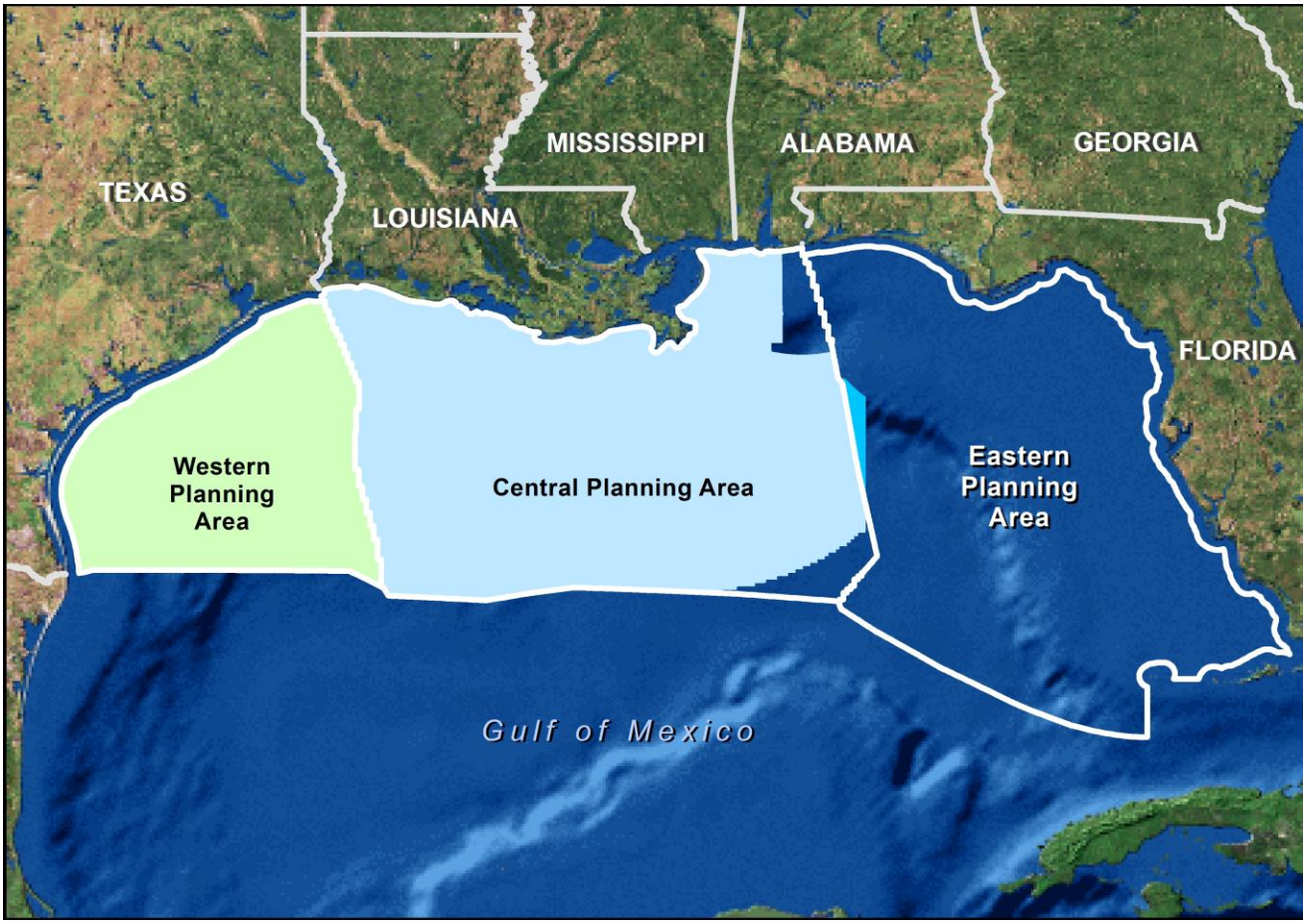
Gulf of Mexico OCS
Oil and Gas Lease Sales: 2017-2022

Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261

Draft Environmental Impact Statement

Executive Summary



U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region

BOEM
Bureau of Ocean Energy Management

EXECUTIVE SUMMARY

PURPOSE OF AND NEED FOR THE PROPOSED ACTIONS

The Bureau of Ocean Energy Management (BOEM) proposes to conduct 10 regionwide Gulf of Mexico (GOM) oil and gas lease sales, which are tentatively scheduled in the *Proposed Outer Continental Shelf Oil & Gas Leasing Program: 2017-2022* (Five-Year Program; USDOI, BOEM, 2016a). Five regionwide lease sales are tentatively scheduled in August of each year from 2017 through 2021 and five regionwide lease sales are tentatively scheduled in March of each year from 2018 through 2022. The lease sales proposed in the GOM in the Five-Year Program are regionwide lease sales comprised of the Western, Central, and a small portion of the Eastern Planning Areas (WPA, CPA, and EPA, respectively) not subject to Congressional moratorium (**Figure 1**). Even though the Five-Year Program includes regionwide lease sales, any individual lease sale could still be scaled back during the prelease sale process to conform more closely to the separate planning area model used in the *Proposed Final Outer Continental Shelf Oil & Gas Leasing Program*: *2012-2017* (2012-2017 Five-Year Program; USDOI, BOEM, 2012a), should circumstances warrant.

Proposed 2017-2022 Gulf of Mexico OCS Region Lease Sale Schedule	
Lease Sale Number	Year
249	2017
250 and 251	2018
252 and 253	2019
254 and 256	2020
257 and 259	2021
261	2022

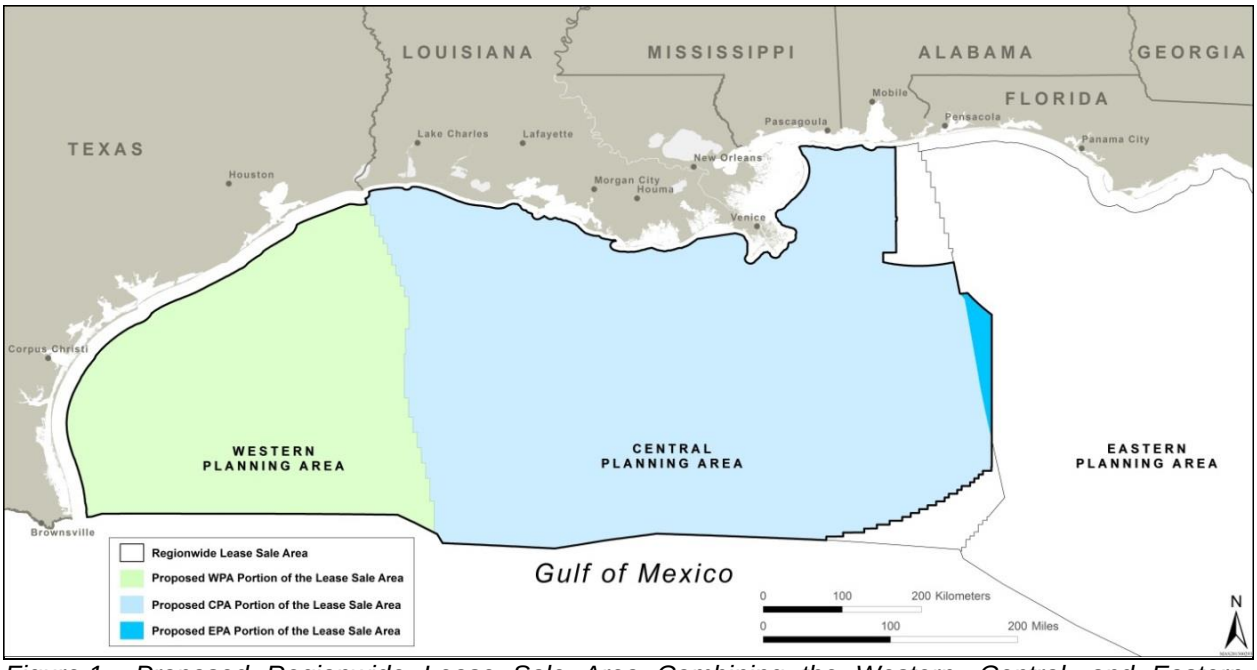


Figure 1. Proposed Regionwide Lease Sale Area Combining the Western, Central, and Eastern Planning Areas.

The proposed lease sales would provide qualified bidders the opportunity to bid upon and lease acreage in the Gulf of Mexico Outer Continental Shelf (OCS) in order to explore, develop, and produce oil and natural gas.

Purpose of the Proposed Actions

The Outer Continental Shelf Lands Act of 1953, as amended (43 U.S.C. §§ 1331 *et seq*. [1988]), hereafter referred to as OCSLA, establishes the Nation's policy for managing the vital energy and mineral resources of the OCS. Section 18 of OCSLA requires the Secretary of the Interior to prepare and maintain a schedule of proposed OCS oil and gas lease sales determined to "best meet national energy needs for the 5-year period following its approval or reapproval" (43 U.S.C. § 1344). The Five-Year Program establishes a schedule that the U.S. Department of the Interior (USDOI or DOI) will use as a basis for considering where and when leasing might be appropriate over a 5-year period.

> *"It is hereby declared to be the policy of the United States that . . . the Outer Continental Shelf is a vital national resource held by the Federal Government for the public, which should be made available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs."*
>
> OCSLA, 43 U.S.C. §§ 1331 *et seq.*

The purpose of the proposed Federal actions is to offer for lease those areas that may contain economically recoverable oil and gas resources in accordance with the OCSLA.

Need for the Proposed Actions

The need for the proposed actions is to further the orderly development of OCS resources in an environmentally and economically responsible manner. Oil serves as the feedstock for liquid hydrocarbon products, including gasoline, aviation and diesel fuel, and various petrochemicals. Oil from the Gulf of Mexico OCS contributes to meeting domestic demand and enhances national economic security.

THE DECISION TO BE MADE

BOEM will make an individual decision on whether and how to proceed with each proposed lease sale in the Five-Year Program. After completion of this Multisale EIS, BOEM will make a decision on proposed Lease Sale 249 (i.e., prepare a Record of Decision for Lease Sale 249 only). As discussed in **Chapter 1.3.1**, individual decisions will be made on each subsequent lease sale after completion of the appropriate supplemental NEPA documents.

SCOPING

BOEM conducted a public scoping process that extended from April 29 to June 1, 2015. Public scoping meetings were held in five cities (New Orleans, Louisiana; Houston, Texas; Panama City, Florida; Mobile, Alabama; and Gulfport, Mississippi). In addition to accepting oral and written comments at each public meeting, BOEM accepted written comments by mail, email, and through the regulations.gov web portal (http://www.regulations.gov). BOEM received a total of 10 comments in response to the Notice of Intent to Prepare an EIS. Many of the comments cited broad environmental concerns or specific concern about impacts on marine wildlife in general or on

protected species such as marine mammals and sea turtles. Others cited concerns about impacts to critical habitats, fish and fisheries, sensitive benthic communities, and pelagic resources. Several of the comments had concerns with the effects of oil spills and the safety of offshore operations. Within the broad category of socioeconomics, comments focused on impacts on fisheries, recreation, tourism, and local jobs. Some of the comments provided recommendations for inclusion of particular alternatives or mitigation in this Multisale EIS analysis. Some comments recommended the implementation of specific analysis methodologies, while others recommended that recent industry technology and safety advances be taken into consideration.

Pursuant to the OCSLA, the Bureau of Ocean Energy Management published a Call for Information (Call) to request and gather information to determine the Area Identification (Area ID) for each lease sale. The Call was published in the *Federal Register* (2015a) on September 4, 2015. The Call invited potential bidders to nominate areas of interest within the program area(s) included in the 2017-2022 Draft Proposed Program. The Call was also an opportunity for the public to provide information on environmental, socioeconomic, and other considerations relevant to determining the Area ID. The comment period for the Call closed on October 5, 2015. BOEM received one comment letter in response to the Call from the Louisiana Department of Natural Resources. The Louisiana Office of Coastal Management requested that BOEM consider secondary and cumulative impacts of OCS lease sales on coastal environments as well as identify, quantify, and mitigate (e.g., compensatory mitigation) secondary and cumulative harm that occurs to Louisiana's coastal wetlands, and implement plans for validating predictions of social and environmental effects on coastal resources. Using information provided in response to the Call and from scoping comments, BOEM then developed an Area ID recommendation memorandum. The Area ID is an administrative prelease step that describes the geographic area for environmental analysis and consideration for leasing. On November 20, 2015, the Area ID decision was made. One Area ID was prepared for all proposed lease sales. The Area ID memorandum recommended keeping the entire regionwide area of the GOM included in the Draft Proposed Program for consideration in this Multisale EIS. The area identified for lease includes all of the available unleased blocks in the GOM not subject to Congressional moratorium pursuant to the Gulf of Mexico Energy Security Act of 2006.

ALTERNATIVES

BOEM has identified four action alternatives, and the no action, to be analyzed in this Multisale EIS. These alternatives are briefly described below. The mitigating measures (pre- and postlease), including the proposed stipulations, are fully described in **Chapter 2 and Appendix D**, as are the deferred alternatives not analyzed in detail.

Alternative A—Regionwide OCS Lease Sale (The Preferred Alternative)

Alternative A would allow for a proposed regionwide lease sale encompassing all three planning areas within the U.S. portion of the Gulf of Mexico OCS for any given lease sale in the Five-Year Program. This is BOEM's preferred alternative. This alternative would offer for lease all available unleased blocks within the WPA, CPA, and EPA portions of the proposed lease sale area for oil and gas operations (**Figure 2**), with the following exceptions:

(1) whole and portions of blocks deferred by the Gulf of Mexico Energy Security Act of 2006 (discussed in the *OCS Regulatory Framework* white paper [Cameron and Matthews, 2016]);

(2) blocks that are adjacent to or beyond the United States' Exclusive Economic Zone in the area known as the northern portion of the Eastern Gap; and

(3) whole and partial blocks within the boundary of the Flower Garden Banks National Marine Sanctuary (i.e., the boundary as of the publication of this Multisale EIS).

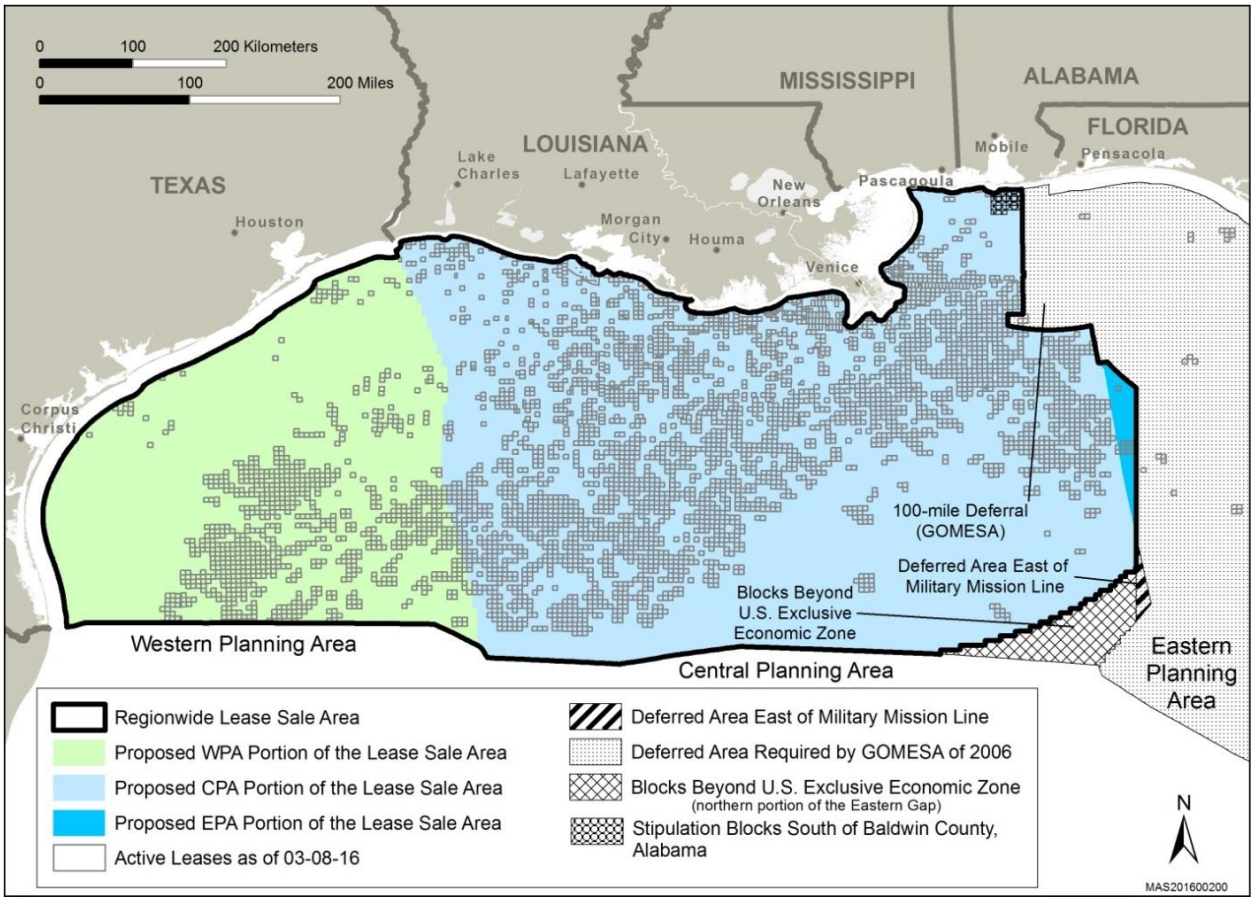


Figure 2. Proposed Regionwide Lease Sale Area, Encompassing the Available Unleased Blocks within All Three Planning Areas (approximately 92.2 million acres with approximately 72.5 million acres available for lease as of March 2016).

Alternative B—Regionwide OCS Lease Sale Excluding Available Unleased Blocks in the WPA Portion of the Proposed Lease Sale Area

Alternative B would allow for a proposed lease sale encompassing the CPA and EPA within the U.S. portion of the Gulf of Mexico OCS (**Figure 3**). Available blocks within the WPA would ***not*** be considered under this alternative. This alternative would offer for lease all available unleased blocks within the CPA and EPA portions of the proposed lease sale area as those planning area portions described in Alternative A for oil and gas operations, with the following exceptions:

(1) whole and portions of blocks deferred by the Gulf of Mexico Energy Security Act of 2006 (discussed in the *OCS Regulatory Framework* white paper [Cameron and Matthews, 2016]); and

(2) blocks that are adjacent to or beyond the United States' Exclusive Economic Zone in the area known as the northern portion of the Eastern Gap.

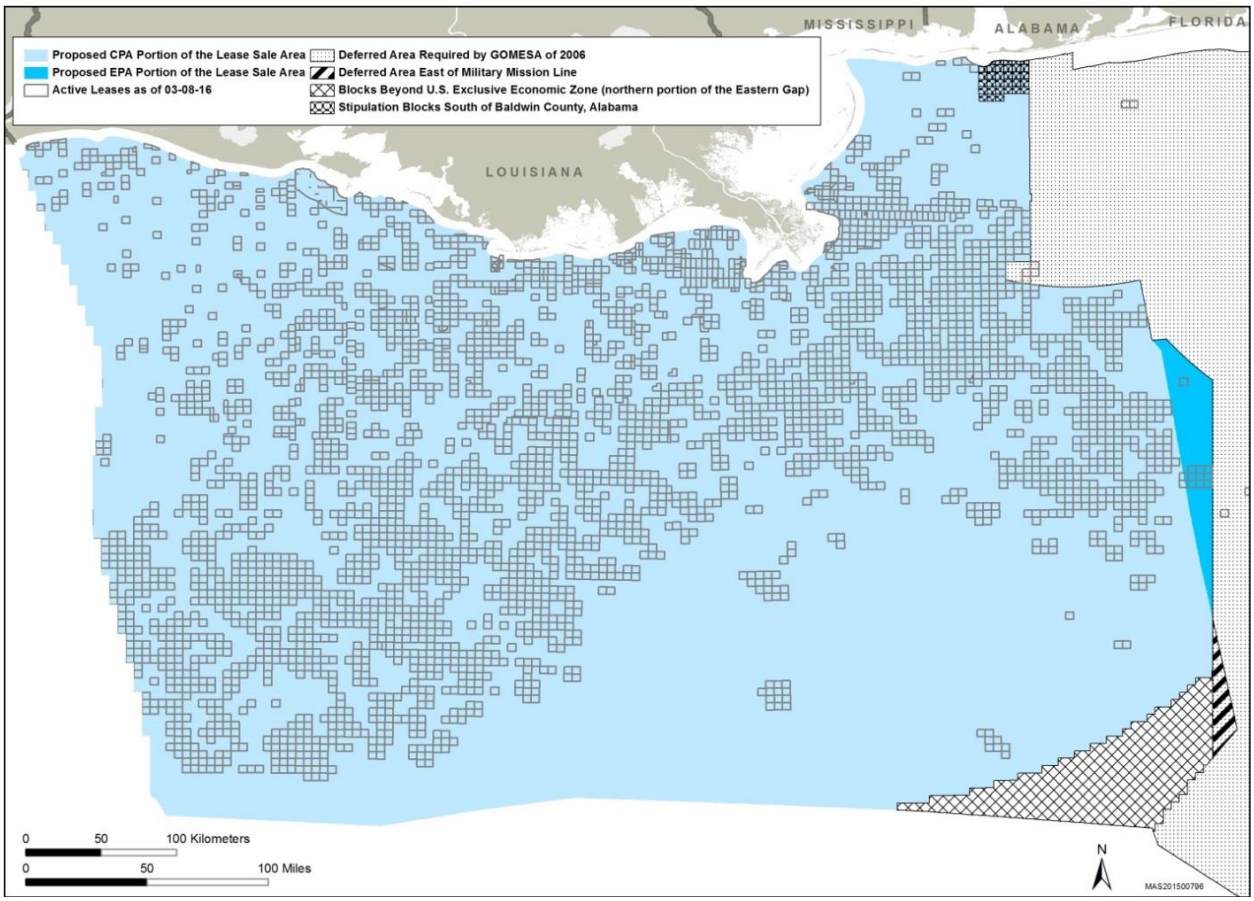


Figure 3. Proposed Lease Sale Area for Alternative B, Excluding the Available Unleased Blocks in the WPA (approximately 66.45 million ac with approximately 48.3 million ac available for lease as of March 2016).

Alternative C—Regionwide OCS Lease Sale Excluding Available Unleased Blocks in the CPA/EPA Portions of the Proposed Lease Sale Area

Alternative C would allow for a proposed lease sale encompassing the WPA within the U.S. portion of the Gulf of Mexico OCS (**Figure 4**). Available blocks within the CPA and EPA would ***not*** be considered under this alternative. This alternative would offer for lease all available unleased blocks within the WPA portion of the proposed lease sale area for oil and gas operations, with the following exception:

(1) whole and partial blocks within the boundary of the Flower Garden Banks National Marine Sanctuary (i.e., the boundary as of the publication of this Multisale EIS).

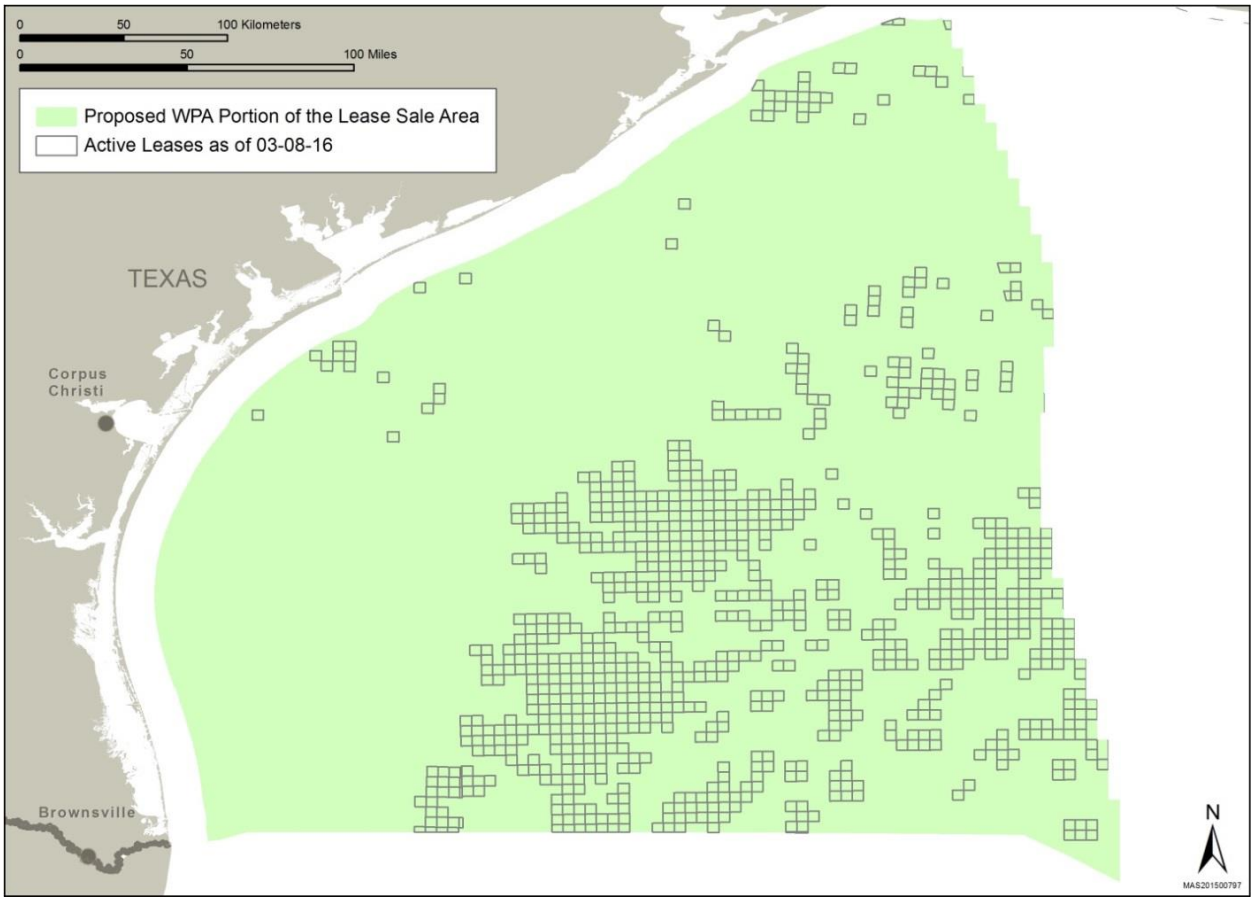


Figure 4. Proposed Lease Sale Area for Alternative C, Excluding the Available Unleased Blocks in the CPA and EPA (approximately 28.58 million ac with approximately 23.6 million ac available for lease as of March 2016).

Alternative D—Alternative A, B, or C, with the Option to Exclude Available Unleased Blocks Subject to the Topographic Features, Live Bottom (Pinnacle Trend), and/or Blocks South of Baldwin County, Alabama, Stipulations

Alternative D could be combined with any of the action alternatives above (A, B, or C) and would allow the flexibility to offer leases under any alternative with additional exclusions. Under Alternative D, the decisionmaker could exclude from leasing any available unleased blocks subject to any one and/or combination of the following stipulations:

- Topographic Features Stipulation;
- Live Bottom (Pinnacle Trend) Stipulation; and
- Blocks South of Baldwin County, Alabama, Stipulation (not applicable to Alternative C).

This alternative considered blocks subject to these stipulations because these areas have been emphasized in scoping, can be geographically defined, and adequate information exists regarding their ecological importance and sensitivity to OCS oil- and gas-related activities, as shown in **Figure 5**. All of the assumptions (including the other potential mitigating measures) and estimates would remain the same as described for any given alternative.

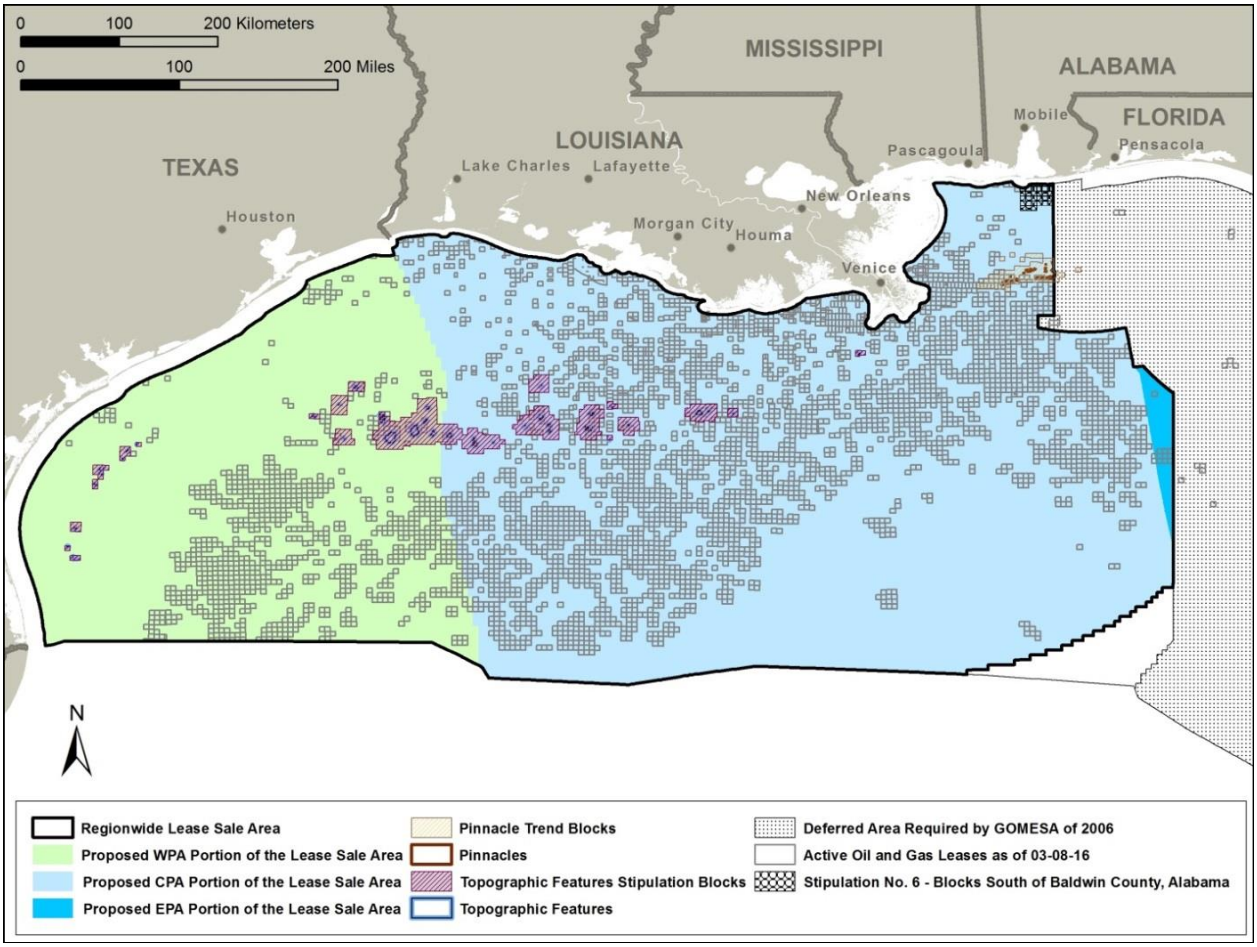


Figure 5. Identified Topographic Features, Pinnacle Trend, and Baldwin County Stipulation Blocks in the Gulf of Mexico.

Alternative E—No Action

Alternative E is the cancellation of a single proposed lease sale. The opportunity for development of the estimated oil and gas that could have resulted from a proposed action (i.e., a single lease sale) or alternative to a proposed action, as described above, would be precluded or postponed to a future lease sale. Any potential environmental impacts resulting from a proposed lease sale would not occur or would be postponed. Cancellation of a proposed lease sale, however, would not stop all OCS oil- and gas-related activities. 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 oil and gas program would continue. If a lease sale were to be cancelled, the resulting development of oil and gas would most likely be postponed to a future lease sale; therefore, the

overall level of OCS oil- and gas-related activity would only be reduced by a small percentage, if any.

MITIGATING MEASURES

Proposed lease stipulations and other mitigating measures designed to reduce or eliminate environmental risks and/or potential multiple-use conflicts between OCS operations and U.S. Department of Defense activities may be applied to the chosen alternative. Mitigating measures in the form of lease stipulations are added to the lease terms and are therefore enforceable as part of the lease. The 10 lease stipulations being considered are the Topographic Features Stipulation; Live Bottom (Pinnacle Trend) Stipulation; Military Areas Stipulation; Evacuation Stipulation; Coordination Stipulation; Blocks South of Baldwin County, Alabama, Stipulation; Protected Species Stipulation; United Nations Convention on the Law of the Sea Royalty Payment Stipulation; Below Seabed Operations Stipulation; and the Stipulation on the Agreement between the United States of America and the United Mexican States Concerning Transboundary Hydrocarbon Reservoirs in the Gulf of Mexico (Transboundary Stipulation). The United Nations Convention on the Law of the Sea Royalty Payment Stipulation is applicable to a proposed lease sale even though it is not an environmental or military stipulation. **Chapter 2.2.4** provides a brief description of each stipulation and the potential benefits associated with its use. **Appendix D** provides a more detailed analysis of the 10 lease stipulations and their effectiveness.

Application of lease stipulations will be considered by the Assistant Secretary of the Interior for Land and Minerals Management (ASLM). The inclusion of the stipulations as part of the analysis of the proposed actions does not ensure that the ASLM will make a decision to apply the stipulations to leases that may result from a proposed lease sale, nor does it preclude minor modifications in wording during subsequent steps in the prelease process if comments indicate changes are necessary or if conditions warrant. Any lease stipulations or mitigating measures to be included in a lease sale will be described in the Final Notice of Sale. In addition, mitigations may be added to plan and/or permits for OCS oil- and gas-related activities (**Chapter 2.2.4.3**). For more information on mitigating measures that are added at the postlease stage, refer to **Appendix B** ("Commonly Applied Mitigating Measures").

DIRECT AND INDIRECT ACTIONS ASSOCIATED WITH A PROPOSED LEASE SALE

BOEM describes the potentially occurring actions associated with a single lease sale and the cumulative activities that provide a framework for a detailed analysis of the potential environmental impacts. Exploration and development scenarios describe the infrastructure and activities that could potentially affect the biological, physical, and socioeconomic resources in the GOM. They also include a set of ranges for resource estimates, projected exploration and development activities, and impact-producing factors.

Offshore activities are described in the context of scenarios for a proposed action (**Chapter 3.1**) and for the OCS Program (**Chapter 3.3**). BOEM's Gulf of Mexico OCS Region developed these scenarios to provide a framework for detailed analyses of potential impacts of a

proposed lease sale. The scenarios are presented as ranges of the amounts of undiscovered, unleased hydrocarbon resources estimated to be leased and discovered as a result of a proposed action. The analyses are based on a traditionally employed range of activities (e.g., the installation of platforms, wells, and pipelines, and the number of helicopter operations and service-vessel trips) that would be needed to develop and produce the amount of resources estimated to be leased.

Within each resource section in **Chapter 4**, the cumulative analysis considers environmental and socioeconomic impacts that may result from the incremental impact of a proposed action when added to all past, present, and reasonably foreseeable future activities, including non-OCS oil- and gas-related activities such as import tankering and commercial fishing, as well as all OCS oil- and gas-related activities (OCS Program). This includes projected activity from lease sales that have been held but for which exploration or development has not yet begun or is continuing. In addition, impacts from natural occurrences, such as hurricanes, are analyzed.

ENVIRONMENTAL IMPACTS

The affected environment and the potential impacts of a single lease sale and each alternative have been described and analyzed by resource. Analysis of the alternatives include routine activities, accidental events, cumulative impact analysis, incomplete or unavailable information, and conclusions for each resource. This Multisale EIS also considers baseline data in the assessment of impacts from a proposed action on the resources and the environment (**Chapter 4**).

The major issues that frame the environmental analyses in this Multisale EIS are the result of concerns raised during years of scoping for the Gulf of Mexico OCS Program. Issues related to OCS oil and gas exploration, development, production, and transportation activities include the potential for oil spills, wetlands loss, air emissions, wastewater discharges and water quality degradation, marine trash and debris, structure and pipeline emplacement activities, platform removal, vessel and helicopter traffic, multiple-use conflicts, support services, population fluctuations, land-use planning, impacts to recreation and beaches, aesthetic interference, environmental justice, and conflicts with State coastal zone management programs. Environmental resources and activities identified during the scoping process that warrant an environmental analysis include air quality, water quality, coastal habitats (including wetlands and seagrasses), barrier beaches and associated dunes, live bottom habitats (including topographic features and pinnacle trends), *Sargassum* and associated communities, deepwater benthic communities, marine mammals, sea turtles, birds, fishes and invertebrate resources, commercial fisheries, recreational fishing, recreational resources, archaeological resources, and socioeconomic factors (including environmental justice), and within the CPA only, beach mice.

Other relevant issues include impacts from the *Deepwater Horizon* explosion, oil spill, and response; impacts from past and future hurricanes on environmental and socioeconomic resources; and impacts on coastal and offshore infrastructure. During the past several years, the Gulf Coast States and Gulf of Mexico oil and gas activities have been impacted by major hurricanes. The

description of the affected environment includes impacts from these relevant issues on the physical environment, biological environment, and socioeconomic activities, and on OCS oil- and gas-related infrastructure.

Impact Conclusions

The full analyses of the potential impacts of routine activities and accidental events associated with a proposed action and a proposed action's incremental contribution to the cumulative impacts are described in the individual resource discussions in **Chapter 4**. A summary of the potential impacts from a proposed action on each environmental and socioeconomic resource and the conclusions of the analyses can be found in the following discussions. **Table 1** provides a comparison of the expected impact levels by alternative and is derived from the analysis of each resource in **Chapter 4**. The impact level ratings have been specifically tailored and defined for each resource within the **Chapter 4** impact analysis. BOEM has concluded that the selection of Alternative E would result in no additional discernible impacts to the resources analyzed; therefore, Alternative E ratings were not included. Cumulative impacts of current and past activities, however, would continue to occur under Alternative E.

Table 1. Alternative Comparison Matrix.

Impact Level Key				
Beneficial	Negligible	Minor	Moderate	Major

Resource	Alternative A	Alternative B	Alternative C	Alternative D
Air Quality	Minor	Minor	Minor	Minor
Water Quality	Minor	Minor	Minor	Minor
Estuarine Systems	Minor	Negligible	Negligible	Negligible to Minor
Coastal Barrier Beaches and Associated Dunes	Negligible	Negligible	Negligible	Negligible
Deepwater Benthic Communities	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor
Sargassum and Associated Communities	Negligible	Negligible	Negligible	Negligible
Live Bottoms				
Topographic Features	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible
Pinnacles and Low-Relief Features	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible
Fishes and Invertebrate Resources	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate
Birds	Moderate	Moderate	Moderate	Moderate
Protected Species				
Marine Mammals	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate
Sea Turtles	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate

Impact Level Key				
Beneficial	Negligible	Minor	Moderate	Major

Resource	Alternative A	Alternative B	Alternative C	Alternative D
Beach Mice	Negligible	Negligible	Negligible	Negligible
Protected Birds	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate
Protected Corals	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor
Commercial Fisheries	Beneficial to Minor	Beneficial to Minor	Beneficial to Minor	Beneficial to Minor
Recreational Fishing	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor
Recreational Resources	Beneficial to Minor	Beneficial to Minor	Beneficial to Minor	Beneficial to Minor
Archaeological Resources	Negligible	Negligible	Negligible	Negligible
Human Resources and Land Use	Negligible to	Negligible to	Negligible to	Negligible to
Land Use and Coastal Infrastructure	Major	Major	Major	Major
Economic Factors	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor
Social Factors (including Environmental Justice)	Minor	Minor	Minor	Minor

Note: BOEM has concluded that the selection of Alternative E would result in no additional discernible impacts to the resources analyzed; however, cumulative impacts of current and past activities would continue to occur.

Air Quality

Air quality is the degree at which the ambient air is free of pollution; it is assessed by measuring the pollutants in the air. To protect public health and welfare, the Clean Air Act established National Ambient Air Quality Standards (NAAQS) for certain common and widespread pollutants. The seven common "criteria pollutants" are particle pollution (also known as particulate matter [$PM_{2.5}$ and PM_{10}]), carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); lead (Pb); and ozone (O_3). Air emissions from OCS oil and gas development in the Gulf of Mexico would arise from emission sources related to drilling and production with associated vessel support, flaring and venting, decommissioning, fugitive emissions, and oil spills. Associated activities that take place as a result of a proposed action support and maintain the OCS oil and gas platform sources. Air emissions from non-OCS oil- and gas-related emissions in the Gulf of Mexico would arise from emission sources related to State oil and gas programs, onshore industrial and transportation sources, and natural events. Since the primary NAAQS are designed to protect human health, BOEM focuses on the impact of these activities on the States, where there are permanent human populations.

Based on Year 2008 and Year 2011 OCS emission inventories, postlease 1-hour NO_x modeling, and past studies, emissions of pollutants into the atmosphere from routine activities and accidental events associated with the OCS Program are projected to be **minor**. Additionally, reductions in emissions have been achieved through the use of low sulfur fuels, catalytic reduction, and other efforts. The incremental contribution of a single regionwide proposed lease sale to the cumulative impacts would be **minor**. Portions of the Gulf Coast onshore areas have ozone levels that exceed the Federal air quality standard, but the incremental contribution from a regionwide proposed lease sale would be very small. The cumulative contribution to visibility impairment from a regionwide proposed lease sale is also expected to be very small. A full analysis of air quality can be found in **Chapter 4.1**.

Water Quality

Water quality is a term used to describe the condition or environmental health of a waterbody or resource, reflecting its particular biological, chemical, and physical characteristics and the ability of the waterbody to maintain the ecosystems it supports and influences. It is an important measure for both ecological and human health. The impacts of OCS Program-related routine operational discharges (**Chapter 3.1.5.1**) on water quality are short term and localized, and are therefore considered **negligible**. The potential impacts from OCS Program-related oil spills on water quality after mitigation are also short term and are considered **minor**. This is because, after removal of most free product, the residual oil dissipates quickly through dispersion and weathering; however, secondary impacts to water quality may occur, such as the introduction of additional hydrocarbon into the dissolved phase through the use of dispersants and the sinking of hydrocarbon residuals from burning. The impacts from a proposed action are a small addition to the cumulative impacts on water quality when compared with inputs from hypoxia, potentially leaking shipwrecks, chemical weapon and industrial waste dumpsites, natural oil seeps, and natural turbidity. The incremental contribution of the routine activities and accidental events associated with a proposed action to the cumulative impacts on water quality is not expected to be significant. A full analysis of water quality can be found in **Chapter 4.2**.

Coastal Habitats

Estuarine Systems (Wetlands and Seagrasses/Submerged Vegetation)

The estuarine system is the transition zone between freshwater and marine environments. It can consist of many habitats, including wetlands and submerged vegetation. The impacts to these habitats from routine activities associated with a proposed action are expected to be **negligible** due to the projected low probability for any new pipeline landfalls (0-1 projected), the minimal contribution to the need for maintenance dredging, and the mitigating measures expected to be used to further reduce these impacts, e.g., use of modern techniques such as directional drilling. Overall, impacts to estuarine habitats from oil spills associated with activities related to a proposed action would be expected to be **minor** because of the distance of most postlease activities from the coast, the expected weathering of spilled oil, the projected low probability of large spills near the coast, the resiliency of wetland vegetation, and the available cleanup techniques. Cumulative impacts to

estuarine habitats are caused by a variety of factors, including the OCS oil- and gas-related and non-OCS oil- and gas-related activities outlined in **Chapter 4.3.1** and the human and natural impacts. Development pressures in the coastal regions of the GOM have been largely the result of tourism and residential beach-side development, and this trend is expected to continue. Storms will continue to impact the coastal habitats and have differing impacts. The incremental contribution of a proposed action to the cumulative impacts on estuarine habitats is expected to be **negligible** to **minor**. A full analysis of estuarine habitats can be found in **Chapter 4.3.1**.

Coastal Barrier Beaches and Associated Dunes

The coastal barrier beaches and associated dunes are those beaches and dunes that line the coast of the northern GOM, including both barrier islands and beaches on the mainland. The impacts to coastal barrier beaches and dunes from routine activities associated with a proposed action are expected to be **negligible** due to the minimal number of projected onshore pipelines, the minimal contribution to vessel traffic and the need for maintenance dredging, and the mitigating measures that would be used to further reduce these impacts. The greater threat from an oil spill to coastal beaches is from a coastal spill as a result of a nearshore vessel accident or pipeline rupture and from cleanup activities. Overall, impacts to coastal barrier beaches and dunes from oil spills associated with OCS oil- and gas-related activities related to a proposed action would be expected to be **minor** because of the distance of most of the resulting activities from the coast, expected weathering of spilled oil, projected low probability of large spills near the coast, and available cleanup techniques. Cumulative impacts to coastal barrier beaches and dunes are caused by a variety of factors, including the OCS oil- and gas-related and non-OCS oil- and gas-related activities outlined in **Chapter 4.3.2** and the other human and natural impacts. Development pressures in the coastal regions of the GOM have been largely the result of tourism and residential beach-side development, and this trend is expected to continue. Efforts to stabilize the GOM shoreline have adversely impacted coastal beach landscapes. Storms will continue to impact the coastal habitats and have differing impacts. The incremental contribution of a proposed action to the cumulative impacts on estuarine habitats is expected to be **negligible** to **minor**. A full analysis of coastal barrier beaches and associated dunes can be found in **Chapter 4.3.2**.

Deepwater Benthic Communities

BOEM defines “deepwater benthic communities” as including both chemosynthetic communities (chemosynthetic organisms plus seep-associated fauna) and deepwater coral communities (deepwater coral plus associated fauna). These communities are typically found in water depths of 984 feet (ft) (300 meters [m]) or deeper throughout the GOM, although deepwater benthic habitats are relatively rare compared with ubiquitous soft bottoms. The OCS oil- and gas-related impact-producing factors for deepwater benthic communities can be grouped into three main categories: (1) bottom-disturbing activities; (2) drilling-related sediment and waste discharges; and (3) noncatastrophic oil spills. These impact-producing factors have the potential to damage individual deepwater habitats and disrupt associated benthic communities if insufficiently distanced or otherwise mitigated. However, impacts from individual routine activities and accidental events are usually temporary, highly localized, and expected to impact only small numbers of organisms and

substrates at a time. Moreover, use of the expected site-specific plan reviews/mitigations will distance activities from deepwater benthic communities, greatly diminishing the potential effects. Therefore, at the regional, population-level scope of this analysis and assuming adherence to all expected regulations and mitigations, impacts from routine activities and reasonably foreseeable accidental events are expected to be **negligible** to **minor**. Proposed OCS oil- and gas-related activities would also contribute incrementally to the overall OCS and non-OCS cumulative effects experienced by live bottom habitats. The OCS oil- and gas-related cumulative impacts to deepwater benthic communities are estimated to be **negligible to minor**. A full analysis of deepwater benthic communities can be found in **Chapter 4.4**.

Sargassum and Associated Communities

Sargassum in the GOM is comprised of *S. natans* and *S. fluitans*, and is characterized by a brushy, highly branched thallus with numerous leaf-like blades and berrylike pneumatocysts. The *Sargassum* cycle is truly expansive, encompassing most of the western Atlantic Ocean and the Gulf of Mexico with the growth, death, and decay of these plant and epiphytic communities, which may play a substantial role in the global carbon cycle. Several impacting factors can affect *Sargassum*, including vessel-related operations, oil and gas drilling discharges, operational discharges, accidental spills, non-OCS oil- and gas-related vessel activity, and coastal water quality. Routine vessel operations and accidental events that occur during drilling operations or vessel operations, and oiling due to an oil spill were the impact-producing factors that could be reasonably expected to impact *Sargassum* populations in the GOM. All of these impact-producing factors would result in the death or injury to the *Sargassum* plants or to the organisms that live within or around the plant matrix. However, the unique and transient characteristics of the life history of *Sargassum* and the globally widespread nature of the plants and animals that use the plant matrix buffer against impacts at any given location. Impacts to the overall population of the *Sargassum* community are therefore expected to be **negligible** from either routine activities or reasonably foreseeable accidental events. The incremental impact of OCS oil- and gas-related activities on the population of *Sargassum* would be **negligible** and would not result in cumulative impacts to the population. Impacts from changing water quality would be much more influential on *Sargassum* than OCS development and would still occur without the presence of OCS oil- and gas-related activities. A full analysis of *Sargassum* and associated communities can be found in **Chapter 4.5**.

Live Bottom Habitats

Topographic Features

Defined topographic features (**Chapter 4.6.1**) are a subset of GOM live bottom habitats that are large enough to have an especially important ecological role, with specific protections defined in the proposed Topographic Features Stipulation. Within the Gulf of Mexico, BOEM has identified 37 topographic features where some degree of protection from oil and gas development may be warranted based on geography and ecology. Of all the possible impact-producing factors, it was determined that bottom-disturbing activities associated with drilling, exploration, and vessel operations were the only impact-producing factors from routine activities that could be reasonably

expected to substantially impact topographic features. The impact-producing factors resulting from accidental events include bottom-disturbing activities from drilling, exploration, and vessel operations, as well as the release of sediments and toxins released during drilling. Oil spill-related activities were also considered to be a substantial source of potential impact to topographic features.

Adherence to the Topographic Features Stipulation, which is detailed in **Appendix D**, would assist in preventing most of the potential impacts on topographic feature communities by increasing the distance of OCS oil- and gas-related activities from these features. Should this stipulation be applied to any future lease sale, as it has been historically, impacts of a proposed action to topographic features from routine activities and accidental events or the cumulative impact of a proposed action in the GOM are expected to be **negligible**. The incremental contribution of a proposed action to the cumulative impacts on topographic features is expected to be **negligible** with adherence to the proposed Topographic Features Stipulation. Impacts ranging from **negligible** to **moderate** may still be expected from non-OCS oil- and gas-related activities depending on factors such as fishing and pollution; however, the incremental impact of the proposed activities should not result in an augmentation of the expected impacts. Additionally, any localized impacts at one topographic feature does not preclude that impacts will occur at other topographic features. A full analysis of topographic features can be found in **Chapter 4.6.1**.

Pinnacles and Low-Relief Features

The Pinnacle Trend is an approximately 64 x 16 mile (103 x 26 kilometer) area in water depths of about 200-650 ft (60-200 m). It is in the northeastern portion of the CPA at the outer edge of the Mississippi-Alabama shelf between the Mississippi River and De Soto Canyon (**Figures 2-4 and 4-16**). Outside of the Pinnacle Trend, low-relief live bottom epibenthic communities occur in isolated locations in shallow waters (<984 ft; 300 m) throughout the GOM, wherever there is suitable hard substrate and other physical conditions (e.g., depth, turbidity, etc.) for development. Hard bottom habitats occur throughout the GOM but are relatively rare compared with ubiquitous soft bottoms. The impact-producing factors for pinnacles and low-relief live bottom features can be grouped into three main categories: (1) bottom-disturbing activities; (2) drilling-related sediment and waste discharges; and (3) oil spills. These impact-producing factors have the potential to damage individual deepwater habitats and disrupt associated benthic communities if insufficiently distanced or otherwise mitigated. At the broad geographic and temporal scope of this analysis, and assuming adherence to all expected lease stipulations and typically applied regulations and mitigations, routine activities are expected to have largely short-term localized and temporary effects. Although accidental events have the potential to cause severe damage to specific live bottom communities, the number of such events is expected to be very small. Therefore, at the regional, population-level scope of this analysis, impacts from reasonably foreseeable routine activities and accidental activities are expected to be **negligible** to **minor**. Proposed OCS oil- and gas-related activities would also contribute incrementally to the overall OCS and non-OCS cumulative impacts experienced by live bottom habitats. The OCS oil- and gas-related cumulative impacts to live bottom communities are estimated to be **negligible**. A full analysis of pinnacles and low-relief features can be found in **Chapter 4.6.2**.

Fish and Invertebrate Resources

The distribution of fishes and invertebrates vary widely, and species may be associated with different habitats at various life stages, which is discussed further in **Chapter 4.7**. The impact-producing factors affecting these resources are anthropogenic sound, bottom-disturbing activities, habitat modification, and accidental oil spills. The impacts from routine activities, excluding infrastructure emplacement, would be expected to be **negligible** or **minor** due to short-term localized effects. The installation of OCS oil- and gas-related infrastructure constitutes a long-term modification of the local habitat and is hypothesized to have resulted over the life of the program in **moderate** changes in the distribution of some species. Although this effect is not necessarily adverse and infrastructure is expected to be decommissioned and sites restored to natural habitat, the cumulative impact over the life of the OCS Program extensively pertains to time and space. Accidental spills have been historically low-probability events and are typically small in size. The expected impact to fishes and invertebrate resources from accidental oil spills is **negligible**. Commercial and recreational fishing are expected to have the greatest direct effect on fishes and invertebrate resources, resulting in impact levels ranging from **negligible** for most species to potentially **moderate** for some targeted species (e.g., hogfish spp., gray triggerfish, and greater amber jack [*Seriola dumerili*]). The analysis of OCS oil- and gas-related and non-OCS oil- and gas-related routine activities, accidental events, and cumulative impacts indicates the overall impact to fishes and invertebrate resources would range from **negligible** to **moderate** for different species. A full analysis of fish and invertebrate resources can be found in **Chapter 4.7**.

Birds

The affected birds include both terrestrial songbirds and many groups of waterbirds. Routine impacts to coastal, marine, and migratory birds that were considered include routine discharges and wastes, noise, platform severance with explosives (barotrauma), geophysical surveys with airguns, platform presence and lighting, construction of OCS oil- and gas-related onshore facilities, and pipeline landfalls. The impacts to birds from OCS oil-and gas-related routine activities are similar wherever they may occur in the GOM, and all are considered **negligible** to **minor**. Negligible impacts would be little to no impacts that are measured or measurable for a population. No mortality of a flock or large population would occur, and no overall disturbance-causing changes in behavioral patterns would be expected. Minor impacts would occur when one of the two following conditions are met: (1) flocks or large populations of birds would experience stimuli or impact-producing factors and would be disturbed or otherwise affected overall, resulting in acute behavioral changes; however, these impacts would be short term and reversible; and (2) one or more incidents where one or more individuals experience injury or mortality may occur, but with no measured or measurable impact on a large population. Accidental impacts to birds are caused by oil spills, spill cleanup, and emergency air emissions. Seabirds may not always experience the greatest impacts from a spill but it may take longer for populations to recover because of their unique population ecology (demography). Some species of seabirds can have a clutch size of just one egg, and they have relatively long life spans and often have delayed age at first breeding. Impacts for overall accidental events would be **moderate**. However, other seabirds, such as gulls, have larger clutches (laughing gulls usually have three eggs/clutch except in the tropics) and may recover quite quickly.

This conclusion is based on the increment of a proposed action compared with all cumulative OCS oil- and gas-related and non-OCS oil- and gas-related impacts. A full analysis of birds can be found in **Chapter 4.8**.

Protected Species

Marine Mammals

The Gulf of Mexico marine mammal community is diverse and distributed throughout the GOM, with the greatest abundances and diversity of species inhabiting oceanic and OCS waters. The major potential impact-producing factors affecting marine mammals in the GOM as a result of cumulative past, present, and reasonably foreseeable OCS energy-related activities are decommissioning activities, operational discharges, G&G activities, noise, transportation, marine debris, and accidental oil spill and spill-response activities. Accidental events that involve large spills, particularly those continuing to flow fresh hydrocarbons into oceanic and/or outer shelf waters for extended periods (i.e., days, weeks, or months), pose an increased likelihood of impacting marine mammal populations inhabiting GOM waters. While accidental events have the potential to impact marine mammal species, the number of such events is expected to be very small.

At the regional, population-level scope of this analysis, impacts from routine activities and reasonably foreseeable accidental activities are expected to be **negligible** to **moderate**. Proposed OCS oil- and gas-related activities would also contribute incrementally to the overall OCS and non-OCS cumulative effects experienced by marine mammal populations. The incremental contribution of a proposed action to cumulative impacts to marine mammal populations, depending upon the affected species and their respective population estimate, even when taking into consideration the potential impacts of the *Deepwater Horizon* explosion, oil spill, and response; non-OCS oil- or gas-related factors; and the minimization of the OCS oil- or gas-related impacts through lease stipulations and regulations, would be expected to be **negligible**. A full analysis of marine mammals can be found in **Chapter 4.9.1**.

Sea Turtles

Five sea turtle species have been listed and are present throughout the northern GOM; however, only Kemp's ridley and loggerheads commonly nest on beaches in the GOM. Because of expected mitigations (e.g., BOEM and the Bureau of Safety and Environmental Enforcement [BSEE] proposed compliance with Notices to Lessees and Operators [NTLs] under the proposed Protected Species Stipulation and conditions of approval on postlease activities), the routine activities (e.g., noise or transportation) and accidental events (e.g., oil spills) related to a proposed action are not expected to have long-term adverse effects on the size and productivity of any sea turtle species or populations in the northern GOM. Lethal effects could occur from chance collisions with OCS oil- and gas-related service vessels or ingestion of accidentally released plastic materials from OCS oil- and gas-related vessels and facilities. However, there have been no reports to date on such incidences. Most routine activities and accidental events are therefore expected to have **negligible** to **moderate** impacts. For example, a minor impact might be a behavioral change in response to

noise while a moderate impact might be a spill contacting an individual and causing injury or mortality.

Historically, intense harvesting of eggs, loss of suitable nesting beaches, and fishery-related mortality have led to the rapid decline of sea turtle populations. Anthropogenic actions continue to pose the greatest threat to sea turtles since their listing under the Endangered Species Act (ESA), as well as different natural threats including climate change and natural disasters. Cumulative impacts to sea turtles would be expected to be **negligible** as a result of a proposed action. Population-level impacts are not anticipated. A full analysis of sea turtles can be found in **Chapter 4.9.2**.

Beach Mice

The four subspecies of beach mouse (*Peromyscus polionotus* ssp.) are small coastal rodents that are only found along beaches in parts of Alabama and northwest Florida. Beach mice rely on dune systems as favorable habitat for foraging and maintaining burrows. Due to the distance between beach mouse habitat and OCS oil- and gas-related activities, routine impacts are not likely to affect beach mouse habitat except under very limited situations. Pipeline emplacement or construction, for example, could cause temporary degradation of beach mouse habitat; however, these activities are not expected to occur in areas of designated critical habitat. Accidental oil spills and associated spill-response efforts are not likely to impact beach mice or their critical habitat because the species live above the intertidal zone where contact is less likely. Habitat loss from non-OCS oil- and gas-related activities (e.g., beachfront development) and predation have the greatest impacts to beach mice. The overall analyses of impact-producing factors associated with the routine activities, accidental events, and cumulative impacts of OCS oil- and gas-related and non-OCS oil- and gas-related activities on beach mice concluded that impacts from a proposed action would be **negligible**. A full analysis of beach mice can be found in **Chapter 4.9.3**.

Protected Birds

Protected birds are those species or subspecies listed under the ESA by the U.S. Fish and Wildlife Service (FWS) as threatened or endangered due to the decrease in their population sizes or loss of habitat; therefore, a proposed action could have a greater impact. BOEM is undergoing consultation with the FWS to minimize the potential impacts to ESA-listed species. Impacts from routine activities, which include discharges and wastes affecting air and water quality, noise, and possibly artificial lighting, would be **negligible** to protected birds. The listed bird species considered are typically coastal birds and would not be exposed to much of the oil- and gas-related activities. Waste discharges to air or water produced as a result of routine activities are regulated by the U.S. Environmental Protection Agency and BOEM, and these discharges are subject to limits to reduce potential impacts; therefore, due to precautionary requirements and monitoring, the impacts to protected birds would be **negligible**. The major impact-producing factors resulting from accidental events associated with a proposed action that may affect protected birds include accidental oil spills and response efforts and marine debris. In the case of an accidental oil spill, impacts would be **negligible** to **moderate** depending on the magnitude and time and place of such an event. Major

impacts could occur if a large oil spill occurred with direct contact to a protected bird species or if the habitat became contaminated resulting in mortality of a listed species. Marine debris produced by OCS oil- and gas-related activities as a result of accidental disposal into the water may affect protected birds by entanglement or ingestion. Due to the regulations prohibiting the intentional disposal of items, impacts would be expected to be **negligible**; however, impacts may scale up to **moderate** if the accidental release of marine debris caused mortality of a listed bird. Overall, BOEM would expect **negligible** to **moderate** impacts to protected birds considering routine activities, accidental events, and cumulative impacts. A full analysis of protected birds can be found in **Chapter 4.9.4**.

Protected Corals

Elkhorn, staghorn, boulder star, lobed star, and mountainous corals are listed by the National Marine Fisheries Service as threatened due to the decrease in their population sizes; therefore, impacts from a proposed action could have a higher level than realized by other coral species. BOEM understands this and is undergoing consultation for these species to minimize the potential impacts. Though the listed species are protected, they would have the same impacts from a proposed action as other coral species. Without effective mitigations, a proposed action could directly impact coral habitat within the GOM. Assuming adherence to all expected lease stipulations and other postlease, protective restrictions and mitigations, the routine activities related to a proposed action are expected to have mostly short-term localized and temporary effects because the site-specific survey information and distancing requirements described in NTL 2009-G39 will allow BOEM to identify and protect live bottom features (which protected corals may inhabit) from harm by proposed OCS oil- and gas-related activities during postlease reviews. While accidental events have the potential to cause severe damage to specific coral communities, the number of such events is expected to be small. Further, many of the protected corals occur in the Flower Garden Banks National Marine Sanctuary, which under the current boundaries is not proposed for future leasing under any of the alternatives in this Multisale EIS. Therefore, the incremental contribution of activities resulting from a proposed action to the overall cumulative impacts on protected corals is expected to be **negligible**. Proposed OCS oil- and gas-related activities would contribute incrementally to the overall OCS and non-OCS cumulative impacts experienced by corals. A full analysis of protected corals can be found in **Chapter 4.9.5**.

Commercial Fisheries

A proposed action could affect commercial fisheries by affecting fish populations or by affecting the socioeconomic aspects of commercial fishing. The impacts of a proposed action on fish populations are presented in **Chapter 4.7**. Routine activities such as seismic surveys, drilling activities, and service-vessel traffic can cause space-use conflicts with fishermen. Structure emplacement could have positive or negative impacts depending on the location and species. For example, structure emplacement prevents trawling in the associated area and, thus, could impact the shrimp fishery. On the other hand, production platforms can facilitate fishing for reef fish such as red snapper and groupers. Accidental events, such as oil spills, could cause fishing closures and have other impacts on the supply and demand for seafood. However, accidental events that could

arise from a proposed action would likely be small and localized. A proposed action would be relatively small when compared with the overall OCS Program, State oil and gas activities, overall vessel traffic, hurricanes, economic factors, Federal and State fisheries management strategies, and other non-OCS oil- and gas-related factors. Therefore, the incremental contribution of a proposed action to the cumulative impacts to commercial fisheries would range from **beneficial** to **minor**. The exact impacts would depend on the locations of activities, the species affected, the intensity of commercial fishing activity in the affected area, and the substitutability of any lost fishing access. Alternative E would prevent these impacts from occurring, although commercial fisheries would still be subject to the impacts from the OCS Program, as well as the impacts from non-OCS sources. A full analysis of commercial fisheries can be found in **Chapter 4.10**.

Recreational Fishing

The Gulf of Mexico's extensive estuarine habitats (**Chapter 4.3.1**), live bottom habitats (**Chapter 4.6**), and artificial substrates (including artificial reefs, shipwrecks, and oil and gas platforms) support several valuable recreational fisheries. Alternatives A-D can affect recreational fishing by affecting fish populations or by affecting the socioeconomic aspects of recreational fishing. The impacts of Alternatives A-D on fish populations are presented in **Chapter 4.7**. Vessel traffic can cause space-use conflicts with anglers. Structure emplacement generally enhances recreational fishing, although this positive effect will be offset during decommissioning unless a structure were maintained as an artificial reef. Accidental events, such as oil spills, can cause fishing closures and can affect the aesthetics of fishing in an area. However, accidental events that could arise would likely be small and localized. Alternatives A-D should also be viewed in light of overall trends in OCS platform decommissioning, State oil and gas activities, overall vessel traffic, hurricanes, economic factors, and Federal and State fisheries management strategies. The incremental impacts of Alternatives A-D on recreational fisheries are expected to be **negligible** to **minor**. A full analysis of recreational fishing can be found in **Chapter 4.9.11**.

Recreational Resources

Alternatives A-D would contribute to the negligible to minor aesthetic impacts and space-use conflicts that arise due to the broader OCS Program. These conflicts arise due to marine debris, the visibility of platforms, and vessel traffic. Structure emplacements can have positive impacts on recreational fishing and diving because platforms often act as artificial reefs. Oil spills can negatively affect beaches and other coastal recreational resources. Alternatives A-D should also be viewed in light of economic trends, as well as various non-OCS oil- and gas-related factors that can cause space-use conflicts and aesthetic impacts, such as commercial and military activities. Because of the relatively small contribution of any given lease sale under any of the proposed action alternatives to the overall OCS Program, in addition to other non-OCS oil- and gas-related activities, the various impacts are expected to be **beneficial** to **minor**. A full analysis of recreational resources can be found in **Chapter 4.12**.

Archaeological Resources

Archaeological resources are any material remains of human life or activities that are at least 50 years of age and that are capable of providing scientific or humanistic understanding of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques, such as controlled observation, contextual measurement, controlled collection, analysis, interpretation, and explanation (30 CFR § 250.105). Archaeological resources are primarily impacted by any activity that directly disturbs or has the potential to disturb the seafloor. For the OCS Program, this includes the placement of drilling rigs and production systems on the seafloor; pile driving associated with platform emplacement; pipeline placement and installation; the use of seismic receiver nodes and cables; the dredging of new channels, as well as maintenance dredging of existing channels; anchoring activities; post-decommissioning activities, including trawling clearance; and the masking of archaeological resources from industry-related infrastructure and debris.

Regardless of which planning area a proposed lease sale is held, the greatest potential impact to an archaeological resource as a result of a proposed action under any of the action alternatives is site-specific and would result from direct contact between an offshore activity or accidental event and a site. Archaeological surveys, where required prior to an operator beginning OCS oil- and gas-related activities on a lease, are expected to be effective at identifying possible archaeological sites. There is no acceptable threshold of negative cumulative impacts to archaeological sites. A proposed action's alternatives, including the drilling of wells and installation of platforms, installation of pipelines, anchoring, and removal of platforms and other structures installed on the seafloor and site clearance activities without archaeological review and mitigation, may result in major, adverse impacts to archaeological sites. Identification, evaluation, and avoidance or mitigation of archeological resources is expected to result in **negligible**, long-term cumulative impacts to archeological resources; however, if an archaeological site were to be impacted, impacts may range from **negligible** to **major**. A full analysis of archaeological resources can be found in **Chapter 4.13**.

Human Resources and Land Use (Including Environmental Justice)

Land Use and Coastal Infrastructure

Oil and gas exploration, production, and development activities on the OCS are supported by an expansive onshore network of coastal infrastructure that includes hundreds of large and small companies. Because OCS oil- and gas-related activities are supported by this long-lived, expansive onshore network, the potential impacts of a proposed lease sale are not expected to produce any major impacts to land use and coastal infrastructure. The impacts of reasonably foreseeable accidental events such as oil spills, chemical and drilling fluid spills, and vessel collisions are not likely to last long enough to adversely affect overall land use or coastal infrastructure in the analysis area. In the cumulative analysis, activities relating to all past, present, and future OCS oil- and gas-related activities and State oil and gas production are expected to minimally affect the current land use of the analysis area because most subareas have strong industrial bases and designated

industrial parks. Non-OCS oil- and gas-related factors contribute substantially to the cumulative impacts on land use and coastal infrastructure, while there is only a small incremental contribution of a proposed lease sale. The cumulative impacts on land use and coastal infrastructure could range from **negligible** to **major** depending on the specifics of each situation, whether the impacts are measurable, how long the impacts would last, and the size of the affected geographic area as defined in **Chapter 4.14.1**. A full analysis of land use and coastal infrastructure can be found in **Chapter 4.14.1**.

Economic Factors

A proposed lease sale would lead to beneficial impacts arising from industry expenditures, government revenues, corporate profits, and other market impacts. Some of these impacts would be concentrated along the Gulf Coast, while others would be widely distributed. A proposed lease sale would also lead to negative economic impacts arising from accidental events and other sources. There would be some differences in economic impacts among Alternatives A-D, corresponding to the differences in the scales and distributions of likely activities. Alternatives A-D should be viewed in light of the OCS Program, as well the numerous forces that can affect energy markets and the overall economy. Most of the incremental economic impacts of a proposed action are forecast to be positive, although there would be some **negligible** to **minor** adverse impacts due to oil spills and to the effects on industries that compete with the offshore oil and gas industry for resources. A full analysis of economic factors can be found in **Chapter 4.14.2**.

Social Factors (Including Environmental Justice)

Potential social impacts resulting from a proposed action would occur within the larger socioeconomic context of the GOM region. The affected environment of the analysis area is quite large geographically and in terms of population (133 counties and parishes with over 22.7 million residents). The impacts from routine activities related to a proposed action are expected to be **negligible**, widely distributed, and to have little impact because of the existing extensive and widespread support system for the petroleum industry and its associated labor force. Outside of a low-probability catastrophic oil spill, which is not reasonably foreseeable and not part of a proposed action, any potential accidental events are not likely to be of sufficient scale or duration to have adverse and disproportionate long-term impacts for people and communities in the analysis area. Non-OCS oil- and gas-related factors, which include all human activities, natural events, and processes, actually contribute more to cumulative impacts than do factors related to OCS oil- and gas-related activities alone. When considered with existing and projected routine activities and cumulative impacts and the potential accidental events, the incremental contributions of a proposed action and the OCS Program to social impacts are expected to be **minor**. The oil and gas industry in the GOM region is expansive and long-lived over several decades with substantial infrastructure in place to support both onshore and offshore activities. BOEM's scenario estimates call for 0-1 new gas processing plant and 0-1 new pipeline landfall over the 50-year life of a single proposed action. Impacts to GOM populations from a proposed action would be immeasurable for environmental justice since these low-income and minority communities are located onshore, distant from Federal OCS oil- and gas-related activities. Also, since these vulnerable populations are located within the

larger context of onshore and State-regulated nearshore oil and gas activities that are connected to downstream infrastructure over which BOEM has no regulatory authority, BOEM has determined that a proposed action would not produce environmental justice impacts in the GOM region. A full analysis of social factors and an environmental justice determination can be found in **Chapter 4.14.3**.

APPENDICES

To improve the readability of this Multisale EIS, more detailed supporting information has been placed in the appendices, which include postlease processes, commonly applied mitigating measures, a Memorandum of Agreement between BOEM and the U.S. Environmental Protection Agency, prelease stipulations, OSRA figures, species not considered further, and State Coastal Management Programs.

Appendix A describes postlease activities, including the following: geological and geophysical surveys; exploration and development plans; permits and applications; inspection and enforcement; pollution prevention, oil-spill response plans, and financial responsibility; air emissions; flaring and venting; hydrogen sulfide contingency plans; archaeological resources regulation; coastal zone management consistency review and appeals for postlease activities; best available and safest technologies, including at production facilities; personnel training and education; structure removal and site clearance; marine protected species NTLs; and the Rigs-to-Reefs program.

Appendix B describes commonly applied mitigations that were developed as a result the continuing OCS Program in the Gulf of Mexico. These are mitigations that BOEM and BSEE could apply to permits and approvals. These mitigating measures address concerns such as endangered and threatened species, geologic and manmade hazards, military warning and ordnance disposal areas, archaeological sites, air quality, oil-spill response planning, chemosynthetic communities, artificial reefs, operations in hydrogen sulfide-prone areas, and shunting of drill effluents in the vicinity of biologically sensitive features. Operational compliance of the mitigating measures is enforced through BSEE's onsite inspection program.

Appendix C is the Memorandum of Agreement between BOEM and the USEPA; it outlines the roles and responsibilities for both agencies during the preparation of this Multisale EIS.

Appendix D describes the potential lease stipulations that were developed as a result of numerous scoping efforts for the continuing OCS Program in the Gulf of Mexico. The 10 lease stipulations being considered are the Topographic Features Stipulation; Live Bottom (Pinnacle Trend) Stipulation; Military Areas Stipulation; Evacuation Stipulation; Coordination Stipulation; Blocks South of Baldwin County, Alabama, Stipulation; Protected Species Stipulation; United Nations Convention on the Law of the Sea Royalty Payment Stipulation; Below Seabed Operations Stipulation; and the Stipulation on the Agreement between the United States of America and the United Mexican States Concerning Transboundary Hydrocarbon Reservoirs in the Gulf of Mexico (Transboundary Stipulation). The United Nations Convention on the Law of the Sea Royalty

Payment Stipulation is applicable to a proposed lease sale even though it is not an environmental or military stipulation.

Appendix E provides the combined probabilities for an offshore oil spill ≥1,000 barrels occurring and contacting coastal and offshore areas for each of the proposed actions.

Appendix F is a listing of species not considered further in this Multisale EIS because these species are not generally found in the area of activity and/or impact. Therefore, it is not reasonably foreseeable that these species would have population effects from a proposed action.

Appendix G describes State Coastal Management Programs (CMPs). Each State's CMP is a comprehensive statement setting forth objectives, enforceable policies or guidelines, and standards for public and private use of land and water resources and uses in that State's coastal zone. The programs provide for direct State land and water use planning and regulations. The programs also include a definition of what constitutes permissible land uses and water uses. To ensure conformance with State CMP policies or guidelines and local land use plans, BOEM prepares a Federal consistency determination for each proposed OCS lease sale. Federal consistency is the Coastal Zone Management Act requirement where Federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone must be consistent to the maximum extent practicable with the enforceable policies or guidelines of a coastal State's federally approved CMP.