

# FINDING OF NO SIGNIFICANT IMPACT FOR THE ISSUANCE OF AN INCIDENTAL HARASSMENT AUTHORIZATION TO THE LAMONT-DOHERTY EARTH OBSERVATORY TO TAKE MARINE MAMMALS BY HARASSMENT INCIDENTAL TO A MARINE GEOPHYSICAL SURVEYS IN PUERTO RICO IN THE NORTH ATLANTIC OCEAN (FALL 2023) AND ADOPTION OF THE NATIONAL SCIENCE FOUNDATION'S ENVIRONMENTAL ASSESSMENT/ANALYSIS

## I. INTRODUCTION

The National Marine Fisheries Service (NMFS) received an application from the Lamont-Doherty Earth Observatory (L-DEO) requesting authorization for the take of marine mammals incidental to geophysical surveys in the Puerto Rico Trench and southern slope of Puerto Rico in the North Atlantic Ocean, which was analyzed in the National Science Foundation's (NSF's) 2023 Final Environmental Assessment (EA), *Final Environmental Assessment/Analysis of Marine Geophysical Surveys by R/V Marcus G. Langseth of the Puerto Rico Trench and Southern Slope of Puerto Rico, Northwest Atlantic Ocean* (Final EA). NMFS is required to review applications and, if appropriate, issue Incidental Take Authorizations<sup>1</sup> (ITAs) pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*). In addition, NEPA, 40 CFR Parts 1500-1508<sup>2</sup>, and National Oceanic and Atmospheric Administration (NOAA) policy and procedures<sup>3</sup> require all proposals for major federal actions be reviewed with respect to environmental consequences on the human environment. Therefore, the purposes of this document are twofold. First, this document explains NMFS' determination to adopt NSF's Final EA for the NEPA review that NMFS is otherwise required to develop for its consideration of whether to issue an Incidental Harassment Authorization (IHA) to L-DEO. Second, this document explains NMFS' rationale for its finding that issuance of this IHA will not significantly impact the quality of the human environment.

NMFS proposes to issue an IHA to L-DEO pursuant to Section 101(a)(5)(D) of the MMPA and 50 CFR 216. This IHA will be valid for 1 year from the date of issuance and authorizes the take, by Level A and Level B harassment, of small numbers of marine mammals incidental to L-DEO's geophysical surveys in Puerto Rico. NMFS' proposed action is a direct outcome of L-DEO's request for an IHA for conducting marine geophysical survey activities. The research activities would investigate the Puerto Rico Trench, its outer rise, and the island of Puerto Rico, and provide data necessary to illuminate the depth, geometry, and physical properties of the seismogenic fault interface between the subducting Atlantic plate and the overlying accretionary wedge/Puerto Rico arc/Caribbean plate, as well as seismogenic structures in the accretionary wedge and submarine slopes of the island of Puerto Rico. The surveys will be conducted aboard

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<sup>1</sup> ITAs may be issued as either (1) regulations and the associated Letter of Authorization (LOA) or (2) an Incidental Harassment Authorization (IHA). LOAs may be issued for a maximum period of five years and IHAs may be issued for a maximum period of one year. Detailed information about the MMPA is available at <https://www.fisheries.noaa.gov/topic/laws-policies#marine-mammal-protection-act>.

<sup>2</sup> This Finding of No Significant Impact (FONSI) is being prepared using the 2020 Council on Environmental Quality (CEQ) NEPA regulations as modified by the Phase I 2022 revisions. The effective date of the 2022 revisions was May 20, 2022 and reviews begun after this date are required to apply the 2020 regulations as modified by the Phase I revisions unless there is a clear and fundamental conflict with an applicable statute. This FONSI began on July 31, 2023 and accordingly proceeds under the 2020 regulations as modified by the Phase I revisions.

<sup>3</sup> NOAA Administrative Order (NAO) 216-6A "Compliance with the National Environmental Policy Act, Executive Orders 12114, Environmental Effects Abroad of Major Federal Actions; 11988 and 13690, Floodplain Management; and 11990, Protection of Wetlands" issued April 22, 2016 and the Companion Manual for NAO 216-6A "Policy and Procedures for Implementing the National Environmental Policy Act and Related Authorities" issued January 13, 2017.

a vessel towing an array of airguns<sup>4</sup> that produce low frequency sound pulses that penetrate deep into the subsurface and are then reflected and recorded by receivers to image deep geological features. The use of airgun arrays has the potential to result in behavioral harassment (Level B harassment) of 27 species of marine mammals in the form of startling or avoidance reactions, increased swimming speed, increased surfacing time, or decreased foraging, and for five species, auditory injury (Level A harassment).

Therefore, the action requires an authorization from NMFS for incidental taking pursuant to the MMPA. An authorization for incidental takings shall be granted if NMFS finds that the taking will be of small numbers, have a negligible impact<sup>5</sup> on the species or stock(s), and, where relevant, will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses. In addition, the IHA must set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the monitoring and reporting of such takings.

NMFS' issuance of this IHA allowing the taking of marine mammals, consistent with provisions under the MMPA and incidental to an applicant's lawful activities, is considered a major federal action. Therefore, NMFS conducted an environmental review of L-DEO's application and the NSF's Final EA and determined adopting this EA and preparing a separate IHA Determination is appropriate for NMFS' consideration to issue an IHA to L-DEO. This IHA Determination evaluates the context and intensity of the impacts on marine mammals associated with NMFS' consideration to issue this IHA to L-DEO and documents NMFS' determination to adopt the NSF's Final EA pursuant to 40 CFR 1506.3.

## II. BACKGROUND

The NSF is the federal agency that supports all fields of science and engineering (except medical sciences), and therefore, funds a variety of research projects across a wide-range of scientific disciplines, including oceanography. The NSF does this through grants and cooperative agreements issued to colleges, universities, businesses, scientific research organizations, and other federal agencies throughout the United States. The NSF does not own and operate research facilities or laboratories but does support National Research Centers, user facilities, certain oceanographic vessels, and Antarctic research stations. To support and fund scientific research, the NSF established several programs focused on basic and applied science and engineering research, for example, Geosciences. Each of their research programs forms the basis for specific research areas and projects, like the Division of Ocean Sciences-Marine Geology and Geophysics program in which the NSF may fund geophysical surveys in support of this program's priorities and objectives. Details about the NSF and their research programs are available at <https://www.nsf.gov/about/> and [https://www.nsf.gov/about/research\\_areas.jsp](https://www.nsf.gov/about/research_areas.jsp).

The NSF has funded marine-related research for over 50 years and has identified the need to continue funding marine-related geophysical surveys to enable scientists to collect data essential to understanding the complex Earth processes beneath the ocean floor. The NSF funds research

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<sup>4</sup> 2D data acquisition involves a single vessel towing a single acoustic array. The receiver(s) is towed behind the vessel on a long cable (streamer) or is placed on the ocean bottom (cables or nodes).

<sup>5</sup> NMFS defines "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)

based on proposals reviewed under its merit review process and identified as program priorities. Information about the NSF processes, procedures and outcomes, including the merit review process and results of NSF-funded research is available on the Internet at <https://www.nsf.gov/od/transparency/transparency.jsp>. Examples of NSF-funded marine-related research include:

- Studying source mechanisms, fault locations, and hazard potentials for large earthquakes and tsunamis along faults and segments of tectonic plate boundaries, allowing prioritization of tsunami and earthquake warning systems;
- Imaging to indicate how erosion and sedimentation have impacted and changed the size and shapes of the continental shelves over time;
- Examining the formation and evolution of volcanic islands, mid-ocean ridges, and igneous provinces;
- Studying the evolution and movement of tectonic plates; and
- Mapping the seafloor and its topographic relief and understanding the causes of submarine geologic structures.

The NSF is also responsible for environmental reviews of the research they propose to fund, associated with investigating the geology and geophysics of the seafloor. Therefore, the NSF prepares analyses under NEPA for these research activities. Historically, the NSF prepared EAs and/or Analyses for each research cruise on a project-specific basis. However, over time the NSF concluded that this approach was not conducive to a comprehensive assessment that considered funding multiple geophysical survey activities over larger geographical areas. The NSF determined a programmatic<sup>6</sup> approach was appropriate for a number of reasons. Data obtained from geophysical surveys can occur over large geographical areas, in any given ocean area, and there is inherent uncertainty regarding the timing and locations of site-specific surveys, survey specifics (e.g., equipment and vessels), as well as which research organization will conduct the survey<sup>7</sup>. In addition, the NSF and the U.S. Geological Service (USGS) determined a programmatic document would minimize duplication of effort when preparing environmental documentation because the USGS conducts the same or similar research activities and, as a federal agency, is also required to complete environmental reviews under NEPA.

Therefore, in June 2011, NSF completed a Programmatic Environmental Impact Statement/ Overseas Environmental Impact Statement for marine-related research funded by NSF or conducted by the U.S. Geological Survey (USGS) (herein “NSF/USGS 2011 Final PEIS”) and issued a Record of Decision in June 2012. The analysis in the NSF/USGS 2011 Final PEIS supports NSF planning-level decisions associated with their continuing need to fund marine-related research conducted by USGS and other research organizations and establishes the framework and parameters for subsequent analyses based on the programmatic review. While the

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<sup>6</sup> The concept of “programmatic” NEPA analysis is included in the CEQ regulations, which addresses analyses of “broad actions” and the “tiering” process. Programmatic NEPA reviews add value and efficiency to the decision-making process when they inform the scope of decisions and subsequent tiered NEPA reviews. Programmatic NEPA analyses can facilitate decisions on agency actions that precede project-specific decisions and action. They also provide information and analysis that can be incorporated by reference in future, tiered NEPA reviews.

<sup>7</sup> Approximately four to seven NSF-funded marine-related research cruises involving geophysical surveys are conducted annually, across the world’s oceans including the Northeast Pacific, Eastern Tropical Pacific, and Southwest Pacific, Gulf of Mexico, Caribbean Sea, Mid-Atlantic Ridge, North Atlantic, Norwegian Sea, Arctic Ocean, Bering Sea, and Gulf of Alaska, by research organizations and government agencies. However, details and specifics are unknown until proposals are submitted, reviewed, and approved under NSF’s merit process. For example, the final determination of specific cruise tracks depends on research objectives of proposals recommended for award during merit reviews, NSF’s research budget for a given fiscal year, and other factors such as vessel availability and environmental considerations.

level of activity proposed may vary from one year to the next, the action alternatives analyzed in the NSF/USGS 2011 Final PEIS represent the average range and level of marine-related research NSF anticipates funding and for which ITAs and other permits or authorizations may be required. NSF collaborated with USGS and NMFS (see explanations below) to prepare the evaluation of potential impacts of geophysical surveys on the human environment, including impacts to marine mammals. Information about NSF's programmatic approach is in Chapter 1, Section 1.4 of the NSF/USGS 2011 Final PEIS and the potential effects to marine mammals and the estimates of marine mammal acoustic exposures are in Chapter 3, Sections 3.1- 3.9. A copy of the NSF/USGS 2011 Final PEIS is available at [https://www.nsf.gov/geo/oce/envcomp/usgs-nsf-marine-seismic-research/nsf-usgs-final-eis-oeis\\_3june2011.pdf](https://www.nsf.gov/geo/oce/envcomp/usgs-nsf-marine-seismic-research/nsf-usgs-final-eis-oeis_3june2011.pdf).

### Cooperating Agencies

USGS participated in the development of the NSF/USGS 2011 Final PEIS and served as a cooperating agency because the scope of the proposed action and alternatives involved research activities that USGS conducts. USGS is the federal agency that maps public lands, examines geological structures, and evaluates mineral resources. USGS also provides information about the science of natural hazards and conducts scientific research on other natural resources such as water resources, and studies the health of ecosystems and the environmental health, including the impacts of climate and land use change.

NMFS, on behalf of NOAA, served as a cooperating agency due to NMFS' legal jurisdiction and special expertise for conservation and management of marine mammals. Through its role as a cooperating agency, NMFS did not propose or authorize any action. Instead, NMFS provided NSF with technical assistance and input regarding the analysis of impacts for protected resources. This included information regarding critical habitat and threatened and endangered species pursuant to the Endangered Species Act (ESA), marine mammals pursuant to the MMPA, and Essential Fish Habitat (EFH) and fishery resources pursuant to the Magnuson-Stevens Fishery Conservation and Management Act.

Regarding the current IHA application submitted by L-DEO, NSF completed an EA on September 26, 2023 that tiers to the NSF/USGS 2011 Final PEIS and provides the geophysical survey and site-specific level of analysis addressing potential impacts associated with NSF's proposal to fund L-DEO to conduct geophysical surveys in Puerto Rico. Impacts of the proposed geophysical survey activities to 27 species of marine mammals, including four listed as endangered, estimates of take based on NMFS-recommended criteria, and identification of mitigation and monitoring measures were the primary foci of the 2023 Final EA. The analysis in the Final EA also supports the ESA Section 7 consultation and the IHA application processes.

While NSF is the federal agency funding marine-related research projects, the USGS and others like L-DEO conduct the marine-related research projects NSF funds. Therefore, as the owner of the R/V Marcus G. Langseth<sup>8</sup>, L-DEO, on behalf of itself and NSF, submitted the application to NMFS for authorization to take a small number of marine mammals incidental to conducting the geophysical surveys.

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<sup>8</sup> Vessel to be used for the geophysical survey.

### III. PROPOSED ACTION AND ALTERNATIVES SUMMARY

#### A. NSF's Proposed Action

NSF is proposing to fund L-DEO to conduct geophysical surveys (high and low energy surveys) of the Puerto Rico Trench and southern slope, in the North Atlantic Ocean. The surveys will occur within the Exclusive Economic Zone (EEZ) and coastal zone of Puerto Rico, and the EEZs of the Dominican Republic, U.S. Virgin Islands and the British Virgin Islands, in water depths ranging from approximately 1,000 to 8,400 meters (m) for the high-energy survey portion and approximately 100 to 3,000 m for the low-energy survey portion, including 24 days of seismic data acquisition. The remainder of the survey duration would be involved in equipment deployment and retrieval and vessel transit. The surveys would use two different airgun configurations: (a) 36-airgun towed array with a total discharge volume of ~6600 in<sup>3</sup> at a depth of 12 m for the high-energy surveys, and (b) two 45/105-inches (in)<sup>3</sup> GI airguns with a total discharge volume of 90 in<sup>3</sup> off southern Puerto Rico at a depth of 3 m for the USGS low-energy surveys. Survey protocols generally involve a predetermined set of survey track lines. The vessel travels down a linear track for some distance until a line of data is acquired, then turns and acquires data on a different track. Representative survey tracklines are shown in Figure 1 of the NSF's 2023 EA for this project, but there may be deviation from these tracklines due to scientific drivers, poor data quality, inclement weather, or mechanical issues with the research vessel and/or equipment. These activities are expected to produce sound at levels that have the potential to adversely affect marine mammals.

#### B. NMFS' Proposed Action

Sections 101(a)(5)(A) and (D) of the MMPA allow NMFS to authorize the incidental, but not intentional, take of small numbers of marine mammals by harassment, provided certain determinations are made and statutory and regulatory procedures are met. To authorize the incidental take of marine mammals, NMFS evaluates the best available scientific and commercial information to determine whether the take will have a negligible impact on marine mammal species or stocks, will be of small numbers of individuals, and whether the activity will have an unmitigable impact on the availability of affected marine mammal species for subsistence use.

NMFS cannot issue an ITA if it will result in more than a negligible impact on marine mammals or stocks or will result in an unmitigable impact on subsistence uses. NMFS must also prescribe the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat, paying particular attention to rookeries, mating grounds, and other areas of similar significance. Where applicable, NMFS must prescribe means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. ITAs include additional requirements or conditions pertaining to monitoring and reporting.

Overview of the IHA parameters

On April 27, 2023, NMFS received a request from L-DEO for an IHA to take marine mammals incidental to marine geophysical surveys of the Puerto Rico Trench and southern slope of Puerto Rico, in the North Atlantic Ocean. The application was deemed adequate and complete on July 27, 2023. L-DEO's request is for the take of 27 species of marine mammals by Level B harassment and, for five of these species, by Level A harassment. Neither L-DEO, nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. Therefore, NMFS' proposed action is a direct outcome of L-DEO's request for an IHA and will authorize take of marine mammals incidental to the activities analyzed in the 2023 Final EA. Species information is available in Table 1 below.

**Table 1 – Species Likely Impacted by the Specified Activities**

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	Modeled abundance <sup>4</sup>	PBR	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)							
Family Balaenopteridae (rorquals)							
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; N	1,396 (0; 1,380; 2016)	4,990	22	12.15
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,802 (0.24; 5,573; 2016)	11,672	11	1.8
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.02; 3,098; 2016)	19,530	6.2	0.8
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	13,784	170	10.6
Blue whale	<i>Balaenoptera musculus</i>	Western North Atlantic	E/D; Y	unk (unk; 402; 1980-2008)	191	0.8	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)							
Family Physeteridae							
Sperm whale	<i>Physeter macrocephalus</i>	North Atlantic	E/D; Y	4,349 (0.28; 3,451; 2016)	64,015	3.9	0
Family Kogiidae							
Pygmy sperm whale	<i>Kogia breviceps</i>	Western North Atlantic	-/-; N	7,750 (0.38; 5,689; 2016)	26,043	46	0
Dwarf sperm whale	<i>Kogia sima</i>	Western North Atlantic	-/-; N				
Family Ziphiidae (beaked whales)							
Cuvier's beaked Whale	<i>Ziphius cavirostris</i>	Western North Atlantic	-/-; N	5,744 (0.36; 4,282; 2016)	65,069	43	0.2
Blainville's beaked Whale	<i>Mesoplodon densirostris</i>	Western North Atlantic	-/-; N	10,107 (0.27; 8,085; 2016) <sup>4</sup>		81 <sup>4</sup>	0 <sup>4</sup>
True's beaked whale	<i>Mesoplodon mirus</i>	Western North Atlantic	-/-; N				

Gervais' beaked whale	<i>Mesoplodon europaeus</i>	Western North Atlantic	-/-; N				
Family Delphinidae							
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	-/-; Y	28,924 (0.24; 23,637; 2016)	264,907	236	136
Rough-toothed dolphin	<i>Steno bredanensis</i>	Western North Atlantic	-/-; N	136 (1.0; 67; 2016)	32,848	0.7	0
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.23; 51,914, 2016)	418,151	519	28
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Western North Atlantic	-/-; N	6,593 (0.52; 4,367; 2016)	321,740	44	0
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	-/-; N	39,921 (0.27; 32,032; 2016)	259,519	320	0
Spinner dolphin	<i>Stenella longirostris</i>	Western North Atlantic	-/-; N	4,102 (0.99; 2,045; 2016)	152,511	21	0
Clymene dolphin	<i>Stenella clymene</i>	Western North Atlantic	-/-; N	4,237 (1.03; 2,071; 2016)	181,209	21	0
Striped dolphin	<i>Stenella coeruleoalba</i>	Western North Atlantic	-/-; N	67,036 (0.29; 52,939; 2016)	412,729	529	0
Fraser's dolphin	<i>Lagenodelphis hosei</i>	Western North Atlantic	-/-; N	unk	19,585	unk	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,215(0.19; 30,051; 2016)	78,205	301	34
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,947 (0.21; 145,216; 2016)	473,260	1,452	390
Melon-headed whale	<i>Peponocephala electra</i>	Western North Atlantic	-/-; N	unk	64,114	unk	0
Pygmy killer whale	<i>Feresa attenuate</i>	Western North Atlantic	-/-; N	unk	9,001	unk	0
False killer whale	<i>Pseudorca crassidens</i>	Western North Atlantic	-/-; N	1,791 (0.56; 1,154; 2016)	12,682	12	0
Killer whale	<i>Orcinus orca</i>	Western North Atlantic	-/-; N	unk	972	unk	0

<sup>1</sup> ESA status: Endangered (E), Threatened (T). MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup> NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region/>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance; unknown (unk).

<sup>3</sup> These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual mortality or serious injury (M/SI) often cannot be determined precisely and is in some cases presented as a minimum value or range.

<sup>4</sup>Modeled abundance value from U.S Navy Atlantic Fleet Training and Testing Area Marine Mammal Density (AFTT) (Roberts *et al.*, 2023; Mannocci *et al.*, 2017)

### C. Alternatives Considered by NSF

NSF analyzed the proposed action and the No Action Alternative. In addition, they considered two other alternatives, Alternatives E1 and E2, but eliminated them from further analysis.

Alternative E1 would have been to conduct all the scientific research described in the Proposed Action (III. A above), in an alternative location. However, earthquake and tsunami hazards associated with Puerto Rico can only be addressed by imaging structures across the Puerto Rico Trench and nearby regions. The locations of the profiles are chosen to sample crust characterized by contrasting properties such as obliquity on plate convergence orientation of abyssal hill fabric, and location of historic and recent seismic activity. The Puerto Rico Trench is associated with anomalous, and hitherto unexplained characteristics, such as the widest trench (below 6000 m) and the lowest gravity anomaly on Earth, and anomalous subsidence of the north coast of Puerto Rico. The proposed science underwent the NSF merit review process, and the science, including the site location, was determined to be meritorious. This alternative action was considered but ultimately eliminated from further analysis. Additional explanation concerning the Alternative Location Alternative is in section 2.3.1 of the Final EA.

Alternative E2 would have been to conduct all the scientific research described in the Proposed Action (III. A above), using alternative technologies to seismic airguns to complete the surveys. Under this alternative, L-DEO would use alternative survey techniques, such as marine vibroseis, that could potentially reduce impacts on the marine environment. However, NSF deemed these technologies as not feasible, commercially viable, or appropriate to meet the purpose and need of the study. This alternative action was considered but ultimately eliminated from further analysis. Additional explanation concerning the Use of Alternative Technologies Alternative is in section 2.3.2 of the Final EA.

Under the "No Action" alternative, NSF would not support the L-DEO to conduct the marine geophysical surveys in Puerto Rico. and L-DEO and NMFS would not issue an IHA. The consideration and analysis of this alternative is included for presenting a comparative analysis to the action alternative, in accordance with 40 CFR 1502.14. Additional explanation concerning the No Action Alternative is in Section 2.2 of the Final EA.

### D. Alternatives Considered by NMFS

In accordance with NEPA and the 2020 Council on Environmental Quality (CEQ) NEPA regulations as modified by the Phase I 2022 revisions, NMFS is also required to consider a reasonable range of alternatives to a proposed action. Since NMFS is adopting the NSF's Final EA, it reviewed this document to determine whether it met this requirement. NMFS determined the NSF's analysis of alternatives in their Final EA is adequate for purposes of NEPA and the CEQ regulations and therefore chose not to supplement this EA by developing and evaluating additional alternatives. However, based on the statutory framework explained in Section III,



paragraph B above, NMFS considers two alternatives, a No Action Alternative, in which NMFS denies L-DEO's application, and an Action Alternative, in which it grants the application and issues an IHA to L-DEO. Thus, the alternatives analysis (Section 2) in the NSF's Final EA supports NMFS' alternatives described below.

**No Action Alternative:** For NMFS, denial of an MMPA authorization constitutes the NMFS No Action alternative, which is consistent with our statutory obligation under the MMPA to grant or deny ITA requests and to prescribe mitigation, monitoring, and reporting with any authorizations. Under NMFS' No Action alternative, NMFS would not issue the IHA to L-DEO, and NMFS assumes L-DEO would not conduct the geophysical surveys as described in their application and NSF's 2023 Final EA. The No Action Alternative served as a baseline in the EA against which the impacts of the Preferred Alternative were compared and contrasted.

**Action Alternative:** NMFS would issue the IHA to L-DEO authorizing take of marine mammals incidental to the subset of activities described under NSF's preferred alternative (Section 2.1 in the Final EA), with the mitigation and monitoring in Section 2.1.3 of the 2023 Final EA and in NMFS' Federal Register notice of proposed IHA under "Summary of Request" and "Description of Proposed Activity" and the "Proposed Mitigation" and "Proposed Monitoring and Reporting" sections.

#### **IV. ENVIRONMENTAL REVIEW**

NMFS independently reviewed the 2023 Final EA and concludes the impacts evaluated by the NSF are substantially the same as the impacts of NMFS' proposed action to issue an IHA for the take of marine mammals incidental to the geophysical surveys funded by NSF but conducted by L-DEO. NMFS has determined that the 2023 Final EA contains an adequate evaluation of the direct, indirect, and cumulative impacts on marine mammals, including species listed under the ESA, and the marine environment. The 2023 Final EA also addresses NOAA's required components for adoption because it meets the requirements for an adequate EA under the CEQ regulations and NOAA policy and procedures.

#### **V. PUBLIC INVOLVEMENT**

During the development of the NSF/USGS 2011 Final PEIS, the public had opportunities to comment during the scoping period in 2005 and during the public comment period (October 8, 2010 – November 22, 2010). The details concerning public involvement and public comments associated with the NSF/USGS 2011 Final PEIS are in Chapter 1, Section 1.9 of the 2011 Final PEIS. NSF also posted their 2023 Draft EA for the geophysical survey on their website and notified relevant groups of its availability.

NMFS did not participate as a cooperating agency during the development of the NSF's 2023 Final EA. Regarding the current IHA under consideration, NMFS relied substantially on the public process pursuant to the MMPA to develop and evaluate environmental information relevant to an analysis under NEPA. NMFS made the IHA application available for public review and comment and, separately, published the proposed IHA in the Federal Register (FR)

on August 21, 2023 (88 FR 56964). There, NMFS notified the public of its intent to use the MMPA public review process for the proposed IHA to solicit relevant environmental information and provide the public an opportunity to submit comments. In addition, NMFS indicated that it was appropriate and intended to adopt NSF's Final EA and posted the document online with the publication of the proposed IHA.

NMFS did not receive any comments in response to the publication of the proposed IHA. Therefore, NMFS did not make any changes to its analysis in response to public comments.

## **VI. ANALYSIS SUMMARY**

The environmental consequences to the marine environment and protected resources are important to the evaluation leading to the decision to issue any given ITA. In particular, because NMFS' action is specific to authorizing incidental take of marine mammals, the key factors relevant to, and considered in a decision to issue any given ITA, are related to NMFS' statutory mission under the MMPA. The information in the following subsections discusses key factors considered in the analysis in the EA along with the evaluation and reasons why the impacts of our proposed action will not significantly impact the quality of the human environment.

### **A. Environmental Consequences**

In the Final EA, NSF presented the baseline environmental conditions and impacts for affected resources in the survey area. The affected environment and environmental consequences are in Sections 3.1-3.9 and 4.1. Since the anticipated impacts of NMFS' issuance of an IHA to L-DEO are to marine mammals, which, if affected, would be through the introduction of sound into the marine environment during geophysical surveys, the analysis in the NSF Final EA specifically describes and addresses potential acoustic impacts to marine mammals, such as masking, stress, and behavioral response (Section 4.1.1 of the Final EA). NSF assessed impacts to marine mammals through both acoustic exposure estimates and a qualitative assessment based on a review of literature primarily on acoustic impacts to marine mammals (Section 4.1.1 of the Final EA).

The Summary of Potential Effects of Airgun Sounds section (4.1.1.1) in NSF's Final EA contains the majority of the analysis that relates to NMFS' action of issuing the IHA to L-DEO. This includes an assessment by NSF that included a qualitative evaluation of potential impacts to marine mammals, including descriptions of the potential acoustic impacts used to indicate at what received sound levels marine mammals will experience certain effects (equivalent to regulatory definitions of harassment pursuant to the MMPA). Other subsections contain analyses related to potential impacts on marine mammal habitat and prey, along with the potential for cumulatively significant impacts to marine mammals, all of which supports this analysis for issuance of the IHA to L-DEO. The principal types of impacts from the seismic airguns are limited to underwater noise (and its effects on marine biota). L-DEO's surveys are expected to result in sound levels that may affect marine mammals; these effects are expected to be limited to behavioral harassment (Level B harassment) and potential auditory injury (Level A harassment).

The anticipated impacts of L-DEO's surveys associated with the proposed action are primarily from increased levels of underwater sound resulting from impulsive acoustic sources. The analysis in the NSF Final EA indicated these impacts will be highly localized and of short duration.

Underwater sound associated with the surveys could have an effect on the wildlife in the Study Area. As such, NSF's Final EA analyzed the impacts to marine mammals with other impacts on wildlife including fish, marine birds, invertebrates, and EFH. The Final EA concludes the impacts associated with the proposed action are minor, temporary and not significant, including impacts on species listed under the ESA. No marine mammals are anticipated to be exposed to sound levels resulting in injury or mortality during the conduct of the geophysical surveys.

## **VII. PURPOSE OF FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

NEPA requires the preparation of an Environmental Impact Statement (EIS) for any proposal for a major federal action significantly affecting the quality of the human environment. 42 U.S.C. 4332(C). The CEQ regulations direct agencies to prepare a Finding of No Significant Impact (FONSI) when an action not otherwise excluded will not have a significant impact on the human environment. 40 CFR 1500.4(b), 1500.5(b), and 1501.6. To evaluate whether a significant impact on the human environment is likely, the CEQ regulations direct agencies to analyze the potentially affected environment and the degree of the effects of the proposed action. 40 CFR 1501.3(b). In doing so, agencies should consider the geographic extent of the affected area (i.e., national, regional or local), the resources located in the affected area (40 CFR 1501.3(b)(1)), and whether the project is considered minor or small-scale (Companion Manual [CM] for NOAA Administrative Order [NAO] 216-6A, Appendix A-2). In considering the degree of effect on these resources, agencies should examine, as appropriate, short- and long-term effects, beneficial and adverse effects, and effects on public health and safety, as well as effects that would violate laws for the protection of the environment (40 CFR 1501.3(b)(2)(i)-(iv); NAO 216-6A CM Appendix A-2 - A-3), and the magnitude of the effect (e.g., negligible, minor, moderate, major). CEQ identifies specific criteria for consideration. 40 CFR 1501.3(b)(2)(i)-(iv). Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

In preparing this FONSI, we reviewed *Final Environmental Assessment/Analysis of Marine Geophysical Surveys by R/V Marcus G. Langseth of the Puerto Rico Trench and Southern Slope of Puerto Rico, Northwest Atlantic Ocean* which evaluates the affected area, the scale and geographic extent of the proposed action, and the degree of effects on those resources (including the duration of impact, and whether the impacts were adverse and/or beneficial and their magnitude). The EA is hereby incorporated by reference. 40 CFR 1501.6(b).

## **VIII. APPROACH TO ANALYSIS**

The proposed action is not considered to meaningfully contribute to a significant impact based on scale of impact, as the action and related impacts are temporary. NMFS only expects intermittent, localized impacts on marine mammals and their habitat because survey duration will be limited to 42 days and only cover a portion of the region's coastline and surrounding waters.

The proposed action will not meaningfully contribute to significant impacts to specific resources. NMFS only anticipates that marine mammals might be displaced temporarily, and will not permanently vacate any areas, due to the harassment authorized in this IHA. NMFS expects natural processes and the environment to recover from any such displacement.

The proposed action is not connected to other actions that have caused or may cause effects to the resources in the affected area, and there is no potential for the effects of the proposed action to add to the effects of other projects, such that the effects taken together could be significant.

## **IX. GEOGRAPHIC EXTENT AND SCALE OF THE PROPOSED ACTION**

The proposed surveys would occur within approximately 17-21° N, 63.6-68.2° W, within the EEZ of Puerto Rico, U.S. Virgin Islands, British Virgin Islands, and the Dominican Republic, in water depths ranging from approximately 100–8400 m. The closest approach of the proposed low-energy survey lines to land on the south side of Puerto Rico is ~2.5 km from Isla de Ratones (Isla Piñero), ~3.4 km from Cayo Maria Langa, and ~3 km from Cayo Aurora. The closest approach of the high-energy survey lines to the coast of Puerto Rico is ~22 km, 28 km to the British Virgin Islands, 42 km to Dominican Republic, and 77 km to the U.S. Virgin Islands, in depths ranging from 100-8,400 m deep. The Final EA describes the proposed survey area, and the environmental effects analyzed in the Final EA occur at a relatively small scale.

## **X. DEGREE OF EFFECT**

### *A. The potential for the proposed action to threaten a violation of Federal, state, or local law, or requirements imposed for environmental protection.*

The issuance of this IHA to L-DEO will not violate any federal, state, or local laws for environmental protection. NMFS' compliance with environmental laws and regulations is based on NMFS' action and the nature of the applicant's activities. NMFS complied with the MMPA's requirements in issuing this IHA. NMFS also consulted under Section 7 of the ESA to determine if the issuance of this IHA will likely jeopardize the continued existence of listed species or result in an adverse modification of critical habitat. The consultation concluded that issuance of an IHA will not jeopardize any listed species or destroy or adversely modify critical habitat. NSF and L-DEO fulfilled their responsibilities under the MMPA for this action and will be required to obtain any additional federal, state, and local permits necessary to carry out the proposed geophysical survey activities.

### *B. The degree to which the proposed action is expected to affect public health or safety.*

The issuance of this IHA to L-DEO to authorize take of marine mammals is not likely to affect public health or safety because the proposed survey area will take place in offshore areas and are unlikely to overlap with activities conducted by the public. NMFS is only authorizing the take of marine mammal species associated with this research, which does not involve the public or expose the public directly (e.g., chemicals, diseases) or indirectly (e.g., food sources) to

hazardous or toxic materials in a way that will be linked to the quality of the environment and well-being of humans.

C. *The degree to which the proposed action is expected to affect a sensitive biological resource, including:*

a. *Federal threatened or endangered species and critical habitat;*

The proposed geophysical surveys may have the potential to adversely affect the following marine mammal species listed as threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*): the sei whale, fin whale, blue whale, and sperm whale. The Protected Resources Permits and Conservation Division initiated a Section 7 consultation with the NMFS Office of Protected Resources ESA Interagency Corporation Division (PR5) in October 2023. Protected Resources Interagency Cooperation Division issued a Biological Opinion concluding that the issuance of an IHA to L-DEO for the geophysical surveys is not likely to jeopardize the continued existence of any ESA-listed species. No critical habitat has been established for any species within the survey area.

To reduce the potential for disturbance from the activities, L-DEO and the other research partners would implement several monitoring and mitigation measures for marine mammals, which are enforceable through the final IHA and the Biological Opinion's Terms and Conditions. Taking these measures into consideration, NMFS expects that the responses of marine mammals to the Preferred Alternative would primarily be in the form of temporary displacement from the area and/or short-term behavioral changes, falling within the MMPA definition of "Level B harassment." NMFS does not anticipate that take by serious injury or mortality would occur, nor has NMFS authorized take by serious injury or mortality. Thus, NMFS expects that impacts would be at the lowest level practicable due to the incorporation of the proposed mitigation measures.

b. *Stocks of marine mammals as defined in the Marine Mammal Protection Act;*

In addition to considering estimates of the number of marine mammals that might be taken through harassment, NMFS considered 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. NMFS also assessed the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the 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).

L-DEO calculated the estimated number of animals that will be taken by Level A and Level B harassment from the acoustic sources using the density data from

Roberts *et al.*, (2023) and Mannocci *et al.*, 2017. The numbers of marine mammals that NMFS proposes for authorized take will be considered small relative to the relevant populations.

Additionally, the proposed activity is temporary. and of relatively short duration. Potential adverse effects on prey species will also be temporary and spatially limited. No mortality is anticipated or authorized. Furthermore, alternate areas of similar habitat value for affected marine mammals will be available, allowing animals to temporarily vacate the affected areas to avoid exposure to sound. For these reasons, impacts resulting from this activity are not expected to adversely affect the marine mammal species or stocks as defined in the MMPA. Accordingly, NMFS determined that the specified activity will have a negligible impact on the affected species and stocks of marine mammals.

*c. Essential fish habitat identified under the Magnuson-Stevens Fishery Conservation and Management Act;*

NSF described EFH that exists in the action area in Section 3.6 of the Final EA. NMFS does not expect the issuance of an IHA for the take of marine mammals incidental to the conduct of geophysical survey activities would cause substantial damage to the ocean and coastal habitats and/or EFH because the IHA is limited to the take of marine mammals incidental to geophysical survey activities. Similarly, the mitigation and monitoring measures required by the IHA for L-DEO's proposed activities are limited to actions that minimize take of marine mammals and improve monitoring of marine mammals, and do not alter any aspect of the activity itself.

*d. Bird species protected under the Migratory Bird Treaty Act;*

The proposed action would not significantly affect bird species, because the Final EA (see section 4.1), and previous NEPA analyses, found that direct impacts on birds, notably seabirds, are minimal to non-existent in geophysical surveys, such as the proposed action, because any transitory disturbance would be short lived. There is no discernable difference between the effects of the Alternatives on seabirds.

*e. National marine sanctuaries or monuments;*

There are no National Marine Sanctuaries or Monuments within the proposed study area. The nearest sanctuary or monument is the Florida Keys and is approximately 1,856 km away and well outside the affected environment for this action.

*f. Vulnerable marine or coastal ecosystems, including, but not limited to, shallow or coral ecosystems;*

NMFS' proposed action is the authorization of the taking of marine mammals incidental to geophysical surveys in Puerto Rico. Issuance of the IHA will not result in impacts to the vulnerable marine or coastal ecosystems, as it will only authorize harassment to marine mammals. NMFS does not expect the issuance of

an IHA for the take of marine mammals incidental to L-DEO's surveys will cause substantial damage to marine or coastal habitats. The Study Area is in mostly deep waters of Puerto Rico, well offshore of any coastal habitat. The IHA is limited to the take of marine mammals incidental to survey activities and does not authorize the activity itself, thus it is limited to activities that do not have an effect on vulnerable marine or coastal ecosystems. Therefore, no impacts to marine habitats or coastal habitats are expected. Mitigation and monitoring measures required by the IHA for L-DEO's proposed research activities are limited to actions that minimize take of marine mammals and improve monitoring of marine mammals, and do not alter any aspect of the activity itself.

*g. Biodiversity or ecosystem functioning (e.g., benthic production, predator-prey relationships, ect.)*

NMFS does not expect that the action of issuing an IHA to L-DEO will have a substantial impact on biodiversity and/or ecosystem function within the Study Area. The impacts of the proposed action on marine mammals are specifically related to the sound produced by seismic airguns. Any impacts are expected to be limited to behavioral reactions (e.g., avoidance), and only during times when acoustic sources are active. Marine mammals may forage in the vicinity of the acoustic sources, and this behavior may be affected, but no substantial predator-prey relationships will be substantially changed. Any impacts will be temporary and localized in nature and not result in substantial impacts to marine mammals or to their role in the ecosystem. The IHA will authorize the Level A harassment of five species and Level B harassment of 27 marine mammal species, and neither serious injury nor mortality will be authorized.

*D. The degree to which the proposed action is reasonably expected to affect a cultural resource: properties listed or eligible for listing on the National Register of Historic Places; archeological resources (including underwater resources); and resources important to traditional cultural and religious tribal practices.*

No significant impacts are expected to occur in any of the above areas for the following reasons. NMFS' proposed action is limited to the authorization to harass marine mammals consistent with the MMPA definition of "Level A and Level B harassment." Therefore, there is no potential to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural, or historical resources. In addition, the Study Area lies outside of U.S. territorial waters, in the U.S. Exclusive Economic Zone (EEZ)s of Puerto Rico, U.S. Virgin Islands, and the EEZs of British Virgin Islands, and the Dominican Republic. No significant scientific, cultural, or historical resources are known to exist in the Study Area.

*E. The degree to which the proposed action has the potential to have a disproportionately high and adverse effect on the health or the environment of minority or low-income communities, compared to the impacts on other communities (EO 12898).*

NMFS does not expect the proposed geophysical survey to disproportionately affect minority and low-income communities. As stated above, Study Area lies outside of U.S. territorial waters, in the U.S. Exclusive Economic Zone (EEZ)s of Puerto Rico, U.S. Virgin Islands, and the EEZs of British Virgin Islands, and the Dominican Republic.

F. *The degree to which the proposed action is likely to result in effects that contribute to the introduction, continued existence, or spread of noxious weeds or nonnative invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of the species.*

The proposed action is not expected to import, introduce, or contribute to the spread of noxious weeds or nonnative species, as equipment that could cause such effects will not be used. Moreover, the IHA does not mandate marine transits outside of the local area or have any relation to bilge water or other potential causes of the introduction or spread of a nonnative species.

G. *The potential for the proposed action to cause an effect to any other physical or biological resources where the impact is considered substantial in magnitude (e.g., irreversible loss of coastal resources such as marshland or seagrass), or over which there is substantial uncertainty or scientific disagreement.*

The proposed action is not expected to cause a substantial effect to any other physical or biological resource, nor is there substantial uncertainty or scientific disagreement on the impacts of the proposed action, based on the following reasons. The potential risks associated with the issuance of the IHA are not unique or unknown, nor is there significant uncertainty about impacts. NMFS has issued authorizations for similar activities or activities with similar types of marine mammal harassment in the Atlantic, Pacific, and Southern Oceans and the Mediterranean Sea, and conducted NEPA analyses on those projects. The scope of this action is not substantially different from past geophysical surveys and is not unusually large or substantial, and would include the same or similar mitigation and monitoring measures required in past surveys. Therefore, NMFS expects any potential effects from the issuance of the IHA to be similar to prior activities, which are not likely to be highly uncertain or involve unique or unknown risks.

## **XI. OTHER ACTIONS INCLUDING CONNECTED ACTIONS**

The EA and the documents it references analyzed the impacts of the issuance of an IHA for the take of marine mammals incidental to the conduct of marine geophysical surveys in light of other human activities within the study area. These activities are described in Section 4.1.5 of the Final EA. The limited duration of the proposed seismic survey (maximum of 24 days of seismic operations) would be expected to result in only a negligible or minor increase in overall disturbance effects on marine animals and would result in no increase in serious injuries or mortality to marine mammals.

## **XII. MITIGATION AND MONITORING**



NMFS does not authorize the geophysical surveys proposed by NSF and L-DEO, however, NMFS does authorize the incidental take of marine mammals under its jurisdiction in connection with these activities and prescribes, where applicable, the methods of taking and other means of effecting the least practicable impact on the species and stocks and their habitats. NMFS' issuance of this IHA is thus conditioned upon reporting requirements and the implementation of mitigation and monitoring designed to reduce impacts to marine mammals to the level of least practicable impact. These conditions are summarized below and are described in detail in Section 2 of NSF's Final EA as well as the proposed IHA, available on NMFS's website (at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-research-and-other-activities>) and include:

- Visual mitigation monitoring;
- Passive acoustic monitoring;
- Establishment of a shutdown zone and buffer zone;
- Shutdown procedures;
- Ramp-up procedures;
- Vessel strike avoidance measures;
- Documentation of the number and species of marine mammals exposed and behavior and responses of marine mammals; and
- Submission of a monitoring report to NMFS.

### XIII. DETERMINATION

The CEQ NEPA regulations, 40 CFR 1501.6, direct an agency to prepare a FONSI when the agency, based on the EA for the proposed action, determines not to prepare an EIS because the action will not have significant effects. In view of the information presented in this document and the analysis contained in the supporting EA prepared for the 2023 geophysical surveys in Puerto Rico in the North Atlantic Ocean, it is hereby determined that the geophysical surveys in Puerto Rico will not significantly impact the quality of the human environment. NSF's *Final Environmental Assessment/Analysis of Marine Geophysical Surveys by R/V Marcus G. Langseth of the Puerto Rico Trench and Southern Slope of Puerto Rico, Northwest Atlantic Ocean* is hereby incorporated by reference. In addition, all beneficial and adverse impacts of the proposed action as well as mitigation measures have been evaluated to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

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For Kimberly Damon-Randall  
Director, Office of Protected Resources  
National Marine Fisheries Service

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Date