BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

DRAFT FINDING OF NO HISTORIC PROPERTIES AFFECTED FOR PASSIVE ACOUSTIC MONITORING ACTIVITIES ON THE ATLANTIC OUTER CONTINENTAL SHELF

February 27, 2025

FINDING

The Bureau of Ocean Energy Management (BOEM) has made a Draft Finding of no historic properties affected for this undertaking, which entails acquiring and deploying passive acoustic equipment, and collecting data to assess anthropogenic noise and species presence throughout the Atlantic outer continental shelf (OCS). Through conditions on deployment teams, active bureau oversight, and targeted pre-deployment surveys using *de minimis* sources like echosounders or previously reviewed high-resolution (HRG) geophysical surveys, BOEM will avoid affecting any potential historic properties.

DOCUMENTATION IN SUPPORT OF THE FINDING

1 Description of the Undertaking

1.1 Background

As offshore wind construction continues in federal waters, the Atlantic coastline is poised to undergo rapid change in the coming years, with other geographic regions following close behind. Construction of offshore wind farms began in summer of 2023, and it is expected that by 2025, several hundred wind turbine foundations may be in the water along the Atlantic coast.

While each of these offshore wind project undergoes their own Section 106 review under the National Historic Preservation Act (NHPA), there are many scientific questions regarding the potential impacts of offshore wind development on marine species that require the development of research strategies and monitoring plans. For example, will the presence of this new infrastructure result in measurable changes to the distributions of marine species? Will some species be attracted to the structures, while others may avoid them? What kind of effects will the turbine foundations have on local oceanographic conditions? How will these potential changes interact with the ongoing stressors of climate change, fishing, and vessel traffic?

BOEM is required to assess and monitor the impacts of its permitted activities on marine species, to better inform future leasing decisions and to ensure compliance under the National Environmental Policy Act. Given the critically endangered status of the North Atlantic right whale (NARW), whose migratory corridor overlaps with some of the most reliable wind resources on the Atlantic Outer Continental Shelf (OCS), one driving question has garnered significant attention among stakeholders: **will there be a measurable change in baleen whale distributions because of offshore wind development**? To assist in answering this question, BOEM will be participating in the deployment of passive acoustic monitoring

devices throughout the Atlantic OCS, beginning in the New York Bight and Southern New England lease areas, and moving to other areas as offshore wind development proceeds.

1.2 Project Location and Description

1.2.1 Description

This undertaking will build out BOEM's portion of the Atlantic Regional Passive Acoustic Monitoring (PAM) Network, which is already underway through the efforts of many other stakeholders. This project will implement PAM through equipment acquisition, deployment, maintenance, and data collection. The work of the Regional Wildlife Science Collaborative for Offshore Wind (RWSC) marine mammal (MM) subcommittee is helping to coordinate PAM deployments that are funded by a range of stakeholders like states, NGOs, and academics, and in turn, will lead PAM deployments funded by BOEM. BOEM currently has funding to establish the PAM network. In addition, BOEM is receiving industry contributions to cover PAM within certain lease areas via the Partnership for an Offshore Wind Environmental Observation Network (POWERON) program, so this consultation will cover PAM deployments both on and off offshore wind leases.

The RWSC was established in 2021 to serve as a coordinating body for a range of stakeholders interested in answering scientific questions about offshore wind and wildlife. They have representation from the federal, state, industry, and NGO sectors, with academic expertise serving in subcommittees for each taxonomic group. This study will analyze acoustic data to achieve the objective of understanding baleen whale presence in relation to offshore wind development, as well as long-term changes in the acoustic environment.

The objectives of this undertaking are: (1) Establish and run a program for PAM in the Atlantic OCS, with a specific focus on areas near windfarm development; and (2) Obtain first-order data products (e.g., time-stamps of vocalizations of baleen whales, time-series of ambient noise metrics) from PAM deployments. These data products will be used in a multivariate analysis to address the overarching question about how offshore wind development may affect the distributions of baleen whales. This multivariate analysis is the ultimate end goal of this PAM program and will drive how the PAM network is set up.

The first objective of this program is likely to be met within the first several years of the project but given that most offshore wind leases last for 30 years and baleen whales are long-lived animals, it is likely that this work will need to continue for decades to answer these and new questions that will likely be generated from the initial analyses. The work outlined here may be expanded, subject to the availability of additional funds, to better address these or other pertinent questions. Lessons learned from this project can be applied to other BOEM regions as offshore wind development progresses along.

1.2.2 Location

Deployment locations could span the entire Atlantic OCS, but BOEM will initially prioritize deployments in the New York Bight and Southern New England Wind lease areas. Both areas encompass dynamic marine environments characterized by diverse ecosystems and significant commercial and recreational activity. These locations also serve as a critical intersection for marine species and habitat, commercial shipping, and fishing making them a focal point for this undertaking.

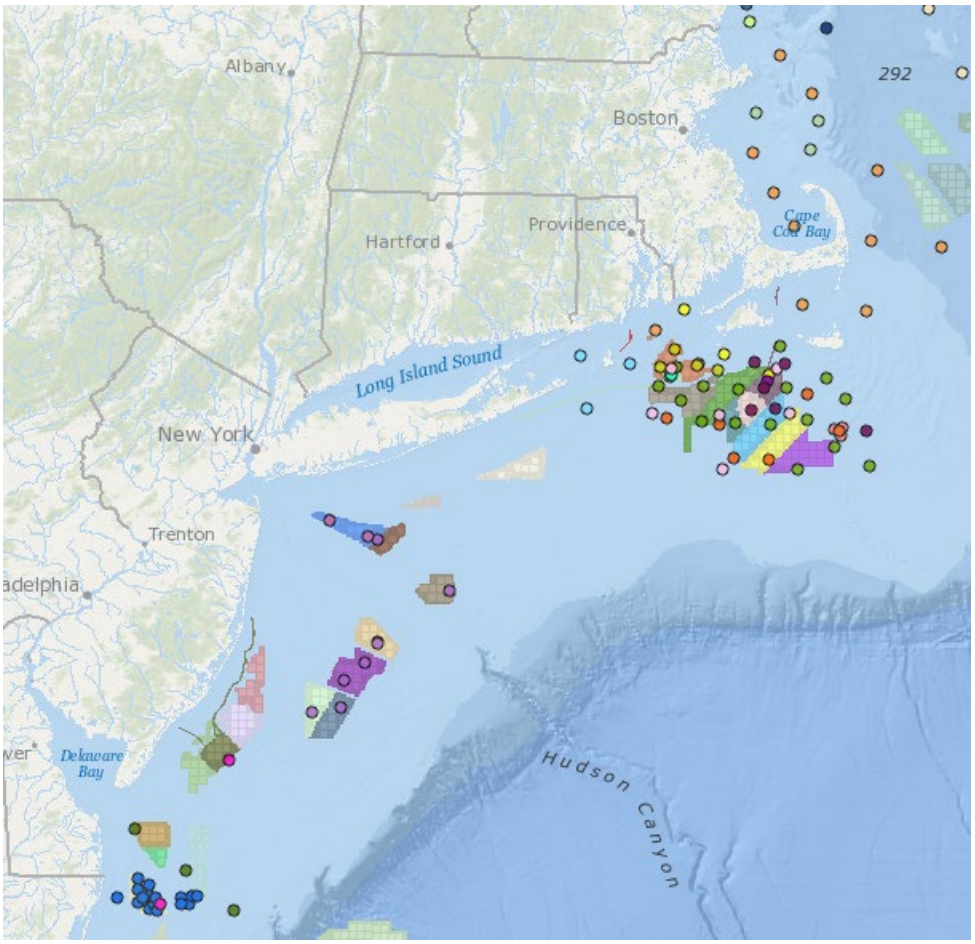

Figure 1. Current PAM deployments near the NY Bight and Southern New England lease areas as of November 2024

1.2.3 Study Design

In 2021 and 2022, BOEM convened two workshops in collaboration with NOAA Fisheries to plan the development of a Regional Atlantic PAM network to monitor and assess the effects of offshore wind on marine mammals. Attendees identified the key research questions that could be answered with PAM, and discussed the framework introduced in a recent paper (Van Parijs et al. 2021). The paper proposed a PAM grid with spacing of 20 x 20 km within wind farm areas and 40 x 40 km outside wind farm areas. Given the lively discussions in these workshops, further assessment of the proposed grid was required.

In 2022, BOEM commissioned the RWSC to conduct a statistical power analysis on this proposed PAM grid design. The RWSC MM subcommittee was instrumental in guiding the objectives of the power analysis, which was conducted by a team of statisticians at St. Andrews University (Chudzinska and Thomas 2023). The results of the power analysis showed that the proposed grid design had low statistical power for all four baleen whale species (NARW, fin, sei, and minke whales) under all hypotheses related to potential avoidance of wind farms during construction and operations. The St. Andrews Team recommended other configurations such as a T-design with sensors most closely spaced within the wind area, and larger spacing further away, which would increase statistical power. The team focused solely on omnidirectional recorders in their analysis but advised that multi-channel recorders or directional sensors could also increase statistical power.

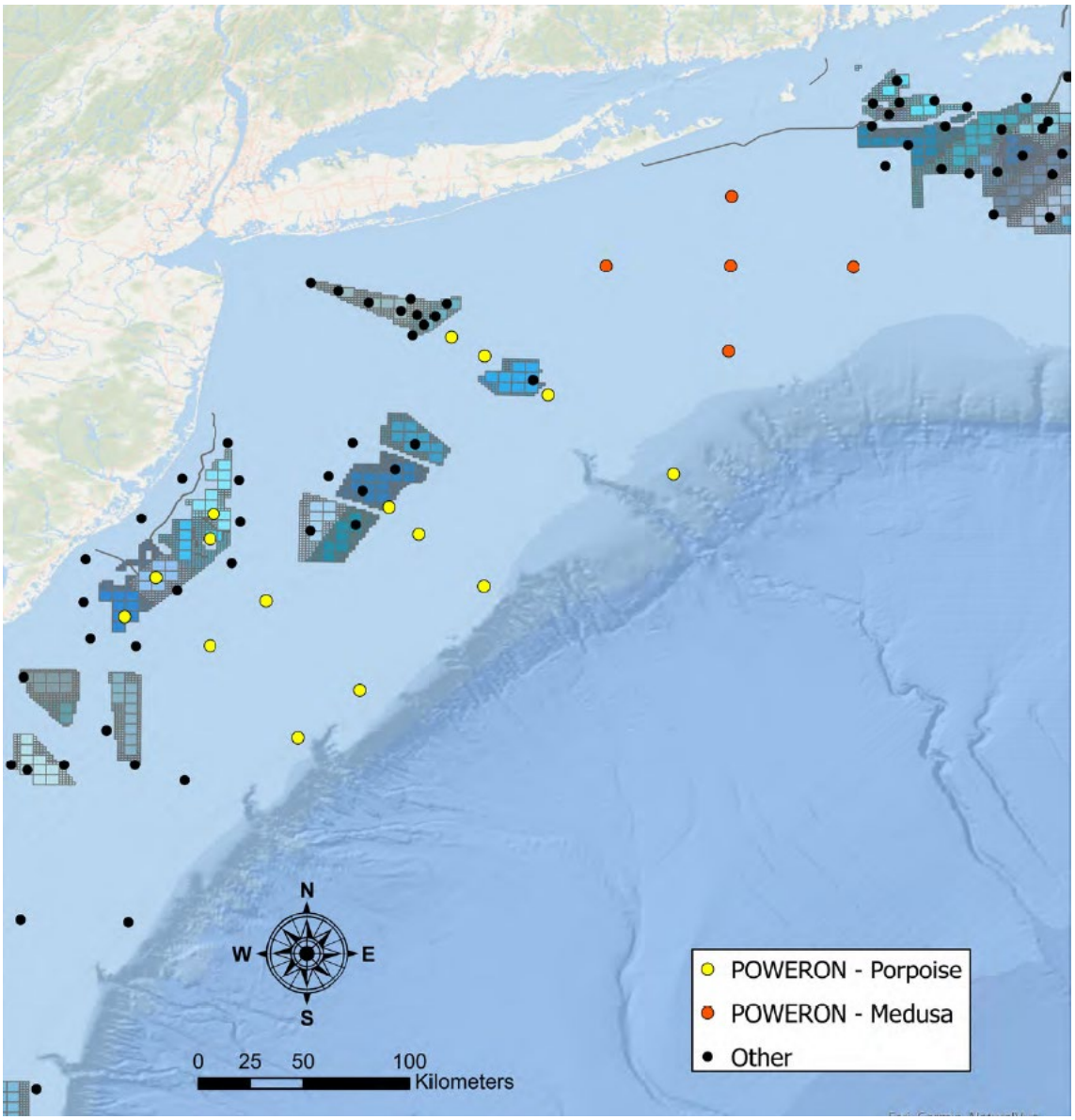

Figure 2. Proposed deployment locations of BOEM-funded sensors (in red and yellow dots) in the New York Bight Lease Area. Black dots represent PAM units that are funded by other means. Together, these locations emulate the proposed T design from the power analysis.

1.2.4 Proposed Equipment

BOEM anticipates using a variety of recorder types, all of which will be archival, stationary, bottom-mounted systems. Single-channel systems are generally smaller, comprising a simple weight and leave-no-trace mooring, while multi-channel systems will require a larger pyramid-shaped frame and additional weights. BOEM plans to utilize both recorder types throughout this project to resolve the bearing of calling animals, and sometimes even the true "location," so that we can answer questions about potential behavioral changes (e.g., movements, acoustic behaviors) of marine mammals. Finally, information gained from these sensors can also be used to estimate marine mammal densities, thus providing answers to questions about potential population-level changes.

PAM equipment	Seafloor footprint	Weight	Units	Deployments/yr	Total deployments/yr	years
Multi-channel array	2m x 2m	~150 kg	15	2	30	10
Single channel hydrophone	< 1 m	~41 kg	5	2	10	10

Table 1. Proposed PAM equipment and estimated number of deployments

Figure 3. Example of a multi channel hydrophone array measuring 2m x 2m and weighing ~150kg

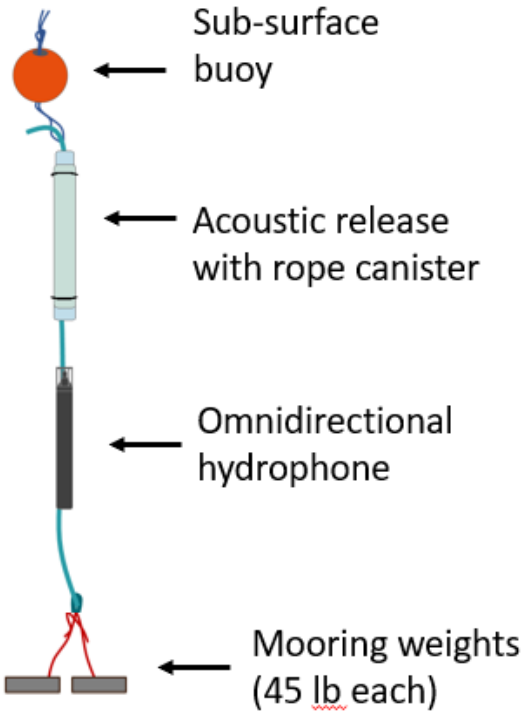

Figure 4. Example of a simple omnidirectional hydrophone with a seafloor footprint of <1m and weighing ~41kg

1.2.5 Deployment and Retrieval

Since one of the primary goals of this work is to build time-series at specific geographic locations, PAM arrays or single hydrophone recorders (hereafter referred to as 'PAM units') will be deployed, refurbished, and re-deployed in the same location many times over the course of this project. The team anticipates refurbishing PAM units approximately twice a year. Every effort will be made to re-deploy the PAM units in the exact same location in order to minimize seafloor disturbance.

Deployment locations will first be identified based on their ability to help answer the scientific questions at hand with the highest statistical power. Then we will consult with the Navy and other ocean users for potential conflicts. Finally, we will consult with existing survey data and utilize the expertise of BOEM's in-house marine archaeologists to identify several suitable deployment locations within each target area. Once deployed, the onboard GPS system will geo-reference the final deployment location and tracks of the echosounder.

The PAM units will be deployed and retrieved from a vessel which is equipped with a high resolution (e.g., 400 kHz) echosounder, winch/davit/A-frame, and enough deck space to transport and mobilize ~5 of the PAM units. Prior to deployment of a PAM unit at a given target site, an echosounder will be used to survey the area along a targeted bathymetric contour to ensure that there are not any unidentified seafloor resources, debris, or sensitive habitat in the vicinity. We will save images and geospatial data of the target site and prior to deployment.

Prior to deployment, several on-board steps need to take place: 1) Calibrate hydrophones; 2) Power-on the PAM unit, confirm everything is operational; 3) Finish mooring assembly and clear an area on deck; 4) ensure that all parties are ready for deployment (e.g., acoustics crew, ship's crew, crane operator, and vessel master). The PAM unit will then be slowly lowered to the seafloor using a winch or davit to minimize risk of disturbance to the seafloor. An acoustic release may be used to connect the array to the winch or davit. After the PAM unit is lowered down to the seafloor, the acoustic release will be triggered so the deployment line can be brought back onboard the vessel. This will prevent the need for a secondary line in the water, thereby reducing risk of entanglement. Once the PAM unit is in place, the echosounder will again survey the area and we will save images and geospatial data of the instrument in place.

For retrievals, the transducer and deck box are needed to send pings to the acoustic release to locate it, activate it, and begin the release process. Prior to triggering the acoustic release, we will again take images with the echosounder to see the orientation of the instrument and determine whether there are any other obstacles in the way.

Once triggered, the Vemco acoustic release disconnects itself from the PAM unit and the float plate of the ARC canister with a rope connected to it (and the other end connected to the array or single hydrophone) floats to the surface. The PAM unit can then be pulled up by the rope/winch system, or a secondary rope mechanism can be used if the rope strength is not strong enough to pull up the weight of the PAM array. The PAM unit is carefully hoisted onto the deck of the boat. Nothing is left behind on the seafloor. This process can be completed in less than an hour.

PAM arrays cannot be deployed or retrieved in a Beaufort Sea State greater than four (i.e., moderate waves with whitecaps; 18 - 20 knots; wave heights 3.8 - 5 ft) and deployment/retrieval activities are always at the discretion of the field team, vessel captain, and vessel crew. All PAM units will be properly labeled with owner and contact information.

1.3 Area of Potential Effects

As defined in the Section 106 regulations (36 CFR §800.16[d]), the APE is the geographic area, or areas, within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The dimensions of the APE are influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Specific to the undertaking under discussion in this Finding (Passive Acoustic Monitoring) BOEM considers the APE to be the depth and breadth of the seabed that could potentially be impacted by any proposed seafloor/bottom-disturbing activities along the Atlantic seaboard in offshore waters depths between 40 and 250 m.

The area of proposed deployments and any associated vessel anchoring will be surveyed prior to seafloor disturbing activities, thereby minimizing the potential for impacting historic properties. The multi-channel PAM units have an estimated seafloor footprint of ~4 m^2, and the single-channel units have a seafloor footprint of 0.25 m^2. Over the entire course of this project (10 years, spanning a wide geographic range on the Atlantic OCS), BOEM anticipates deploying approximately 50 PAM units, with each being serviced twice a year, resulting in ~1,000 total deployments and retrievals.

1.3.1 Consultation

BOEM has strived to develop a consistent approach to Section 106 consultation when considering

undertakings that may affect historic properties on the OCS. BOEM has previously consulted with State Historic Preservation Offices (SHPOs), federally-recognized Tribes, state-recognized tribes, and the Advisory Council on Historic Preservation (ACHP) for lease issuance, site characterization activities, and construction and operations related to wind energy development in the Atlantic OCS. Information related to these consultations can be viewed at: http://www.boem.gov/Renewable-Energy/Historic- Preservation-Activities/.

The historic property identification efforts and avoidance measures discussed in this Finding take into consideration the information obtained during those consultations and the avoidance measures are consistent with those implemented for swift energy development in the Atlantic OCS.

In the context of Section 106 of the National Historic Preservation Act (NHPA), the implementation of minimally invasive undertakings, such as passive acoustic monitoring, may not necessitate formal consultation due to the limited potential for adverse effects on historic properties. Passive acoustic monitoring involves the deployment of acoustic sensors to gather data on underwater soundscapes and marine life without significantly disturbing the seabed or surrounding environments. Given that this technology is temporary, non-invasive, utilizes leave-no-trace anchors, and operates primarily through acoustic detection rather than direct interaction with the marine and archaeological resources, it is unlikely to affect any significant historic properties as defined by the NHPA. Furthermore, the methodology employed in passive acoustic monitoring typically adheres to best practices that prioritize environmental protection and preservation. Therefore, based on the nature and scope of such undertakings, BOEM has concluded that formal consultation is not required, as the potential for any adverse effects on historic properties is minimal or nonexistent.

1.3.2 Public Participation

The draft findings of No Historic Properties Affected document will be distributed to the Tribes, SHPOS, and ACHP, and posted on the BOEM website (https://www.boem.gov/environment/center-marine-acoustics/science-and-monitoring) for a 45-day review and comment period. A notice to stakeholders will be issued to notify the public of the draft Finding and will provide an email address to receive comments.

2 Description of Steps Taken to Identify Historic Properties

2.1 Existing and Available Information

BOEM has reviewed existing and available information regarding historic properties that may be present with the proposed project area. Sources of this information include consultations with appropriate parties, SHPOs, and Indian Tribes on similar proposed activities related to renewable energy siting on the Atlantic. Before proceeding with the development of lease sites for offshore wind activities, BOEM's renewable energy regulations require a lessee to provide the results of an archaeological resource identification survey with its site assessment plan (SAP) and construction and operations plan (COP) for the areas affected by the activities proposed in the plan (see 30 CFR §585.610(b) and 30 CFR §585.626(b)). This process is critical for ensuring compliance with applicable laws and regulations, including the National Historic Preservation Act (NHPA). For any PAM unit deployed in existing lease areas where high resolution geophysical surveys have taken place, BOEM will utilize the survey information to identify and avoid potential hazards, historic properties, and archaeological resources. For any proposed deployment locations that have not been previously surveyed, the following protocols will be used to identify potential hazards and minimize impacts.

Prior to deployment, the vessel will survey potential deployment sites using a high-resolution (e.g., 400 kHz) on-board echosounder to ensure that there are no historic properties, debris, or sensitive habitats in the vicinity. If any potential historic properties or archaeological resources are identified, they will be avoided by a distance of at least 50 meters from the furthest extent of the potential historic property or archaeological resource.

2.1.1 Historic Shipwrecks and Obstruction

BOEM has reviewed existing and available information gathered including an updated study of archaeological resource potential on the Atlantic OCS (TRC Environmental Corporation 2012). This study compiles information on historic shipwrecks in the Atlantic Shipwreck Database (ASD) and additionally models the potential for pre-European contact sites based on reconstruction of past landscapes, human settlement patterns, and site formation and preservation conditions. This report is publicly available (without the database) and can be found on BOEM's website at: http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5196.pdf.

Existing governmental databases form the core of the data for BOEM's ASD and include: The National Oceanic and Atmospheric Administration (NOAA) Automated Wreck and Obstructions Information System (AWOIS), a database of wrecks and obstructions compiled from hydrographic surveys and field reports, and the U.S. Navy Non-Submarine Contact List (NSC), a database created for military use in distinguishing shipwrecks from submarines hiding on the ocean floor. The U.S. Navy also maintains a database entitled Partial List of Foundered U.S. Navy Craft which is included in the ASD. Commercial databases were also compiled including The Global Maritime Wrecks Database and the International Registry of Sunken Ships (TRC Environmental Corporation 2012). The inherent expectation for utilizing multiple sources of information for the same area, however, is that these databases often include redundant listings for the same shipwrecks. Where listings are reasonably close geographically, and/or contain similar enough information to be understood to be one shipwreck location or obstruction, they were analyzed for the purposes of the Finding to contain only one potential shipwreck location or obstruction.

The accuracy of location information is quantified in the ASD by a ranking between "1" and "4." Shipwrecks that have been positively located through recent survey are given a location reliability of "1." Those shipwrecks with specific locations provided by informants, reported in literature, or marked on a map are considered a "2." A location reliability of "3" indicates that the location is given generally rather than specifically by an informant, in the literature, or on a map. Those locations that are unreliable or vague, such as "off the coast of North Carolina" or "at sea" are ranked at "4."

Based on the historically available information compiled in the report and database, a shipwreck density map was created (Figure 5). Another way of illustrating this information is to breakdown the distribution of shipwrecks by State and OCS Planning Area (Table 2). The information contained in the ASD clearly shows that within the APE, there is a high potential for the presence of historic shipwrecks, with the highest concentration being in the Middle-Atlantic OCS Planning Area (TRC Environmental Corporation 2012), but should be easily avoided when deploying PAM equipment.

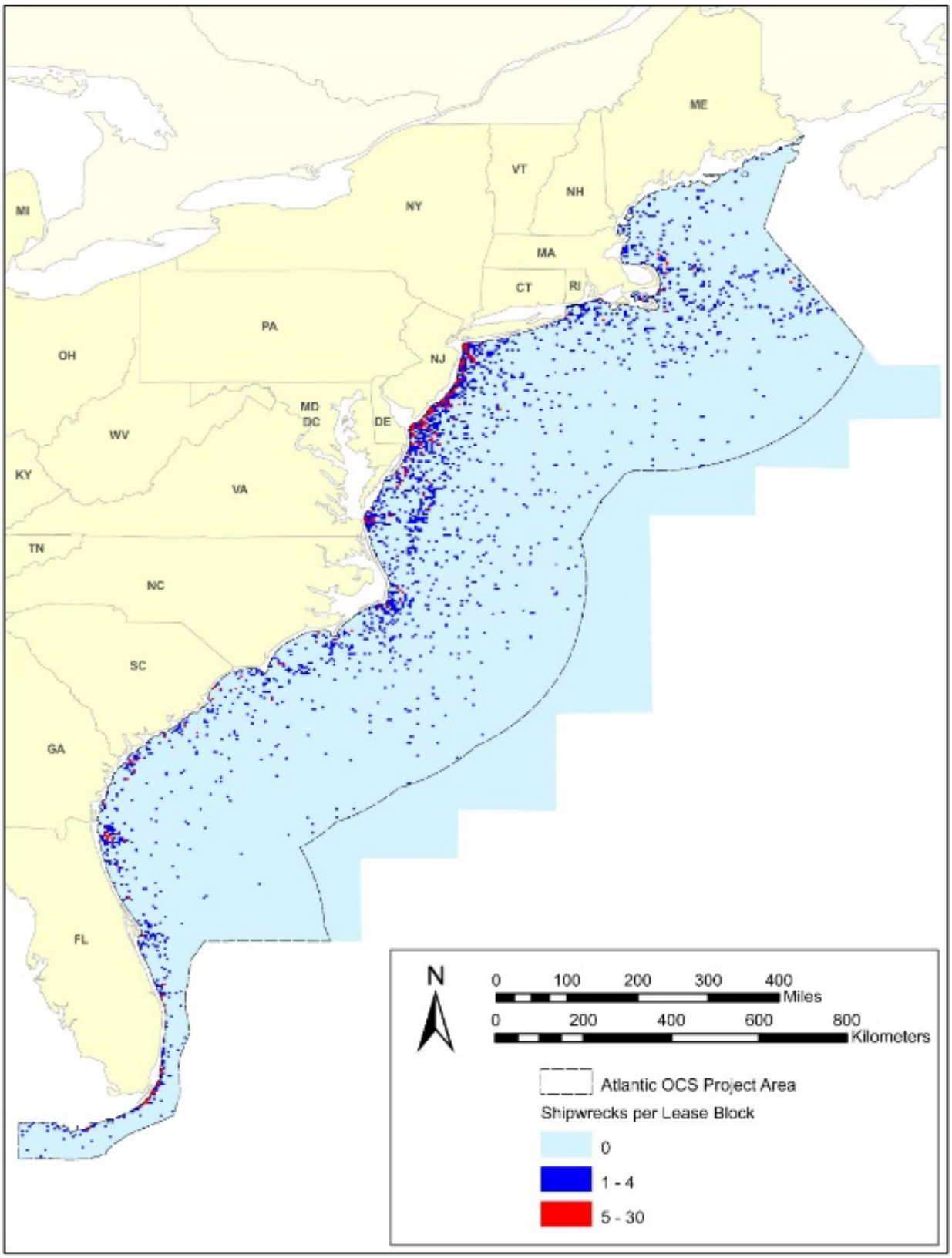

Figure 5. Shipwreck density map for BOEM lease blocks in the Atlantic OCS (TRC Environmental Corporation 2012)

Table 2 2. Distribution of Shipwrecks in the ASD by State and Planning Area

Nearest State	Number of Wrecks	Miles of Shoreline in State	Sites Per Linear Mile	Planning Area	Miles of Shoreline in Planning Area	Sites per linear mile
ME	137	240	0.57	North Atlantic	789	4.04
NH	10	14	0.71	North Atlantic	789	4.04
MA	762	230	3.31	North Atlantic	789	4.04
RI	140	40	3.50	North Atlantic	789	4.04
CT	13	15	0.87	North Atlantic	789	4.04
NY	371	120	3.09	North Atlantic	789	4.04
NJ	1,752	130	13.48	North Atlantic	789	4.04
DE	310	25	12.40	Mid-Atlantic	490	8.68
MD	630	33	19.09	Mid-Atlantic	490	8.68
VA	1,701	112	15.19	Mid-Atlantic	490	8.68
NC	1,611	320	5.03	Mid-Atlantic	490	8.68
SC	435	185	2.35	South Atlantic	917	1.87
GA	160	97	1.65	South Atlantic	917	1.87
FL	1,118	635	1.76	South Atlantic	917	1.87
Totals	**9,150**	**2,196**	**4.17**			

2.1.2 Submerged Pre-contact Archaeological Resources

Offshore archaeological resources that may exist within the proposed deployment locations also include submerged pre-contact sites or landforms that have a high potential to contain these sites. No sites have been previously identified within the proposed deployment locations; however, many areas are located within a region of the OCS that was formerly exposed above sea level and available to human occupation during the last ice age. Because of this, the entirety of the proposed project area is within an area that is considered to have the potential for the presence of submerged pre-contact archaeological sites (TRC Environmental Corporation 2012). Due to the minimal amount of seafloor disturbance, there is little chance of PAM deployment impacting buried pre-contact archaeological resources or landforms.

3 Description of Proposed Avoidance Measures

BOEM will adopt an avoidance strategy to avoid potential effects to historic properties and archaeological resources, such as historic shipwrecks and pre-contact archaeological resources. For example, with advance surveys of the seafloor where deployments are proposed, activities can be conducted in such a way as to avoid or move to another area if sensitive resources are present.

3.1 Proposed Archaeological Mitigation Measures

To mitigate potential impacts on archaeological resources during the deployment of PAM units in compliance with Section 106 of the NHPA, BOEM will employ several measures. Initially, BOEM will conduct a comprehensive evaluation of its databases and any existing HRG survey data (see Section 2.1) to identify any potential historic properties or archaeological resources within the proposed deployment locations. If there is existing HRG survey data available, BOEM's marine archaeologists will clear areas that are free of potential resources. In the field, a thorough pre-deployment survey will be conducted utilizing an on-board echosounder (~400 kHz). If significant potential resources are identified, avoidance strategies will be prioritized, potentially leading to adjustments in the deployment locations to prevent disturbance. The preferred option will be to move to a suitable alternate deployment location. If this is not possible, the deployment team will move to a site at least 50 m from the furthest extent of a potential historic property or archaeological resource, resurvey the deployment area, and only deploy the PAM unit if it is cleared. We will ensure that images and geospatial data of the deployment site is saved, both pre- and post- deployment, and conveyed to BOEM after the field operations. Finally, adaptive management will be used throughout this undertaking ensuring that processes and strategies for future PAM deployments can be improved to further limit potential for disturbance.

BOEM will ensure that unnecessary anchoring and bottom disturbance are avoided during deployments. No spudding or clump weight anchoring will be allowed. Although BOEM plans to minimize anchoring to the extent possible, there may be instances where anchoring cannot be avoided due to emergency situations or field situations/conditions. In these instances, a minimum sized anchor/anchor array will be used and real-time clearance of the anchoring footprint using the on-board echosounder (~400 kHz) will be required.

Finally, all proposed equipment will use acoustic releases which offer significant advantages by enabling precise and timely deployment and retrieval of monitoring devices without necessitating physical disturbance to the marine environment. By utilizing these systems alongside leave-no-trace anchors, deployment teams can minimize their ecological footprint, ensuring that the seabed and surrounding habitat remain intact and undisturbed.

3.2 Post-Review Discoveries Clause

BOEM will require that a post-review discoveries clause be included in any contracts. This clause describes the actions that the deployment team is required to take in the event of a post-review archaeological discovery during deployment, retrieval or survey activities associated with this undertaking.

In this event, BOEM will follow the post-review discoveries process outlined at 36 CFR 800.13(b)(3). In addition to the reporting requirements, BOEM will require the deployment team to report and avoid any previously undiscovered suspected archaeological resources and take precautions to protect the resource from activities. Undiscovered archaeological resources may include shipwrecks (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock), pre-contact artifacts, etc. within the project area.

If the deployment team discovers any archaeological resource while conducting PAM operations, BOEM will require them to: immediately halt seafloor/bottom-disturbing activities operations that may continue to affect the discovery; notify the BOEM Federal Preservation Officer within 24 hours of its discovery; and keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until BOEM has made an evaluation and instructs the deployment team how to proceed. In the very unlikely event that bottom disturbing activities impact potential historic properties,

BOEM will require that the deployment team and a qualified marine archaeologist provide a statement documenting the extent of these impacts within 24 hours.

4 The Basis for the Determination of No Historic Properties Affected

This Finding (see 36 CFR Part 800.4(d) of the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act) is based on the review conducted by BOEM of existing and available information, the proposed identification efforts, and avoidance measures that will be included in the contract or interagency agreement, the minimally invasive nature of the passive acoustic monitoring itself, and the conclusions drawn from this information. The mandatory avoidance measures that will be included in all contracts will ensure that the proposed undertaking will not affect historic properties.

5 References

Chudzinska M, Thomas L. 2023. Power analysis for optimal design of a passive acoustic monitoring network in the Atlantic Ocean. Sterling, VA: U.S. Department of the Interior, Bureau of Ocean Energy Management. 85 p. Report No.: OCS Study BOEM 2023-041.

TRC Environmental Corporation. 2012. Inventory and analysis of archaeological site occurence on the Atlantic outer continental shelf. Gulf of Mexico OCS Region, New Orleans, LA: TRC Environmental Corporation. 324 p. Report No.: OCS Study BOEM 2012-008.

Van Parijs SM, Baker K, Carduner J, Daly J, Davis GE, Esch C, Guan S, Scholik-Schlomer A, Sisson NB, Staaterman E. 2021. NOAA and BOEM Minimum Recommendations for Use of Passive Acoustic Listening Systems in Offshore Wind Energy Development Monitoring and Mitigation Programs. Frontiers in Marine Science. 8. doi:10.3389/fmars.2021.760840.