UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT
GULF OF AMERICA OCS REGION
NEW ORLEANS, LOUISIANA

SITE-SPECIFIC ENVIRONMENTAL ASSESSMENT

OF
EXPLORATION PLAN
NO. N-10264

FOR

ANADARKO PETROLEUM CORPORATION

FEBRUARY 12, 2026

RELATED ENVIRONMENTAL DOCUMENTS

Gulf of Mexico OCS Oil and Gas Lease Sales: 2017-2022
Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261.
Final Multisale Environmental Impact Statement
(OCS EIS/EA BOEM 2017-009)

Gulf of Mexico OCS Lease Sale: Final Supplemental Environmental Impact Statement 2018
(OCS EIS/EA BOEM 2017-074)

Biological Opinion Oil and Gas Leasing, Exploration, Development, Production, Decommissioning, and All Related Activities in the Gulf of Mexico Outer Continental Shelf
(FWS, April 20, 2018)

Gulf of Mexico Catastrophic Spill Event Analysis: High-Volume, Extended-Duration Oil Spill Resulting from Loss of Well Control on the Gulf of Mexico Outer Continental Shelf; 2nd Revision
(OCS Report BOEM 2021-007)

Biological Environmental Background Report for the Gulf of Mexico OCS Region
(OCS Report BOEM 2021-015)

Gulf of Mexico OCS Oil and Gas Leasing Greenhouse Gas Emissions and Social Cost Analysis
(Technical Report BOEM 2022-056)

Gulf of Mexico OCS Oil and Gas Lease Sales 259 and 261: Final Supplemental Environmental Impact Statement
(OCS EIS/EA BOEM 2023-001)

Biological and Conference Opinion on Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement's Oil and Gas Program Activities in the Gulf of America
(NMFS, May 20, 2025)

Gulf of America Regional OCS Oil and Gas Lease Sales and Post Lease Activities Final Programmatic Environmental Impact Statement (2025 GOA PEIS) (OCS EIS/EA BOEM 2025-042)

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

The Bureau of Ocean Energy Management (BOEM) has prepared a Site-Specific Environmental Assessment (SEA) (No. N-10264) complying with the National Environmental Policy Act (NEPA) at 42 United States Code (U.S.C.) §§ 4321 et seq. The United States Department of the Interior (DOI) NEPA implementing regulations at 43 Code of Federal Regulations (CFR) Part 46 and BOEM policy require an evaluation of proposed major Federal actions, which under BOEM jurisdiction includes approving a plan for oil and gas exploration or development activity on the Outer Continental Shelf (OCS).

Secretary of the Interior Doug Burgum issued Secretary's Order 3423, which directed the renaming of the Gulf of Mexico to the Gulf of America. As a result, BOEM updated existing content while legacy content such as previously published reports, studies, and NEPA documents remain unchanged.

The potential effects or impacts caused by similar actions to that proposed were examined at a basin-wide scale on the OCS in the following documents, from which this SEA is tiered:

- *Gulf of Mexico OCS Oil and Gas Lease Sales: 2017-2022 Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261 – Final Multisale Environmental Impact Statement* (2017-2022 GOM Multisale EIS) (OCS EIS/EA BOEM 2017-009);
- *Gulf of Mexico OCS Lease Sale Final Supplemental Environmental Impact Statement 2018 (2018 GOM Supplemental EIS) (OCS EIS/EA BOEM 2017-074);*
- *Gulf of Mexico OCS Oil and Gas Lease Sales 259 and 261. Final Supplemental Environmental Impact Statement 2023 (2023 SEIS) (USDOI, BOEM 2023-001)*

This SEA also considers the impacts of the proposed action and incorporates by reference the evaluations below:

- *Gulf of Mexico Catastrophic Spill Event Analysis: High-Volume, Extended-Duration Oil Spill Resulting from Loss of Well Control on the Gulf of Mexico Outer Continental Shelf; 2nd Revision (Gulf of Mexico Catastrophic Spill Event Analysis) (OCS Report BOEM 2021-007);*
- *Biological Environmental Background Report for the Gulf of Mexico OCS Region (BEBR) (OCS Report BOEM 2021-015);*
- *Gulf of Mexico OCS Oil and Gas Leasing Greenhouse Gas Emissions and Social Cost Analysis (Technical Report BOEM 2022-056);*
- *Biological Opinion Oil and Gas Leasing, Exploration, Development, Production, Decommissioning, and All Related Activities in the Gulf of Mexico Outer Continental Shelf (2018 FWS BiOp) (Issued by United States Fish and Wildlife Service [FWS] on April 20, 2018) and as amended on March 28, 2025;*

- *Biological and Conference Opinion on Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement's Oil and Gas Program Activities in the Gulf of America (NMFS, May 20, 2025)*
- *Gulf of America Regional OCS Oil and Gas Lease Sales and Post Lease Activities Final Programmatic Environmental Impact Statement (2025 GOA PEIS) (OCS EIS/EA BOEM 2025-042).*

Proposed Activities: Anadarko Petroleum Corporation's (Anadarko) Initial Exploration Plan (EP) for drilling operations on the OCS proposes to explore for hydrocarbons by drilling and completing fifteen exploratory wells and installing subsea wellheads (Proposed Action). The surface locations of the wells are in East Breaks Blocks 685 and 686, Leases OCS-G 37127 and 37128 in the Western Planning Area:

- East Breaks Block 641 – wells A, AA and AAA
- East Breaks Block 685 – wells A, AA, AAA, AAAA, AAAAA, B, BB, C and CC
- East Breaks Block 686 – wells B, BB, and BBB

The Proposed Action is located south of Galveston, Texas, approximately 111 miles (mi) (179 kilometers [km]) from the nearest shoreline in Matagorda County, Texas. The water depth at the proposed project area ranges from 3,676 - 3,687 feet (ft) (1,120 - 1,124 meters [m]). Anadarko proposes using either a Dynamically Positioned (DP) semisubmersible or a drillship, mobile offshore drilling units (MODU), to drill these wells.

Resources and Impacts Considered: The impact analysis focused on the exploration activities and the resources that may be potentially impacted. The impact producing factors (IPF) include (1) bottom disturbances, (2) waste and discharges, (3) noise, (4) vessel traffic, (5) air emissions, (6) spill and spill response, and (7) marine trash and debris.

In the Initial EP, Anadarko has included all required mitigation measures (e.g., lease stipulations and 2025 NMFS BiOp terms and conditions and reasonable and prudent measures) and regulatory guidance as part of its Proposed Action. BOEM has assessed the impacts of the Proposed Action on the following resources:

- air quality;
- offshore water quality;
- benthic communities;
- marine mammals;
- sea turtles;
- fish resources and essential fish habitat (EFH);
- marine and coastal birds;
- archaeological resources;

- human/socioecomic resources; and
- other marine uses.

Based on the site-specific analysis, the Proposed Action would result in negligible to minor impacts to marine mammals and sea turtles because the resources may be present at times or located near where activities will take place or would be potentially impacted from proposed activities. Based on the site-specific analysis and because all required mitigation measures and regulatory guidance are incorporated into the Proposed Action, no additional mitigation measures are required at this time. As a result, in this SEA, BOEM has considered two alternatives: (1) No Action and (2) Proposed Action.

In the N-10264 EP, and in accordance with lease terms and applicable regulations and guidance, Anadarko has committed to employ required mitigation measures to address potential impacts to air quality, water quality, benthic communities, marine mammals, sea turtles, fish resources and EFH, and archaeological resources from the Proposed Action. Therefore, BOEM has determined that any remaining impacts would have no or negligible impact, and BOEM has selected Alternative 2, Proposed Action, and will not require additional mitigation measures as conditions of approval (COAs). Below are the required mitigation measures:

- **COMPLIANCE WITH BIOLOGICAL OPINION TERMS AND CONDITIONS AND REASONABLE AND PRUDENT MEASURES:** This approval is conditioned upon compliance with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025 (2025 NMFS BiOp). This compliance includes mitigation, particularly any Terms and Conditions applicable to the plan, as well as record-keeping and reporting sufficient to allow BOEM and BSEE to comply with reporting and monitoring requirements under the BiOp, and any additional reporting required by BOEM or BSEE developed as a result of BiOp implementation. The 2025 NMFS BiOp may be found here: https://www.fisheries.noaa.gov/resource/document/biological-and-conference-opinion-bureau-ocean-energy-management-and-bureau. The BiOp Attachments and Appendices may be found here: https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **MARINE DEBRIS PROTOCOL**: The applicant will follow the protocols provided under Attachment 2 (A.2): Marine Debris Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **VESSEL-STRIKE AVOIDANCE AND INJURED AND/OR DEAD AQUATIC PROTECTED SPECIES REPORTING PROTOCOLS:** The applicant will follow the protocols provided under Attachment 3 (A.3): Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **IN-WATER LINE PRECAUTION PROTOCOL:** The applicant will follow the protocols provided under Attachment 5 (A.4): In-water Line Precaution Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.

- **MOON POOL MONITORING PROTOCOL:** The applicant will follow the protocols provided under Attachment 6 (A.5): Moon Pool Monitoring Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **VESSEL TRANSIT WITHIN THE RICE'S WHALE AREA AS IDENTIFIED IN THE 2020 BIOLOGICAL OPINION'S REASONABLE AND PRUDENT ALTERNATIVE (2020 RWA):** The applicant will follow the protocols provided under Attachment 4 (A.6): Vessel Transit within the Rice's Whale Area as identified in the 2020 Biological Opinion's Reasonable and Prudent Alternative (2020 RWA) found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **SEA TURTLE RESUSCITATION GUIDELINES PROTOCOL:** The applicant will follow the protocols provided under Attachment 10 (A.7): Sea Turtle Resuscitation Guidelines Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.

Conclusion: BOEM has evaluated the potential environmental impacts of the Proposed Action and, based on our evaluation in this SEA, BOEM has selected Alternative 2. Based on SEA No. N-10264, a determination is made that the Proposed Action would have no significant impact on the human environment; therefore, preparation of an environmental impact statement is not required. Any new information relevant to resources was updated and analyzed in the attached SEA and the other documents listed above that were reviewed and considered by BOEM.

BRUCE CERVINI

Digitally signed by BRUCE CERVINI
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Supervisor, Environmental Assessment Unit 2
Office of Environment
GOA OCS Region
Bureau of Ocean Energy Management

Date

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Site-Specific Environmental Assessment (SEA)

ANADARKO PETROLEUM CORPORATION

INITIAL EXPLORATION PLAN: N-10264

1 INTRODUCTION

This Site-Specific Environmental Assessment (SEA) has been prepared to determine whether the proposed activities outlined in the Initial Exploration Plan (EP), N-10264, initially submitted by Anadarko Petroleum Corporation (Anadarko) on November 13, 2025, will significantly affect the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act (NEPA) and therefore require an environmental impact statement (EIS) to be prepared. Anadarko's Initial EP proposes to explore for hydrocarbons by drilling and completing fifteen wells (Proposed Action). The wells are located in East Breaks Blocks 685 and 686, Lease Numbers OCS-G 37127 and 37128 in the Western Planning Area (CPA) of the Outer Continental Shelf (OCS).

The United States Department of the Interior (DOI) regulations encourage the use of existing environmental analyses (i.e., tiering) to avoid unnecessary redundant analyses, reduce the size of new NEPA documents, and focus the NEPA analysis on the issues for decision at each level of environmental review (43 Code of Federal Regulations (CFR) § 46.140). The regulations are designed to allow for the preparation of an SEA for an individual proposed action as long as any previously unanalyzed effects are not significant. As such, this SEA is tiered to the following Bureau of Ocean Energy Management (BOEM) NEPA and relevant documents, which evaluated the potential impacts resulting from exploration and development activities across the OCS.

This SEA analyzes the potential impacts resulting from the proposed site-specific activities. Where applicable, relevant affected environment discussions and impact analyses from the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS are summarized and utilized for site-specific analysis and are incorporated by reference. Relevant new information published after the above-referenced environmental analyses is included by citation. Lease stipulations, the Outer Continental Shelf Lands Act (OCSLA), all applicable Federal, State, and local regulations (as per 30 CFR § 550.101(a)); guidance provided in all applicable Notices to Lessees and Operators (NTLs) (as per 30 CFR § 550.103); and mitigation and monitoring measures identified in this SEA, 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, the GOM Lease Sales 259 and 261 Supplemental EIS, 2018 FWS BiOp, and the 2025 NMFS BiOp have been considered in the evaluation of the Proposed Action.

The potential effects or impacts caused by similar actions to that proposed were examined at a basin-wide scale on the OCS in the following documents, from which this SEA is tiered:

- Gulf of Mexico OCS Oil and Gas Lease Sales: 2017-2022 Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261 – Final Multisale Environmental Impact Statement (2017-2022 GOM Multisale EIS) (OCS EIS/EA BOEM 2017-009);
- Gulf of Mexico OCS Lease Sale Final Supplemental Environmental Impact Statement 2018 (2018 GOM Supplemental EIS) (OCS EIS/EA BOEM 2017-074);

- Gulf of Mexico OCS Oil and Gas Lease Sales 259 and 261. Final Supplemental Environmental Impact Statement 2023 (2023 SEIS) (USDOI, BOEM 2023-001); and

This SEA also considers the impacts of the proposed action and incorporates by reference the evaluations below:

- Gulf of Mexico Catastrophic Spill Event Analysis: High-Volume, Extended-Duration Oil Spill Resulting from Loss of Well Control on the Gulf of Mexico Outer Continental Shelf; 2nd Revision (Gulf of Mexico Catastrophic Spill Event Analysis) (OCS Report BOEM 2021-007);
- Biological Environmental Background Report for the Gulf of Mexico OCS Region (BEBR) (OCS Report BOEM 2021-015);
- Gulf of Mexico OCS Oil and Gas Leasing Greenhouse Gas Emissions and Social Cost Analysis (Technical Report BOEM 2022-056);
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Secretary of the Interior Doug Burgum issued Secretary's Order 3423, which directed the renaming of the Gulf of Mexico to the Gulf of America. As a result, BOEM updated existing content while legacy content such as previously published reports, studies, and NEPA documents remain unchanged.

1.1 BACKGROUND

BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) have been delegated the authority under OCSLA to manage and oversee the exploration and development of OCS oil, gas, and mineral resources while ensuring safe operations and the protection of the human environment. Working together, BOEM and BSEE manage oil and gas leases, permits, authorizations, and regulate exploration, development, production, and decommissioning. Prior to authorizing activities related to these phases, BOEM conducts resource and NEPA reviews. BOEM's Office of Leasing and Plans oversees the submittal of EPs and Development Operations Coordination Documents (DOCD) pursuant to 30 CFR part 550 subpart B.

As required by 30 CFR § 550.201, lessees and operators submit EPs and DOCDs to provide BOEM with information needed to adequately evaluate the overall potential impacts to the human environment prior to conducting activities on the lease. Submittal of an environmental impact analysis (EIA) is required in EPs under 30 CFR § 550.227 and in DOCDs under 30 CFR § 550.261, wherein the operator provides environmental information and makes impact conclusions regarding their proposed activities.

1.2 Purpose of and Need for the Proposed Action

Anadarko has submitted a plan to conduct exploration activities on the OCS. The purpose of the Proposed Action is to drill and complete fifteen wells so that Anadarko can utilize the information to evaluate the potential for, and develop plans for, the development and production of hydrocarbon resources on the OCS, which would contribute to the Nation's energy needs.

The need for this action is established by BOEM's responsibility under OCSLA to make OCS lands available for expeditious and orderly development, subject to environmental safeguards, in a manner that is consistent with the maintenance of competition and other national needs. Section 11 of OCSLA at 43 United States Code (U.S.C.) § 1340 requires oil and gas lessees seeking to conduct exploration activities to first obtain approval from the Secretary who has delegated the authority to grant such approval to BOEM.

In response to the Proposed Action in Anadarko's plan, BOEM is required by OCSLA to approve, approve with modifications, or deny the plan within 30 days (refer to 43 U.S.C. § 1340(c)(1)). The criteria that BOEM will apply in reaching a decision to approve, approve with modifications, or deny the plan within 30 days and the scope of its discretion are provided by Section 11 of OCSLA and detailed in the implementing regulations (30 CFR Part 550 Subpart B). Authorizing the Proposed Action, as outlined in the Initial EP N-10264, allows Anadarko to pursue its rights under the lease and to conduct exploration drilling activities.

1.3 Description of Proposed Action

Anadarko's Initial EP for drilling operations on the OCS proposes to explore for hydrocarbons by drilling and completing fifteen exploratory wells and installing subsea wellheads (Proposed Action). The surface location of the wells are in East Breaks Blocks 685 and 686, Leases OCS-G 37127 and 37128 in the Western Planning Area:

- East Breaks Block 641 – wells A, AA and AAA
- East Breaks Block 685 – wells A, AA, AAA, AAAA, AAAAA, B, BB, C and CC
- East Breaks Block 686 – wells B, BB, and BBB

The Proposed Action is located south of Galveston, Texas, approximately 111 miles (mi) (179 kilometers [km]) from the nearest shoreline in Matagorda County, Texas. The water depth at the proposed project area ranges from 3,676 - 3,687 feet (ft) (1,120 - 1,124 meters [m]). Anadarko proposes using either a Dynamically Positioned (DP) semisubmersible or a drillship, mobile offshore drilling units (MODU), to drill these wells. The projected duration of the proposed drilling and

completion of each well is 175 days, with proposed drilling activities planned between March 2026 and September 2036.

Supply and crew boat facilities to support the proposed activities are to be located in existing facilities in Port Fourchon, Louisiana, approximately 296 mi (476 km) northeast of the project location. Port Fourchon will be used as the debarkation point for equipment, supplies, and crews supporting the proposed activities. Helicopter support will be flown out of Houma, Louisiana, approximately 285 mi (459 km) northeast of the project area. Anadarko does not expect any shore-based construction or expansion in association with these proposed activities. The types of support vessels and their potential travel frequency during exploratory drilling are included in Anadarko's plan (Anadarko, 2025). No new or unusual technology is proposed by Anadarko.

1.4 IMPACT-PRODUCING FACTORS

For purposes of this analysis, an impact-producing factor (IPF) is the outcome of a proposed activity that may pose a risk of vulnerability or potential impact to the human environment, such as noise (acoustic source), air emissions, discharges and waste (effluent), or offshore habitat modification (physical disturbance). The impact analysis evaluates the potentially affected environment[1] and the degree of the effects[2] of the action. Each phase of oil and gas operations typically have specific types of IPFs that may affect physical or environmental conditions and/or may affect one or more natural, cultural, or socioeconomic resource(s). The IPFs are categorized as routine activities, accidental events, and other effects that are reasonably foreseeable and have a close causal connection to the Proposed Action. Detailed descriptions of routine activities and accidental events considered in this SEA are provided in **Appendix A**, and the vulnerability (effects or impacts) of resources to IPFs is also available in the BEBR (BOEM, 2021b).

1.4.1 Routine Activities

Routine activities are generally sequential and occur on a regular basis during the lifetime of a lease (i.e., 50 years). Examples of routine activity include geological and geophysical (G&G) surveys[3], drilling wells, installing production structures and/or subsea infrastructure (platforms, wellheads, manifolds, subsea tie-ins, pipelines), ancillary activities, and decommissioning. Specific to the activities for exploration proposed by Anadarko, the routine activities would result in the following:

(1) bottom disturbance or offshore habitat modification;

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[1] In considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources, such as listed species and designated critical habitat under the Endangered Species Act (ESA). Significance varies with the setting of the proposed action (40 CFR § 1501.3(b)(1)).

[2] The degree of the effects, as appropriate to the specific action; both short and long term, beneficial and adverse, public health and safety, and whether the effects would violate laws protecting the environment are to be considered (40 CFR § 1501.3(b)(2)(i-iv)).

[3] The G&G activities for oil and gas exploration and development are authorized on the basis of whether or not the proposed activities occur before leasing takes place (prelease) and are authorized by a permit or the G&G activity will occur on an existing lease (post-lease/ancillary). Postlease/ancillary activities are authorized by OCS plan approvals, plan revisions, requirement for notification, or a separate G&G permit if the survey will extend off the existing lease.

(2) noise;

(3) discharges and wastes;

(4) space-use conflicts; and

(5) air emissions.

1.4.2 Accidental Events

Though not planned, intended, nor anticipated, BOEM recognizes that there is potential for accidental events. The impacts and complexity of an accidental event can vary greatly dependent upon the type, interrelated factors, type and amount of material, time of year, and resources impacted. The primary IPFs from potential accidents related to the proposed activities include the following:

(1) accidental releases (oil/chemical spills and oil spill response, emergency flaring/venting, or marine trash and debris);

(2) accidental collisions resulting in a spill (vessel to vessel or vessel to structure);

(3) accidental vessel strike (vessel to organism); and

(4) accidental entanglement/entrapment (equipment or facility and organism).

1.5 Accidental Spill Concerns

Based on experience and the operations proposed in Anadarko's plan, the potential sources of spills from the proposed activity would include the following:

(1) a storage tank accident on the MODU or vessel(s);

(2) a transfer operation mishap between the supply vessel(s) and the MODU;

(3) a leak resulting from damage to the fuel tanks or equipment on the MODU or vessel(s); and/or

(4) a loss of well control (LWC)[4].

As required by 30 CFR §§ 550.219 and 550.250, lessees or designated operators are required to provide BSEE and BOEM with an oil spill response plan (OSRP), prepared in accordance with 30 CFR Part 254 Subpart B, with their proposed exploration, development, or production plan for the facilities that they will use to conduct their activities or to alternatively reference their approved Regional OSRP. In addition, lessees or designated operators are required to report incidents under 30 CFR § 250.188(a) (fatalities, blowouts, explosions, etc.) and oil spills pursuant to 30 CFR § 250.187(d) and 30 CFR § 254.46 (from a rig, production facility, or pipeline estimated to be more

[4] The current definition for loss of well control is as follows: uncontrolled flow of formation or other fluids (the flow may be to an exposed formation [an underground blowout] or at the surface [a surface blowout]; uncontrolled flow through a diverter; and/or uncontrolled flow resulting from a failure of surface equipment or procedures. Not all loss of well control events would result in a blowout as defined above, but they are most commonly thought of as releases to the human environment. A loss of well control can occur during any phase of development, i.e., exploratory drilling, development drilling, well completion, production, or workover operations (BOEM, 2021a).

than 1 barrel [bbl] [42 gallons (gal)]). As required in 30 CFR § 254.46(a), immediate notification is required for spills from a facility, another offshore facility, or offshore spill of unknown origin.

Spill Response Requirements

Agency regulations require that all lessees and designated operators of oil handling, storage, or transportation facilities located seaward of the coastline submit an OSRP before they can operate a facility. BSEE has issued NTL 2012-N06, "Guidance to Owners and Operators of Offshore Facilities Seaward of the Coast Line Concerning Regional Oil Spill Response Plans," which informs operators of OSRP requirements and requires that they have adequate resources available to protect the environment from spills or releases from their facilities. The Environmental Protection and Response Plan within the OSRP outlines the availability of spill containment and cleanup equipment and trained personnel necessary to ensure that a full response can be deployed during an oil-spill emergency.

All the proposed activities and facilities in this plan will be covered by the Regional OSRP filed by Anadarko (Operator Number 00981) in accordance with 30 CFR Part 550 and 30 CFR Part 254 and deemed in compliance by BSEE in August 2025. Anadarko also certifies it has the capability to respond, to the maximum extent practicable, to a worst-case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in their Initial EP (Anadarko, 2025).

Potential Spills from Vessels/Transfer Operations

As indicated above, offshore spills from Anadarko's proposed activities are possible if an accident were to damage a storage tank onboard the drilling rig, crew boat, offshore support vessel, or fuel supply vessel. Historically, accidents of this nature have resulted from unintentional vessel collisions and transfer incidents during the offloading of diesel fuel to the drilling rig. Anadarko plans to use an either a DP semisubmersible or a drillship using a subsea blowout preventer (BOP) to conduct the proposed activities. There are several tanks onboard the MODUs that store fuel and lubricants necessary for the rig's operation. A worst-case discharge (WCD) scenario[5] from a rupture or spill from the vessels and other support are provided in Table **1-1**.

Table 1-1. Worst-Case Discharges from Proposed Drillrigs and Vessels

Vessel	Largest Main Tank Capacity*	Total Capacity*
DP Semisubmersible	12,458 bbl	62,874 bbl
DP Drillship	4,541 bbl	16,689 bbl
Crew Boat	N/A	70,000 gal (1,667 bbl)

[5] Information provided regarding the WCD totals and calculations is not required under NEPA regulations; however, the information is included as part of the review process and compliance with 30 CFR § 254.47; BOEM NTL 2015-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS for Worst Case Discharge and Blowout Scenarios"; and Frequency Asked Questions as part of every EP and development and production plan (DPP)/DOCD. In addition, the August 16, 2010, CEQ Report prepared following the *Deepwater Horizon* explosion, oil spill, and response recommended that BOEM should "Ensure that NEPA document provide decisionmakers with a robust analysis of reasonably foreseeable impacts, including an analysis of reasonably foreseeable impacts associated with low-probability catastrophic spills for oil and gas activities on the OCS" (CEQ, 2010). BOEM's *Gulf of Mexico Catastrophic Spill Event Analysis* technical report is a robust analysis of the impacts from low-probability catastrophic spills and is included in this analysis to support decisionmaking purposes.

Supply Boat	N/A	336,227 gal (8,005 bbl)
Diesel Oil Supply Vessel	N/A	336,227 gal (8,005 bbl)
Helicopter	N/A	735.3 gal (17.5 bbl)

bbl = barrel; gal = gallon; N/A = not applicable.

Potential Spills from a Loss of Well Control (LWC)

BSEE requires that all LWC incidents be reported immediately per 30 CFR § 250.188(a)(3). Offshore LWCs that cause large-scale, oil-spill[6] events are rare and not expected. Most LWC accidents release a relatively small amount of oil into the environment before the well is brought under control by the operator or the well is sealed by natural processes known as bridging over[7]. It is important to note that spill volume is only one factor that influences the nature and severtity of an event's impacts. Each oil-spill event is unique; its outcome depends on several factors. These factors include time of year and location, atmospheric and oceanographic conditions (e.g., winds, currents, coastal type, and sensitive resources), specifics of the well (i.e., flow rates, hydrocarbon characteristics, and infrastructure damage), and response efforts (i.e., speed and effectiveness). For these reasons, the severity of impacts from an oil spill cannot be predicted based on volume alone (BOEM, 2021a). In the event of a LWC, an operator's first course of action is to activate the BOP to close the well. The BOP may be located on the surface of the drilling rig or subsea (on the seafloor). There are built-in redundancies in the BOP system to allow activation of selected components with the intent to seal off the well bore. If a subsea BOP cannot be operated from the drill rig, it can be operated on the seafloor using remotely operated vehicles (ROVs).

BSEE prepared annual reports that described activity, environmental compliance, and safety on the OCS (https://www.bsee.gov/newsroom/library/annual-report)[8]. Based on records from previous years provided in the annual reports, a LWC that results in a crude oil spill is unlikely to occur. Between 2007 and 2014, on average a LWC event with a surface release occured three times or less per year. This average is based on more than 100 wells drilled annually. As an additional measure, the operator has an OSRP in place that addresses the WCD and LWC.

[6] As applicable to NEPA, Eccleston (2008) describes a catastrophic event as "large-scale damage involving destruction of species, ecosystems, infrastructure, or property with long-term effects, and/or major loss of human life." For oil and gas activities on the OCS, a catastrophic event is a high-volume, extended-duration oil spill regardless of the cause. The high-volume, extended-duration oil spill, or catastrophic spill, has been further defined by the National Oil and Hazardous Substances Pollution Contingency Plans as a "spill of national significance" or "a spill which, because of its severity, size, location, actual or potential impact on the public health and welfare or the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of Federal, State, and local, and responsible party resources to contain and cleanup the discharge" (40 CFR part 300, Appendix E) (BOEM, 2021a).

[7] In a LWC or blowout, the flow duration is dependent on the oil reservoir characteristics and the tendency for the well to fill in or bridge naturally (bridge over), and the timing of the intervention. The flow of a blowout well could, and often does, change as the blowout naturally bridges, the reservoir is depleted, or the reservoir pressure is reduced (Buchholz et al., 2016).

[8] The 2014 Annual Report was based on a calendar year. The 2015 Annual Report and future reports were based on U.S. fiscal year (FY), which runs from October 1 to September 30 (BSEE, 2016). The last Annual Report available is from FY 2016.

Potential Site-Specific Spill Risk and Response

Anadarko's plan describes measures for LWC prevention, likelihood for surface intervention to stop a blowout, and early intervention in the event of a blowout. Anadarko has developed standards for well control, personnel safety, and an emergency response plan; these methods are stated in detail in the OSRP or emergency response plan submitted by Anadarko. As per the information provided in Anadarko's OSRP and plan, the MODU that Anadarko plans to use will deploy a subsea BOP while drilling the well (Anadarko, 2025).

The WCD from drilling or production operations of a subsea well is the daily rate of uncontrolled flow of natural gas or oil into the open wellbore. Operators must submit WCD calculated volumes and associated data according to NTL 2015-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS for Worst Case Discharge and Blowout Scenarios," as part of every EP and DOCD. Though not proposed or expected, Anadarko has estimated that a WCD scenario from a blowout of one of the wells under the proposed activities could be 218,962 barrels of oil per day (BOPD) of 26.5° American Petroleum Institute (API) gravity crude. In accordance with enhanced agency oversight, BOEM verified the operator's calculations used to determine the WCD volume[9].

Anadarko indicated in its plan that mechanical collapse of the reservoirs in the open-hole section of the wellbore was not considered in determining WCD. During a worst-case discharge event, the open hole portion of the well will be exposed to a substantial underbalance condition. Some amount of sand and heaving shale could enter the flowstream. The presence of sediments in the flowstream are excluded from Anadarko's discharge calculations and assumes no bridging will occur, however, bridging is likely to occur. Anadarko has developed standards for well control, personnel safety, and emergency response. These methods are stated in detail in the OSRP and plan (Anadarko, 2025).

For this project, Anadarko estimates that 7-20 days is required to suspend operations on a deepwater GOA well and begin drilling the relief well. This assumes 0-14 days to suspend current operations on an existing well and 7 days to mobilize and be ready to spud the relief well. The estimated time to drill the relief well to a blowout originating from the target zone is 60-70 days, for a total estimated time of 67-90 days from time of blowout to finishing the relief well. There are no existing facilities/platforms nearby from where the relief well can be drilled. Additional details related to the proposed activities can be found in Anadarko's Initial EP (Anadarko, 2025).

Oil-Spill Risk and Assessment

In the event of a spill, there is no single method of containing and removing the oil that would be 100 percent effective. Removal and containment efforts to respond to an ongoing spill would likely require multiple technologies, including mechanical cleanup, chemical dispersant application, and less

[9] Information provided regarding the WCD totals and calculations is not required under NEPA regulations; however, the information is included as part of the review process and compliance with 30 CFR § 254.47; NLT 2015-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS for Worst Case Discharge and Blowout Scenarios"; and Frequency Asked Questions as part of every EP and DPP/DOCD.

frequently, in-situ burning of the slick. Even with the potential to deploy all of these technologies, it is likely that, with the operating limitations of today's spill response technology, not all of the oil could be contained and removed from the offshore environment. It is likely that larger spills in deep waters and under the right conditions would require the simultaneous use of all available cleanup methods (i.e., mechanical cleanup, dispersant application, and in-situ burning).

However, when considering the historical/statistical data, subsea containment improvements, BOEM and BSEE's enhanced oversight, and industry's heightened safety awareness since the *Deepwater Horizon*, it is reasonable to conclude that an accidental spill event is less likely to occur. Events that are statistically unexpected to occur, but would still be possible, such as a catastrophic discharge event are not considered a part of the proposed activities and, therefore, are not discussed in this document. For more information on a low-probability catastrophic event and the resulting analysis of potential effects, refer to BOEM's *Gulf of Mexico Catastrophic Spill Event Analysis* technical report (BOEM, 2021a).

Oil and Gas Production Safety Systems

On September 28, 2018, BSEE published revisions to the 2018 Oil and Gas Production Safety Systems Rule, which became effective on December 27, 2018 (Federal Register, 2018), and on May 2, 2019, BSEE published revisions for the 2019 Well Control and Blowout Preventer Rule, which became effective on July 15, 2019 (Federal Register, 2019b). BOEM has independently reviewed BSEE's Final Environmental Assessment and Finding of No Significant Impact (FONSI) for the 2019 Well Control and Blowout Preventer Proposed Rule and the Final Environmental Assessment and FONSI for the 2018 Oil and Gas Production Safety Systems Rule (BSEE 2018a; 2018b; 2019a; 2019b). The analyses in those environmental assessments and FONSIs are incorporated by reference herein. For purposes of this site-specific analysis, BOEM agrees with BSEE's conclusions that the rule changes do not change or increase environmental risks from what they were under the 2016 rules. BOEM agrees with the conclusions because the changes to the rules carefully removed unnecessary burdens while leaving critical safety provisions intact and did not change the overall risks related to oil and gas activities on the OCS.

BOEM, therefore, concludes that the final changes to the rules do not change the conclusions of the 2017-2022 GOM Multisale EIS or 2018 GOM Supplemental EIS and do not alter the reasonably foreseeable impacts that may result from the proposed activities analyzed in this site-specific review.

2 ALTERNATIVES CONSIDERED

2.1 NO ACTION

Alternative 1 – If selected, Anadarko would not be authorized to undertake the proposed activities. If the proposed activities are not undertaken, they would not cause activity-specific routine or accidental impacts. Activities related to other existing leases, authorizations, and permits associated with the overall OCS activities would not increase. The No Action Alternative would not significantly change the environmental impacts of overall OCS oil and gas exploration and development activities as described in the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, and routine and accidental impacts would continue to occur elsewhere on the OCS. However, these activities on this lease block would not occur.

2.2 PROPOSED ACTION

Alternative 2 – If selected, Anadarko would be authorized to undertake the proposed activities as requested in N-10264. The lessee/operator will conduct operations in accordance with the lease stipulations; OCSLA; and all applicable Federal, State, and local regulations (as per 30 CFR § 550.101(a)); guidance provided in all appropriate NTLs (as per 30 CFR § 550.103); and appropriate mitigation measures, terms and conditions, and reasonable and prudent measures set out in the 2025 NMFS BiOp, as applicable. These consist of the following:

- **COMPLIANCE WITH BIOLOGICAL OPINION TERMS AND CONDITIONS AND REASONABLE AND PRUDENT MEASURES:** This approval is conditioned upon compliance with the Reasonable and Prudent Measures and implementing Terms and Conditions of the Biological Opinion issued by the National Marine Fisheries Service on May 20, 2025 (2025 NMFS BiOp). This compliance includes mitigation, particularly any Terms and Conditions applicable to the plan, as well as record-keeping and reporting sufficient to allow BOEM and BSEE to comply with reporting and monitoring requirements under the BiOp, and any additional reporting required by BOEM or BSEE developed as a result of BiOp implementation. The 2025 NMFS BiOp may be found here: https://www.fisheries.noaa.gov/resource/document/biological-and-conference-opinion-bureau-ocean-energy-management-and-bureau. The BiOp Attachments and Appendices may be found here: https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **MARINE DEBRIS PROTOCOL**: The applicant will follow the protocols provided under Attachment 2 (A.2): Marine Debris Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **VESSEL-STRIKE AVOIDANCE AND INJURED AND/OR DEAD AQUATIC PROTECTED SPECIES REPORTING PROTOCOLS:** The applicant will follow the protocols provided under Attachment 3 (A.3): Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.

- **IN-WATER LINE PRECAUTION PROTOCOL:** The applicant will follow the protocols provided under Attachment 5 (A.4): In-water Line Precaution Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **MOON POOL MONITORING PROTOCOL:** The applicant will follow the protocols provided under Attachment 6 (A.5): Moon Pool Monitoring Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **VESSEL TRANSIT WITHIN THE RICE'S WHALE AREA AS IDENTIFIED IN THE 2020 BIOLOGICAL OPINION'S REASONABLE AND PRUDENT ALTERNATIVE (2020 RWA):** The applicant will follow the protocols provided under Attachment 4 (A.6): Vessel Transit within the Rice's Whale Area as identified in the 2020 Biological Opinion's Reasonable and Prudent Alternative (2020 RWA) found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.
- **SEA TURTLE RESUSCITATION GUIDELINES PROTOCOL:** The applicant will follow the protocols provided under Attachment 10 (A.7): Sea Turtle Resuscitation Guidelines Protocol found in the 2025 NMFS BiOp. The protocols can be accessed on NOAA Fisheries internet website at https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.

2.3 Summary and Comparison of the Alternatives

If selected, Alternative 1, No Action Alternative, would result in Anadarko not exercising its rights under the lease and conducting the proposed activities. Alternative 1 would not result in any immediate activity-specific impacts to the human environment, and the lessee may not develop or continue to develop the oil and gas resources of its lease. Alternative 1 does not meet the underlying purpose and need as defined in **Chapter 1.2** because the potential oil and gas resources at this site would not be explored and, thus, may not be developed.

Alternative 2 would result in the lessee/designated operator being authorized to conduct proposed activities. Alternative 2 is BOEM's preferred alternative as it allows the lessee to achieve its exploration objectives and incorporates mitigation and monitoring requirements (as components of project design) to minimize or negate potential environmental impacts. **Table 2-1** provides an overall summary of impacts to resources.

Table 2-1. Summary of Alternatives and Potential Impacts to Resources

Resource	Alternative 1: No Action	Alternative 2: Proposed Action
Air Quality	Negligible	Negligible to Minor
Water Quality	None	Negligible to Minor
Marine Mammals	None	Negligible
Sea Turtles	None	Negligible to Minor
Birds	None	Negligible
Fish and EFH	None	Negligible to Minor
Benthic Communities	None	Negligible to Minor
Archaeology	None	Negligible to Minor

Negligible	No impact or impacts may or may not cause observable changes to natural conditions; does not reduce the integrity of a resource.
Minor	Impacts cause observable and short-term changes to natural conditions but does not reduce the integrity of a resource.
Moderate	Impacts cause observable and short-term changes to natural conditions and/or reduces the integrity of a resource.
Major	Impacts cause observable and long-term changes to natural conditions and reduces the integrity of a resource.

NOTE: The descriptions above are a general summary/definition of the overall impacts. Refer to each specific resource in **Chapter 3** for a more detailed definition of the impact levels used for our evaluation of the potential impacts to resources.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 INTRODUCTION

The discussion below will briefly describe/summarize the pertinent affected resources, discuss the site-specific review that was conducted, and provide the analysis of the proposed activities' potential impacts to the human environment. The description of the affected environment and impact analysis are presented together in this chapter for each resource. For the impact analysis, resource-specific significance criteria was developed for each resource category.

A detailed description of resources on the OCS, along with a detailed impact analysis of the routine and accidental impacts of the proposed activities on these resources, can be found in the BEBR, GOM Catastrophic Spill Event Analysis, and Chapter 4 of the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS; these documents are incorporated by reference for all resources discussed below. Throughout this SEA, where information was incomplete or unavailable, BOEM complied with its obligations under NEPA to determine if the information was relevant to reasonably foreseeable significant adverse impacts; if so, whether it was essential to a reasoned choice among alternatives and, if it was essential, whether it could be obtained and whether the cost of obtaining the information is exorbitant, as well as whether scientifically credible information using generally accepted scientific methodologies could be applied in its place.

The most notable incomplete or unavailable information relates to some aspects of the effects from the *Deepwater Horizon* explosion, oil spill, and response in 2010. Credible scientific data regarding the potential short-term and long-term impacts from the *Deepwater Horizon* explosion, oil spill, and response on some OCS resources have become available. However, some long-term effects continue to be studied, results remain incomplete at this time, and it could be many years before this information becomes available. BOEM will continue to monitor these resources for effects caused by the *Deepwater Horizon* explosion, oil spill, and response, and will ensure that future BOEM environmental reviews take into account any new information that may emerge.

While incomplete or unavailable information could conceivably result in potential shifts in baseline conditions of habitats that could affect BOEM's decision-making, BOEM has determined that it can make an informed decision at this time without this incomplete or unavailable information. BOEM's subject-matter experts have applied other scientifically credible information using accepted theoretical approaches and research methods, such as information on related or surrogate species.

3.1.1 Potentially Affected Resources

Preliminary screening for this assessment was based on a review of the relevant literature, previous SEAs, 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, and statistics/data pertinent to historic and projected activities. For this SEA, BOEM evaluated the site-specific impacts that may result from the operator's proposed activities and identified the following potentially affected resources:

- air quality;
- offshore water quality;
- benthic communities;
- marine mammals (including ESA listed and non-listed species);
- sea turtles (all are ESA listed species);
- fisheries and essential fish habitat (EFH);
- marine and coastal birds;
- archaeological resources;
- human/socioeconomic resources; and
- other marine uses (military, significant sand source block [SSRA], artificial reef, etc.).

3.1.2 Resources Not Affected or Negligibly Impacted

Based on the site-specific review and impact conclusions reached, the following resources are scoped out of this SEA on the basis that the Proposed Action would not have an impact on the resource because the resource is not present within the proposed activity area and/or the proposed activities would have no impact/effect or no more than a negligible impact (**Table 3-1**).

Table 3-1. Resources Not Included for Further Analysis

Resource	Reason For No Further Analysis
Offshore Water Quality	
BOEM requires projected waste and discharge information for specific proposed activities to be submitted in an exploration plan, as outlined by NTL 2008-G04. The U.S. Environmental Protection Agency (USEPA) Regions 4 and 6 regulate the discharge of routine operational waste streams generated from offshore oil- and gas-related activities. Section 403 of the Clean Water Act (CWA) requires that National Pollutant Discharge Elimination System (NPDES) permits be issued for discharges to the ocean in compliance with USEPA's regulations for preventing unreasonable degradation of the receiving waters. The NPDES permits specify effluent limitations and monitoring requirements for discharges associated with offshore oil and gas extraction activities. There are two general NPDES permits that cover the OCS. Permit GMG290000, issued by USEPA Region 6, covers the Western Planning Area (WPA) and CPA; Permit GEG460000, issued by USEPA Region 4, covers the Eastern Planning Area (EPA) and a small part of the CPA. BSEE has regulatory authority through 30 CFR § 250.300 to prevent and control water pollution. BSEE's Office of Environmental Compliance performs inspections to support the USEPA.	The proposed exploration activities are located on East Breaks Blocks 685 and 686, which are located approximately 111 mi (179 km) from the nearest coastline off Matagorda County, Texas. East Breaks Blocks 685 and 686 is within USEPA Region 6 and falls under the requirements of NPDES Permit GMG290000. Discharges authorized under the NPDES permit would have no effect to negligible impact on the pH, temperature, dissolved oxygen content, salinity, oxidation-reduction potential, or turbidity of the water. Furthermore, any hydrocarbons present in discharges that meet the NPDES permit would be below concentrations that would produce physical or chemical changes to water quality. In addition to permitted discharges, unpermitted spills may occur. BOEM has previously estimated that most accidental spills will be less than 50 bbl in volume, based on historical spill rates and projected OCS activity. Potential impacts on resources from these small spills would be rendered negligible by natural processes such as weathering and dispersion that would degrade the spill products. Water quality is also degraded by trash and debris. Activities proposed will comply with Federal regulations and the requirements in 2025 NMFS BiOp A.2 Marine Debris Protocol to reduce the potential for trash and marine debris from the proposed activities, which reduces the potential impacts to negligible.
Benthic Communities	
Benthic fauna inhabit the seafloor throughout the OCS at all water depths. In shallow water (<984 ft [300 m]), naturally occurring geological or biogenic seafloor with measurable vertical relief serves as important habitat for a wide variety of sessile and mobile marine organisms. Corals in the region that are protected under the ESA include elkhorn coral, staghorn coral, boulder star coral, lobed star coral, and mountainous star coral. In deep water (>984 ft [300 m]), chemosynthetic communities form around natural hydrocarbon seepages. Deepwater coral communities can co-occur on hard substrates near hydrocarbon seeps with chemosynthetic organisms and routinely colonize other hard substrates.	Based on review of the geo-hazard survey, the BOEM 3D Seismic Anomaly Database, and N-10264, no known or mapped benthic resources were identified within the proposed activity area; therefore, with existing regulatory requirements in place, the potential impact is negligible and no additional mitigation or monitoring measures are applied. Activities proposed will comply with Federal, State, and local regulations and NTLs to reduce the risk for potential for accidental events; therefore, potential impacts to benthic communities from accidental events are negligible.
Archaeological Resources	
BOEM is required under 36 CFR § 800.4(b)(1) to make a reasonable and good faith effort to carry out appropriate identification efforts, which may	Based on review of the archaeological survey and additional data, no potential archaeological resources were identified within the Proposed

Resource	Reason For No Further Analysis
include background research, consultation, oral history interviews, sample field investigation, and field survey. BOEM regulation 30 CFR § 550.194 requires an operator to submit an archaeological report based on high-resolution geophysical survey analyzing the potential for an undertaking to adversely affect archaeological resources. To mitigate adverse impacts to these resources, BOEM requires that the operator either avoid the features identified as possible archaeological resources in the operator's archaeological report or establish to the satisfaction of the Regional Director that an archaeological resource does not exist or will not be adversely affected by operations. Mitigation of adverse impacts to archaeological resources determined to be significant under 36 CFR § 60.4 within the identified Area of Potential Effect may be determined following consultation with the Advisory Council on Historic Preservation and appropriate State Historic Preservation Offices per 36 CFR § 800.6[10]. Under 30 CFR § 550.195, lessees are required to immediately halt seafloor disturbing operations within 1,000 feet of the resource and notify BOEM's Regional Director of the discovery of any potential archaeological resources within 72-hours.	Action area. Therefore, with existing regulatory requirements in place, the potential impact is negligible to minor and no additional mitigation or monitoring measures are applied.
Fish and Invertebrate Resources and Essential Fish Habitat	
Fish and invertebrate resources refers to all estuarine and marine fish and invertebrates endemic to the region, with a particular emphasis on species of ecological and economical significance. EFH refers to all waters and substrate necessary for spawning, breeding, feeding, and growth to maturity for federally managed fisheries species on the OCS (16 U.S.C. §§ 1801 *et seq.*).	The proposed activity in East Breaks Blocks 685 and 686 will not occur within delineated EFH and will not occur within specified distances of deepwater benthic communities that would trigger a project-specific EFH consultation (i.e., minimum separation distances described in NTL-2009-G40). Minimum distance requirements were cooperatively developed by BOEM and NMFS during past programmatic EFH consultations for bottom-disturbing activities occurring near sensitive benthic habitats. Overall, N-10264 is expected to have negligible population-level impacts to fish and invertebrate resources in the OCS, as well as EFH due to the localized, short-term nature of the proposed activities. Therefore, no site-specific avoidances or mitigations are applied.
Marine and Coastal Birds	
Several bird groups use the U.S. Gulf of America environment, because the area serves multiple	Overall, reasonably foreseeable impacts to birds from routine activities are expected to be not

[10] The technical requirements of the archaeological resource survey and report are detailed in 30 CFR 550.194 and 195, and a Frequently Asked Questions page published online at https://www.boem.gov/regions/gulf-mexico-ocs-region/protection-marine-archaeological-resources-final-rule-frequently.

Resource	Reason For No Further Analysis
habitat and life staging purposes. Birds from six distinct taxonomic and ecological groups are represented within the GOA region, including passerines (i.e., Passeriformes), raptors (i.e., Falconiformes, Accipitriformes), seabirds (i.e., Charadriiformes, Pelecaniformes, Procellariiformes, Gaviiformes, Podicipediformes), waterfowl (i.e., Anseriformes, Gaviiformes), shorebirds (i.e., Charadriiformes), and wading or marsh birds (i.e., Ciconiiformes, Gruiformes). Currently, nine federally listed protected bird species occur in the northern GOA: Cape Sable seaside sparrow; Mississippi sandhill crane; piping plover; rufa red knot; roseate tern; whooping crane; wood stork; eastern black rail; and black-capped petrel.	significant. Potential impacts from routine activities could include behavioral effects, exposure to or intake of OCS oil- and gas-related contaminants and discarded debris, sublethal chronic effects from air emissions, mortality and energetic costs associated with structure presence and associated lighting, disturbance-related impacts, and displacement of birds from habitats that are destroyed, altered, or fragmented, thus making these areas temporarily unavailable. Also, secondary impacts from pipeline and navigation canals to coastal habitats will occur over the long term and may temporarily displace birds to other habitats. The ESA-listed birds are part of the FWS ESA consultations (stated therein that no incidental takes of any listed species are anticipated under BOEM/BSEE proposed action) held in conjunction with or contemporaneously with the preparation of the Final GOA Oil and Gas PEIS.
Human/Socioeconomic Resources	
The coastal zone of the OCS is not a physically, culturally, or economically homogenous unit. The counties and parishes along the Gulf Coast cover approximately 1,631 mi (2,625 km) and includes multiple uses for recreational activities (beaches), deepwater ports, oil and gas support industries, manufacturing, farming, ranching, and hundreds of thousands of acres of wetlands and protected habitat. Offshore oil and gas activities affect onshore areas because of the various industries involved and because of the complex supply chains for these industries. Many of these impacts occur in counties and parishes along the coastal region. Employment stability in the oil and gas industry and its support sectors correlates directly with fluctuations in OCS oil- and gas-related activity levels, which are, in turn, closely related to the changes in oil and gas commodity prices.	The potential impacts resulting from the industry's routine activities occur within the larger socioeconomic context of the region. Given the existing, extensive, and widespread support system for the OCS oil- and gas-related industry and its associated labor force, the impacts of routine activities related to a single lease sale are expected to be negligible, widely distributed, and to have little impact. Routine activities related to a single Proposed Action would be incremental in nature, not expected to change existing conditions, and positive in their contribution to the sustainability of current industry, related support services, and associated employment. No new or expansion of existing shore bases or onshore support infrastructure and facilities is planned as part of the Proposed Action; therefore, potential impacts are negligible.
Other Marine Uses	
The marine environment is used for a variety of activities and overlaps or conflicts can occur with multiple uses and/or users. The region is very active with existing multiple users and designated uses, including oil and gas activities, fishing (commercial or recreational), shipping, military, SSRA blocks, and artificial reefs. Future activities may include renewable energy development, aquaculture, and other alternative uses.	The Proposed Action would have no to negligible impacts on other marine uses, and no additional mitigation or monitoring measures are applied.

3.2 MARINE MAMMALS

3.2.1 Affected Environment

The marine mammal community is diverse and distributed throughout the northern Gulf waters. The marine mammals are represented by members of the taxonomic order Cetacea, including suborders Mysticeti (i.e., baleen whales) and Odontoceti (i.e., toothed whales), as well as the order Sirenia (i.e., manatee). Twenty-one species of cetaceans and one species of Sirenia regularly occur in the Gulf region and are identified in the NMFS Stock Assessment Reports (Hayes et al., 2024). A complete description of marine mammals can be found in Chapter 4.8 of the 2025 PEIS; Chapter 3.7 of the 2021 BEBR; the 2023 NMFS SAR (Hayes et al. 2024); and the 2025 NMFS BiOp; and are incorporated by reference. The proposed action is located in East Breaks Blocks 685 and 686, 111 mi (179 km) from the shore in water depths of 3,676 - 3,687 ft (1,120 - 1,124 m).

Threatened or Endangered Marine Mammal Species

Two cetacean species, the sperm whale (*Physeter macrocephalus*) and the Rice's whale (*Balaenoptera ricei*) (previously named the Gulf of Mexico (GOM) Bryde's whale [*Balaenoptera edeni*]), regularly occur in the Gulf region and are listed as endangered under the ESA. The Florida manatee (*Trichechus manatus latirostris*), a subspecies of the West Indian manatee (*Trichechus manatus*), has been documented all along the Gulf in nearshore waters, typically less than 4 m (13 ft) deep and within 1,000 m (328 ft) of the shore (Slone et al., 2022). West Indian manatees are currently listed as threatened. However, the Florida manatee subspecies is proposed to be listed as threatened, and the Antillean manatee (*Trichechus manatus manatus*) subspecies as endangered, which would replace the listing of the West Indian manatee (90 FR 3131). Further, USFWS proposed critical habitat revisions for the Florida manatee (89 FR 78134). The sperm whale was listed as endangered throughout its range on December 2, 1970. GOM Bryde's (now Rice's) whale was listed as endangered on May 15, 2019 (84 FR 15446). The Rice's whale critical habitat is currently proposed by NMFS in the northern Gulf from the 100 to 400 m (328 to 1,312 ft) isobath (88 FR 47453).

The only commonly occurring baleen whale in the northern Gulf is the Rice's whale. The majority of Rice's whale detections are limited to the northeastern Gulf along the continental shelf between roughly 100 and 400 m depths (Garrison et al. 2024; NOAA Fisheries 2025), though there have been some detections outside of this area in the northwestern and northcentral Gulf (Soldevilla et al. 2022; Rappucci et al. 2023; Soldevilla et al. 2024; NOAA Fisheries 2024). Predicted densities and occurrence of Rice's whales remain highest in their northeastern Gulf habitat (Farmer et al. 2022; Garrison et al. 2024). Sperm whales in the Gulf are not evenly distributed, showing greater densities in areas associated with oceanic features that provide the best foraging opportunities (Garrison et al. 2018).

Non-ESA-Listed Marine Mammal Species

Nineteen toothed cetaceans (including beaked whales and dolphins) regularly occur in the region that are not ESA-listed (Hayes et al. 2024). Despite being non-listed, the Marine Mammal Protection Act of 1972 (MMPA) protects all marine mammals regardless of ESA status.

Unusual Mortality Event (UME)

Under the MMPA, an UME is defined as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." There are currently no active UMEs in the Gulf region. A list of active and closed UMEs with updated information can be found at the following website: https://www.fisheries.noaa.gov/national/marine-life-distress/active-and-closed-unusual-mortality-events.

3.2.2 Impact Analysis

The IPFs with the proposed activities in the project area (East Breaks Blocks 685 and 686) that could affect marine mammals include (1) noise (drilling and/or production and vessel/aircraft noise and use of impact driving equipment), (2) vessel strike, (3) entanglement and entrapment, (4) marine trash and debris, and (5) oil/chemical spills and oil spill response. For this SEA, impacts were evaluated and assigned levels of environmental impact caused by IPFs as listed below. **Table 3-2** provides a summary of the impact analysis for marine mammals.

- **Negligible** – An individual or group of animals would be subject to nominal to slight measurable impacts. No mortality or injury to any individual would occur, and no disruption of behavioral patterns would be expected. The disturbance would last only as long as the human-caused stimulus was perceptible to the individual or group.
- **Minor** – An individual or group of animals would be subject to a human-caused stimulus and would be disturbed, resulting in an acute behavioral change. No mortality or injury to an individual or group would occur.
- **Moderate** – An individual or group of animals would be subject to a human-caused stimulus and would be disturbed, resulting in a chronic behavioral change. Individuals may be impacted but at levels that do not affect the fitness of the population. Some impacts to individual animals may be irreversible.
- **Major** – An individual or group of animals would be subject to a human-caused stimulus, resulting in physical injury or mortality, and would include sufficient numbers that the continued viability of the population is diminished, including annual rates of recruitment or survival. Impacts would also include permanent disruption of behavioral patterns that would affect a species or stock.

Table 3-2. Summary of Impact Levels to Marine Mammals

Impact-Producing Factor	Magnitude of Potential Impact	
	Alternative 1	Alternative 2
Routine Activities		
Noise	None	Negligible
Accidental Events		

Vessel Strike	None	Negligible to Moderate[11]
Marine Trash and Debris	None	Negligible
Oil/Chemical Spills and Oil-Spill Response	None	Negligible to Moderate
Entanglement and Entrapment	None	Negligible

3.2.2.1 Alternative 1

If selected, Alternative 1, No Action Alternative, would result in the operator not undertaking the proposed activities as described in the plan. Therefore, direct or indirect activity-specific IPFs to marine mammals would not occur. Activities related to previously issued leases and permits (as well as those that may be issued in the future under a separate decision) related to OCS activities would not increase. The No Action Alternative would not contribute to the environmental impacts of overall OCS oil- and gas-related activity as described in the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, and routine and accidental impacts would still occur from other activities.

3.2.2.2 Alternative 2

If selected, Alternative 2, Proposed Action, would result in the operator undertaking the proposed activities as requested and conditioned in the plan. The operator will adhere to 2025 NMFS BiOp A.2 Marine Debris Protocol, A.3 Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols, and A.4 In-Water Line Precautions Protocol (Anadarko, 2025). Compliance with the regulations, protocols, and the 2025 NMFS BiOp are expected to negate or lessen the chance of significant impacts on marine mammals under this alternative.

3.2.3 Routine Activities

Noise

Vessel noise from the Proposed Action will produce low levels of noise, generally in the 150 to 170 decibels (dB) re 1 µPa-m (dB referenced to 1 micropascal at a distance of 1 meter) at frequencies below 1,000 hertz (Hz). Vessel and equipment noises are transitory and generally do not propagate at great distances from the vessel. The intensity of noise from vessels is roughly related to ship size and speed (Erbe et al. 2019). For a given vessel, relative noise tends to increase with increasing speed. A comprehensive review of the literature on marine mammals and vessel noise (Erbe et al. 2019; 2025) revealed that changes in behavior vary widely across species and are heavily dependent on context. Vessel noise could interfere with marine mammal communication either by masking important sounds from conspecifics (a member of the same species), masking sounds from predators, or it may trigger animals to alter their vocalizations (Tyack 2008). There is the possibility of short-term disruption of movement patterns and/or behavior caused by vessel noise and disturbance.

[11] In the unlikely (i.e., not reasonably foreseeable) event of a strike on an ESA-listed whale that results in mortality, the determination could be major.

Therefore, vessel noise associated with the proposed action is not expected to significantly affect marine mammals.

According to Southall et al. (2007, 2019, and 2021), for behavioral responses to non-impulsive noise sources (e.g., drill noise), data indicate considerable variability in received levels associated with behavioral responses. Further, research suggests that the sensitivity of marine mammals to drilling noise varies between and within species and is likely context-dependent (Richardson et al. 1990). The source levels from drilling (154 dB and below, as cited by Greene, 1986 in Richardson et al., 1995) are below the auditory injury onset criteria established by NMFS (NMFS 2024). While behavioral responses may result from offshore drilling, they are expected to be short-term and intermittent. Since drilling associated with the proposed action would be temporary and localized, and considering the wide range of marine mammals in the Gulf, marine mammals are not expected to be significantly affected by drilling noise. In addition to various pieces of support equipment used in construction, such as vessels and cranes, pile driving is the primary method by which fixed structures are attached to the seafloor and provide stability for other support structures. There are two primary pile driving operations on the OCS: (1) the setting of casing conductors (also known as drive pipe) for drilling operations, and (2) pile emplacement for securing oil and gas structures and facilities to the seabed. The highest reported source levels for pile driving are 204 dB (sound exposure level (SEL)) and 232 dB (peak). Since these occurrences would be temporary, subject to the step-down review process per the 2025 NMFS BiOp and given the applicable required mitigation measures per the 2025 NMFS BiOp, marine mammals are not expected to be significantly affected by pile driving.

Helicopter noises contain dominant tones (resulting from rotors) generally below 500 Hz (Richardson et al. 1995). Air traffic may elicit a startle response and interrupt marine mammals at the surface (depending on the activity of the animals; Richardson et al. 1995). Aircraft noise is generally short in duration and transient in nature, although it may ensonify large areas. Much of the noise from a passing aircraft is reflected and does not penetrate the air-water interface (Urick 1972). The Proposed Action is expected to have helicopter support with multiple transits between the MODU and airbase. Since these occurrences would be temporary and pass within seconds, and given the relevant guidelines and regulations, marine mammals are not expected to be adversely affected by routine helicopter traffic operating at prescribed required Federal Aviation Administration altitudes.

Marine mammals may exhibit some avoidance behaviors, but their behavioral or physiological responses (e.g., stress) to noise associated with the Proposed Action are unlikely to have population-level- impacts. Therefore, impacts to marine mammals from noise associated with the proposed activities are expected to be negligible.

3.2.4 Accidental Events

Vessel Strike

All marine mammals are vulnerable to accidental vessel strike. However, some marine mammal species may be more vulnerable than others to possible vessel strike with all vessels operating at speed, including primarily slow-moving species (e.g., manatees) or those that spend extended periods of time at the surface (e.g., Rice's whales), and deep-diving species (e.g., sperm whales) while on the surface (Vanderlaan and Taggart 2007). For example, Rice's whales may spend

up to 88 percent of their time at night, and 70 percent of their time overall, within 15 m (39 ft.) of the ocean surface (Soldevilla et al. 2017), making them vulnerable to collisions with large vessels (Stevens et al. 2024).

Accidental vessel strike on a marine mammal can result in injury, mortality, or no apparent injury (Laist et al. 2001; Van Waerebeek et al. 2007; Vanderlaan and Taggart 2007; Pace 2011). Three fundamental components are essential to understanding and assessing vessel strike risk to any marine mammal population: 1. distribution, occurrence, and habitat selection of the population; 2. dive and surface behavior of individuals; and 3. vessel characteristics, activity, and mitigation measures (Stevens et al. 2024). Further, several factors affect the risk and severity of vessel strike to marine mammals, including species type, speed, health, and behavior of the animal; and the path, speed, size, and number of vessels (Laist et al. 2001; Vanderlaan and Taggart 2007; Martin et al. 2016). Vessel speed and size are of note when assessing strike risk (Stevens et al. 2024; Garrison et al. 2025). Most global reports of vessels striking marine mammals involve large whales, though strikes with smaller species also occur (Van Waerebeek et al. 2007). Most severe and lethal whale injuries involve large ships (>80 m [262 ft]) at higher speeds: 89 percent of ship strike records show that vessels were moving >14 kn (16 mph); most strikes occurred over or near the continental shelf; and the whales were usually not seen beforehand or seen too late to be avoided (Laist et al. 2001; Van Waerebeek et al. 2007).

The operator has not proposed any vessel transit within the Rice's Whale Area. Per the 2025 NMFS BiOp protocol A.6 Vessel Transit within the Rice's Whale Area as identified in the 2020 Biological Opinion's Reasonable and Prudent Alternative (2020 RWA), which includes monitoring, speed restriction, and reporting requirements, the operator is required to provide notification to BOEM and BSEE prior to any vessel transit through the 2020 RWA or any vessel transit changes. In addition, adherence to the 2025 NMFS BiOp protocol A.3 Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols would prevent or substantially reduce marine mammal interactions with vessels by requiring separation distances, speed restrictions, and the use of onboard observers for monitoring during certain activities. NMFS also provides all boat operators with whale watching guidelines, which are derived from the MMPA. These guidelines suggest safe navigational practices based on speed and distance limitations when encountering marine mammals. With these protocols in place, and considering the wide range of marine mammals in the Gulf, impacts to marine mammals from vessel strike are expected to be negligible to moderate[12].

Marine Trash and Debris

Marine debris, such as plastics, can affect marine mammals through entanglement and/or ingestion (e.g., choking or intestinal blockage) (Gall and Thompson 2015; Senko et al. 2020). Entanglement in marine debris could lead to injury, infection, reduced mobility, increased susceptibility to predation, decreased feeding ability, fitness consequences, and mortality (e.g., drowning) (Gall and Thompson 2015; Senko et al. 2020). In addition, marine debris ingestion could lead to intestinal blockage, which can impact feeding ability and lead to injury or death (Gall and Thompson 2015;

[12] In the unlikely (i.e., not reasonably foreseeable) event of a strike on an ESA-listed whale that results in mortality, the determination could be major.

Senko et al. 2020). The discharge of marine debris by the offshore oil and gas industry and supporting activities is subject to several laws and treaties. With adherence to the 2025 NMFS BiOp A.2 Marine Debris Protocol, which is designed to prevent or minimize marine mammal interactions with marine debris, impacts to marine mammals from marine debris are expected to be negligible.

Oil/Chemical Spills and Oil-Spill Response

Potential impacts of an oil spill depend on a variety of factors, such as spill magnitude, frequency, timing, location, and the meteorological and oceanographic conditions at the time (NRC 2003). Further, the impacts of an oil spill could depend on oil characteristics; time of year; response efforts (e.g., burning, dispersant); and types of habitats, as well as the behavior and physiology of the marine mammals themselves (Johnson and Ziccardi 2006; Ziccardi et al. 2015; Sullivan et al. 2019). Marine mammals could experience decreased health, reproductive fitness, and longevity, increased vulnerability to disease, and possibly mortality. The oil from a spill can adversely affect marine mammals by causing soft-tissue irritation, fouling of baleen plates, respiratory stress from the inhalation of toxic fumes, food reduction or contamination, direct ingestion of oil and/or tar, and temporary displacement from preferred habitats. There is evidence that some species of marine mammals can metabolize hydrocarbons (Engelhardt 1983; Lee and Anderson 2005). However, the extent to which species metabolize and eliminate hydrocarbons, and the specific gene biomarker pathways used are unclear (Ruberg et al. 2021). An oil spill may physiologically stress an animal (Geraci and St. Aubin 1980), making it more vulnerable to disease, parasitism, environmental contaminants, and/or predation.

The increased human presence in the water after an oil spill (e.g., vessels) would likely add to changes in behavior and/or distribution, thereby potentially stressing marine mammals further and perhaps making them more vulnerable to various physiological and toxic effects of spilled oil. Response vessels could increase risk of vessel strikes. Removing oil from the surface would reduce the risk of contact and render it less likely to adhere to skin, baleen plates, or other body surfaces (Neff 1990). One assumption concerning the use of dispersants is that the chemical dispersion of oil would considerably reduce the impacts to marine mammals, primarily by reducing their exposure to petroleum hydrocarbons (French-McCay 2004; NRC 2005). The acute toxicity of most oil dispersant chemicals is low relative to the constituents and fractions of crude oil and refined products. Dispersants may be irritant to tissues and sensitive membranes (NRC 2005). Impacts through skimmers could be through capture and/or entrainment. In-situ burns could impact some marine mammals if they were in the burning oil; however, it is expected that animals would avoid the area once it is ignited. In both skimming and controlled burning activities, the use of trained observers is common. Because the potential occurrence of a spill and contact with species is low due to applicable regulatory requirements (refer to **Chapter 1.5**) in this plan submittal, and due to the wide-ranging movements of marine mammals in the Gulf, the effects on marine mammals from oil/chemical spills and oil-spill response are expected to be negligible to moderate.

Entanglement and Entrapment

Entanglement, such as from lines in the water, and entrapment can result in death or injury of marine mammals (Moore et al., 2009). Entangled marine mammals may drown or starve due to being restricted by gear, suffer physical trauma and systemic infections, and/or be hit by vessels due to an

inability to avoid them. Moon pools are too small to allow a marine mammal in the Gulf to enter and are therefore highly unlikely to entrap them. The operator will adhere to the 2025 NMFS BiOp A.4 In-Water Line Precaution Protocol and the A.5 Moon Pool Monitoring Protocol, which appreciably reduce the likelihood of marine mammals being entangled or entrapped in gear from the proposed activity (Anadarko, 2025). With applicable required protocols per the 2025 NMFS BiOp marine mammal entanglement in hydrophone cables and streamers, geophones, bottom cables, and other associated gear is unlikely to occur since lines in the water would be taut as required to prevent looping and tangling. Thus, because the possibility of entanglement and entrapment is low and since the operator will adhere to the A.4 In-Water Line Precaution Protocol and A.5 Moon Pool Monitoring Protocol, the effects on marine mammals are expected to be negligible.

Conclusion

Long-term or permanent displacement of the animals from preferred habitats and the destruction or adverse modification of any habitats are not expected to occur due to the scope, timing, and the short-term nature of the proposed activities, and considering the wide-ranging movements and behaviors of marine mammals in the Gulf. Furthermore, the 2025 NMFS BiOp protocols are expected to prevent vessel strikes from reaching the level of significance. The noise related to the proposed drilling operation is not expected to result in auditory effects, behavioral change, masking, or non-auditory effects to marine mammals that would rise to the population level. Based on the above analysis, BOEM finds that the potential for such effects from the Proposed Action is unlikely to rise to significant levels.

3.3 SEA TURTLES

3.3.1 Affected Environment

Five sea turtle species, all federally listed as threatened or endangered, are known to inhabit the waters of the Gulf OCS: leatherback (*Dermochelys coriacea*); green (*Chelonia mydas*); hawksbill (*Eretmochelys imbricata*); Kemp's ridley (*Lepidochelys kempii*); and loggerhead (*Carettra caretta*). These species are all highly migratory, and individual animals will migrate into nearshore waters as well as other areas of the North Atlantic Ocean, Gulf, and Caribbean Sea. The North Atlantic DPS of green turtle is ESA-listed as threatened. Hawksbill turtles, Kemp's ridley turtles, leatherback turtles, and the Northwest Atlantic Ocean Distinct Population Segment (DPS) of loggerhead turtles are ESA-listed as endangered. Floating *Sargassum* patches are federally designated under the ESA as critical habitat for loggerhead turtles (79 FR 39856) and proposed for green turtles (88 FR 46572). Garrison et al. (2020) found that spatial and seasonal variation in loggerheads in the northern Gulf represents the shift in habitats and behavioral modes across seasons, with animals moving into deeper waters and spending progressively less time at the surface during cooler months. Further, Lamont and Hart (2023) found that time at the surface was greater for loggerhead, Kemp's ridley, and green turtles in summer, though did not differ between BOEM's EPA and CPA, except for Kemp's ridleys, which spent more time at the surface in the WPA than the EPA. A complete description of sea turtles can be found in Chapter 4.9 of the 2025 PEIS, Chapter 3.6 of the 2021 BEBR, 2018 FWS BiOp, and 2025 NMFS BiOp, and are incorporated by reference. The proposed action is located in East Breaks Blocks 685 and 686, 111 mi (179 km) from the shore in water depths of 3,676 - 3,687 ft (1,120 - 1,124 m).

3.3.2 Impact Analysis

Sea turtles are susceptible to many natural and human impacts, including impacts on land, in the benthic environment, and in the pelagic environment due to their life history. The IPFs associated with the proposed activities in East Breaks Blocks 685 and 686 that could affect sea turtles include (1) noise (drilling and/or production and vessel/aircraft noise and use of impact-driver equipment), (2) vessel strike, (3) entanglement and entrapment, (4) marine trash and debris, and (5) oil/chemical spills and oil-spill response. For this SEA, impacts were evaluated and assigned levels of environmental impact caused by IPFs as listed below. **Table 3-3** provides a summary of impact to sea turtles.

- **Negligible** – An individual or group of animals would be subject to nominal to slight measurable impacts. No mortality or injury to any individual would occur, and no disruption of behavioral patterns would be expected. The disturbance would last only as long as the human-caused stimulus was perceptible to the individual or group.
- **Minor** – An individual or group of animals would be subject to a human-caused stimulus and would be disturbed, resulting in an acute behavioral change. No mortality or injury to an individual or group would occur.
- **Moderate** – An individual or group of animals would be subject to a human-caused stimulus and would be disturbed, resulting in a chronic behavioral change. Individuals may be impacted but at levels that do not affect the fitness of the population. Some impacts to individual animals may be irreversible.
- **Major** – An individual or group of animals would be subject to a human-caused stimulus, resulting in physical injury or mortality, and would include sufficient numbers that the continued viability of the population is diminished, including annual rates of recruitment or survival. Impacts would also include permanent disruption of behavioral patterns that would affect a species or stock.

Table 3-3. Summary of Impact Levels to Sea Turtles

Impact-Producing Factor	Magnitude of Potential Impact	
	Alternative 1	Alternative 2
Routine Activities		
Noise	None	Negligible
Accidental Events		
Vessel Strike	None	Negligible to Minor
Marine Trash and Debris	None	Negligible
Oil/Chemical Spills and Oil-Spill Response	None	Negligible to Moderate
Entanglement and Entrapment	None	Negligible

3.3.2.1 Alternative 1

If selected, Alternative 1, No Action alternative, would result in the operator not undertaking the proposed activities as described in the plan. Therefore, direct or indirect activity-specific IPFs to

sea turtles would not occur. Activities related to previously issued leases and permits (as well as those that may be issued in the future under a separate decision) related to the OCS activities would not increase. The No Action Alternative would not contribute to the environmental impacts of overall OCS oil- and gas-related activity as described in the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, and routine and accidental impacts would still occur from other activities.

3.3.2.2 Alternative 2

If selected, Alternative 2, Proposed Action, would result in the operator undertaking the proposed activities as requested and conditioned in the plan, and applicable regulations. The operator will adhere to the 2025 NMFS BiOp A.2 Marine Debris Protocol, A.3 Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols, A.7 Sea Turtle Resuscitation Guidelines Protocol, and A.4 In-Water Line Precautions Protocol (Anadarko, 2025). Compliance with the regulations, applicable protocols, and 2025 NMFS BiOp should negate or lessen the chance of significant impacts on sea turtles under this alternative.

3.3.3 Routine Activities

Noise

The dominant source of noise from vessels is propeller operation, and the intensity of this noise is largely related to ship size and speed. Vessel noise from the proposed activities would produce low levels of noise, generally in the 150 to 170 dB re 1 µPa-m at frequencies below 1,000 Hz. Vessel noise is transitory and generally does not propagate at great distances from the vessel. There is no information regarding the long-term consequences that vessel noise may have on sea turtles. Hazel et al. (2007) demonstrated that sea turtles appear to respond behaviorally only to vessels at approximately 33 ft. (10 m) or closer. Noise from service vessel activity may elicit a startle response from sea turtles, and there is the possibility of short-term disruption of activity patterns and temporary sublethal stress (NRC 1990). It is conservative to assume that noise associated with vessels may elicit behavioral changes, such as evasive maneuvers, in individual sea turtles. The most likely effects of vessel noise on sea turtles could include short-term behavioral changes and possibly auditory masking. Based on the best available information, vessel noise is not expected to significantly disrupt normal behavior patterns in sea turtles that include, but are not limited to, breeding, feeding, or sheltering. Further, vessel noises generated by the proposed action will be localized and short term. It is not expected that vessel noise will have any detectable effect on biologically important behaviors of sea turtles.

There is little information on the impacts of underwater drilling sounds on sea turtles. However, sea turtle hearing sensitivity is within the frequency range (100-1,000 Hz) of sound produced by low-frequency sources such as marine drilling (Popper et al. 2014). It is unlikely that sounds from drilling will reach injury thresholds, unless the sea turtle is within very close proximity to the drilling activity (Dow Piniak et al. 2012; Finneran et al. 2017; McCauley et al. 2000), but it may cause temporary avoidance or displacement of sea turtles. Therefore, impacts to sea turtles from noise associated with the proposed drilling activities are expected to be negligible.

Reaction to aircraft noise could temporarily disrupt normal sea turtle activities, including feeding. Important habitat areas (e.g., for feeding, mating, and nesting) may be avoided because of noise generated in the vicinity, but this is not expected as a result of aircraft traffic associated with the proposed action. There is no information regarding the long-term consequences that these disturbances may have on sea turtles. Noise from helicopter overflights may elicit a startle response from sea turtles, and there is the possibility of short-term disruption of activity patterns and temporary sublethal stress (NRC 1990). The most likely effects of aircraft noise on sea turtles could include short-term behavioral changes and possibly auditory masking. The Proposed Action is expected to have helicopter support with multiple transits between the MODU and airbase. Since these occurrences would be temporary and pass within seconds, and given the relevant guidelines and regulations, sea turtles are not expected to be adversely affected by routine helicopter traffic operating at prescribed required Federal Aviation Administration altitudes.

Sea turtles may exhibit some short-term avoidance behaviors, but their behavioral or physiological responses (e.g., stress) to noise associated with the Proposed Action are unlikely to have population-level impacts. Therefore, impacts to sea turtles from noise associated with the proposed activities are expected to be negligible.

3.3.4 Accidental Events

Vessel Strike

There is limited data available concerning potential sea turtle impacts from vessel strikes due to a lack of studies and/or the challenges with detecting such impacts (Nelms et al. 2016). Nonetheless, strikes from all types of vessels are known to result in sea turtle injury and mortality in the Gulf (Lutcavage et al. 1997; Work et al. 2010; Nelms et al. 2016). Sea turtles occur in all Gulf planning areas and are vulnerable to vessel strikes due to the time they spend at the surface. Recent studies show that the time spent at the surface for basking, feeding, orientation, and mating is approximately 11 percent for loggerheads (Garrison et al. 2020), approximately 19 percent for greens (Roberts et al. 2022), and between 11 and 23 percent (Garrison et al. 2020) for Kemp's ridleys, depending on the season. If a sea turtle is struck by a vessel, serious injury, and/or minor, non-lethal injury can occur, with the associated effects varying based on the size and speed of the vessel. There have been no documented sea turtle collisions with OCS oil- and gas related vessels in the Gulf; however, collisions with small or submerged sea turtles may go undetected. The operator will adhere to the 2025 NMFS BiOp A.3 Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols, which prevents or minimizes the potential for vessel strikes by requiring the use of visual observer (e.g., captain), vessel speed restrictions, and separation distances. Thus, effects on sea turtles from vessel strike are expected to be negligible but might be minor for undetected sea turtles underwater (e.g., vessel displacing water inadvertently moving sea turtles in wake).

Marine Trash and Debris

Marine debris, such as plastics, primarily affects sea turtles through entanglement and/or ingestion (e.g., choking or intestinal blockage) (Gall and Thompson 2015; Senko et al. 2020). Entanglement in marine debris could lead to injury, infection, reduced mobility, increased susceptibility

to predation, decreased feeding ability, fitness consequences, and/or mortality (e.g., drowning) of sea turtles (Gall and Thompson, 2015; Senko et al. 2020). Marine debris ingestion could lead to intestinal blockage, which can impact feeding ability and lead to injury or death (Gall and Thompson 2015; Senko et al. 2020). The discharge of marine debris by the offshore oil and gas industry and supporting activities is subject to several laws and treaties. The operator will adhere to the 2025 NMFS BiOp A.2 Marine Debris Protocol, which appreciably reduces the likelihood of sea turtles encountering marine debris from the proposed activity. Thus, effects on sea turtles from marine trash and debris are expected to be negligible.

Oil/Chemical Spills and Oil-Spill Response

Potential impacts of an oil spill depend on a variety of factors, such as spill magnitude, frequency, timing, location, and the meteorological and oceanographic conditions at the time (NRC 2003). Studies have shown that direct exposure of sensitive tissues (e.g., eyes, nares, and other mucous membranes) and soft tissues to oil may produce irritation and inflammation and can adhere to turtle skin or shells (Overton et al. 1983; Van Vleet and Pauly 1987; Lutcavage et al. 1995). Sea turtles surfacing within or near an oil spill would be expected to inhale petroleum vapors, potentially causing respiratory stress. Ingested oil, particularly the lighter fractions, can be acutely toxic to sea turtles. Sea turtle eggs, hatchlings, and small juveniles are particularly vulnerable if contacted with oil (Fritts and McGehee 1982; Lutz and Lutcavage 1989). Sea turtle hatchling exposure to, fouling by, or consumption of tarballs would likely be fatal. Sea turtle eggs laid on sandy beaches are likely to be lethally impacted by contact with spilled oil (NPS 2010). The effects of contact with spilled oil on sea turtles could include mortality; decreased health, reproductive fitness, and longevity; as well as increased vulnerability to disease and contamination of prey species.

Every accidental oil spill is different in the response that would be needed, and activities are determined on a case-by-case basis. Spill response activities could cause an increase in vessel traffic, and thus, an increased possibility for vessel strikes on sea turtles. Cleanup efforts in offshore waters may result in additional injury or mortality of sea turtles, particularly to neonates and juveniles. Due to the nature of the response activities, impacts could occur by a short-term behavioral change of sea turtles in the immediate affected area. Spill response impacts include interrupted or deterred nesting behavior, crushed nests, entanglement in booms, and increased hatchling mortality due to predation from the increased time required to reach the water, assuming no outside intervention (Lutcavage et al. 1997). Increased human presence could influence turtle behavior and/or distribution, thereby stressing animals and making them more vulnerable to predators, the toxicological effects of oil, or other anthropogenic sources of mortality. Because the potential for an oil spill and contact with species are low due to applicable regulatory requirements (refer to **Chapter 1.5**) in this plan submittal and due to the wide-ranging movements of sea turtles in the Gulf, the potential effects on sea turtles from oil/chemical spills and oil-spill response are expected to be negligible to moderate using applicable scientifically credible information.

Entanglement and Entrapment

Entanglement, such as from lines in the water, and entrapment can result in death, stress, or injury of sea turtles. Sea turtles have become entrapped in dredge equipment (NRC, 1990) and have the potential to become entrapped in any submerged structure that an individual is able to enter. Sea

turtles can enter and surface within moon pools, potentially being entrapped. The operator will adhere to the 2025 NMFS BiOp A.4 In-Water Line Precaution Protocol (requiring lines to be taut to prevent looping and tangling) and A.5 Moon Pool Monitoring Protocol, which appreciably reduces the likelihood of sea turtles being entangled or entrapped in gear from the proposed activity (Anadarko, 2025). With applicable required protocols per the 2025 NMFS BiOp, sea turtle entanglement in diver lines, hydrophone cables and streamers, geophones, bottom cables, and other associated gear, in addition to sea turtle entrapment in moon pools (though typically remains open to water if used), is unlikely to occur. Thus, because the possibility of entanglement and entrapment is low and since the operator will adhere to the applicable 2025 NMFS BiOp protocols, the effects on sea turtles are expected to be negligible.

Conclusion

Long-term or permanent displacement of the animals from preferred habitats and the destruction or adverse modification of any habitats are not expected to occur due to the scope, timing, and short-term nature of the proposed activities, and considering the wide-ranging movements and behaviors of sea turtles in the Gulf. Furthermore, the 2025 NMFS BiOp protocols are expected to prevent vessel strikes from increasing to a level that results in population-level effects. Further, the noise related to the proposed drilling operation is not expected to result in auditory effects, behavioral change, masking, or non-auditory effects to sea turtles in the region that would rise to the population level. BOEM finds that the potential effects of the proposed activity on sea turtles would not rise to a level of significance.

3.4 AIR QUALITY

The Clean Air Act (CAA) Amendments of 1990 assigned air quality jurisdiction to the Secretary of the Interior (which was subsequently delegated to BOEM) for sources westward of 87°30' W. longitude and to the United States Environmental Protection Agency (USEPA) for sources eastward of 87°30' W. longitude on the OCS. Air emissions associated with OCS oil- and gas-related activities on the OCS contribute to ambient air pollutant levels in the surrounding onshore areas. The onshore areas include the States of Texas, Louisiana, Mississippi, Alabama, and Florida and special management areas.

The USEPA identified the following six common air pollutants of concern (referred to as criteria air pollutants): carbon monoxide (CO), lead (Pb), ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM), and sulfur dioxide (SO_2) (42 U.S.C. §§ 7401 *et seq*.). The CAA requires USEPA to set the National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants. The USEPA designates onshore areas as “unclassifiable/attainment” or “nonattainment” status depending on the criteria air pollutants levels and their comparison with the NAAQS. Areas designated as “nonattainment” exceed a NAAQS for that criteria air pollutant. **Table 3-4** shows the current areas in nonattainment status. The term “maintenance” area refers to an area that is currently attaining the NAAQS but is still under a maintenance plan to uphold the NAAQS. In addition to the NAAQS, air quality in special management areas designated as Class I, II, or III Areas are further protected by the maximum allowable concentration increases, also referred to as the Prevention of Significant Deterioration (PSD) increments. The protections on air quality in Class I Areas are more stringent than Class II and III

Areas. Moreover, the Federal land managers of Federal Class I Areas are responsible to protect the air quality-related values (AQRVs).

Table 3-4. Nonattainment and Maintenance Areas on the U.S. Gulf Coast

State	Area	8-hr O_3 (1997)	8-hr O_3 (2008)	SO_2 (2010)	Lead (2008)
Alabama	Troy				NAA
Florida	Tampa				NAA
	Hillsborough County			NAA	
	Nassau County			NAA	
Louisiana	Baton Rouge	M	M		
	St. Bernard Parish			NAA	
Texas	Beaumont-Port Arthur	M			
	Houston-Galveston-Brazoria	NAA	NAA		
	Frisco				NAA

M = maintenance area; NAA = nonattainment area; O_3 = ozone; SO_2 = sulfur dioxide. Blank cells indicate that the area is in attainment of the NAAQS.
Source: USEPA, 2021.

3.4.1 Affected Environment

The proposed activities are located approximately 111 mi (179 km) from the nearest coastline. The air emission-related activity covers surface areas in East Breaks Blocks 685 and 686. The air quality over Federal OCS water is not classified. **Table 3-4** displays the current nonattainment and maintenance areas in the surrounding onshore areas; all other onshore areas are in unclassifiable/attainment status. Any annual air pollutant(s) level(s) that exceeds an emission exemption amount in 30 CFR § 550.303(d) will require additional air quality analyses per 30 CFR § 550.303(e)-(i). If there is an exceedance in an emission exemption amount, air quality modeling will estimate onshore air concentration(s) from the highest emissions (except for volatile organic compounds (VOC)) emitted from the development and production activities.

A comparison between the modeled onshore air concentration(s) and significance level(s) (or NAAQS if no significance levels exist for the averaging period) determines if the impacts to the onshore ambient air concentrations are significant. Any air pollutants above the significance levels (or exemption amount for VOCs or NAAQS if no significance levels exist) are defined as having a significant contribution to the violation of the NAAQS. If the emissions are significant, the emissions shall be reduced through the application of best available control technology (BACT). Also, air quality modeling must be performed for the maximum allowable concentration increases (refer to 30 CFR § 550.303(i)(A)).

The proposed activities will be located approximately 364.7 mi (586.9 km) from the nearest Class I Area of the Breton National Wildlife Refuge (NWR) and Wilderness Area. For sources within 31 mi (50 km) from a Class I Area, VISCREEN modeling is an appropriate way of evaluating visibility (1 of 3 AQRVs) impacts. For sources within 124 mi (200 km) from a Class I Area with permanent annual emissions greater than 250 tons per year (tpy), the Q/D (certain annual emissions divided by the distance from the Class I Area) concept is an appropriate way of evaluating visibility impacts. If the

calculated Q/D is greater than 10, further AQRV analysis is appropriate. Air quality modeling will estimate impacts to the AQRVs of the Class I Area (Federal Land Managers Air Quality Working Group (FLAG) (USFS et al., 2010). The modeled values are compared to the AQRVs to determine if there may be significant adverse impacts to the Class I Area of the Breton NWR and Wilderness Area. Any modeled values above the AQRV thresholds are defined as having a significant adverse impact to the Class I Area. If the Q/D is less than 10, no further AQRV impact analysis is needed.

In offshore areas where hydrogen sulfide (H_2S) may be encountered, AERMOD modeling will be performed if concentrations are greater than 500 parts per million (ppm) as addressed in 30 CFR § 550.245. H_2S can convert to SO_2. H_2S is not expected to be encountered in the activity area.

The air quality on the OCS is impacted by emissions from many sources. These include emissions generated by the existing OCS oil and gas program, including emissions from support vessels that service the offshore program, commercial shipping, as well as other sources. Coastal areas may be affected by emissions generated within the onshore nonattainment areas that circulate offshore and back to shore with the sea breeze. The emissions related to the Proposed Action represent a small percentage of the total emissions occurring on the OCS from all sources.

For the facility in East Breaks Blocks 685 and 686, no prior plans have been approved. The emissions from the Proposed Action represent 100 percent of the emissions occurring for this facility and support vessel emissions within a 25-mi (40-km) radius.

3.4.2 Impact Analysis

The IPFs associated with the proposed activities in East Breaks Blocks 685 and 686 that could impact the air quality include (1) air emissions emitted from routine activities (drilling and production related equipment, vessels, and flaring/venting), (2) air emissions emitted from accidental or emergency flaring/venting, and (3) air emissions emitted from an accidental oil spill. An air quality analysis was conducted on the air emission estimates presented in the plan to assess potential impacts to the surrounding onshore areas. The air quality over the Federal OCS water is not classified, but air pollutant concentration(s) could exceed the NAAQS. For this SEA, impacts were evaluated and assigned levels of environmental impact caused by IPFs as listed below.

- **Negligible** – No measurable impact(s).
- **Minor** – Most impacts on the affected resource could be avoided with proper mitigation; if impacts occur, the affected resource would recover completely without mitigation once the impacting stressor is eliminated.
- **Moderate** – Impacts on the affected resource are unavoidable. The viability of the affected resource is not threatened although some impacts may be irreversible, or the affected resource would recover completely if proper mitigation is applied or proper remedial action is taken once the impacting stressor is eliminated.
- **Major** – Impacts on the affected resource are unavoidable. The viability of the affected resource may be threatened although some impacts may be irreversible, and the affected resource would not fully recover even if proper mitigation is

applied or remedial action is implemented once the impacting stressor is eliminated.

Table 3-5 lists the potential IPFs and associated impact levels for each alternative. Overall, routine and accidental impacts to air quality from the proposed activities are expected to be minor.

Table 3-5. Summary of Impact Levels for Air Quality

Impact-Producing Factor	Magnitude of Potential Impact	
	Alternative 1	Alternative 2
Routine Impacts		
Drilling	Negligible	Minor
Production	Negligible	Minor
Vessel Support during Drilling and Production	Negligible	Minor
Routine Flaring and Venting	Negligible	Minor
Accidental Impacts		
Emergency Flaring and Venting	Negligible	Minor
Oil Spill	Negligible	Minor
Cumulative Impacts		
Incremental Contribution	Minor	Minor
OCS Oil and Gas	Moderate	Moderate
Non-OCS Oil and Gas	Moderate	Moderate

A detailed discussion of the IPFs and types of impacts to air quality that could occur from the proposed activities is included in Chapter 4.1 of the 2017-2022 GOM Multisale EIS and 2018 GOM Supplemental EIS, from which this document tiers.

3.4.2.1 Alternative 1

If selected, Alternative 1, No Action Alternative, would result in not undertaking the proposed activities as described in the plan. Therefore, the site-specific IPFs to air quality would not occur. Activities related to previously issued leases and permits (as well as those that may be issued in the future under a separate decision) related to OCS oil- and gas-related activities would continue. The No Action Alternative would not significantly change the environmental impacts of all OCS oil- and gas-related activity as described in the 2017-2022 GOM Multisale EIS and 2018 GOM Supplemental EIS; however, any previously approved, facility-related activities would be ongoing, and routine, accidental, and previously authorized impacts could still occur.

3.4.2.2 Alternative 2

If selected, Alternative 2, Proposed Action, would result in the operator undertaking the proposed activities. As described in the analyses below, impacts to air quality from the Proposed Action are not significant to the onshore area. Impacts to visibility at the Class I Area of the Breton NWR and Wilderness Area are below the threshold, but the impacts to the remaining AQRVs (deposition and ozone effects) are uncertain. Previously approved, facility-related activities are

considered in the impacts analyses, along with the Proposed Action activities, to ensure that exemption thresholds are not exceeded.

3.4.3 Routine Activities

Air quality over Federal OCS water would be affected by the emissions from the proposed operations, supporting service vessels, and aircraft. The calculated emission amounts for the proposed activities did not exceed any emission exemption amount per 30 CFR § 550.303(d). **Table 3-6** shows the maximum calculated emission amounts for each air pollutant. Since all calculated emission amounts were below the emission exemption amount, the proposed activities are not expected to significantly affect onshore air quality.

Table 3-6. Estimated Annual Emission Amounts in Tons per Year (tpy)

TSP	SO_x	NO_x	VOC	CO
95.38	1.39	2285.39	65.96	360.82

The proposed activities will be located greater than 124 mi (200 km) from the Class I Area of the Breton NWR and Wilderness Area; therefore, further AQRV impact analyses were not conducted for visibility. The proposed activities are not expected to cause or contribute to a significant adverse effect on visibility. The remaining AQRVs (deposition and ozone effects) are uncertain because there was no modeling performed for these impacts. However, BOEM believes that such modeling data specific to this Proposed Action are not essential to a reasoned choice among alternatives. BOEM considered the cumulative impact of many plan approvals to deposition and ozone effects in Chapter 4.1 of the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, from which this document tiers. The 2018 GOM Supplemental EIS concluded that the impact on acid deposition from all the activities associated with a single lease sale would be minor to moderate and, while the 2018 GOM Supplemental EIS did not consider ozone effects as an AQRV, the impacts on ozone formation from this proposed activity are considered in the analysis of the IPFs in **Table 3-5**.

3.4.4 Accidental Events

Emergency Flaring and Venting

If an accidental or emergency flaring or venting of gas occurs, PM, NO_x, SO_x, CO, VOCs, and/or methane (CH_4) would be released to the atmosphere. These emissions can contribute to O_3 formation. Additionally, any flared and vented gas may contain H_2S that may convert to SO_2. In general, emergency flaring and venting events are infrequent and of short duration. The emissions (PM, NO_x, SO_x, VOCs, CH_4, CO, and SO_2) are more abundant near the site and will disperse as it travels.

Oil Spills

If an oil spill occurs, VOCs from the surface oil slick will vaporize into the atmosphere. Increases in O_3 concentrations could occur because VOCs are precursors to O_3 formation. Additionally, if a fire occurs, PM and combustion product emissions will be emitted. In general, accidental oil spill and gas release events are infrequent and are usually contained within a few days.

The emissions (VOCs, PM, and combustible emissions) are more likely to be abundant near the site of the release and will disperse with distance.

Conclusion

The potential impacts of the projected emissions to the surrounding onshore areas are below all applicable significance thresholds; therefore, they are expected to be minor. Overall, routine and accidental impacts to air quality from the proposed activities are expected to be minor.

4 CONSULTATION AND COORDINATION

Coastal Zone Management Act

Per 15 CFR part 930 subpart D (private activities that require a federal permit or license) and subpart E (OCS plans), proposed activities must be "fully consistent" with enforceable policies of a State's coastal management program. Consistency concurrence from the states of Louisiana and Texas must be received prior to plan approval.

Endangered Species Act

The ESA of 1973 (16 U.S.C. §§ 1531 *et seq*.), as amended, establishes a national policy designed to protect and conserve threatened and endangered species and the ecosystems upon which they depend. Section 7(a)(2) of the ESA requires each Federal agency to ensure that any action that it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the adverse modification of designated critical habitat.

BOEM and BSEE engaged in consultation under the ESA with NMFS and FWS. On May 20, 2025, the NMFS published their "Biological and Conference Opinion on Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement's Oil and Gas Program Activities in the Gulf of America" (NMFS, 2025a) and associated Attachments and Appendices (NMFS, 2025b), which contain protocols BOEM applies for ESA compliance. In addition, any future BiOp amendments or COAs will be binding on subsequent post-lease actions. The 2025 NMFS BiOp and supporting documents can be found online at https://www.fisheries.noaa.gov/resource/document/biological-and-conference-opinion-bureau-ocean-energy-management-and-bureau. The 2025 NMFS BiOp Attachments and Appendices can be found online at: https://www.fisheries.noaa.gov/resource/document/attachments-and-appendices-2025-gulf-america-oil-and-gas-biological-opinion.

Based on BOEM's internal step-down review on December 1, 2025, this plan does not require a step-down review by NMFS. BOEM concludes the action or activity may affect listed species or critical habitat, but it is an action or activity whose effects have been covered programmatically by this programmatic biological opinion.

On April 20, 2018, the FWS issued a 10-year BiOp for BOEM and BSEE activities with no terms and conditions, and any future consultations may be informal, dependent upon the likelihood of take of ESA-listed species under that Service's jurisdiction (FWS 2018). On March 6, 2024, BOEM and BSEE requested reinitiation of consultation with FWS regarding updated oil-spill risk analyses, new listings, and general species information. FWS requested additional information from BOEM and

BSEE in a letter dated December 20, 2024; the Bureaus responded on February 5, 2025. On March 28, 2025, the FWS sent BOEM a letter with its evaluation of the new information and data, and its determination that nothing considered during the reinitiated consultation changed the conclusions of the 2018 BiOp and that no further ESA consultation with the Service for the proposed action is necessary (BOEM 2025). The 2018 FWS BiOp remains in effect and any future BiOp amendments or associated COAs will be binding on subsequent post-lease actions.

Marine Mammal Protection Act

BOEM petitioned NMFS for rulemaking under the MMPA (16 U.S.C. §§ 1361 et seq.) relating to G&G surveys on the OCS in the Gulf. On January 19, 2021, NMFS published in the *Federal Register* a final Incidental Take Regulation (ITR), which became effective on April 19, 2021 (86 FR 5322). A draft revision to this regulation that corrects some calculation errors and therefore adjusts taking allowable under the regulations was published on January 5, 2023 (88 FR 916). On April 24, 2024, NMFS published in the *Federal Register* its final rule, "Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys in the Gulf of Mexico" and the rule is effective from May 24, 2024 through April 19, 2026 (89 FR 31488). There are no changes to the specified activities or the specified geographical region in which those activities would be conducted, nor to the original 5-year period of effectiveness. A new request for MMPA authorization was prepared and submitted by industry in March 2025. On September 3, 2025, NOAA Fisheries announced the receipt of a request from the NOAA Fisheries' Office of Policy for the reimplementation of ITRs governing the incidental taking of marine mammals during geophysical survey activity conducted in the GOA, and invited the public to provide information, suggestions, and comments on the request (90 FR 42569).

Magnuson-Stevens Fishery Conservation and Management Act

Pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act, Federal agencies are required to consult with NMFS on any action that may result in adverse effects to EFH. The NMFS published the final rule implementing the EFH provisions of the Magnuson-Stevens Fisheries Conservation and Management Act (50 CFR Part 600) on January 17, 2002. Certain OCS oil- and gas-related activities authorized by BOEM may result in adverse effects to EFH and therefore require EFH consultation. As such, BOEM prepared the *Essential Fish Habitat Assessment for the Gulf of Mexico* technical report on behalf of BOEM and BSEE; it describes the routine activities on the OCS, analyzes the effects of routine and accidental activities on EFH, and identifies mitigating measures (BOEM, 2016). The 2017-2022 Programmatic EFH consultation with NMFS was concluded on September 14, 2017, with BOEM and BSEE concurrence with NMFS' conservation recommendations. The agreed upon conservation recommendations contain provisions for bottom-disturbing activities that would trigger an individual project-specific EFH consultation when they occur within specified distances of topographic features and live-bottom (Pinnacle Trend) features (refer to NTL 2009-G39).

National Historic Preservation Act

In accordance with the NHPA (54 U.S.C. §§ 300101 *et seq.*), Federal agencies are required to consider the effects of their undertakings on historic properties. The implementing regulations for Section 106 of the NHPA, issued by the Advisory Council on Historic Preservation (36 CFR Part 800),

specify the required review process. In accordance with 36 CFR § 800.8(c), BOEM uses the NEPA substitution process and documentation to comply with Section 106 of the NHPA. Because of the extensive geographic area analyzed in the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, BOEM defers identification of historic properties and completion of the Section 106 review process until site-specific analysis of postlease activities can be completed prior to approving those activities. Due to the site-specific analysis described in this SEA and additional mitigation measures, if applicable, BOEM has determined that no significant impacts to historic properties are likely to occur as a result of the Proposed Action.

Clean Air Act

The CAA Amendments of 1977 designated 156 Class I Areas, consisting of national parks and wilderness areas that are offered special protection for air quality and the AQRVs. Breton National Wildlife Refuge and Wilderness Area in Louisiana is a Class I Area. The Class I Areas, compared to the Class II Areas, have lower Prevention of Significant Deterioration (PSD) air quality increments that new sources may not exceed and are protected against excessive increases in several AQRVs, including visibility impairment, acid (sulfur and nitrogen) deposition, and nitrogen eutrophication. The Regional Haze Rule (40 CFR § 51.308) has a goal of natural visibility conditions by 2064 at Class I Areas, and States must submit Regional Haze Rule State Implementation Plans that demonstrate progress towards that goal.

The proposed activities are located 365 mi (587 km) from the Breton NWR and Wilderness Area; therefore, coordination with FWS was not required.

Clean Water Act

The USEPA (Regions 4 and 6) regulates the discharge of routine operational waste streams generated from offshore oil- and gas-related activities. Section 403 of the CWA requires that NPDES permits be issued for discharges to State territorial waters, the contiguous zone, and the ocean in compliance with the USEPA's regulations for preventing unreasonable degradation of the receiving waters. There are two general NPDES permits that cover the oi- and gas- related discharges on the OCS. Permit GMG290000, issued by USEPA Region 6, covers the WPA and CPA; Permit GEG460000, issued by USEPA Region 4, covers the EPA and a small part of the CPA.

The final NPDES General Permit No. GMG290000 for New and Existing Sources and New Dischargers in the Offshore Subcategory of the Oil and Gas Extraction Point Source Category for the Western and Central Portion of the Outer Continental Shelf of the Gulf of Mexico was reissued by USEPA Region 6 on May 11, 2023, with an effective date of May 11, 2023, and an expiration date of May 10, 2028 (USEPA, 2023).

Government-to-Government Tribal Consultation

In accordance with Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," Federal agencies are required to establish regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications to strengthen the United States' government-to-government relationships with Indian Tribes and to reduce the imposition of unfunded mandates upon Indian Tribes.

BOEM has formally invited Tribal Nations with current or ancestral ties to the region to consult on the development of OCS oil- and gas-related activities, including the 2017-2022 National OCS Program and Programmatic EIS, 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, and GOM Lease Sales 259 and 261 Supplemental EIS, and the *Gulf of Mexico OCS Proposed Geological and Geophysical Activities: Western, Central, and Eastern Planning Areas; Final Programmatic Environmental Impact Statement* (BOEM, 2017c). Tribes that BOEM has invited to consult on these activities include the Alabama-Coushatta Tribe of Texas, Caddo Nation of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Miccosukee Tribe of Indians of Florida, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Tribe of Florida, Seminole Nation of Oklahoma, and Tunica-Biloxi Indian Tribe of Louisiana.

No tribes have accepted invitations for government-to-government consultation on these activities; however, tribal representatives have requested to be notified if any pre-contact archaeological resources are identified and/or adversely impacted by BOEM-permitted activities. To date, no such discoveries or adverse impacts have occurred. Were they to occur during activities associated with the proposed plan, BOEM will notify and invite consultations with the above tribes as requested.

Greenhouse Gas Analysis

BOEM produced the technical report Gulf of Mexico OCS Oil and Gas Leasing Greenhouse Gas Emissions and Social Cost Analysis (2022 GOM GHG Analysis), which summarizes the life cycle greenhouse gas (GHG) emissions estimated to result from a typical conventional energy lease sale. The report was released after the 2017-2022 GOM Multisale EIS and 2018 GOM Supplemental EIS and is being included as a reference for ongoing site-specific environmental reviews, including those associated with plan reviews. The analysis encompasses emissions potentially resulting from the full life cycle of oil and gas exploration, development, production, and consumption from a representative lease sale; it also estimates emissions from use of energy substitutes in the absence of that leasing.

BOEM acknowledges that the models used in those analyses were developed for programmatic analysis applied at a regional level and there may be limitations on the scalability of the models from this analysis to the site-specific review here. The programmatic analysis depends on a global price change, and individual site-specific decisions may not cause large enough changes in production to generate a market response for substitute energy sources. The site-specific analysis represents a small subset of the activities analyzed for the 2022 GOM GHG Analysis. BOEM has reviewed that analysis and determined that it provides the best available information and that the reasonably foreseeable impacts of the activities proposed in Initial EP N-10264 are not likely to result in significant impacts beyond a subset of those analyzed in the 2022 GOM GHG Analysis.

U.S. Government Accountability Office

In February 2016, the U.S. Government Accountability Office (GAO) prepared a report entitled “Oil and Gas Management: Interior’s Bureau of Safety and Environmental Enforcement Restructuring Has Not Addressed Long-Standing Oversight Deficiencies” (GAO 2016). This report examined the extent to which BSEE’s restructuring at the time had an effect on its capabilities for (1) investigations,

(2) environmental compliance, and (3) enforcement. The GAO reviewed laws, regulations, and policies related to BSEE's restructuring and oversight activities. In the report, the GAO had nine recommendations, including that BSEE (1) complete and update its investigative policies and procedures, (2) conduct and document a risk analysis of the regional-based reporting structure, and (3) develop procedures for enforcement actions. BSEE began addressing the recommendations in 2016 and according to GAO, as of 2021, all recommendations related to BSEE's restructuring and offshore oil and gas oversight have been closed and implemented (GAO 2021). The GAO removed the segment from its High-Risk Series in 2021. After independently reviewing the GAO reports and the updates on the GAO website closing out the recommendations on oversight and restructuring, BOEM has determined that the GAO report and the recommendations that have now been implemented by BSEE do not change the reasonably foreseeable environmental impacts that may result from an oil and gas lease sale and that were evaluated in the 2017-2022 GOM Multisale EIS or 2018 GOM Supplemental EIS. BOEM has also determined that the GAO report or implementation of the recommendations does not affect BOEM's conclusions regarding impacts reasonably foreseeable from the proposed activities (i.e., will not result in significant impacts) as related to this site-specific review.

5 PUBLIC COMMENT

Anadarko's N-10264 EP was deemed submitted (as per 30 CFR § 550.231) on January 21, 2026, and it was placed on https://www.regulations.gov for a 10-day public review. At the end of the comment period on February 11, 2026, no public comments were received.

APPENDICES

A. IMPACT-PRODUCING FACTOR DESCRIPTIONS

Descriptions of the impact-producing factors (IPFs) are provided below. The information provided below are summaries of the information included in the main text of this SEA. Additional detailed information can also be found in the 2017-2022 GOM Multisale EIS, 2018 GOM Supplemental EIS, GOM Lease Sales 259 and 261 Supplemental EIS (BOEM, 2017a, 2017b, and 2023) and 2025 GOA PEIS.

Routine Activities

(1) **Bottom disturbance** from well and anchor emplacement and drilling activities – Physical disturbance to the seabed, benthic habitats, and/or communities. Typically, wells drilled in shallow water (0-300 m [0-984 ft]) create a splay of drilling muds and cuttings that spread 250 m (820 ft) from the well, and the coverage area would be approximately 500 m (1,640 ft) from the well in deepwater (300 to 1,524 m [984 to 5,000 ft]) and ultra deepwater (greater than 1,524 m [5,000 ft]) water depths.

(2) **Noise** from drilling activities and vessel and helicopter transportation – A subjective term reflective of societal values regarding what constitutes unwanted or undesirable intrusions of sound. Noise generated from these activities can be transmitted through both air and water, and may be of long or short duration, distance, and sound level. The intensity level and frequency of the noise emissions are highly variable, both between and among the various types of sound sources, along with the received sound levels to the resources. The primary sources of vessel noise are propeller cavitation, propeller singing, and rotating machinery; other sources include auxiliaries, flow noise from water dragging along the hull, and bubbles breaking in the wake (Richardson et al., 1995)[13]. Drilling operations (these can include pile driving, generators, pumps, etc.) often produce noise that includes strong tonal components at low frequencies, including infrasonic frequencies in at least some cases[14].

(3) **Discharges and Wastes** from vessel operations and exploration activities – Releases into the environment resulting from multiple sources. The primary operational wastes and discharges generated during offshore oil and gas exploration and development are drilling fluids, drill cuttings, various waters (e.g., bilge, ballast,

[13] The intensity of noise from service vessels is roughly related to ship size, laden or not, and speed. Large ships tend to be noisier than small ones, and ships underway with a full load (or towing or pushing a load) produce more noise than empty vessels. For example, a 16-m (52-ft) crewboat may have a 90-hertz (Hz) tone with a source level of 156 dB re: 1µPa, and a small ship may have a broadband source level of 170-180 dB re: 1µPa (Richardson et al., 1995). Helicopter sounds contain dominant tones (resulting from rotors) generally below 500 Hz (Richardson et al., 1995).

[14] Dynamically positioned MODUs (drillships and semisubmersibles) are noisier than anchored MODUs (Richardson et al., 1995). Sound and vibration paths to the water are through either the air or the risers, in contrast to the direct paths through the hull of a drillship. Sound from drilling activities has been measured from the 20- to 1,000-Hz band levels at a range of 1.8 km (1.1 mi) at levels of 113-126 dB re: 1µPa.

fire, and cooling), deck drainage, sanitary wastes, and domestic wastes. During production activities, additional waste streams include produced water, produced sand, and well-treatment, workover, and completion fluids. Minor additional discharges occur from numerous sources. These discharges may include desalination unit discharges, blowout preventer fluids, boiler blowdown discharges, excess cement slurry, several fluids used in subsea production, and uncontaminated freshwater and saltwater.

(4) **Space Use Conflicts** – Wells, platforms, pipelines, subsea infrastructure, and other structures create obstructions to the recovery of marine minerals and other existing or future users (commercial and recreational fishing, aquaculture, renewable, artificial reefs, etc.) of the OCS. BOEM is required to consider the impact of the proposed activities on other users of the OCS. For marine minerals, no-dredging zones are 500 ft (152 m) from any structure and 1,000 ft (305 m) from a pipeline. The well and platforms would be permanent obstructions, even if removed to 15 ft (5 m) below the substrate, as dredging cannot be performed within 500 ft (152 m) due to the risk to the dredge and infrastructure. The pipeline obstruction could be temporary in that pipelines can be removed upon abandonment. All military activities on the OCS occur within military warning areas designated by the Federal Aviation Administration in coordination with the U.S. Department of Defense. Lessees and permittees conducting oil and gas operations within these warning areas are required to coordinate with the appropriate military command.

(5) **Air Emissions** from equipment and vessels – Emissions associated with drilling from OCS oil- and gas-related activities are attributed to gasoline, diesel, and natural gas fuel usage in engines such as propulsion engines, prime engines, mud pumps, draw works, and emergency power. Emissions associated with production from OCS oil- and gas-related activities are attributed to boilers, diesel engines, combustion flares, fugitives, glycol dehydrators, natural gas engines, turbines, pneumatic pumps, pressure/level controllers, storage tanks, cold vents, and others. Pollutants emitted during drilling activities include combustion gases (i.e., CO, NO_x, PM, SO_2, CO_2, CH_4, and N_2O), as well as non-combustion sources (i.e., VOCs, PM, and CH_4)[15].

Accidental events

(1) **Oil/Chemical Spills** (loss of well control and chemical/drilling fluid) **and Oil-Spill Response** – BSEE requires operators to report any spill greater than 1 barrel (bbl) (42 gallons [gal]) occurring on the OCS and maintains a database for all reported incidents[16]. All losses of well control are required to be reported to BSEE.

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[15] CO – carbon monoxide; NO_x – nitrogen oxide; PM – particulate matter; SO_2 – sulfur dioxide; CO_2 – carbon dioxide; CH_4 – methane; N_2O – nitrous oxide; and VOC – volatile organic compound.

[16] Not included in BSEE's data records are spills less than 1 bbl. Spills of any size and composition are required to be reported to the U.S. Coast Guard's (USCG) National Response Center and are further documented in the USCG's

Loss of Well Control

The current definition for loss of well control is as follows:

- uncontrolled flow of formation or other fluids (the flow may be to an exposed formation [an underground blowout] or at the surface [a surface blowout]);
- uncontrolled flow through a diverter; and/or
- uncontrolled flow resulting from a failure of surface equipment or procedures.

Not all loss of well control events would result in a blowout as defined above, but they are most commonly thought of as releases to the human environment. A loss of well control can occur during any phase of development, i.e., exploratory drilling, development drilling, well completion, production, or workover operations. A loss of well control can occur when improperly balanced well pressure results in sudden, uncontrolled releases of fluids from a wellhead or wellbore (PCCI Marine and Environmental Engineering, 1999; Neal Adams Firefighters, Inc., 1991).

The physical and chemical properties of oil greatly affect its transport and fate in the environment. Following a spill, the composition of the released oil can change substantially due to weathering processes such as evaporation, emulsification, dissolution, and oxidation. The ultimate fate of oil in the environment and its impacts are influenced not only by the magnitude, spatial extent, and duration of the event but also by the response methods that may be employed. Horizontal transport of oil is accomplished through spreading, advection, dispersion, and entrainment. Vertical transport involves dispersion, entrainment, Langmuir circulation (a series of shallow, slow, counter-rotating vortices at the ocean's surface aligned with the wind developed when wind blows steadily over the sea surface), sinking, overwashing, partitioning, and sedimentation.

Chemical and Drilling Fluid Spills

Chemicals and synthetic-based drilling fluids are considered because they may be persistent (nondegradable) and are comparatively toxic. A study of chemical spills from OCS oil and gas activities determined that only two chemicals could potentially impact the marine environment – zinc bromide and ammonium chloride (Boehm et al., 2001). Other common chemicals spilled include methanol and ethylene glycol, which are used in deepwater and ultra deepwater operations where gas hydrates tend to form due to cold temperatures. These alcohol-based chemicals are nonpersistent (degradable) and exhibit comparatively low toxicity.

Marine Information for Safety and Law Enforcement (2001-present) database and its predecessors. Also not included in BSEE's database are spills that have occurred in Federal waters from OCS barging operations and from other service vessels that support the OCS oil and gas industry. These data are included in the USCG's record of all spills; however, the USCG's database does not include the source of oil (OCS versus non-OCS) or in the case of spills from vessels, the type of vessel operations; such information is needed to determine if a particular spill occurred as a result of OCS operations. Spills from vessels are provided for tankers in worldwide waters and tankers and barges in U.S. coastal and offshore waters.

(1) **Air emissions** from emergency flaring/venting and/or oil spills – Activities that produce emissions include drilling operations, platform construction and emplacement, platform operations, flaring, fugitive emissions, evaporation of volatile organic compounds during transfers and spills, and support vessel emissions. Various onshore facility activities supporting offshore oil and gas operations, or receiving oil or gas from them, emit air pollutants. This includes emissions from helicopters, vessels, stationary engines (e.g., generators), and equipment leaks (i.e., fugitive emissions). The USEPA defined criteria pollutants released by OCS sources include CO, NO_2, PM_{10}, $PM_{2.5}$ and SO_2.

(2) **Vessel Strike (Vessel to Marine Species or Habitat) and Collisions (Vessel to Vessel; Vessel to Structure)** – BOEM's data show that, from 2007 through 2019, there were 181 OCS oil- and gas-related vessel collisions (BSEE, 2021). Most collision mishaps are the result of service vessels colliding with platforms or vessel collisions with pipeline risers. Fires resulted from hydrocarbon releases in several collision incidents. Diesel fuel is the product most frequently spilled, while oil, natural gas, corrosion inhibitor, hydraulic fluid, and lube oil have also been released as the result of a vessel collision. Approximately 10 percent of vessel collisions with platforms in the OCS caused diesel spills.

Vessels could strike marine mammals, sea turtles, and other marine animals during transit. To limit or prevent such strikes, the National Marine Fisheries Service (NMFS) provides all boat operators with whale-watching guidelines, which is derived from the Marine Mammal Protection Act (MMPA). These guidelines suggest safe navigational practices based on speed and distance limitations when encountering marine mammals. Requirements in the 2025 NMFS BiOp Vessel Strike Avoidance and Injured and/or Dead Aquatic Protected Species Reporting Protocols address vessel strike prevention.

(3) **Marine Trash and Debris** – During construction or operation activities, equipment may be dropped to the seafloor. If this happens within the planned construction site, the bottom disturbance impacts are conservatively considered as part of the routine impacts; however, accidental drops may occur during transport. The discharge of marine debris by the offshore oil and gas industry and supporting activities is subject to a number of laws and treaties. These include the Marine Debris Research, Prevention, and Reduction Act; the Marine Plastic Pollution Research and Control Act; and the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V Prevention of Pollution by Garbage from Ships. Regulation and enforcement of these laws is conducted by a number of agencies such as the U.S. Environmental Protection Agency (USEPA), National Oceanic and Atmospheric Administration (NOAA), and U.S. Coast Guard (USCG). Requirements in the 2025 NMFS BiOp Marine Debris Protocol address marine debris prevention.

(4) **Entanglement/Entrapment** – Marine animals may become entangled or entraped in facility (platform) or vessel moon pool, flexible lines, equipment, or gear used during

construction, drilling, production/operation, and decommissioning activities. Lines in the water, moon pools, or accidental marine debris may pose an entanglement/entrapment risk. Entanglement and entrapment can lead to injury, infection, reduced mobility, increased susceptibility to predations, decreased feeding ability, fitness consequences (increased potential for vessel strike due to an inability to avoid), and/or mortality of marine wildlife. Requirements in the 2025 NMFS BiOp In-Water Line Precaution Protocol and the Moon Pool Monitoring Protocol address entanglement/entrapment prevention.

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