UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

INCIDENTAL HARASSMENT AUTHORIZATION

The Vineyard Wind, LLC (Vineyard Wind) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to incidentally harass marine mammals, under the following conditions:

1. This incidental harassment authorization (IHA) is valid for one year from the date of issuance.

2. This IHA authorizes take incidental to pile driving associated with the construction of the Vineyard Wind Project in the Atlantic Ocean offshore of Massachusetts, as specified in the Vineyard Wind's IHA application, in the Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0501.

3. General Conditions

   (a) A copy of this IHA must be in the possession of Vineyard Wind and its designees, all vessel operators, visual protected species observers (PSOs), passive acoustic monitoring (PAM) operators, pile driver operators, and any other relevant designees operating under the authority of the issued IHA.

   (b) The species and/or stocks authorized for taking are listed in Table 1. Taking is authorized for Level B harassment only and is limited to the species and/or stocks and numbers listed in Table 1.

   (c) The taking, by injury, serious injury, or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.

   (d) Vineyard Wind must ensure that construction supervisors and crews, the monitoring team, and relevant Vineyard Wind staff are trained prior to the start of activities subject to this IHA, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project construction must be trained prior to commencing work. A description of the training program must be provided to NMFS at least 60 days prior to the initial training before in-water activities begin. Confirmation of all required training must be documented on a training course log sheet and reported to NMFS Office of Protected Resources prior to initiating project activities;

(e) PSOs and PAM operators have the authority to call for a delay or shutdown to an activity and Vineyard Wind must instruct all personnel regarding the authority of the PSOs and PAM operators. If a delay to commencing an activity is called for, Vineyard Wind must take the required mitigative action. If a shutdown of an activity is called for by a PSO or PAM operator, Vineyard Wind must take the required mitigative action unless shutdown would result in imminent risk of injury or loss of life to an individual, pile refusal, or pile instability. Any disagreements between the PSO, PAM operator, and the activity operator regarding delays or shutdowns must only be discussed after the mitigative action has occurred;

(f) Vineyard Wind and PSOs are required to use available sources of information on North Atlantic right whale presence to aid in monitoring efforts. These include daily monitoring of the Right Whale Sighting Advisory System, consulting of the WhaleAlert app, and monitoring of the Coast Guard's VHF Channel 16 to receive notifications of marine mammal sightings and information associated with any Dynamic Management Areas and Slow Zones;

(g) Any marine mammal observed by project personnel must be immediately communicated to any on-duty PSOs, PAM operator(s), and all vessel captains. Any large whale observation or acoustic detection by PSOs or PAM operators must be conveyed to all vessel captains;

(h) Marine mammals observed within a clearance or shutdown zone must be allowed to remain in the zone (i.e., must leave of their own volition), and their behavior must be monitored and documented;

(i) If an individual from a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, is observed entering or within the clearance zone, pile driving activities must be delayed. If pile driving activities are ongoing and an individual from a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, is observed entering or within the relevant shutdown zone, the activity must be shut down (i.e., cease) immediately unless a shutdown would result in imminent risk of injury or loss of life to an individual, pile refusal, or pile instability. Activities must not commence or resume until the animal(s) has been confirmed to have left the clearance or shutdown zones and is on a path away from the applicable zone or after 30 minutes for all baleen whale species and sperm whales, and 15 minutes for all other species;

(j) In the event that a large whale is sighted or acoustically detected that cannot be confirmed as a non-North Atlantic right whale, it must be treated as if it were a North Atlantic right whale for purposes of mitigation;

(k) For in-water construction, heavy machinery activities other than pile driving, if a marine mammal is detected within, or about to enter, 10 meters (m; 32.8 feet (ft))

of equipment, Vineyard Wind must cease operations until the marine mammal has moved more than 10 m on a path away from the activity to avoid direct interaction with equipment;

(l) All vessels must be equipped with a properly installed, operation Automatic Identification System (AIS) device and Vineyard Wind must report all Maritime Mobile Service Identity (MMSI) numbers to the NMFS Office of Protected Resources;

(m) By accepting the IHA, Vineyard Wind consents to on-site observation and inspections by Federal agency personnel (including NOAA personnel) during pile driving activities, for the purposes of evaluating the implementation and effectiveness of measures contained within the IHA; and

(n) It is prohibited to assault, harm, harass (including sexually harass), oppose, impede, intimidate, impair, or in any way influence or interfere with a PSO, PAM operator, or vessel crew member acting as an observer, or attempt the same. This prohibition includes, but is not limited to, any action that interferes with an observer's' responsibilities, or that creates an intimidating, hostile, or offensive environment. Personnel may report any violations to the NMFS Office of Law Enforcement.

4. Mitigation Requirements

a) Monopile Installation. The following requirements apply to impact pile driving activities of monopiles:

(i) Foundation impact pile driving must not occur from January 1 through May 31. Foundation impact pile driving must not be planned in December; however, it may only occur if necessary to complete the Project with prior approval by NMFS and if Vineyard Wind implements a NMFS-approved Enhanced Monitoring Plan. Vineyard Wind must notify NMFS in writing by September 1 of that year that pile driving can not be avoided and circumstances are expected to necessitate pile driving in December

(ii) No more than one monopile may be installed per day;

(iii) Monopiles must be no larger than a 9.6-m diameter. The minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Hammer energies must not exceed 4,000 kilojoules (kJ);

(iv) Vineyard Wind must not initiate pile driving earlier than 1 hour after civil sunrise or later than 1.5 hours prior to civil sunset;

(v) Vineyard Wind must utilize a soft-start protocol at the beginning of foundation installation for each impact pile driving event and at any time

following a cessation of impact pile driving of 30 minutes or longer. The soft start process must include an initial set of four to six single hammer strikes at less than 40 percent of the maximum hammer energy from the impact hammer followed by at least a one-minute delay before the subsequent hammer strikes. This process (e.g., 4-6 single strikes, delay) must be repeated at least three times prior to initiation of pile driving for a minimum of 20 minutes.;

(vi) Vineyard Wind must deploy, at minimum, a functionally optimized double bubble curtain (DBBC) and hydro-sound damper (HSD) during all foundation impact pile driving that are capable of reducing distances to harassment thresholds to those modeled (assuming 6 dB-attenuation for Level A harassment) and measured (Level B harassment);

a) The double bubble curtain(s) must distribute air bubbles using an air flow rate of at least 0.5 m^3 /(minute*m). The double bubble curtain must surround 100 percent of the piling perimeter throughout the full depth of the water column. In the unforeseen event of a single compressor malfunction, the offshore personnel operating the double bubble curtain must make appropriate adjustments to the air supply and operating pressure such that the maximum possible sound attenuation performance of the bubble curtain(s) is achieved;

b) The lowest bubble ring must be in contact with the seafloor for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100-percent seafloor contact;

c) No parts of the ring or other objects may prevent full seafloor contact with a bubble curtain ring;

d) Construction contractors must train personnel in the proper balancing of airflow to the ring. Vineyard Wind must provide NMFS Office of Protected Resources with a bubble curtain performance test and maintenance report to review within 72 hours after each pile using a bubble curtain is installed. Additionally, a full maintenance check (e.g., manually clearing holes) must occur prior to each pile being installed. Vineyard Wind must follow the Vineyard Wind enhanced bubble curtain maintenance procedures for bubble curtain maintenance;

e) Corrections to the bubble ring(s) to meet these performance standards must occur prior to foundation pile driving of foundation piles. Vineyard Wind must also inspect and carry out appropriate maintenance on the HSD system and ensure the system is functioning properly prior to every pile driving event. A DBBC inspection report must be submitted to NMFS;

f) Vineyard Wind must inspect and carry out maintenance on the noise attenuation system prior to every pile driving event and prepare and submit a Noise Attenuation System (NAS) inspection/performance report. For piles for which full SFV is carried out, this report must be submitted as soon as it is available, but no later than when the interim SFV report is submitted for the respective pile. Vineyard Wind must submit performance reports for all subsequent piles with the weekly abbreviated SFV pile driving reports. All reports must be submitted by email to *PR.ITP.MonitoringReports@noaa.gov*.

(vii) At least three active on-duty PSOs must be on the pile driving platform visually monitoring for marine mammals at least 60 minutes prior to, during, and 30 minutes after pile driving;

(viii) Vineyard Wind must deploy a minimum of two PSO support vessels, each utilizing three active on-duty PSOs. The three active on-duty PSOs must visually monitor for marine mammals at least 60 minutes prior to, during, and 30 minutes after pile driving;

(ix) Concurrent with visual monitoring, PAM operator(s) must be on-duty and actively monitoring for marine mammals 60 minutes before, during, and 30 minutes after pile driving;

(x) Vineyard Wind must utilize NMFS-approved PAM systems. The PAM system components (i.e., acoustic buoys) must not be placed closer than 1 km (0.6 mi) to the pile being driven. The PAM system must be able to detect a vocalization of North Atlantic right whales up to 10 km (6.2 mi);

(xi) Vineyard Wind must obtain NMFS Office of Protected Resources approval on an updated Passive Acoustic Monitoring Plan (PAM Plan) prior to any foundation installation activities, and abide by the Plan.

(xii) Vineyard Wind must establish clearance and shutdown zones, which must be measured using the radial distance around the pile being driven. PSOs must visually monitor clearance zones for marine mammals for a minimum of 60 minutes prior to commencing pile driving. All clearance zones must be confirmed to be free of marine mammals for 30 minutes immediately prior to the beginning of soft-start procedures. If a marine mammal is detected within or about to enter the applicable clearance zones, during this 30 minute time period, impact pile driving, including soft-start, must be delayed until the animal has been visually observed exiting the clearance zone or until a specific time period has elapsed with no further sightings. The specific time periods are 30 minutes for all baleen whale species, sperm whales, and Risso's dolphins, and 15 minutes for all other species;

(xiii) For North Atlantic right whales, any visual observation by a protected species observer at any distance or acoustic detection within the 10 km PAM Monitoring Zone must trigger a delay to the commencement of pile driving;

(xiv) PSOs must be able to visually clear (*i.e.*, confirm no marine mammals are present), at minimum, the minimum visibility zone. The entire minimum visibility zone must be visible (*i.e.*, not obscured by dark, rain, fog, *etc*.) for a full 60 minutes immediately prior to commencing impact pile driving. Pile driving may only commence once all clearance zones have been determined to be clear of marine mammals for 30 minutes immediately prior to pile driving;

(xv) If a marine mammal is detected (visually or acoustically) entering or within the respective shutdown after pile driving has begun, the PSO or PAM operator must call for a shutdown of pile driving and Vineyard Wind must stop pile driving immediately, unless shutdown is not practicable due to imminent risk of injury or loss of life to an individual or risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is risk of pile refusal or pile instability. If pile driving is not shut down due to one of these situations, Vineyard Wind must reduce hammer energy to the lowest level practicable;

(xvi) If pile driving has been shut down due to the presence of a marine mammal other than a North Atlantic right whale, pile driving must not restart until either the marine mammal(s) has voluntarily left the specific clearance zones and has been visually or acoustically confirmed beyond that clearance zone, or, when specific time periods have elapsed with no further sightings or acoustic detections have occurred. The specific time periods are 30 minutes for all baleen whale species, sperm whales, and Risso's dolphins, and 15 minutes for all other species. In cases where these criteria are not met, pile driving may restart only if necessary to maintain pile stability at which time Vineyard Wind must use the lowest hammer energy practicable to maintain stability;

(xvii) From November 1 through December 31, if a North Atlantic right whale is detected either via real-time PAM or vessel-based surveys at any distance from the pile driving location, pile driving must be delayed and must not commence until the following day, unless a follow up vessel-based survey confirms the clearance zone is clear of North Atlantic right whales upon completion of the survey, as determined by the lead PSO. In November and December, if 3 or more North Atlantic right whales are observed at any distance, pile driving must be delayed until the following day;

(xviii) Vineyard Wind must submit an updated Foundation Installation Pile Driving Marine Mammal Monitoring Plan prior to the start of foundation pile driving. Vineyard Wind must obtain NMFS Office of Protected

Resources approval for this Plan prior to the start of any pile driving, and abide by this Plan;

(xix) Vineyard Wind must perform thorough sound field verification (SFV) measurements during installation of, at minimum, the first monopile foundation, and abbreviated SFV on all remaining foundations. If foundation installation occurs in December, thorough SFV measurements must be conducted on, at minimum, the first monopile installed in December;

(xx) If any of the SFV measurements from any pile indicate that the distance to any isopleth of concern is greater than those modeled or expected before the next pile is installed Vineyard Wind must implement the following measures as applicable: Identify and propose for review and concurrence: additional, modified, and/or alternative noise attenuation measures or operational changes that present a reasonable likelihood of reducing sound levels to the modeled distances (e.g., if the pile was installed with a single bubble curtain and a near field sound attenuation device, add a second bubble curtain or if the pile was installed with a double bubble curtain without a near field sound attenuation device, add a nearfield noise attenuation device; adjust hammer operations; adjust noise attenuation system to improve performance); provide a written explanation to NMFS OPR supporting that determination and requesting concurrence to proceed; and, following NMFS OPR's concurrence, deploy those additional measures on any subsequent piles that are installed (e.g., if threshold distances are exceeded on pile 1 then additional measures must be deployed before installing pile 2);

(xxi) Vineyard Wind must conduct SFV measurements during turbine operations to estimate turbine operational source levels and transmission loss rates, in accordance with a NMFS-approved Foundation Installation Pile Driving SFV Plan;

(xxii) Vineyard Wind must obtain NMFS Office of Protected Resources approval on an updated Foundation Installation Pile Driving SFV Plan prior to any foundation installation activities and abide by the Plan. At minimum, the SFV Plan must include methodology for collecting, analyzing, and preparing SFV measurement data for submission to NMFS Office of Protected Resources and describe how the effectiveness of the sound attenuation methodology would be evaluated based on the results. SFV for pile driving may not occur until NMFS approves the SFV Plan for this activity;

(xxiii) Vineyard Wind must submit thorough SFV interim reports within 48 hours after each foundation is measured and before an additional foundation is installed. If any of the interim SFV reports submitted indicate that distances to the Level A harassment and Level B harassment thresholds

exceed those modeled or previously measured in 2023, then Vineyard Wind implement additional measures on all subsequent foundations to ensure the measured Level A and Level B harassment isopleths do not exceed those modeled or expected for foundation installation. Vineyard Wind must also increase clearance and shutdown zone sizes to those identified by NMFS until SFV measurements on at least three additional foundations demonstrate acoustic distances to harassment thresholds meet or are less than those modeled or expected. For every 1,500 m that a marine mammal clearance or shutdown zone is expanded, additional PSOs must be deployed from additional platforms/vessels to ensure adequate and complete monitoring of the expanded shutdown and/or clearance zone with each observer responsible for maintaining watch in no more than 120° and of an area with a radius no greater than 1,500 m. Vineyard Wind must optimize the sound attenuation systems (e.g., ensure hose maintenance, pressure testing, etc.) to, at least, meet noise levels modeled or expected, within three piles or else foundation installation activities must cease until NMFS and Vineyard Wind can evaluate the situation and ensure future piles will not exceed noise levels modeled or expected;

(xxiv) Vineyard Wind must also conduct abbreviated SFV, using at least one acoustic recorder (consisting of a bottom and mid-water column hydrophone) for every foundation for which thorough SFV monitoring is not conducted. Vineyard Wind must review abbreviated SFV results for each pile within 24 hours of completion of the foundation installation (including of pile driving and any drilling), and, assuming measured levels at 750 m did not indicate noise levels are higher than expected , does not need to take any additional action. Abbreviated SFV results must be included in weekly reports. Any indications that distances to the identified Level A harassment and Level B harassment thresholds for marine mammals may be exceeded based on this abbreviated monitoring must be addressed by Vineyard Wind in the weekly report, including an explanation of factors that contributed to the exceedance and corrective actions that were taken to avoid exceedance on subsequent piles. Vineyard Wind must meet with NMFS within two business days of Vineyard Wind's submission of a report that includes an exceedance to discuss if any additional action is necessary;

(xxv) The SFV plan must also include how operational noise would be monitored. Vineyard Wind must estimate source levels (at 10 m from the operating foundation) based on received levels measured at 50 m, 100 m, and 250 m from the pile foundation. These data must be used to identify estimated transmission loss rates. Operational parameters (*e.g.*, direct drive/gearbox information, turbine rotation rate) as well as sea state conditions and information on nearby anthropogenic activities (*e.g.*, vessels transiting or operating in the area) must be reported;

(xxvi) The PAM Plan must include a description of all proposed PAM equipment, the calibration data, bandwidth capability and sensitivity of hydrophones, address how the proposed passive acoustic monitoring must follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind. The Plan must describe all proposed PAM equipment, procedures, and protocols including proof that vocalizing North Atlantic right whales will be detected within the clearance and shutdown zones including deployment locations, procedures, detection review methodology, and protocols; hydrophone detection ranges with and without foundation installation activities and data supporting those ranges; communication time between call and detection, and data transmission rates between PAM Operator and PSOs on the pile driving vessel; where PAM Operators will be stationed relative to hydrophones and PSOs on pile driving vessel calling for delay/shutdowns; and a full description of all proposed software, call detectors, and filters. The Plan must also include a description of Vineyard Wind's evaluation of the planned acoustic detection software using the PAM Atlantic baleen whale annotated data set available at National Centers for Environmental Information (NCEI) and provide evaluation/performance metrics (e.g., false negatives/positives); and

(xxvii) The Foundation Installation Pile Driving Marine Mammal Monitoring Plan must detail all plans and procedures for sound attenuation, including procedures for adjusting the noise attenuation system(s) and available contingency noise attenuation measures/systems if distances to modeled isopleths of concern are exceeded during SFV. The Plan must include a description of all monitoring equipment and PAM operator and PSO protocols (including number and location of PSOs and PAM operators) for all foundation pile driving and an informal guide to aid personnel in identifying species if they are observed in the vicinity of the project area.

b) Marine Mammal Vessel Strike Avoidance – Vineyard Wind must comply with the following vessel strike avoidance measures while in the specific geographic region, unless a deviation is necessary to maintain safe maneuvering speed and justified because the vessel is in an area where oceanographic, hydrographic, and/or meteorological conditions severely restrict the maneuverability of the vessel; an emergency situation presents a threat to the health, safety, life of a person; or when a vessel is actively engaged in emergency rescue or response duties, including vessel-in distress or environmental crisis response. An emergency is defined as a serious event that occurs without warning and requires immediate action to avert, control, or remedy harm.

(i) Prior to the start of the Project's activities involving vessels, all vessel personnel must receive a protected species training that covers at minimum:

a) Identification of marine mammals that have the potential to occur where vessels would be operating;

b) Detection and observation methods in both good weather conditions (i.e., clear visibility, low winds, low sea states) and poor weather conditions (i.e., fog, high winds, high sea states, with glare);

c) Sighting communication protocols;

d) All vessel speed and approach limit mitigation requirements (e.g., vessel strike avoidance measures); and

e) Information on resources available to the project personnel regarding the applicability of Federal laws and regulations for protected species.

f) This training must be repeated for any new vessel personnel who join the Project.

g) Confirmation of the vessel personnel's training and understanding of the IHA requirements must be documented on a training course log sheet and reported to NMFS within 30 days of completion of training.

(ii) All vessel operators must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, to avoid striking any marine mammal.

(iii) All transiting vessels, operating at any speed, must have a dedicated visual observer on duty at all times to monitor for marine mammals with a 180° direction of the forward path of the vessels (90 °port to 90° starboard) located at an appropriate vantage point for ensuring vessels are maintaining appropriate separation distances. Visual observers may be PSOs or crew members, but crew members responsible for these duties must be provided sufficient training by Vineyard Wind to distinguish marine mammals from other phenomena and must be able to identify a marine mammal as a North Atlantic right whale, other whale (defined in this context as sperm whales or baleen whales other than North Atlantic right whales), or other marine mammal.

a) Dedicated visual observers must be equipped with alternative monitoring technology (e.g., night vision devices, infrared cameras) for periods of low visibility (e.g., darkness, rain, fog, etc.);

b) The dedicated visual observer must not have any other duties while observing and must receive prior training on protected species detection and identification, vessel strike minimization procedures,

how and when to communicate with the vessel captain, and reporting requirements in this measure; and

c) Dedicated visual observers may be third-party observers (*i.e.*, NMFS-approved PSOs (see condition 5(a,b)) or trained crew members.

(iv) All vessel operators and/or dedicated visual observers must continuously monitor US Coast Guard VHF Channel 16 at the onset of transiting through the duration of transition over which North Atlantic right whale sightings are broadcasted. At the onset of transiting and at least once every 4 hours, vessel operators and/or trained crew member(s) must monitor the project's Situational Awareness System (if applicable), WhaleAlert, and relevant NOAA information systems such as the Right Whale Sighting Advisory System (RWSAS) for the presence of North Atlantic right whales;

(v) All vessel operators must abide by vessel speed regulations in 50 CFR 224.105. Nothing in this measure exempts vessels from any other applicable marine mammal speed or approach requirements;

(vi) In the event that any DMA or Slow Zone is established that overlaps with an area where a project-associated vessel would operate, that vessel, regardless of size, must transit that area at 10 kn or less;

(vii) Between November 1st and April 30th, all vessels, regardless of size, must operate port to port (specifically from ports in New Jersey, New York, Maryland, Delaware, and Virginia) at 10 kn or less, except for vessels while transiting in Narragansett Bay or Long Island Sound;

(viii) All vessel operators must immediately reduce speed to 10 kn (11.5 mph) or less for at least 24 hours when a North Atlantic right whale is sighted, at any distance, by any project-related personnel or acoustically detected by any project-related PAM system. Each subsequent observation or acoustic detection in the Project area shall trigger an additional 24-hour period. If a vessel is traveling at speed greater than 10 kn (11.5 mph) (*i.e.* no speed restrictions are enacted) in the transit corridor (defined as from a port to the Lease Area or return), in addition to the required dedicated visual observer, Vineyard Wind must monitor the transit corridor in real-time with PAM prior to and during transits. If a North Atlantic right whale is detected via visual observation or PAM within or approaching the transit corridor, all vessels in the transit corridor must travel at 10 kn (11.5 mph) or less for 24 hours following the detection. Each subsequent detection shall trigger a 24-hour reset. A slowdown in the transit corridor expires when there has been no further North Atlantic right whale visual or acoustic detection in the transit corridor in the past 24 hours. All vessels must maintain a minimum separation distance of 500 m from North Atlantic right whales. If underway, all vessels must steer a course away

from any sighted North Atlantic right whale at 10 kn (11.5 mph) or less such that the 500-m minimum separation distance requirement is not violated. If a North Atlantic right whale is sighted within 500 m of an underway vessel, that vessel must turn away from the whale(s), reduce speed, and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 m;

(ix) All vessels, regardless of size, must immediately reduce speed to 10 kn (11.5 mph) or less when any large whale, (other than a North Atlantic right whale), mother/calf pairs, or large assemblages of cetaceans are sighted within 500 m (0.31 mi) of a transiting vessel;

(x) All vessels must maintain a minimum separation distance of 100-m (328 ft) sperm whales and non-North Atlantic right whale baleen whales. If one of these species is sighted within 100 m of an underway vessel, the vessel must turn away from the whale(s), reduce speed, and shift the engine(s) to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 100 m;

(xi) All vessels must maintain a minimum separation distance of 50-m (164 ft) from all delphinid cetaceans and pinnipeds, with an exception made for those that approach the vessel (e.g., bow-riding dolphins). If a delphinid cetacean or pinniped is sighted within 50 m of a transiting vessel, that vessel must turn away from the animal(s), reduce speed, and shift the engine to neutral, with an exception made for those that approach the vessel (e.g., bow-riding dolphins). Engines must not be engaged until the animal(s) has moved outside of the vessel's path and beyond 50 m;

(xii) All vessels underway must not divert or alter course to approach any marine mammal;

(xiii) Prior to transit, vessel operators must check for information regarding the establishment of Seasonal and Dynamic Management Areas, Slow Zones, and any information regarding North Atlantic right whale sighting locations; and

(xiv) Vineyard Wind must submit an updated Marine Mammal Vessel Strike Avoidance Plan 180 days prior to the planned start of vessel activity that provides details on all relevant mitigation and monitoring measures for marine mammals, vessel speeds and transit protocols from all planned ports, vessel-based observer protocols for transiting vessels, communication and reporting plans, and proposed alternative monitoring equipment in varying weather conditions, darkness, sea states, and in consideration of the use of artificial lighting. If Vineyard Wind plans to implement PAM in any transit corridor to allow vessel transit above 10 kn, the plan must describe how PAM, in combination with visual observations, will be conducted. If an updated plan is not submitted and

approved by NMFS prior to vessel operations under this authorization, all project vessels must travel at speeds of 10 kn (11.5 mph) or less. Vineyard Wind must comply with any approved Marine Mammal Vessel Strike Avoidance Plan.

5. Monitoring

(a) Vineyard Wind must use independent, NMFS-approved PSOs and PAM operators, meaning that the PSOs and PAM operators must be employed by a third-party observer provider, must have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant crew with regard to the presence of protected species and mitigation requirements;

(b) All PSOs and PAM operators must have the following qualifications:

(i) All PSOs and PAM operators must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO or PAM operator has acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification containing alternative experience. Alternate experience that may be considered includes, but is not limited to previous work experience conducting academic, commercial, or government sponsored marine mammal visual and/or acoustic surveys; or previous work experience as a PSO/PAM operator. All PSOs and PAM operators should demonstrate good standing and consistently good performance of all assigned duties;

(ii) PSOs must have visual acuity in both eyes (with correction of vision being permissible) sufficient enough to discern moving targets on the water's surface with the ability to estimate the target size and distance (binocular use is allowable); ability to conduct field observations and collect data according to the assigned protocols; sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations; writing skills sufficient to document observations, and the ability to communicate orally, by radio, or in-person, with project personnel to provide real-time information on marine mammals observed in the area;

(iii) All PSOs must be trained in northwestern Atlantic Ocean marine mammal identification and behaviors and must be able to conduct field observations and collect data according to assigned protocols. Additionally, PSOs must have the ability to work with all required and relevant software and

equipment necessary during observations (as described in condition 5(h)(v));

(iv) All PSOs and PAM operators must successfully complete a relevant training course within the last 5 years, including obtaining a certificate of course completion;

(v) PSOs and PAM operators are responsible for obtaining NMFS' approval. NMFS may approve PSOs as conditional or unconditional. A conditionally approved PSO may be one who has completed training in the last 5 years but has not yet attained the requisite field experience. An unconditionally approved PSO is one who has completed training within the last 5 years and attained the necessary experience (i.e., demonstrate experience with monitoring for marine mammals at clearance and shutdown zone sizes similar to those produced during the respective activity). Lead PSO or PAM operators must be unconditionally approved and have a minimum of 90 days in a northwestern Atlantic Ocean offshore environment performing the role (either visual or acoustic), with the conclusion of the most recent relevant experience not more than 18 months previous. At a minimum, at least one PSO located on each observation platform must have a minimum of 90 days of at-sea experience working in an offshore environment and would be required to have no more than eighteen months elapsed since the conclusion of their last at-sea experiences. Any new and/or inexperienced PSOs would be paired with an experienced PSO;

(vi) PSOs and PAM operators for foundation installation activities must be unconditionally approved;

(vii) To be approved as a PAM operator, the person must meet the following qualifications: The PAM operator must demonstrate that they have prior experience with real-time acoustic detection systems and/or have completed specialized training for operating PAM systems and detecting and identifying Atlantic Ocean marine mammals sounds, in particular: North Atlantic right whale sounds, humpback whale sounds, and how to deconflict them from similar North Atlantic right whale sounds, and other co-occurring species' sounds in the area including sperm whales; must be able to distinguish between whether a marine mammal or other species sound is detected, possibly detected, or not detected, and similar terminology must be used across companies/projects; where localization of sounds or deriving bearings and distance are possible, the PAM operators need to have demonstrated experience in using this technique; PAM operators must be independent observers (i.e., not construction personnel); PAM operators must demonstrate experience with relevant acoustic software and equipment; PAM operators must have the qualifications and relevant experience/training to safely deploy and retrieve equipment and program the software, as necessary; PAM

operators must be able to test software and hardware functionality prior to operation; and PAM operators must have evaluated their acoustic detection software using the PAM Atlantic baleen whale annotated data set available at National Centers for Environmental Information (NCEI) and provide evaluation/performance metric;

(viii) PAM operators must be able to review and classify acoustic detections in real-time (prioritizing North Atlantic right whales and noting detection of other cetaceans) during the real-time monitoring periods; and

(c) For prospective PSOs and PAM operators not previously approved, or for PSOs and PAM operators whose approval is not current, Vineyard Wind must submit resumes for approval at least 60 days prior to PSO and PAM operator use. Resumes must include information related to relevant education, experience, and training, including dates, duration, location, and description of prior PSO or PAM operator experience. Resumes must be accompanied by relevant documentation of successful completion of necessary training and include which specific roles and activities the PSOs/PAM operators are being requested for. PAM operator experience must also include the information described in condition 5(b)(vii);

(d) At least one on-duty PSO and PAM operator must be designated as the Lead PSO or PAM operator.

(e) Vineyard Wind must submit NMFS previously approved PSOs and PAM operators to NMFS Office of Protected Resources for review and confirmation of their approval for specific roles at least 30 days prior to commencement of the activities requiring PSOs/PAM operators or 15 days prior to when new PSOs/PAM operators are required after activities have commenced;

(f) PSOs may work as PAM operators and vice versa, pending NMFS-approval; however, they may only perform one role at any time and must not exceed work time restrictions, which must be tallied cumulatively;

(g) Vineyard Wind must implement the following measures during foundation installation:

(i) Monitoring must be done while free from distractions and in a consistent, systematic, and diligent manner. If PSOs cannot visually monitor the minimum visibility zone at all times using the equipment described in 5(g)(vi), foundation pile driving operations must not commence or must shutdown if they are currently active;

(ii) PSOs must visually clear (i.e., confirm no observations of marine mammals) the entire minimum visibility zone for a full 30 minutes immediately prior to commencing activities;

(iii) All PSOs must be located at the best vantage point(s) on any platform, as determined by the Lead PSO, in order to obtain 360-degree visual coverage of the entire clearance and shutdown zones around the activity area, and as much of the Level B harassment zone as possible. These vantage points must maintain a safe work environment. The PAM operator must assist PSOs in ensuring full coverage of the clearance and shutdown zones, and monitor to and past the clearance zone for large whales;

(iv) All on-duty PSOs must remain in real-time contact with the on-duty PAM operator(s), PAM operators must immediately communicate all acoustic detections of marine mammals to PSOs, including any determination regarding species identification, distance, and bearing (where relevant) relative to the pile being driven and the degree of confidence (e.g., possible, probable detection) in the determination. All on-duty PSOs and PAM operator(s) must remain in contact with the on-duty construction personnel responsible for implementing mitigations (e.g., delay to pile driving) to ensure communication on marine mammal observations can easily, quickly, and consistently occur between all on-duty PSOs, PAM operator(s), and on-water Project personnel;

(v) The PAM operator must inform the Lead PSO(s) on duty of animal detections approaching or within applicable ranges of interest to the activity occurring via the data collection software system (i.e., Mysticetus or similar system) who must be responsible for requesting that the designated crewmember implement the necessary mitigation procedures (i.e., delay);

(vi) PSOs must use high magnification (25x) binoculars, standard handheld (7x) binoculars, and the naked eye to search continuously for marine mammals. During foundation installation, at least three PSOs on the pile driving-dedicated PSO vessel must be equipped with functional Big Eye binoculars (e.g., 25 x 150; 2.7 view angle; individual ocular focus; height control). These must be pedestal mounted on the deck at the best vantage point that provides for optimal sea surface observation and PSO safety. PAM operators must have the appropriate equipment (i.e., a computer station equipped with a data collection software system available wherever they are stationed) and use a NMFS-approved PAM system to conduct monitoring;

(vii) During periods of low visibility (i.e., fog, precipitation, darkness, poor weather conditions), PSOs must use alternative monitoring technology (e.g. infrared or thermal cameras) to monitor mitigation zones. PSOs aboard the pile driving vessel must have access to two FLIR cameras with two screens, thermal clip-ons, hand-held night vision devices, and thermal monoculars. PSOs aboard the PSO support vessels must have access to one FLIR camera with a single screen, thermal clip-ons, hand-held night vision devices, and thermal monoculars;

(viii) PSOs and PAM operators must not exceed 4 consecutive watch hours on duty at any time, must have a 2-hour (minimum) break between watches, and must not exceed a combined watch schedule of more than 12 hours in a 24-hour period. If the schedule includes PSOs and PAM operators on-duty for 2-hour shifts, a minimum 1-hour break between watches must be allowed;

(ix) PSOs and PAM operator(s), using a NMFS-approved PAM system, must monitor for marine mammals 60 minutes prior to, during, and 30 minutes following all pile driving activities. If PSOs cannot visually monitor the minimum visibility zone prior to foundation pile driving at all times using the equipment described in condition 5(h)(vi), pile driving operations must not commence or must shutdown if they are currently active;

(x) Vineyard Wind must conduct PAM for at least 24 hours immediately prior to foundation pile driving activities. The PAM operator must review all detections from the previous 24-hour period immediately prior to foundation pile driving activities;

(xi) Thorough SFV measurements must continue until noise levels are at or below those modeled or expected, based upon 2023 SFV measurements. Thorough SFV measurements must be made at a minimum of four distances from the pile(s) being driven, along a single transect, in the direction of lowest transmission loss (*i.e.*, projected lowest transmission loss coefficient), including, but not limited to, 750 m (2,460 ft) and three additional ranges, including, at least, the modeled Level B harassment isopleth. At least one additional measurement at an azimuth 90 degrees from the array at 750 m must be made;

(xii) At each SFV measurement distance, there must be a near bottom and mid-water column hydrophone (measurement system);

(xiii) The SFV measurements systems must have a sensitivity appropriate for the expected sound levels from pile driving received at the nominal ranges throughout the installation of the pile. The frequency range of SFV measurement systems must cover the range of at least 20 hertz (Hz) to 20 kilohertz (kHz). The SFV measurement systems must be designed to have omnidirectional sensitivity so that the broadband received level of all pile driving exceeds the system noise floor by at least 10 dB. The dynamic range of the SFV measurement system must be sufficient such that at each location, and the signals avoid poor signal-to-noise ratios for low amplitude signals and avoid clipping, nonlinearity, and saturation for high amplitude signals;

(xiv) All hydrophones used in SFV measurements systems are required to have undergone a full system, traceable laboratory calibration conforming to International Electrotechnical Commission (IEC) 60565, or an equivalent

standard procedure, from a factory or accredited source to ensure the hydrophone receives accurate sound levels, at a date not to exceed 2 years before deployment. Additional in-situ calibration checks using a pistonphone are required to be performed before and after each hydrophone deployment. If the measurement system employs filters via hardware or software (e.g., high-pass, low-pass, etc.), which is not already accounted for by the calibration, the filter performance (i.e., the filter's frequency response) must be known, reported, and the data corrected before analysis; and

(xv) Vineyard Wind must be prepared with additional equipment (hydrophones, recording devices, hydrophone calibrators, cables, batteries, etc.), which exceeds the amount of equipment necessary to perform the measurements, such that technical issues can be mitigated before measurement.

6. Reporting Requirements

(a) Prior to initiation of project activities under this authorization, Vineyard Wind must demonstrate in a report submitted to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*) that all required training for Vineyard Wind personnel (including vessel crews, vessel captains, PSOs, and PAM operators has been completed;

(b) Vineyard Wind must use a standardized reporting system during the effective period of the IHA. All data collected *PR.ITP.MonitoringReports@noaa.gov* related to the Project must be recorded using industry-standard software that is installed on field laptops and/or tablets. Unless stated otherwise, all reports must be submitted to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*), dates must be in MM/DD/YYYY format, and location information must be provided in Decimal Degrees and with the coordinate system information (e.g., NAD83, WGS84, etc.);

(c) For all visual monitoring efforts and marine mammal sightings, the following information must be collected and reported to NMFS Office of Protected Resources:

(i) Date and time that monitored activity begins or ends;

(ii) Construction activities occurring during each observation period;

(iii) Watch status (i.e., sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

(iv) PSO who sighted the animal;

(v) Time of sighting;

(vi) Weather parameters (e.g., wind speed, percent cloud cover, visibility);

(vii) Water conditions (e.g., Beaufort sea state, tide state, water depth);

(viii) All marine mammal sightings, regardless of distance from the construction activity; species (or lowest possible taxonomic level possible);

(ix) Pace of the animal(s);

(x) Estimated number of animals (minimum/maximum/high/low/best);

(xi) Estimated number of animals by cohort (e.g., adults, yearlings, juveniles, calves, group composition, etc.);

(xii) Description of the animal(s) *(*i.e., as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

(xiii) Description of any marine mammal behavioral observations (e.g., observed behaviors such as feeding or traveling) and observed changes in behavior, including an assessment of behavioral responses thought to have resulted from the specific activity;

(xiv) Animals' closest distance and bearing from the pile being driven and estimated time entered or spent within the Level A harassment and/or Level B harassment zone(s);

(xv) Activity at time of sighting (e.g., impact pile driving), use of any noise attenuation device(s), and specific phase of activity (e.g., soft-start for pile driving, active pile driving, etc.);

(xvi) Marine mammal occurrence in Level A harassment or Level B harassment zones;

(xvii) Description of any mitigation-related action implemented, or mitigation-related actions called for but not implemented, in response to the sighting (e.g., delay, shutdown, etc.*)* and time and location of the action;

(xviii) Other human activity in the area and other applicable information.

(d) If a marine mammal is acoustically detected during PAM monitoring, the following information must be recorded and reported to NMFS:

(i) Location of hydrophone (latitude & longitude; in Decimal Degrees) and site name;

(ii) Bottom depth and depth of recording unit (in meters);

(iii) Recorder (model & manufacturer) and platform type (i.e., bottom-mounted, electric glider, etc.), and instrument ID of the hydrophone and recording platform (if applicable);

(iv) Time zone for sound files and recorded date/times in data and metadata (in relation to Universal Coordinated Time (UTC); i.e., Eastern Standard Time (EST) time zone is UTC-5);

(v) Duration of recordings (start/end dates and times; in International Organization for Standardization (ISO) 8601 format, yyyy-mm-ddTHH:MM:SS.sssZ);

(vi) Deployment/retrieval dates and times (in ISO 8601 format);

(vii) Recording schedule (must be continuous);

(viii) Hydrophone and recorder sensitivity (in dB re. 1microPascal (μPa);

(ix) Calibration curve for each recorder;

(x) Bandwidth/sampling rate (in Hz);

(xi) Sample bit-rate of recordings; and

(xii) Detection range of equipment for relevant frequency bands (in meters).

(e) For each detection, the following information must be noted:

(i) Species identification (if possible);

(ii) Call type and number of calls (if known);

(iii) Temporal aspects of vocalization (date, time, duration, *etc*.; date times in ISO 8601 format);

(iv) Confidence of detection (detected, or possibly detected);

(v) Comparison with any concurrent visual sightings;

(vi) Location and/or directionality of call (if determined) relative to acoustic recorder or construction activities;

(vii) Name and version of detection or sound analysis software used, with protocol reference;

(viii) Minimum and maximum frequencies viewed/monitored/used in detection (in Hz); and

(ix) Name of PAM operator(s) on duty.

(f) Vineyard Wind must compile and submit weekly reports during foundation installation to NMFS Office of Protected Resources that document the daily start and stop of all pile driving associated with the Project; the start and stop of associated observation periods by PSOs; details on the deployment of PSOs; a record of all detections of marine mammals (acoustic and visual); any mitigation actions (or if mitigation actions could not be taken, provide reasons why); and details on the noise attenuation system(s) used and its performance. Weekly reports are due on Wednesday for the previous week (Sunday to Saturday) and must include the information required under this section. The weekly report must also identify which turbines become operational and when (a map must be provided);

(g) Vineyard Wind must compile and submit monthly reports to NMFS Office of Protected Resources during foundation installation (*PR.ITP.monitoringreports@noaa.gov)* that include a summary of all information in the weekly reports, including project activities carried out in the previous month, vessel transits (number, type of vessel, MMIS number, and route), number of piles installed, all detections of marine mammals, and any mitigative action taken. Monthly reports are due on the 15th of the month for the previous month. The monthly report must also identify which turbines become operational and when (a map must be provided). Full PAM detection data and metadata must also be submitted monthly on the 15th of every month for the previous month via the webform on the NMFS North Atlantic Right Whale Passive Acoustic Reporting System website at *https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates;*

(h) Vineyard Wind must submit a draft final report to NMFS Office of Protected Resources (*PR.ITP.monitoringreports@noaa.gov)* no later than 90 days following the end of the effective date of the IHA. Vineyard Wind must provide a final report within 30 days following resolution of NMFS' comments on the draft report. If no comments are received from NMFS Office of Protected Resources within 60 calendar days of NMFS Office of Protected Resources receipt of the draft report, the report must be considered final. The draft and final reports must detail the following:

(i) Total number of marine mammals of each species/stock detected and how many were within the designated Level A harassment and Level B harassment zone(s) with comparison to authorized take of marine mammals;

(ii) Marine mammal detections and behavioral observations before, during, and after foundation installation activity;

(iii) Mitigation measures that were implemented (i.e., number of shutdowns or clearance zone delays, etc.) or, if no mitigative actions was taken, why not;

(iv) Operational details (i.e., days and duration of foundation pile driving);

(v) Any PAM systems used;

(vi) Results, effectiveness, and which noise attenuation systems were used;

(vii) Summarized information related to situational reporting; and

(viii) Any other important information relevant to the Project.

(i) Vineyard Wind must also submit GIS shapefile(s) of the final location of all piles, including an indication of what year installed and began operating; GIS shapefile of all North Atlantic right whale sightings, including dates and group sizes; a summary and evaluation of all SFV data collected; a summary and evaluation of all PAM data collected; a summary and evaluation of marine mammal behavioral observations; a summary and evaluation of mitigation and monitoring implementation and effectiveness; and a list of recommendations to inform environmental compliance assessments for future offshore wind actions;

(j) For those foundation piles requiring SFV measurements, Vineyard Wind must provide the initial results of the SFV measurements to NMFS Office of Protected Resources in an interim report after each foundation installation event as soon as they are available and prior to a subsequent foundation installation, but no later than 48 hours after each completed foundation installation event. The report must include hammer energies/schedule used during pile driving or UXO/MEC weight (including donor charge weight), the model-estimated acoustic ranges ($R_{95\%}$) to compare with the real-world sound field measurements, estimated source levels at 1 m and/or 10 m, peak sound pressure level (SPL_{pk}) and median, mean, maximum, and minimum root-mean-square sound pressure level that contains 90 percent of the acoustic energy (SPL_{rms}) and sound exposure level (SEL, in single strike for pile driving (SEL_{s-s}) and SELcum) for each hydrophone, including at least the maximum, arithmetic mean, minimum, median (L50) and L5 (95 percent exceedance) statistics for each metric; estimated marine mammal Level A harassment and Level B harassment acoustic isopleths, calculated using the maximum-over-depth L5 (95 percent exceedance level, maximum of both hydrophones) of the associated sound metric; comparison of modeled results assuming 10-dB attenuation against the measured marine mammal Level A harassment and Level B harassment acoustic isopleths; estimated transmission loss coefficients; pile identifier name, location of the pile and each hydrophone array in latitude/longitude; depths of each hydrophone; one-third-octave band single strike SEL spectra; if filtering is applied, full filter characteristics must be reported; and hydrophone specifications including the type, model, and sensitivity. Vineyard Wind must also report any immediate observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices. If any *in-situ* calibration checks for hydrophones reveal a calibration drift greater than 0.75

dB, pistonphone calibration checks are inconclusive, or calibration checks are otherwise not effectively performed, Vineyard Wind must indicate full details of the calibration procedure, results, and any associated issues in the 48-hour interim reports;

(k) The final results of all SFV measurements from each foundation installation must be submitted as soon as possible, but no later than 90 days following completion of SFV. The final reports must include all details included in the interim report and descriptions of any notable occurrences, explanations for results that were not anticipated, or actions taken during foundation installation. The final report must also include at least the maximum, mean, minimum, median (L50) and L5 (95 percent exceedance) statistics for each metric; the SEL and SPL power spectral density and/or one-third octave band levels (usually calculated as decidecade band levels) at the receiver locations should be reported; range of transmission loss coefficients; the local environmental conditions, such as wind speed, transmission loss data collected on-site (or the sound velocity profile); baseline pre- and post-activity ambient sound levels (broadband and/or within frequencies of concern); a description of depth and sediment type, as documented in the Construction and Operation Plan (COP), at the recording and foundation installation locations; the extents of the measured Level A harassment and Level B harassment zone(s); hammer energies required for pile installation and the number of strikes per pile; the hydrophone equipment and methods (i.e., recording device, bandwidth/sampling rate; distance from the pile where recordings were made; the depth of recording device(s)); a description of the SFV measurement hardware and software, including software version used, calibration data, bandwidth capability and sensitivity of hydrophone(s), any filters used in hardware or software, any limitations with the equipment, and other relevant information; the spatial configuration of the noise attenuation device(s) relative to the pile; a description of the noise abatement system and operational parameters (e.g., bubble flow rate, distance deployed from the pile, etc.), and any action taken to adjust the noise abatement system. A discussion which includes any observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices. Vineyard Wind must submit a revised report within 30 days following receipt of NMFS' comments on the draft final report;

(l) If at any time during the project Vineyard Wind becomes aware of any issue or issues which may (to any reasonable subject-matter expert, including the persons performing the measurements and analysis) call into question the validity of any measured Level A harassment or Level B harassment isopleths to a significant degree, which were previously transmitted or communicated to NMFS Office of Protected Resources, Vineyard Wind must inform NMFS Office of Protected Resources within 1 business day of becoming aware of this issue or before the next pile is driven, whichever comes first; and

(m) Performance reports for each bubble curtain deployed must include water depth (m), current speed (m/s) and direction (degrees), wind speed (m/s) and direction (degrees), Beaufort sea state, bubble curtain deployment/retrieval date and time (UTC), bubble curtain hose length (m), bubble curtain radius (distance from pile) (m), diameter of holes and hole spacing (metric units), air supply hose length (m), compressor type (including rated Cubic Feet per Minute (CFM) and model number), number of operational compressors, performance data from each compressor (including Revolutions Per Minute (RPM), pressure, start and stop times [UTC]), free air delivery (m^3/min), total hose air volume (m^3/(min m)), schematic of GPS waypoints during hose laying, maintenance procedures performed and results (pressure tests, inspections, flushing, re-drilling, and any other hose or system maintenance) before and after installation and start and stop times of those tests (UTC), and the length of time the bubble curtain was on the seafloor prior to the associated foundation installation, and confirmation that the bubble curtain was in full contact with the seafloor throughout the use. Additionally, the report must include any important observations regarding performance (before, during, and after pile installation), such as any observed weak areas of low pressure, corrective measures conducted to ensure the system is working sufficiently. The report may also include any relevant video and/or photographs of the bubble curtain(s) operating during all pile driving.

(n) Vineyard Wind must submit situational reports if the following circumstances occur, including all instances wherein an exemption is taken must be reported to NMFS Office of Protected Resources within 24 hours, in specific circumstances, including but not limited to the following:

(i) All sightings of North Atlantic right whales must be reported immediately (no later than 24 hours). If a North Atlantic right whale is sighted with no visible injuries or entanglement at any time by project PSOs or project personnel, Vineyard Wind must immediately report the sighting to NMFS; if immediate reporting is not possible, the report must be submitted as soon as possible but no later than 24 hours after the initial sighting. All North Atlantic right whale acoustic detections within a 24-hour period should be collated into one spreadsheet and reported to NMFS as soon as possible but no later than 24 hours;

(ii) To report sightings and acoustic detections, download and complete the *Real-Time North Atlantic Right Whale Reporting Template* spreadsheet found here: *https://www.fisheries.noaa.gov/resource/document/template-datasheet-real-time-north-atlantic-right-whale-acoustic-and-visual*. Save the spreadsheet as a .csv file and email it to NMFS NEFSC-PSD (*ne.rw.survey@noaa.gov*), NMFS GARFO-PRD (*nmfs.gar.incidental-take@noaa.gov*), and NMFS OPR (*PR.ITP.MonitoringReports@noaa.gov*). If the sighting is in the Southeast (North Carolina through Florida), report via the template and to the Southeast Hotline 877-WHALE-HELP (877-942-5343) with the

observation information provided below PAM detections are not reported to the Hotline;

(iii) If unable to report a sighting through the spreadsheet within 24 hours, call the relevant regional hotline (Greater Atlantic Region [Maine through Virginia] Hotline 866-755-6622; Southeast Hotline 877-WHALE-HELP) with the observation information provided below (PAM detections are not reported to the Hotline);

(iv) Observation information: Report the following information: the time (note time format), date (MM/DD/YYYY), location (latitude/longitude in decimal degrees; coordinate system used) of the observation, number of whales, animal description/certainty of observation (follow up with photos/video if taken), reporter's contact information, and lease area number/project name, PSO/personnel name who made the observation, and PSO provider company (if applicable);

(v) If unable to report via the template or the regional hotline, enter the sighting via the WhaleAlert app (*http://www.whalealert.org/*). If this is not possible, report the sighting to the U.S. Coast Guard via channel 16. The report to the Coast Guard must include the same information as would be reported to the Hotline (see above);

(vi) If a North Atlantic right whale is acoustic detected at any time by a project-related PAM system, Vineyard Wind must ensure the detection is reported as soon as possible to NMFS, but no longer than 24 hours after the detection via the "24-hour North Atlantic right whale Detection Template" (*https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates*). Calling the hotline is not necessary when reporting PAM detections via the template;

(vii) North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via Channel 16 and through the WhaleAlert app (*http://www.whalealert.org*/). PAM detections are not reported to WhaleAlert or the U.S. Coast Guard;

(viii) If a non-North Atlantic right whale large whale is observed, report the sighting via WhaleAlert app (*http://www.whalealert.org/*) as soon as possible but within 24 hours;

(ix) Full detection data , metadata, and location of recorders (or GPS tracks, if applicable) from all real-time hydrophones used for monitoring during construction must be submitted within 90 calendar days following completion of activities requiring PAM for mitigation via the International Organization for Standardization (ISO) standard metadata forms available on the NMFS Passive Acoustic Reporting System website *(https://www.fisheries.noaa.gov/resource/document/passive-acoustic-*

reporting-system-templates). Submit the completed data templates to *nmfs.nec.pacmdata@noaa.gov*. The full acoustic recordings from real-time systems must also be sent to the National Centers for Environmental Information (NCEI) for archiving within 90 days following completion of activities requiring PAM for mitigation. Submission details can be found at: *https://www.ncei.noaa.gov/products/passive-acoustic-data*;

(x) When an observation of a marine mammal occurs during vessel transit, the following information must be recorded:

1. Time, date, and location;

2. The vessel's activity, heading, and speed;

3. Sea state, water depth, and visibility;

4. Marine mammal identification to the best of the observer's ability (*e.g.*, North Atlantic right whale, whale, dolphin, seal);

5. Initial distance and bearing to marine mammal from vessel and closest point of approach; and

6. Any avoidance measures taken in response to the marine mammal sighting.

(xi) If a North Atlantic right whale is detected via PAM, the date, time, location (*i.e.*, latitude and longitude of recorder) of the detection as well as the recording platform that had the detection must be reported to *nmfs.pacmdata@noaa.gov* as soon as feasible, but no longer than 24 hours after the detection. Full detection data and metadata must be submitted monthly on the 15th of every month for the previous month via the webform on the NMFS North Atlantic right whale Passive Acoustic Reporting System website (*https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates*).

(o) In the event that the personnel involved in the Project discover a stranded, entangled, injured, or dead marine mammal, Vineyard Wind must immediately report the observation to the NMFS Office of Protected Resources (OPR). If in the Greater Atlantic Region (Maine to Virginia) call the NMFS Greater Atlantic Stranding Hotline (866-755-6622); if in the Southeast Region (North Carolina to Florida), call the NMFS Southeast Stranding Hotline (877-942-5343). Separately, Vineyard Wind must report the incident to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov)*; if in the Greater Atlantic region (Maine to Virginia), to NMFS Greater Atlantic Regional Fisheries Office (GARFO; *nmfs.gar.incidental-take@noaa.gov, nmfs.gar.stranding@noaa.gov*); if in the Southeast region (North Carolina to Florida), to NMFS Southeast Regional Office

(SERO; *secmammalreports@noaa.gov*); and to the U.S. Coast Guard, as soon as feasible but within 24-hours. The report (via phone or email) must include:

(i) Contact (name, phone number, etc.);

(ii) Time, date, and location of the first discovery (and updated location information if known and applicable);

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

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

(v) Observed behaviors of the animal(s), if alive:

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

(vii) General circumstances under which the animal was discovered.

(p) In the event of a ship strike of a marine mammal by any vessel associated with the Project, or if project activities cause a non-auditory injury or death of a marine mammal, Vineyard Wind must report the incident to NMFS. If in the Greater Atlantic Region (Maine to Virginia), call the NMFS Greater Atlantic Stranding Hotline (866-755-6622) and if in the Southeast Region (North Carolina to Florida) call the NMFS Southeast Stranding Hotline (877-942-5343). Separately, Vineyard Wind must immediately report the incident to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov)* and, if in the Greater Atlantic region (Maine to Virginia), NMFS GARFO (*nmfs.gar.incidental-take@noaa.gov, nmfs.gar.stranding@noaa.gov*) or, if in the Southeast region (North Carolina to Florida), NMFS SERO (*secmammalreports@noaa.gov*). The report must include the following information:

(i) Time, date, and location (coordinates) of the incident;

(ii) Species identification (if known) or description of the animal(s) involved (i.e., identifiable features including animal color, presence of dorsal fin, body shape and size);

(iii) Vessel strike reporter information (name, affiliation, email for person completing the report);

(iv) Vessel strike witness (if different than reporter) information (name, affiliation, phone number, platform for person witnessing the event);

(v) Vessel name and/or MMSI number;

(vi) Vessel size and motor configuration (inboard, outboard, jet propulsion);

(vii) Vessel's speed leading up to and during the incident;

(viii) Vessel's course/heading and what operations were being conducted (if applicable);

(ix) Part of vessel that struck whale (if known);

(x) Vessel damage notes;

(xi) Status of all sound sources in use;

(xii) If animal was seen before strike event;

(xiii) Behavior of animal before strike event;

(xiv) Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

(xv) Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

(xvi) Estimated (or actual, if known) size and length of animal that was struck;

(xvii) Description of the behavior of the marine mammal immediately preceding and following the strike;

(xviii) If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

(xix) Other animal details if known (e.g., length, sex, age class);

(xx) Behavior or estimated fate of the animal post-strike (e.g., dead, injured but alive, injured and moving, external visible wounds (linear wounds, propeller wounds, non-cutting blunt-force trauma wounds), blood or tissue observed in the water, status unknown, disappeared);

(xxi) To the extent practicable, photographs or video footage of the animal(s); and

(xxii) Any additional notes the witness may have from the interaction. For any numerical values provided (i.e., location, animal length, vessel length etc.), please provide if values are actual or estimated.

(q) Vineyard Wind must immediately cease all on-water activities that have the potential to result in take until the NMFS Office of Protected Resources 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. NMFS Office of Protected Resources may impose additional measures to minimize the

likelihood of further prohibited take and ensure MMPA compliance. Vineyard Wind may not resume their activities until notified by NMFS Office of Protected Resources.

7. This Authorization may be modified, suspended or revoked if the holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: (1) the authorized taking is likely to have or is having more than a negligible impact on the species or stocks of affected marine mammals, or (2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.

_____ _____

Kimberly Damon-Randall, Date

Director, Office of Protected Resources,

National Marine Fisheries Service.

Table 1. Authorized incidental take by Level A harassment and Level B harassment

Species	Stock	Level A harassment	Level B harassment
North Atlantic right whale	Western North Atlantic	0	7
Fin whale	Western North Atlantic	1	6
Humpback whale	Gulf of Maine	2	4
Minke whale	Canadian Eastern Coastal	1	28
Sei whale	Nova Scotia	1	2
Sperm whale	North Atlantic	0	2
Atlantic white-sided dolphin	Western North Atlantic	0	32
Bottlenose dolphin	Western North Atlantic Offshore	0	13
Common dolphin	Western North Atlantic	0	462
Long-finned pilot whale	Western North Atlantic	0	13
Risso's dolphin	Western North Atlantic	0	2
Harbor porpoise	Gulf of Maine/Bay of Fundy	3	110
Gray seal	Western North Atlantic	0	241
Harbor seal	Western North Atlantic	1	29

Table 2. Radial distances to Foundation Impact Pile Driving Level A harassment and Level B harassment thresholds and ensonified area for Level B Harassment, assuming 6-dB attenuation (km)[1]

Marine Mammal Hearing Group	Distances to Level A (SEL_{cum}) harassment thresholds (km)[2]	Distance to Level B (SPL_{rms}) harassment threshold (km)[3]	Ensonified area for Level B harassment (km^2)[3]
Low-frequency cetaceans	3.191	5.72	102.7
Mid-frequency cetaceans	0.0043		
High-frequency cetaceans	0.071		
Phocid pinnipeds (underwater)	0.153		

1- These zone sizes may be adjusted based on SFV results with approval by NMFS.
2 - The distances to Level A harassment thresholds reflect modeling.

3 - The distance (and corresponding area) to the Level B harassment threshold reflects the acoustically monitored distance to the maximum range with absorption to the Level B harassment threshold of pile monitored during the 2023 monopile installation.

Table 3. Radial distances (in meters (m)) to minimum visibility for clearance and shutdown zones (m)[1]

Monitoring Zones	North Atlantic right whales [1]	Other Mysticetes/Sperm whales/Pilot whales/Risso's (m) [1]	Other delphinids (m) [1]	Harbor porpoises (m) [1]	Seals (m) [1]
Minimum Visibility Zone [2]	4,000				
Visual Clearance Zone	Any distance	500	160	160	160
PAM Clearance Zone [3]	10,000	500	160	160	160
Visual Shutdown Zone	Any distance	500	160	160	160
PAM Monitoring Zone [3]	10,000	500	160	160	160

1- These zone sizes may be adjusted based on SFV results with approval by NMFS.
2- Minimum visibility zone corresponds to the minimum distance that must be visible prior to initiating pile driving, as determined by the lead PSO. The minimum visibility zone corresponds to the modeled Level A harassment distance for low-frequency cetaceans plus twenty percent and rounded up to the nearest 0.5 km.
3- The PAM system must be able to detect North Atlantic right whales 10 km from the pile being driven. While not required, the PAM system should detect other marine mammals, as practicable (e.g., include a humpback whale detector). Opportunistically, if other marine mammals are acoustically detected within their respective clearance or shutdown zones, mitigative action must be taken.

Table 4. Vessel Separation Zones

Marine Mammal Species	Vessel Separation Zone (m)
North Atlantic right whale	500
Other ESA-listed species and large whales	100
Other marine mammals [1]	50

1- With the exception of seals and delphinid(s) from the genera *Delphinus*, *Lagenorhynchus*, *Stenella*, or *Tursiops*, as described below.