



BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XR010]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of New York and New Jersey

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Atlantic Shores Offshore Wind, LLC (Atlantic Shores) to incidentally harass, by Level B harassment only, marine mammals during marine site characterization surveys off the coasts of New York and New Jersey in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0499) and along potential submarine cable routes to a landfall location in New York or New Jersey.

DATES: This authorization is valid from April 20, 2020 through April 19, 2021.

FOR FURTHER INFORMATION CONTACT: Jordan Carduner, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the applications and supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the Internet at: www.fisheries.noaa.gov/national/marine-mammal-

protection/incidental-take-authorizations-other-energy-activities-renewable. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

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

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On November 5, 2019, NMFS received a request from Atlantic Shores for an IHA to take marine mammals incidental to marine site characterization surveys off the coast of New York and New Jersey in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0499) and along potential submarine cable routes to a landfall location in either New York or New Jersey. A revised application was received on December 30, 2019. NMFS deemed that request to be adequate and complete. Atlantic Shores' request is for the take of 12 marine mammal species by Level B harassment. Neither Atlantic Shores nor NMFS expects serious injury or mortality to result from this activity and the activity is expected to last no more than one year, therefore, an IHA is appropriate.

Description of the Proposed Activity

Atlantic Shores proposes to conduct marine site characterization surveys, including high-resolution geophysical (HRG) and geotechnical surveys, in the area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf #OCS-A 0499 (Lease Area) and along potential submarine cable routes to landfall locations in either New York or New Jersey.

The purpose of the planned surveys is to support the preliminary site characterization, siting, and engineering design of offshore wind project facilities including wind turbine generators, offshore substations, and submarine cables within the Lease Area and along export cable routes (ECRs). As many as three survey vessels may

operate concurrently as part of the planned surveys. Underwater sound resulting from Atlantic Shores’ planned site characterization surveys has the potential to result in incidental take of marine mammals in the form of behavioral harassment (*i.e.*, Level B harassment only). The estimated duration of the surveys is expected to be up to 350 total days (including 210 survey days within the Lease Area and 140 survey days within the ECR areas; see Table 1) between April 2020 and April 2021. This schedule is based on 24-hour operations and includes potential down time due to inclement weather.

Table 1 – Summary of Proposed HRG Survey Segments

Survey Segment	Duration (Survey Days)
Lease Area	210
Northern ECR	80
Southern ECR	60
All areas combined	350

Atlantic Shores’ geotechnical survey activities are described in detail in the notice of proposed IHA (85 FR 7926; February 12, 2020). As described in that notice, the geotechnical survey activities not expected to result in the take of marine mammals and are therefore not analyzed further in this document. The HRG survey activities planned by Atlantic Shores are also described in detail in the notice of proposed IHA (85 FR 7926; February 12, 2020). The HRG equipment that may be used by Atlantic Shores are shown in Table 2. The literature sources for the sound source levels shown in Table 2 are in Table 2-2 in the IHA application.

Table 2 – Summary of HRG Survey Equipment Proposed for Use by Atlantic Shores

HRG Equipment Category	Specific HRG Equipment	Operating Frequency Range (kHz)	Source Level (dB rms)	Beamwidth (degrees)	Typical Pulse Duration (ms)	Pulse Repetition rate
Single Beam Echosounders	Kongsberg EA 400	38 to 200	222.8	31	0.3	10
	Teledyne ODOM Echotrac CVM	24	224.6	20	0.3	10
Sparker	Applied Acoustics Dura-Spark 240	0.25 to 5	211.4	180	2.5	1.6
Sub-Bottom Profiler	Edgetech 2000-DSS	2 to 16	178	24	6.3	10
	Edgetech 216	2 to 16	179	17, 20, or 24	10	10
	Edgetech 424	4 to 24	180	71	4	2
	Edgetech 512i	0.5 to 12	180	80	10	10
	Teledyne Benthos Chirp III	2 to 7	197	100	15	10
		10 to 20	205	30	15	10
	Kongsberg GeoPulse	2 to 12	214	30, 40, or 55	16	10
Innomar SES-2000 Medium-100 Parametric	85 to 115	241	2	2	40	
Boomer	Applied Acoustics S-Boom Triple Plate	0.01 to 20	203	80	0.8	3
	Applied Acoustics S-Boom	0.01 to 20	195	98	0.8	3

As described above, detailed description of Atlantic Shores’ planned surveys is provided in the notice of proposed IHA (85 FR 7926; February 12, 2020). Since that time, no changes have been made to the activities. Therefore, a detailed description is not provided here. Please refer to that notice for the detailed description of the specified activity. Mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting** below).

Comments and Responses

A notice of proposed IHA was published in the **Federal Register** on February 12, 2020 (85 FR 7926). During the 30-day public comment period, NMFS received comment letters from the Marine Mammal Commission (Commission) and the New Jersey Council of Diving Clubs. NMFS has posted the comments online at: www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-

activities-renewable. Please see the Commission's letter for full details regarding their recommendations.

Comment 1: The Commission recommends that NMFS incorporate the actual beamwidth of 100° rather than 180° for the Teledyne Benthos Chirp III and 98° rather than 180° for the Applied Acoustics S-Boom and re-estimate the Level A and B harassment zones accordingly.

Response: None of the HRG sources specified by the Commission's comment were determined to be the dominant source in terms of Level A/B harassment zones and therefore were not used for estimating relevant ensonified zones. Additionally, the Commission's recommendations would result in harassment zone sizes for these particular sources that would be equal to, or lesser than, those described in the proposed IHA, and therefore would not result in a change to the dominant source used to estimate marine mammal exposures. As re-modeling these specific sources would not result in any changes to marine mammal exposure estimates, Level A or Level B harassment take numbers, or our determinations, we have determined that taking these steps is not warranted for this authorization. NMFS will take the Commission's comments into consideration for future ITAs for similar activities and sources.

Comment 2: The Commission recommends that NMFS use the out-of-beam source level of 187 dB re 1 μ Pa at 1 m from Subacoustech (2018) for the Innomar SES-2000 Medium-100 parametric SBP and re-estimate the Level A and B harassment zones accordingly. Otherwise, the Commission states that NMFS should use the in-beam source level and beamwidth to revise the harassment zones accordingly for the parametric SBP.

Response: With respect to the Innomar SES-2000 Medium-100 parametric SBP, NMFS has determined that, based on the very narrow beam width of this source (*i.e.*, 2 degrees), it is extremely unlikely that a marine mammal would be exposed to sound emitted from this particular source. In addition, baleen whales are unlikely to hear signals from this source, which operates at 85-115 kHz. Therefore, we have determined the potential for this source to result in take of marine mammals is so low as to be discountable, and re-modeling harassment isopleths for this source is therefore not warranted.

Comment 3: The Commission recommends that NMFS incorporate water depth when considering the beam width for all sources, including in this instance single-beam echosounders, shallow-penetration SBPs and boomers, and revise the Level A and B harassment zones accordingly.

Response: NMFS agrees with the Commission that water depth should be incorporated in acoustic modeling for HRG sources and acknowledges that depth was not incorporated in the modeling of HRG sources that was used for modeling exposure estimates in the notice of proposed IHA (85 FR 7926; February 12, 2020). However, NMFS has confirmed using a recently-developed spreadsheet tool that accompanies our interim HRG guidance (NMFS, 2019), which incorporates water depth, that the incorporation of water depth in modeling the HRG sources planned for use by Atlantic Shores would result only in smaller harassment zones for some sources, and would not result in larger zones for any sources. In addition, for the source that was determined to be the dominant source in terms of the Level B harassment zone and was therefore used to model acoustic exposures (the AA DuraSpark 240), using our interim guidance

(NMFS, 2019) we determined incorporation of depth resulted in no change to the modeled Level B harassment isopleth. As a result, NMFS will take the Commission's comments into consideration for future ITAs for similar activities and sources to ensure action proponents incorporate depth into acoustic modeling (as we agree is appropriate). However, as taking this step would not change the modeled distances to relevant isopleths for dominant sources, and therefore would result in no change to exposure estimates, authorized take numbers, or our determinations, NMFS has determined that taking this step for this particular authorization is not warranted. We note that the recently-developed spreadsheet tool that accompanies the NMFS interim HRG guidance, referred to above, was not publicly available at the time the Atlantic Shores IHA application was submitted, but is now available to the public upon request. We also note that the NMFS interim HRG guidance did not previously incorporate water depth, but a revised version has been developed since the notice of proposed IHA (85 FR 7926; February 12, 2020) was published, and this version will be shared with applicants from this point onward. These recent developments will ensure water depth will be incorporated in future IHAs issued for HRG surveys.

Comment 4: The Commission recommends that NMFS and BOEM expedite efforts to develop and finalize, in the next six months, methodological and signal processing standards for HRG sources. Those standards should be used by action proponents that conduct HRG surveys and that either choose to conduct in-situ measurements to inform an authorization application or are required to conduct measurements to fulfill a lease condition set forth by BOEM.

Response: NMFS agrees with the Commission that methodological and signal processing standards for HRG sources is warranted and is working on developing such standards. However, NMFS cannot ensure such standards will be developed within the Commission's preferred time frame.

Comment 5: The Commission recommends that NMFS (1) prohibit Atlantic Shores and other action proponents from using the impulsive Level A harassment thresholds for estimating the extents of the Level A harassment zones for non-impulsive sources (*i.e.*, echosounders, shallow-penetration SBPs, pingers, etc.) and (2) require action proponents to use the correct Level A harassment thresholds in all future applications.

Response: NMFS concurs with the Commission's recommendation. As described in the notice of proposed IHA, NMFS does not agree with Atlantic Shores' characterization of certain HRG sources as impulsive sources. However, this characterization results in more conservative modeling results. Thus, we have assessed the potential for Level A harassment to result from the proposed activities based on the modeled Level A harassment zones with the acknowledgement that these zones are likely conservative. This approach allows us to assess the impacts of the proposed activity conservatively and is appropriate in this case. Therefore, it is unnecessary to make any changes to the analysis for this proposed activity. However, we will proactively work with action proponents to require use of the correct Level A harassment thresholds in all future applications.

Comment 6: The Commission recommends that NMFS (1) re-estimate all of the Level A and B harassment zones using its user spreadsheet that incorporates the

operating frequency and beam width and (2) provide the spreadsheet to all action proponents that conduct HRG surveys, post it on NMFS's website, and require all action proponents to use it for all future HRG-related authorizations.

Response: NMFS appreciates the Commission's comments and concurs with this recommendation. However, the current Level A harassment User Spreadsheet does not incorporate operating frequency or beam width as inputs for assessing Level A harassment zones. The tool referenced by the Commission is in development and will not be available for use prior to making a decision regarding the issuance of this IHA. In addition, re-estimating the isopleth distances for Level A harassment with the incorporation of operating frequency and beam width would result in smaller Level A zones and would therefore not result in any change in our determination as to whether Level A harassment is a likely outcome of the activity. Therefore, the Level A harassment zones will not be recalculated. Note that the current User Spreadsheet is available on our website. The current interim guidance for determining Level B harassment zones does incorporate operating frequency and beam width. We strongly recommend that applicants employ these tools, as we believe they are best currently available methodologies. However, applicants are free to develop additional models or use different tools if they believe they are more representative of real-world conditions.

Comment 7: The Commission recommends that NMFS (1) continue to prohibit action proponents, including Atlantic Shores, from using a 100-msec integration time to adjust the SPLrms-based source levels when estimating the Level B harassment zones, (2) ensure that the **Federal Register** notice for the final authorization does not incorrectly state that pulse duration was considered in the estimation of the Level B harassment

zones, and (3) require action proponents to omit any related discussions regarding integration time from all future applications to avoid unnecessary confusion and errors in future **Federal Register** notices.

Response: As the Commission is aware, NMFS does not have the authority to require action proponents to omit the discussion of particular topics in ITA applications. We will, however, continue to prohibit applicants from using a 100-msec integration time to adjust the SPLrms-based source levels when estimating the Level B harassment zones, as we have done in this IHA. NMFS has removed references to the use of pulse duration for the estimation of Level B harassment zones.

Comment 8: The Commission recommends that NMFS evaluate the impacts of sound sources consistently across all action proponents and deem sources *de minimis* in a consistent manner for all proposed incidental harassment authorizations and rulemakings. This has the potential to reduce burdens on both action proponents and NMFS.

Response: NMFS concurs with the Commission's recommendation and agrees that sound sources should be analyzed in a consistent manner and agrees that sources determined to result in *de minimis* impact should generally be considered unlikely to result in take under the MMPA. As an example, NMFS has determined that most types of geotechnical survey equipment are generally unlikely to result in the incidental take of marine mammals (in the absence of site-specific or species-specific circumstances that may warrant additional analysis). NMFS has not made such a determination with respect to all HRG sources. As NMFS has not made a determination that sound from all HRG sources would be considered *de minimis* we cannot rule out the potential for these sources to result in the incidental take of marine mammals.

Comment 9: The Commission recommends that NMFS consider whether, in such situations involving HRG surveys, incidental harassment authorizations are necessary given the small size of the Level B harassment zones, the proposed shut-down requirements, and the added protection afforded by the lease-stipulated exclusion zones. Specifically, the Commission states that NMFS should evaluate whether taking needs to be authorized for those sources that are not considered *de minimis*, including sparkers and boomers, and for which implementation of the various mitigation measures should be sufficient to avoid Level B harassment takes.

Response: NMFS has evaluated whether taking needs to be authorized for those sources that are not considered *de minimis*, including sparkers and boomers, factoring into consideration the effectiveness of mitigation and monitoring measures, and we have determined that implementation of mitigation and monitoring measures cannot ensure that all take can be avoided during all HRG survey activities under all circumstances at this time. If and when we are able to reach such a conclusion, we will re-evaluate our determination that incidental take authorization is warranted for these activities.

Comment 10: The Commission recommends that NMFS authorize up to two Level B harassment takes of sei whales based on group size.

Response: Based on survey data from 2010 through 2018 from the Annual Reports of Comprehensive Assessments of Marine Mammal, Marine Turtle, and Seabird Abundance and Spatial Distribution in U.S. waters of the Western North Atlantic Ocean (AMAPPS), published by the NOAA Fisheries Northeast and Southeast Fisheries Science Centers, the mean group size for sei whales was determined to be 1.3 whales (NOAA Fisheries Northeast and Southeast Fisheries Science Centers, 2019, 2018, 2017, 2016,

2015, 2014, 2013, 2012, 2011). However, to be conservative, we have authorized two takes of sei whales to account for the fact that sei whales may be encountered in pairs.

Comment 11: The Commission recommends that NMFS authorize up to 30 Level B harassment takes of Risso's dolphins for Atlantic Shores based on group size.

Response: Based on AMAPPS survey data from 2010 through 2018, the mean group size for Risso's dolphins was determined to be 5.9 dolphins (NOAA Fisheries Northeast and Southeast Fisheries Science Centers, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011). We have therefore not followed the recommendation of the Commission and have authorized 6 takes of Risso's dolphins based on group size as proposed in our notice of proposed IHA (85 FR 7926; February 12, 2020).

Comment 12: The Commission recommends that NMFS require Atlantic Shores to report as soon as possible and cease project activities immediately in the event of an unauthorized injury or mortality of a marine mammal from a vessel strike until the NMFS Office of Protected Resources and the NMFS New England/Mid-Atlantic Regional Stranding Coordinator determine whether additional measures are necessary to minimize the potential for additional unauthorized takes.

Response: NMFS has imposed a suite of measures in this IHA to reduce the risk of vessel strikes and has not authorized any takes associated with vessel strikes. However, NMFS does not concur and does not adopt the recommendation. NMFS does not agree that a blanket requirement for project activities to cease would be practicable for a vessel that is operating on the open water, and it is unclear what mitigation benefit would result from such a requirement in relation to vessel strike. The Commission does not suggest what measures other than those prescribed in this IHA would potentially

prove more effective in reducing the risk of strike. Therefore, we have not included this requirement in the authorization. NMFS retains authority to modify the IHA and cease all activities immediately based on a vessel strike and will exercise that authority if warranted.

Comment 13: The Commission recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated **Federal Register** notice process. That process is similarly expeditious and fulfills NMFS's intent to maximize efficiencies, and that NMFS (1) stipulate that a renewal is a one-time opportunity (a) in all **Federal Register** notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, explain why it will not do so in its **Federal Register** notices, on its webpage, and in all draft and final authorizations.

Response: NMFS does not agree with the Commission and, therefore, does not adopt the Commission's recommendations. NMFS believes IHA renewals can be appropriate in certain limited circumstances. NMFS will provide a more detailed response within 120 days, as required by section 202(d) of the MMPA.

Comment 14: The Commission recommends that, for all authorizations and rulemakings, NMFS provide separate, detailed explanations for not following or adopting any Commission recommendation.

Response: NMFS agrees that section 202(d) of the MMPA requires that any recommendations made by the Commission be responded to within 120 days of receipt, and that response to recommendations that are not followed or adopted must be

accompanied by a detailed explanation of the reasons why. Therefore, NMFS concurs with the Commission's recommendation that NMFS provide detailed explanations for not following or adopting any Commission recommendation.

However, NMFS disagrees with the Commission's underlying allegation that we have not provided the necessary responses, as required by the MMPA. Section 202(d) requires NMFS to provide detailed explanations of the reasons why recommendations are not adopted within 120 days, however it does not provide the Commission with the authority to assess the adequacy of NMFS' response, and NMFS believes that the explanations provided are sufficient. Regarding certain examples where NMFS does acknowledge having yet to provide the requisite detailed explanation, the Commission notes that it has been "over a month" with no response. However, as noted accurately by the Commission, the statute requires only that the explanation be provided within 120 days.

Comment 15: The New Jersey Council of Diving Clubs recommended that Atlantic Shores take steps to safeguard sport divers that are in the area of proposed surveys.

Response: The commenter's letter focused on specific issues that are not germane to our consideration of requested action under the MMPA, and provided recommendations relating to mitigation of potential impacts to recreational divers. NMFS's proposed action—the issuance of an IHA authorizing incidental take of marine mammals—necessarily results in impacts only to marine mammals and marine mammal habitat. Therefore, the comments are not relevant to NMFS's proposed action. Although

NMFS does not have the authority to require measures specific to diver safety, we have provided the commenter's letter to Atlantic Shores for their consideration.

Changes from the Proposed IHA to Final IHA

As described above, the following revision has been made to authorized take numbers:

- Authorized Level B harassment takes of sei whales has been revised from one to two.

Description of Marine Mammals in the Area of Specified Activity

Sections 3 and 4 of the IHA application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' web site (www.fisheries.noaa.gov/find-species).

Table 3 summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2019). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs).

While no mortality is anticipated or authorized here, PBR is included here as a gross indicator of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS’ stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS’ U.S. Atlantic SARs. All values presented in Table 3 are the most recent available at the time of publication and are available in the 2019 draft Atlantic SARs (Hayes *et al.*, 2019), available online at: www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

Table 3 – Marine Mammals Known to Occur in the Survey Area That May be Affected by Atlantic Shores’ Activity

Common Name (Scientific Name)	Stock	MMPA and ESA Status; Strategic (Y/N) ¹	Stock Abundance (CV, N _{min} , most recent abundance survey) ²	Predicted abundance (CV) ³	PBR ⁴	Annual M/SI ⁴	Occurrence in project area
Toothed whales (Odontoceti)							
Sperm whale (<i>Physeter macrocephalus</i>)	North Atlantic	E; Y	4,349 (0.28; 3,451; n/a)	5,353 (0.12)	6.9	0.0	Rare
Long-finned pilot whale (<i>Globicephala melas</i>)	W. North Atlantic	--; N	39,215 (0.3; 30,627; n/a)	18,977 (0.11) ⁵	306	21	Rare
Atlantic white- sided dolphin (<i>Lagenorhynchus acutus</i>)	W. North Atlantic	--; N	93,233(0.71; 54,443; n/a)	37,180 (0.07)	544	26	Common

Bottlenose dolphin (<i>Tursiops truncatus</i>)	W. North Atlantic, Offshore	--; N	62,851 (0.23; 51,914; 2011)	97,476 (0.06) ⁵	519	28	Common offshore
	W. North Atlantic, Northern Coastal Migratory	--; N	6,639 (0.41; 4,759; 2015)		48	6.1-13.2	Common nearshore
Common dolphin (<i>Delphinus delphis</i>)	W. North Atlantic	--; N	172,825 (0.21; 145,216; 2011)	86,098 (0.12)	1,452	419	Common
Atlantic spotted dolphin (<i>Stenella frontalis</i>)	W. North Atlantic	--; N	39,921 (0.27; 32,032; 2012)	55,436 (0.32)	320	0	Common
Risso's dolphin (<i>Grampus griseus</i>)	W. North Atlantic	--; N	35,493 (0.19; 30,289; 2011)	7,732 (0.09)	303	54.3	Rare
Harbor porpoise (<i>Phocoena phocoena</i>)	Gulf of Maine/Bay of Fundy	--; N	95,543 (0.31; 74,034; 2011)	45,089 (0.12)*	851	217	Common
Baleen whales (Mysticeti)							
North Atlantic right whale (<i>Eubalaena glacialis</i>)	W. North Atlantic	E; Y	428 (0; 418; n/a)	535 (0.45)*	0.8	6.85	Occur seasonally
Humpback whale (<i>Megaptera novaeangliae</i>)	Gulf of Maine	--; N	1,396 (0; 1,380; n/a)	1,637 (0.07)*	22	12.15	Common year round
Fin whale (<i>Balaenoptera physalus</i>)	W. North Atlantic	E; Y	7,418 (0.25; 6,025; n/a)	4,633 (0.08)	12	2.35	Year round in continental shelf and slope waters
Sei whale (<i>Balaenoptera borealis</i>)	Nova Scotia	E; Y	6,292 (1.015; 3,098; n/a)	717 (0.30)*	6.2	1.0	Year round in continental shelf and slope waters
Minke whale (<i>Balaenoptera acutorostrata</i>)	Canadian East Coast	--; N	24,202 (0.3; 18,902; n/a)	2,112 (0.05)*	8.0	7.0	Year round in continental shelf and slope waters
Earless seals (Phocidae)							
Gray seal ⁶ (<i>Halichoerus grypus</i>)	W. North Atlantic	--; N	27,131 (0.19; 23,158; n/a)		1,389	5,410	Common

Harbor seal (<i>Phoca vitulina</i>)	W. North Atlantic	--; N	75,834 (0.15; 66,884; 2012)		2,006	350	Common
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1 ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

2 Stock abundance as reported in NMFS marine mammal stock assessment reports (SAR) except where otherwise noted. SARs available online at: www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments. CV is coefficient of variation; N_{\min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks, abundance estimates are actual counts of animals and there is no associated CV. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate. All values presented here are from the 2019 draft Atlantic SARs (Hayes *et al.*, 2019).

3 This information represents species- or guild-specific abundance predicted by recent habitat-based cetacean density models (Roberts *et al.*, 2016, 2017, 2018). These models provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. Atlantic Ocean, and we provide the corresponding abundance predictions as a point of reference. Total abundance estimates were produced by computing the mean density of all pixels in the modeled area and multiplying by its area. For those species marked with an asterisk, the available information supported development of either two or four seasonal models; each model has an associated abundance prediction. Here, we report the maximum predicted abundance.

4 Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP). Annual M/SI, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI values often cannot be determined precisely and is in some cases presented as a minimum value. All M/SI values are as presented in the draft 2019 SARs (Hayes *et al.*, 2019).

5 Abundance estimates are in some cases reported for a guild or group of species when those species are difficult to differentiate at sea. Similarly, the habitat-based cetacean density models produced by Roberts *et al.* (2016, 2017, 2018) are based in part on available observational data which, in some cases, is limited to genus or guild in terms of taxonomic definition. Roberts *et al.* (2016, 2017, 2018) produced density models to genus level for *Globicephala* spp. and produced a density model for bottlenose dolphins that does not differentiate between offshore and coastal stocks.

6 NMFS stock abundance estimate applies to U.S. population only, actual stock abundance is approximately 505,000.

Four marine mammal species that are listed under the Endangered Species Act (ESA) may be present in the survey area and are included in the take request: the North Atlantic right whale, fin whale, sei whale, and sperm whale. We consulted under section 7 of the ESA with the NMFS Greater Atlantic Regional Fisheries Office (GARFO) on

our authorization of take for these species; please see the **Endangered Species Act** section below.

A detailed description of the species likely to be affected by Atlantic Shores' surveys, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the notice of proposed IHA (85 FR 7926; February 12, 2020). Since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that notice for these descriptions. Please also refer to NMFS' web site (www.fisheries.noaa.gov/find-species) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from Atlantic Shores' survey activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (85 FR 7926; February 12, 2020) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from Atlantic Shores' survey activities on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (85 FR 7926; February 12, 2020).

Estimated Take

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

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

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to HRG sources. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Mitigation** section, Level A harassment is neither anticipated nor authorized.

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

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring

results or average group size). Below, we describe the factors considered here in more detail and present the take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for impulsive and/or intermittent sources (*e.g.*, impact pile driving) and 120 dB rms for continuous sources (*e.g.*, vibratory driving). Atlantic Shores' proposed activity includes the use of impulsive and intermittent sources (geophysical survey equipment) therefore use of the 160 dB re 1 μ Pa (rms) threshold is applicable.

Level A harassment - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The components of Atlantic Shores' proposed activity that may result in the take of marine mammals include the use of impulsive sources. We note that sources that operate with a repetition rate greater than 10 Hz were assessed by Atlantic Shores with the non-impulsive (intermittent) source criteria and sources with a repetition rate equal to or less than 10 Hz were assessed with the impulsive source criteria. This resulted in all echosounders, sparkers, boomers and sub-bottom profilers (with the exception of one: the Innomar SES-2000 Medium-100 parametric sub-bottom profiler) being categorized as impulsive for purposes of modeling Level A harassment zones.

These thresholds are provided in Table 4 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at:

www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

Table 4 – Thresholds Identifying the Onset of Permanent Threshold Shift

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB

High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (<i>i.e.</i>, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The proposed survey would entail the use of HRG equipment. The distance to the isopleth corresponding to the threshold for Level B harassment was calculated for all HRG equipment with the potential to result in harassment of marine mammals. NMFS has developed an interim methodology for determining the rms sound pressure level (SPL_{rms}) at the 160-dB isopleth for the purposes of estimating take by Level B harassment resulting from exposure to HRG survey equipment (NMFS, 2019). This methodology incorporates frequency and some directionality to refine estimated ensonified zones. Atlantic Shores used the methods specified in the interim methodology

(NMFS, 2019) with additional modifications to incorporate a seawater absorption formula and a method to account for energy emitted outside of the primary beam of the source. For sources that operate with different beam widths, the maximum beam width was used. The lowest frequency of the source was used when calculating the absorption coefficient. The formulas used to apply the methodology are described in detail in Appendix B of the IHA application. As described above, NMFS acknowledges that water depth should also be incorporated in modeling of HRG sources but was not incorporated in the modeling of HRG sources in the notice of proposed IHA (85 FR 7926; February 12, 2020). However, also as noted above, NMFS has confirmed using a recently-developed spreadsheet tool that accompanies the NMFS interim HRG guidance (NMFS, 2019), which incorporates water depth, that the incorporation of water depth in modeling the HRG sources proposed for use by Atlantic Shores would result only in smaller harassment zones for some sources, and would not result in larger zones for any sources.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and therefore recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to the Level B harassment threshold. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment types that may be used during the planned surveys and the sound levels associated with those

HRG equipment types. Table 2-2 in the IHA application shows the literature sources for the sound source levels that are shown in Table 2 and that were incorporated into the modeling of isopleth distances to the Level B harassment threshold.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by Atlantic Shores that has the potential to result in harassment of marine mammals, sound produced by the Applied Acoustics Dura-Spark 240 sparker would propagate furthest to the Level B harassment threshold (Table 5); therefore, for the purposes of the exposure analysis, it was assumed the Applied Acoustics Dura-Spark 240 would be active during the entire duration of the surveys. Thus the distance to the isopleth corresponding to the threshold for Level B harassment for the Applied Acoustics Dura-Spark 240 (estimated at 372 m; Table 5) was used as the basis of the take calculation for all marine mammals. Note that this results in a conservative estimate of the total ensonified area resulting from the proposed activities as Atlantic Shores may not operate the Applied Acoustics Dura-Spark 240 during the entire survey, and for any survey segments in which it is not ultimately operated the distance to the Level B harassment threshold would be less than 372 m (Table 5). However, as Atlantic Shores cannot predict the precise number of survey days that will require the use of the Applied Acoustics Dura-Spark 240, it was assumed that it would operated during the entire duration of the planned surveys.

Table 5 – Modeled Radial Distances from HRG Survey Equipment to Isopleths Corresponding to Level A Harassment and Level B Harassment Thresholds

Sound Source	Radial Distance to Level A Harassment Threshold (m)*	Radial Distance to Level B Harassment Threshold (m)
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	Low frequency cetaceans	Mid frequency cetaceans	High frequency cetaceans	Phocid pinnipeds (underwater)	All marine mammals
Kongsberg EA 400	<1	2	213	<1	172
Teledyne ODOM Echotrac CVM	<1	1	220	<1	173
Applied Acoustics Dura-Spark 240	1	<1	9	1	372
Edgetech 2000-DSS	<1	<1	<1	<1	4
Edgetech 216	<1	<1	<1	<1	5
Edgetech 424	<1	<1	<1	<1	6
Edgetech 512i	<1	<1	<1	<1	7
Teledyne Benthos Chirp III	n/a	n/a	n/a	n/a	71
Kongsberg GeoPulse	n/a	n/a	n/a	n/a	231
Innomar SES-2000 Medium-100 Parametric	<1	<1	60	<1	116
Applied Acoustics S-Boom Triple Plate	<1	<1	38	<1	97
Applied Acoustics S-Boom	<1	<1	13	<1	56

* Distances to the Level A harassment threshold based on the larger of the dual criteria (peak SPL and SEL_{cum}) are shown. For the Applied Acoustics Dura-Spark 240 the peak SPL metric resulted in larger isopleth distances; for all other sources the SEL_{cum} metric resulted in larger isopleth distances.

Predicted distances to Level A harassment isopleths, which vary based on marine mammal functional hearing groups (Table 4), were also calculated. The updated acoustic thresholds for impulsive sounds (such as HRG survey equipment) contained in the Technical Guidance (NMFS, 2018) were presented as dual metric acoustic thresholds using both cumulative sound exposure level (SEL_{cum}) and peak sound pressure level metrics. As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.*, the metric resulting in the largest isopleth). The SEL_{cum} metric considers both level and duration of exposure, as well as auditory weighting functions by marine mammal hearing group.

Modeling of distances to isopleths corresponding to the Level A harassment threshold was performed for all types of HRG equipment proposed for use with the potential to result in harassment of marine mammals. Atlantic Shores used a new model developed by JASCO to calculate distances to Level A harassment isopleths based on both the peak SPL and the SEL_{cum} metric. For the peak SPL metric, the model is a series of equations that accounts for both seawater absorption and HRG equipment beam patterns (for all HRG sources with beam widths larger than 90° , it was assumed these sources were omnidirectional). For the SEL_{cum} metric, a model was developed that accounts for the hearing sensitivity of the marine mammal group, seawater absorption, and beam width for downwards-facing transducers. Details of the modeling methodology for both the peak SPL and SEL_{cum} metrics are provided in Appendix A of the IHA application. This model entails the following steps:

1. Weighted broadband source levels were calculated by assuming a flat spectrum between the source minimum and maximum frequency, weighted the spectrum according to the marine mammal hearing group weighting function (NMFS 2018), and summed across frequency.
2. Propagation loss was modeled as a function of oblique range.
3. Per-pulse SEL was modeled for a stationary receiver at a fixed distance off a straight survey line, using a vessel transit speed of 3.5 knots and source-specific pulse length and repetition rate. The off-line distance is referred to as the closest point of approach (CPA) and was performed for CPA distances between 1 m and 10 km. The survey line length was modeled as 10 km long (analysis showed

longer survey lines increased SEL by a negligible amount). SEL is calculated as $SPL + 10 \log_{10} T / 15$ dB, where T is the pulse duration.

4. The SEL for each survey line was calculated to produce curves of weighted SEL as a function of CPA distance.
5. The curves from Step 4 above were used to estimate the CPA distance to the impact criteria.

We note that in the modeling methods described above and in Appendix A of the IHA application, sources that operate with a repetition rate greater than 10 Hz were assessed with the non-impulsive (intermittent) source criteria while sources with a repetition rate equal to or less than 10 Hz were assessed with the impulsive source criteria. This resulted in all echosounders, sparkers, boomers and sub-bottom profilers (with the exception of one: the Innomar SES-2000 Medium-100 parametric sub-bottom profiler) being categorized as impulsive for purposes of modeling Level A harassment zones. As noted above, NMFS does not agree with this step in the modeling assessment, which results in nearly all HRG sources being classified as impulsive. However, we note that the classification of the majority of HRG sources as impulsive results in more conservative modeling results. Therefore, we are retaining the analysis of Level A harassment zones from the notice of proposed IHA (85 FR 7926; February 12, 2020), though this analysis does incorporate a 10 Hz repetition rate as a cutoff between impulsive and non-impulse sources. We acknowledge that this modeling approach results in zones are likely conservative for some sources.

Modeled isopleth distances to Level A harassment thresholds for all types of HRG equipment and all marine mammal functional hearing groups are shown in Table 5. The

dual criteria (peak SPL and SEL_{cum}) were applied to all HRG sources using the modeling methodology as described above, and the largest isopleth distances for each functional hearing group were then carried forward in the exposure analysis to be conservative. For the Applied Acoustics Dura-Spark 240 the peak SPL metric resulted in larger isopleth distances; for all HRG sources other than the Applied Acoustics Dura-Spark 240, the SEL_{cum} metric resulted in larger isopleth distances. Distances to the Level A harassment threshold based on the larger of the dual criteria (peak SPL and SEL_{cum}) are shown in Table 5.

Modeled distances to isopleths corresponding to the Level A harassment threshold are very small (< 3 m) for three of the four marine mammal functional hearing groups that may be impacted by the proposed activities (*i.e.*, low frequency and mid frequency cetaceans, and phocid pinnipeds; see Table 5). Based on the very small Level A harassment zones for these functional hearing groups, the potential for species within these functional hearing groups to be taken by Level A harassment is considered so low as to be discountable. These three functional hearing groups encompass all but one of the marine mammal species listed in Table 3 that may be impacted by the proposed activities. There is one species (harbor porpoise) within the high frequency functional hearing group that may be impacted by the proposed activities. The largest modeled distance to the Level A harassment threshold for the high frequency functional hearing group was 220 m (Table 5). However, as noted above, modeled distances to isopleths corresponding to the Level A harassment threshold are assumed to be conservative. Level A harassment would also be more likely to occur at close approach to the sound source or as a result of longer duration exposure to the sound source, and mitigation measures – including a 100-m

exclusion zone for harbor porpoises – are expected to minimize the potential for close approach or longer duration exposure to active HRG sources. In addition, the two HRG sources with the large calculated Level A zones are highly directional (Table 5), which lessens significantly the likelihood of exposure. Finally, harbor porpoises are a notoriously shy species which is known to avoid vessels, and would also be expected to avoid a sound source prior to that source reaching a level that would result in injury (Level A harassment). Therefore, we have determined that the potential for take by Level A harassment of harbor porpoises is so low as to be discountable. As NMFS has determined that the likelihood of take of any marine mammals in the form of Level A harassment occurring as a result of the planned surveys is so low as to be discountable, we therefore do not propose to authorize the take by Level A harassment of any marine mammals.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

The habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018) represent the best available information regarding marine mammal densities in the proposed survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for

all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated on the basis of additional data as well as certain methodological improvements. Our evaluation of the changes leads to a conclusion that these represent the best scientific evidence available. More information is available online at seamap.env.duke.edu/models/Duke-EC-GOM-2015/. Marine mammal density estimates in the project area (animals/km²) were obtained using these model results (Roberts *et al.*, 2016, 2017, 2018). The updated models incorporate additional sighting data, including sightings from the NOAA Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys from 2010–2014 (NEFSC & SEFSC, 2011, 2012, 2014a, 2014b, 2015, 2016).

For the exposure analysis, density data from Roberts *et al.* (2016, 2017, 2018) were mapped using a geographic information system (GIS). The density coverages that included any portion of the survey areas were selected for all potential survey months. For each of the survey areas (*i.e.*, Lease Area, CER North and ECR South), the densities of each species as reported by Roberts *et al.* (2016, 2017, 2018) were averaged by season; thus, a density was calculated for each species for spring, summer, fall and winter. To be conservative, the greatest seasonal density calculated for each species was then carried forward in the exposure analysis. Estimated seasonal densities (animals per km²) of all marine mammal species that may be taken by the planned survey, for all survey areas are shown in Tables B-1, B-2 and B-3 in Appendix C of the IHA application. The maximum seasonal density values used to estimate take numbers are shown in Table 6 below.

For bottlenose dolphin densities, Roberts *et al.* (2016, 2017, 2018) does not differentiate by stock. The Western North Atlantic northern migratory coastal stock only

occurs in coastal waters from the shoreline to approximately the 20-m isobath (Hayes *et al.* 2018). As the Lease Area is located within depths exceeding 20-m, where the offshore stock would typically be expected to occur, all calculated bottlenose dolphin exposures within the Lease Area were assigned to the offshore stock. However, both stocks have the potential to occur in the ECR North and ECR South survey areas. To account for the potential for mixed stocks within ECR North and South, the survey areas ECR North and South were divided approximately along the 20-m depth isobath, which roughly corresponds to the 10-fathom contour on NOAA navigation charts. As approximately 33 percent of ECR North and ECR South are 20-m or less in depth, 33 percent of the estimated take calculation for bottlenose dolphins was applied to the Western North Atlantic northern migratory coastal stock and the remaining 67 percent was applied to the offshore stock. Similarly, Roberts *et al.* (2018) produced density models for all seals and did not differentiate by seal species. Because the seasonality and habitat use by gray seals roughly overlaps with that of harbor seals in the survey areas, it was assumed that modeled takes of seals could occur to either of the respective species, thus the total number of modeled takes for seals was applied to each species. This approach represents a double-counting of expected total seal takes and is therefore conservative.

Table 6 – Maximum Seasonal Marine Mammal Densities (Number of Animals per 100 km²) in the Survey Areas

Species	Lease Area	ECR North	ECR South
North Atlantic right whale	0.087	0.068	0.073
Humpback whale	0.076	0.082	0.103
Fin whale	0.100	0.080	0.057
Sei whale	0.004	0.004	0.002
Minke whale	0.055	0.017	0.019
Sperm Whale	0.013	0.005	0.003
Long-finned pilot whale	0.036	0.012	0.009
Bottlenose dolphin (W. N. Atlantic)	-	21.675	58.524

Coastal Migratory)			
Bottlenose dolphin (W. N. Atlantic Offshore)	21.752	21.675	58.524
Common dolphin	3.120	1.644	1.114
Atlantic white-sided dolphin	0.487	0.213	0.152
Atlantic spotted dolphin	0.076	0.059	0.021
Risso's dolphin	0.010	0.001	0.002
Harbor porpoise	2.904	7.357	2.209
Gray seal	4.918	9.737	6.539
Harbor seal	4.918	9.737	6.539

Note: All density values derived from Roberts *et al.* (2016, 2017, 2018). Densities shown represent the maximum seasonal density values calculated.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to harassment thresholds are calculated, as described above. Those distances are then used to calculate the area(s) around the HRG survey equipment predicted to be ensonified to sound levels that exceed harassment thresholds. The area estimated to be ensonified to relevant thresholds in a single day is then calculated, based on areas predicted to be ensonified around the HRG survey equipment and the estimated trackline distance traveled per day by the survey vessel.

Atlantic Shores estimates that planned surveys will achieve a maximum daily track line distance of 85 km per day. This distance accounts for the vessel traveling at approximately 3.5 kn and accounts for non-active survey periods. Based on the maximum estimated distance to the Level B harassment threshold of 372 m (Table 5) and the maximum estimated daily track line distance of 85 km, an area of 63.675 km² would be ensonified to the Level B harassment threshold per day during Atlantic Shores' planned

surveys. As described above, this is a conservative estimate as it assumes the HRG source that results in the greatest isopleth distance to the Level B harassment threshold would be operated at all times during the entire survey, which may not ultimately occur.

The number of marine mammals expected to be incidentally taken per day is then calculated by estimating the number of each species predicted to occur within the daily ensonified area (animals / km²), incorporating the estimated marine mammal densities as described above. Estimated numbers of each species taken per day are then multiplied by the total number of survey days (*i.e.*, 350). The product is then rounded, to generate an estimate of the total number of instances of harassment expected for each species over the duration of the survey. A summary of this method is illustrated in the following formula:

$$\text{Estimated Take} = D \times \text{ZOI} \times \# \text{ of days}$$

Where: D = average species density (per km²) and ZOI = maximum daily ensonified area to relevant thresholds.

Table 7 – Numbers of Potential Incidental Take of Marine Mammals Authorized and Takes as a Percentage of Population

Species	Takes by Level A Harassment Authorized	Estimated Takes by Level B Harassment	Takes by Level B Harassment Authorized	Total Takes Authorized	Total Instances of Take as a Percentage of Population ¹
North Atlantic right whale	0	18	9	9	2.2
Humpback whale	0	18	18	18	1.1
Fin whale	0	20	20	20	0.4
Sei whale ²	0	1	2	2	0.3
Minke whale	0	9	9	9	0.4
Sperm whale ²	0	2	3	3	0.1
Long-finned pilot whale	0	6	6	6	0.0
Bottlenose dolphin (W.N. Atlantic Coastal Migratory)	0	1,102	1,102	1,102	16.6

Bottlenose dolphin (W.N. Atlantic Offshore)	0	5,113	5,113	5,113	8.1
Common dolphin	0	544	544	544	0.6
Atlantic white-sided dolphin	0	82	82	82	0.2
Atlantic spotted dolphin ²	0	14	100	100	0.2
Risso's Dolphin ²	0	2	6	6	0.1
Harbor porpoise	0	115	115	115	0.3
Harbor seal	0	1,404	1,404	1,404	1.9
Gray seal	0	1,404	1,404	1,404	0.3

1 Calculations of percentage of stock taken are based on the best available abundance estimate as shown in Table 3. In most cases the best available abundance estimate is provided by Roberts *et al.* (2016, 2017, 2018), when available, to maintain consistency with density estimates derived from Roberts *et al.* (2016, 2017, 2018). For North Atlantic right whales the best available abundance estimate is derived from the North Atlantic Right Whale Consortium 2019 Annual Report Card (Pettis *et al.*, 2019). For bottlenose dolphins and seals, Roberts *et al.* (2016, 2017, 2018) provides only a single abundance estimate and does not provide abundance estimates at the stock or species level (respectively), so abundance estimates used to estimate percentage of stock taken for bottlenose dolphins, gray and harbor seals are derived from NMFS SARs (Hayes *et al.*, 2019).

2 The number of authorized takes (Level B harassment only) for these species has been increased from the estimated take number to mean group size (*i.e.*, Risso's dolphin, sperm whale and Atlantic spotted dolphin) or to account for the fact that the species may be encountered in pairs despite estimated mean group size being less than two (*i.e.*, sei whale). Sources for mean group size estimates are as follows: Risso's dolphin: (NOAA Fisheries Northeast and Southeast Fisheries Science Centers, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011); Atlantic spotted dolphin: Herzing and Perrin (2018); sperm whale: Barkaszi and Kelly (2019).

The numbers of takes authorized are shown in Table 7. Atlantic Shores did not request take authorization for four marine mammal species for which takes by Level B harassment were calculated based on the modeling approach described above: North Atlantic right, fin, sei, and sperm whale. Though the modeling resulted in estimates of take for these species as shown in Table 7, Atlantic Shores determined that take of these species could be avoided due to mitigation. However, given the size of the modeled Level B harassment zone, the duration of the planned surveys, and the fact that surveys will occur 24 hours per day, NMFS is not confident that all takes of these species could be avoided due to mitigation, and we therefore authorize the number of Level B harassment

takes shown in Table 7. For fin whales we authorize the number of takes modeled. For sei and sperm whales we authorize takes based on the numbers modeled but increased the numbers based on mean group size for the species (described further below). For North Atlantic right whale, we authorize one half of the takes modeled, as we expect that mitigation measures, including a 500-m exclusion zone for right whales (which exceeds the Level B harassment zone by over 100-m and will be implemented during daylight hours) will be at least that effective in reducing the potential for takes by Level B harassment.

As described above, Roberts *et al.* (2018) produced density models for all seals and did not differentiate by seal species. The take calculation methodology as described above resulted in an estimate of 1,404 total seal takes. Based on this estimate, Atlantic Shores requested 1,404 takes each of harbor and gray seals, based on an assumption that the modeled takes could occur to either of the respective species. Although this is a conservative approach, we authorize the requested take numbers for seals as shown in Table 7.

Using the take methodology approach described above, the take estimates for Risso's dolphin, spotted dolphin and sperm whale were less than the average group sizes estimated for these species (Table 7). However, information on the social structures of these species indicates these species are likely to be encountered in groups. Therefore it is reasonable to conservatively assume that one group of each of these species will be taken during the planned survey. We therefore authorize the take of the average group size for these species to account for the possibility that the planned survey encounters a group of either of these species (Table 7).

Using the take methodology approach described above, the take estimate for sei whale resulted in an estimate of one take. While the mean group size estimate from AMAPPS survey data from 2010 through 2018 was 1.3 whales (NOAA Fisheries Northeast and Southeast Fisheries Science Centers, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011), to be conservative we have authorized the take of two sei whales to account for the fact that the species may be encountered in pairs (NOAA Fisheries Northeast and Southeast Fisheries Science Centers, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011) (Table 7).

As described above, NMFS has determined that the likelihood of take of any marine mammals in the form of Level A harassment occurring as a result of the planned surveys is so low as to be discountable; therefore, we do not authorize the take of any marine mammals by Level A harassment.

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

Mitigation Measures

NMFS has required that the following mitigation measures be implemented during Atlantic Shores' planned marine site characterization surveys.

Marine Mammal Exclusion Zones, Buffer Zone and Monitoring Zone

Marine mammal exclusion zones (EZ) would be established around the HRG survey equipment and monitored by protected species observers (PSO) during HRG surveys as follows:

- A 500-m EZ would be required for North Atlantic right whales; and
- A 100-m EZ would be required for all other marine mammals.

If a marine mammal is detected approaching or entering the EZs during the survey, the vessel operator would adhere to the shutdown procedures described below. In addition to the EZs described above, PSOs would visually monitor a 200 m Buffer Zone. During use of acoustic sources with the potential to result in marine mammal harassment (*i.e.*, anytime the acoustic source is active, including ramp-up), occurrences of marine mammals within the Buffer Zone (but outside the EZs) would be communicated to the vessel operator to prepare for potential shutdown of the acoustic source. The Buffer Zone is not applicable when the EZ is greater than 100 meters. PSOs would also be required to observe a 500-m Monitoring Zone and record the presence of all marine mammals within this zone. In addition, observation of any marine mammals within the Level B harassment zone will be documented. The zones described above would be based upon the radial distance from the active equipment (rather than being based on distance from the vessel itself).

Visual Monitoring

A minimum of one NMFS-approved PSO must be on duty and conducting visual observations at all times during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset) and 30 minutes prior to and during nighttime ramp-ups of HRG equipment. Visual monitoring would begin no less than 30 minutes prior to ramp-up of HRG equipment and would continue until 30 minutes after use of the acoustic source ceases or until 30 minutes past sunset. PSOs would establish and monitor the applicable EZs, Buffer Zone and Monitoring Zone as described above. Visual PSOs must ensure 360° visual coverage around the vessel from the most appropriate observation posts, and would conduct visual observations using binoculars and the naked eye while

free from distractions and in a consistent, systematic, and diligent manner. PSOs would estimate distances to marine mammals located in proximity to the vessel and/or relevant using range finders. It would be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate and enforce the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate. Position data would be recorded using hand-held or vessel global positioning system (GPS) units for each confirmed marine mammal sighting.

Pre-Clearance of the Exclusion Zones

Prior to initiating HRG survey activities, Atlantic Shores would implement a 30-minute pre-clearance period. During pre-clearance monitoring (*i.e.*, before ramp-up of HRG equipment begins), the Buffer Zone would also act as an extension of the 100 m EZ in that observations of marine mammals within the 200 m Buffer Zone would also preclude HRG operations from beginning. During this period, PSOs would ensure that no marine mammals are observed within 200 m of the survey equipment (500 m in the case of North Atlantic right whales). HRG equipment would not start up until this 200 m zone (or, 500 m zone in the case of North Atlantic right whales) is clear of marine mammals for at least 30 minutes. The vessel operator would notify a designated PSO of the planned start of HRG survey equipment as agreed upon with the lead PSO; the notification time should not be less than 30 minutes prior to the planned initiation of HRG equipment order to allow the PSOs time to monitor the EZs and Buffer Zone for the 30 minutes of pre-clearance. A PSO conducting pre-clearance observations would be notified again immediately prior to initiating active HRG sources.

If a marine mammal were observed within the relevant EZs or Buffer Zone during the pre-clearance period, initiation of HRG survey equipment would not begin until the animal(s) has been observed exiting the respective EZ or Buffer Zone, or, until an additional time period has elapsed with no further sighting (*i.e.*, minimum 15 minutes for small odontocetes and seals, and 30 minutes for all other species). The pre-clearance requirement would include small delphinoids that approach the vessel (*e.g.*, bow ride). PSOs would also continue to monitor the zone for 30 minutes after survey equipment is shut down or survey activity has concluded.

Ramp-Up of Survey Equipment

When technically feasible, a ramp-up procedure would be used for geophysical survey equipment capable of adjusting energy levels at the start or re-start of survey activities. The ramp-up procedure would be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by allowing them to detect the presence of the survey and vacate the area prior to the commencement of survey equipment operation at full power. Ramp-up of the survey equipment would not begin until the relevant EZs and Buffer Zone has been cleared by the PSOs, as described above. HRG equipment would be initiated at their lowest power output and would be incrementally increased to full power. If any marine mammals are detected within the EZs or Buffer Zone prior to or during ramp-up, the HRG equipment would be shut down (as described below).

Shutdown Procedures

If an HRG source is active and a marine mammal is observed within or entering a relevant EZ (as described above) an immediate shutdown of the HRG survey equipment

would be required. When shutdown is called for by a PSO, the acoustic source would be immediately deactivated and any dispute resolved only following deactivation. Any PSO on duty would have the authority to delay the start of survey operations or to call for shutdown of the acoustic source if a marine mammal is detected within the applicable EZ. The vessel operator would establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the HRG source(s) to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch. Subsequent restart of the HRG equipment would only occur after the marine mammal has either been observed exiting the relevant EZ, or, until an additional time period has elapsed with no further sighting of the animal within the relevant EZ (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for large whales).

Upon implementation of shutdown, the HRG source may be reactivated after the marine mammal that triggered the shutdown has been observed exiting the applicable EZ (*i.e.*, the animal is not required to fully exit the Buffer Zone where applicable), or, following a clearance period of 15 minutes for small odontocetes and seals and 30 minutes for all other species with no further observation of the marine mammal(s) within the relevant EZ. If the HRG equipment shuts down for brief periods (*i.e.*, less than 30 minutes) for reasons other than mitigation (*e.g.*, mechanical or electronic failure) the equipment may be re-activated as soon as is practicable at full operational level, without 30 minutes of pre-clearance, only if PSOs have maintained constant visual observation during the shutdown and no visual detections of marine mammals occurred within the applicable EZs and Buffer Zone during that time. For a shutdown of 30 minutes or

longer, or if visual observation was not continued diligently during the pause, pre-clearance observation is required, as described above.

The shutdown requirement would be waived for certain genera of small delphinids (*i.e.*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) under certain circumstances. If a delphinid(s) from these genera is visually detected approaching the vessel (*i.e.*, to bow ride) or towed survey equipment, shutdown would not be required. If there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs would use best professional judgment in making the decision to call for a shutdown.

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the area encompassing the Level B harassment isopleth (372 m), shutdown would occur.

Vessel Strike Avoidance

Vessel strike avoidance measures would include, but would not be limited to, the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- All vessel operators and crew will maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop their vessel to avoid striking these protected species;
- All survey vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right

whales from vessel strikes: any Dynamic Management Areas (DMA) when in effect, and the Mid-Atlantic Seasonal Management Area (SMA) off the entrance to New York harbor (from November 1 through April 30);

- All vessel operators will reduce vessel speed to 10 knots (18.5 km/hr) or less when any large whale, any mother/calf pairs, large assemblages of non-delphinoid cetaceans are observed near (within 100 m (330 ft)) an underway vessel;
- All survey vessels will maintain a separation distance of 500 m (1640 ft) or greater from any sighted North Atlantic right whale;
- If underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/hr) or less until the 500 m (1640 ft) minimum separation distance has been established. If a North Atlantic right whale is sighted in a vessel's path, or within 100 m (330 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines will not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 100 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m;
- All vessels will maintain a separation distance of 100 m (330 ft) or greater from any sighted non-delphinoid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 m. If a survey vessel is stationary, the vessel will not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m;

- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted delphinoid cetacean. Any vessel underway remain parallel to a sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction. Any vessel underway reduces vessel speed to 10 knots (18.5 km/hr) or less when pods (including mother/calf pairs) or large assemblages of delphinoid cetaceans are observed. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50 m and/or the abeam of the underway vessel;
- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted pinniped; and
- All vessels underway will not divert or alter course in order to approach any whale, delphinoid cetacean, or pinniped. Any vessel underway will avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped.

Atlantic Shores will ensure that vessel operators and crew maintain a vigilant watch for marine mammals by slowing down or stopping the vessel to avoid striking marine mammals. Project-specific training will be conducted for all vessel crew prior to the start of survey activities. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew members understand and will comply with the necessary requirements throughout the survey activities.

Seasonal Operating Requirements

As described above, the section of the survey area partially overlaps with a portion of a North Atlantic right whale SMA off the port of New York / New Jersey. This SMA is active from November 1 through April 30 of each year. All survey vessels, regardless of length, would be required to adhere to vessel speed restrictions (<10 kn) when operating within the SMA during times when the SMA is active. In addition, between watch shifts, members of the monitoring team would consult NMFS' North Atlantic right whale reporting systems for the presence of North Atlantic right whales throughout survey operations. Members of the monitoring team would also monitor the NMFS North Atlantic right whale reporting systems for the establishment of DMA. If NMFS should establish a DMA in the survey area while surveys are underway, Atlantic Shores would contact NMFS within 24 hours of the establishment of the DMA to determine whether alteration of survey activities was warranted to avoid right whales to the extent possible.

The mitigation measures are designed to avoid some instances of Level B harassment, and to minimize the potential for vessel strikes. Further, we believe the mitigation measures are practicable for the applicant to implement. Atlantic Shores plans to implement mitigation measures in addition to the measures described above; for information on these additional measures, see Section 11 of the IHA application.

There are no known marine mammal rookeries or mating or calving grounds in the survey area that would otherwise potentially warrant increased mitigation measures for marine mammals or their habitat (or both). The survey would occur in an area that has been identified as a biologically important area for migration for North Atlantic right whales. However, given the small spatial extent of the survey area relative to the

substantially larger spatial extent of the right whale migratory area, the survey is not expected to appreciably reduce migratory habitat nor to negatively impact the migration of North Atlantic right whales, thus mitigation to address the survey's occurrence in North Atlantic right whale migratory habitat is not warranted.

Based on our evaluation of the required measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).

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

Monitoring Measures

As described above, visual monitoring would be performed by qualified and NMFS-approved PSOs. Atlantic Shores would use independent, dedicated, trained PSOs, meaning that the PSOs 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 vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and must have successfully completed an approved PSO training course appropriate for their

designated task. Atlantic Shores would provide resumes of all proposed PSOs (including alternates) to NMFS for review and approval.

During survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty and conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset) and nighttime ramp-ups of HRG equipment. Visual monitoring would begin no less than 30 minutes prior to initiation of HRG survey equipment and would continue until one hour after use of the acoustic source ceases or until 30 minutes past sunset. PSOs would coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts, and would conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all survey vessels.

PSOs would be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or exclusion zone using range finders. Reticulated binoculars will also be available to PSOs for use as appropriate based on conditions and visibility to support the monitoring of marine mammals. Position data would be recorded using hand-held or vessel GPS units for each sighting. Observations would take place from the highest available vantage point on the

survey vessel. General 360-degree scanning would occur during the monitoring periods, and target scanning by the PSO would occur when alerted of a marine mammal presence.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the acoustic source and between acquisition periods. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team.

Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal take that occurs (*e.g.*, noted behavioral disturbances).

Reporting Measures

Within 90 days after completion of survey activities, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals estimated to have been taken during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS.

In addition to the final technical report, Atlantic Shores will provide the reports described below as necessary during survey activities. In the unanticipated event that Atlantic Shores' activities lead to an injury (Level A harassment) of a marine mammal, Atlantic Shores would immediately cease the specified activities and report the incident to the NMFS Office of Protected Resources (OPR) Permits and Conservation Division and the NMFS New England / Mid-Atlantic Stranding Coordinator. The report would include the following information:

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

Activities would not resume until NMFS is able to review the circumstances of the event. NMFS would work with Atlantic Shores to minimize reoccurrence of such an event in the future. Atlantic Shores would not resume activities until notified by NMFS.

In the event that Atlantic Shores personnel discover an injured or dead marine mammal, Atlantic Shores would report the incident to the OPR Permits and Conservation Division and the NMFS New England / Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Atlantic Shores would report the incident to the NMFS OPR Permits and Conservation Division and the NMFS New England / Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;

- 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;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the

likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 3, given that NMFS expects the anticipated effects of the planned survey to be similar in nature. NMFS does not anticipate that serious injury or mortality would occur as a result of Atlantic Shores' survey, even in the absence of mitigation. Thus the authorization does not authorize any serious injury or mortality. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section, non-auditory physical effects and vessel strike are not expected to occur. Additionally and as discussed previously, given the nature of activity and sounds sources used and especially in consideration of the required mitigation, Level A harassment is neither anticipated nor authorized. We expect that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area, reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007).

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring). Most likely, individuals will simply move away from the sound source and temporarily avoid the area where the survey is occurring. We expect that any avoidance of the survey area by marine mammals would be temporary in nature and that any marine mammals that avoid the survey area during the survey activities would not be permanently displaced. Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole.

In addition to being temporary and short in overall duration, the acoustic footprint of the survey is small relative to the overall distribution of the animals in the area and their use of the area. Potential impacts to marine mammal habitat were discussed in the notice of proposed IHA (85 FR 7926; February 12, 2020). Marine mammal habitat may be impacted by elevated sound levels, but these impacts would be temporary. There are no areas of notable biological significance for marine mammal feeding known to exist in the project area. Feeding behavior is not likely to be significantly impacted, as prey species are mobile and are broadly distributed throughout the project area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine

mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating areas or calving areas known to be biologically important to marine mammals within the survey area. The survey area overlaps a portion of a biologically important migratory area for North Atlantic right whales (effective March-April and November-December) that extends from Massachusetts to Florida (LaBrecque, *et al.*, 2015). Off the coasts of New York and New Jersey, this biologically important migratory area extends from the coast to beyond the shelf break. Due to the fact that the survey is temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory habitat in the area, right whale migration is not expected to be impacted by the survey. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

North Atlantic right, humpback, and minke whales, and gray and harbor seals are experiencing ongoing UMEs. For North Atlantic right whales, as described above, no injury as a result of the survey is expected or authorized, and Level B harassment takes of right whales are expected to be in the form of avoidance of the immediate area of the survey. In addition, the number of takes authorized above the Level B harassment threshold are minimal (*i.e.*, 9). As no injury or mortality is expected or authorized, and Level B harassment of North Atlantic right whales will be reduced to the level of least practicable adverse impact through use of mitigation measures, the authorized takes of right whales would not exacerbate or compound the ongoing UME in any way.

Similarly, no injury or mortality is expected or authorized for any of the other species with UMEs, Level B harassment will be reduced to the level of least practicable

adverse impact through use of mitigation measures, and the authorized takes would not exacerbate or compound the ongoing UMEs. For minke whales, although the ongoing UME is under investigation (as occurs for all UMEs), this event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales. Even though the PBR value is based on an abundance for U.S. waters that is negatively biased and a small fraction of the true population abundance, annual M/SI does not exceed the calculated PBR value for minke whales. With regard to humpback whales, the UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or distinct population segment (DPS)) remains healthy. The West Indies DPS, which consists of the whales whose breeding range includes the Atlantic margin of the Antilles from Cuba to northern Venezuela, and whose feeding range primarily includes the Gulf of Maine, eastern Canada, and western Greenland, was delisted. The status review identified harmful algal blooms, vessel collisions, and fishing gear entanglements as relevant threats for this DPS, but noted that all other threats are considered likely to have no or minor impact on population size or the growth rate of this DPS (Bettridge *et al.*, 2015). As described in Bettridge *et al.* (2015), the West Indies DPS has a substantial population size (*i.e.*, approximately 10,000; Stevick *et al.*, 2003; Smith *et al.*, 1999; Bettridge *et al.*, 2015), and appears to be experiencing consistent growth. With regard to gray and harbor seals, although the ongoing UME is under investigation, the UME does not yet provide cause for concern regarding population-level impacts to any of these stocks. For harbor seals, the population abundance is over 75,000 and annual M/SI (345) is well below PBR

(2,006) (Hayes *et al.*, 2018). For gray seals, the population abundance in the United States is over 27,000, with an estimated abundance including seals in Canada of approximately 505,000, and abundance is likely increasing in the U.S. Atlantic EEZ as well as in Canada (Hayes *et al.*, 2019).

The mitigation measures are expected to reduce the number and/or severity of takes by giving animals the opportunity to move away from the sound source before HRG survey equipment reaches full energy and by establishing zones that will prevent animals from being exposed to higher sound levels that may otherwise result in injury or more severe behavioral responses. No Level A harassment, which involves the potential for injury, has been authorized. Additional vessel strike avoidance requirements will further mitigate potential impacts to marine mammals during vessel transit to and within the survey area.

NMFS concludes that exposures to marine mammal species and stocks due to Atlantic Shores' survey would result in only short-term (temporary and short in duration) effects to individuals exposed. Marine mammals may temporarily avoid the immediate area, but are not expected to permanently abandon the area. Major shifts in habitat use, distribution, or foraging success are not expected. NMFS does not anticipate the authorized takes to impact annual rates of recruitment or survival.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality, serious injury, or Level A harassment is anticipated or authorized;

- The anticipated impacts of the activity on marine mammals would primarily be in the form of temporary behavioral changes due to avoidance of the area around the survey vessel;
- The availability of alternate areas of similar habitat value (for foraging, etc.) for marine mammals that may temporarily vacate the survey area during the survey to avoid exposure to sounds from the activity;
- The survey area does not contain known areas of significance for mating or calving;
- Effects on species that serve as prey species for marine mammals from the survey would be minor and temporary and would not be expected to reduce the availability of prey or to affect marine mammal feeding;
- The mitigation measures, including visual and acoustic monitoring, exclusion zones, and shutdown measures, are expected to minimize potential impacts to marine mammals.

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

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice,

where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The numbers of marine mammals that we authorize to be taken, for all species and stocks, would be considered small relative to the relevant stocks or populations (less than one third of the best available population abundance for all species and stocks) (see Table 7). Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

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

National Environmental Policy Act

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

This action is consistent with categories of activities identified in Categorical Exclusion B4 of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the proposed action qualifies to be categorically excluded from further NEPA review.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the NMFS GARFO, whenever we propose to authorize take for endangered or threatened species.

The NMFS OPR Permits and Conservation Division is authorizing the incidental take of four species of marine mammals which are listed under the ESA: the North Atlantic right, fin, sei and sperm whale. We requested initiation of consultation under Section 7 of the ESA with NMFS GARFO on February 12, 2020, for the issuance of this IHA. BOEM consulted with NMFS GARFO under section 7 of the ESA on commercial wind lease issuance and site assessment activities on the Atlantic Outer Continental Shelf in Massachusetts, Rhode Island, New York and New Jersey Wind Energy Areas. The NMFS GARFO issued a Biological Opinion concluding that these activities may adversely affect but are not likely to jeopardize the continued existence of the North

Atlantic right, fin, and sperm whale. The Biological Opinion can be found online at: www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorization-other-energy-activities-renewable. Upon request from the NMFS Office of Protected Resources, NMFS GARFO issued an amended incidental take statement associated with this Biological Opinion to include the takes of the ESA-listed marine mammal species authorized through this IHA in April, 2020.

Authorization

NMFS has issued an IHA to Atlantic Shores for conducting marine site characterization surveys offshore of New Jersey and New York, for a period of one year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: April 10, 2020.

Donna Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.

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