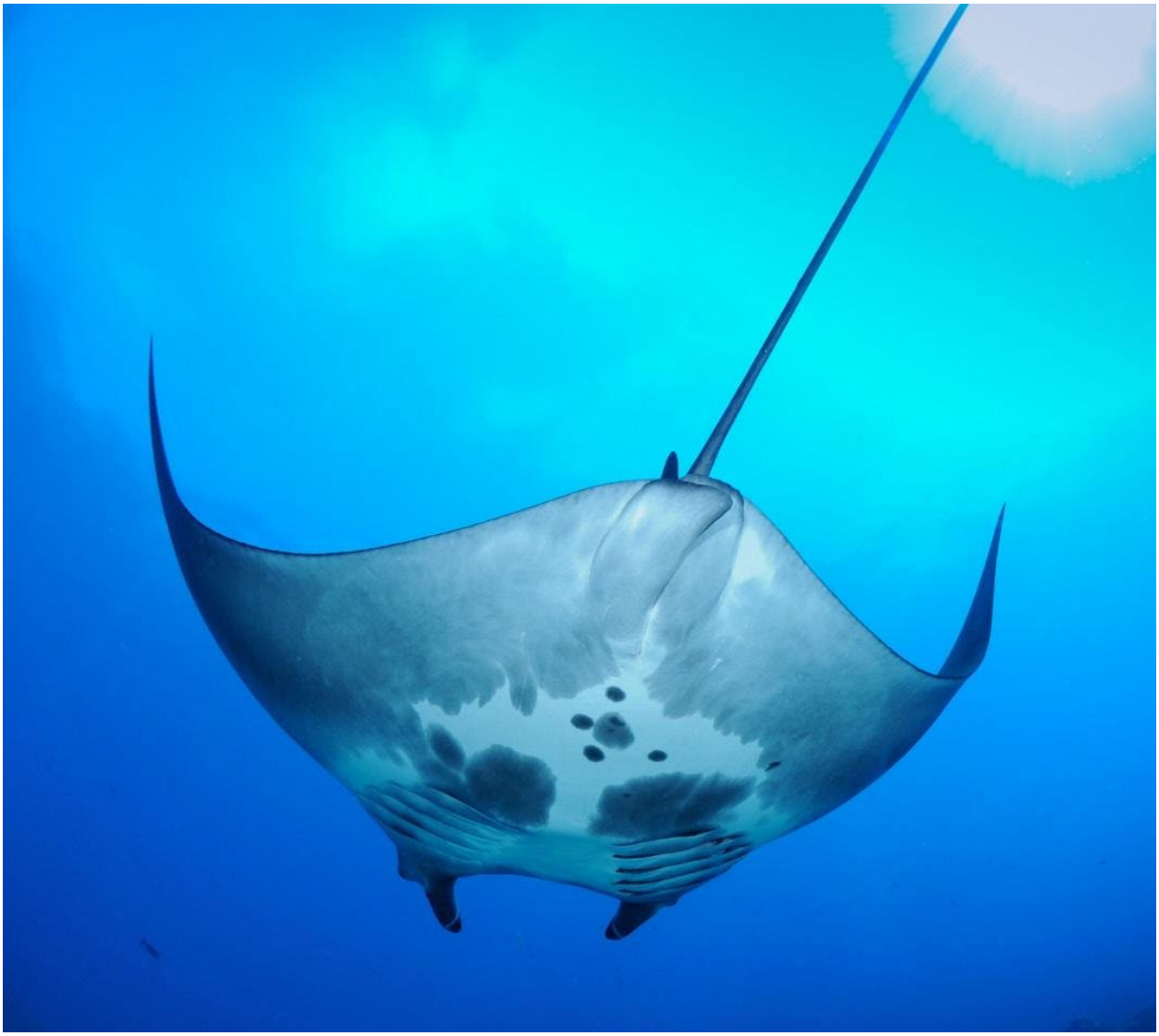
Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

Flower Garden Banks National Marine Sanctuary

Final Environmental Impact Statement:

Sanctuary Expansion

Volume II: Appendices



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Cover Photo: Manta ray swims over the reef in Flower Garden Banks National Marine Sanctuary. Photo: G.P. Schmahl/NOAA

Table of Contents

Appendix A
Response to Comments on the DEIS and Proposed Rule

NOAA consolidated public comments from the Draft Environmental Impact Statement (DEIS) and Notice of Proposed Rulemaking (NPRM) and collectively responds to those comments here.

General Support and Opposition of Proposed Sanctuary Expansion

1. **Comment:** NOAA received comments that supported the proposed expansion of the sanctuary and encouraged NOAA to proceed with the expansion process. Comments also supported the Revised Preferred Alternative (NOAA's Final Preferred Alternative).

> **Response:** Comment accepted. NOAA has considered these comments in carrying the Revised Preferred Alternative forward to the Final Environmental Impact Statement (FEIS) and final rule as NOAA's Final Preferred Alternative.

2. **Comment:** NOAA received comments that opposed the overall sanctuary expansion process citing reasons including: (1) existing protections for sensitive resources; (2) concern of restricting use/access to the public; (3) safety, budget, and management limitations; and (4) socioeconomic consequences to certain industries.

> **Response:** NOAA determined the proposed action responds to the need to provide additional protection and management of sensitive underwater features and marine habitats associated with continental shelf-edge reefs and banks in the northwestern Gulf of Mexico. The current jurisdictional regime divides authority among several governmental entities that regulate offshore energy exploration (Bureau of Ocean and Energy Management (BOEM)), fishing (Gulf of Mexico Fishery Management Council (GMFMC)), and water quality (Environmental Protection Agency (EPA)). NOAA has determined the current jurisdictional regime does not provide comprehensive and effective management for the full range of activities that impact the sensitive reefs and banks in the region. Chapter 2 of the FEIS and Part I, Section 2 of the preamble to the final rule describe the purpose and need for this proposed expansion. Extending the sanctuary boundary to new reefs and banks in the northwestern Gulf of Mexico promotes ecological conservation and biodiversity, expands sanctuary management efforts in the region, and helps to balance multiple uses.

Boundaries

3. **Comment**: NOAA received comments that generally supported expansion, but opposed the boundaries in the Revised Preferred Alternative (NOAA's Final Preferred Alternative). These comments indicated that the proposed boundaries of the Revised Preferred Alternative were too small or would exclude some "topographic highs" and reduce migratory corridors, or that NOAA should select a larger boundary alternative. Additionally, comments noted the removal of buffer zones entirely in the Revised Preferred Alternative and that very small areas were created at some banks (e.g., Elvers, McGrail) which results in fragmented connectivity and diminished ecological and species function. Comments also stated NOAA's Preferred Alternative in the DEIS (Alternative 3) excluded 39 nationally significant areas and 9 nationally significant shipwrecks.

Response: NOAA developed the Final Preferred Alternative in response to public comments and recommendations from the Sanctuary Advisory Council. NOAA's Final Preferred Alternative was based on boundary configurations developed by the Advisory Council's Boundary Expansion Working Group (BEWG) and the Advisory Council's 2018 recommendation. It was also based on research conducted by Office of National Marine Sanctuaries (ONMS), consultation with other Federal and state agencies, strong public support and comment during public meetings preceding this proposal, and extensive input from oil and gas, and fishing interests. The Final Preferred Alternative further follows the National Marine Sanctuaries Act's (NMSA) goal of facilitating, to the extent compatible with the primary objective of resource protection, all public and private uses of the resources.

NOAA modified DEIS Alternative 3 to develop the Final Preferred Alternative under which the boundaries were drawn more tightly around the shallowest portions of the geological features identified in Alternative 3. The new boundaries closely follow the BOEM No Activity Zones (NAZs), which have prohibitions on oil and gas exploration and development, but allow other bottom-disturbing activities that can cause severe negative impacts to the benthic areas. NOAA's Final Preferred Alternative expands the sanctuary by approximately 104 square miles, to include additional important and sensitive marine habitat areas outside the current sanctuary boundary, which will offer additional protection not provided by BOEM's current regulations. NOAA has determined the Final Preferred Alternative minimizes the impact to offshore energy exploration and production while providing substantial protection to sensitive marine habitats of national significance and meeting the expansion objectives as identified in the 2012 FGBNMS management plan and 2016 DEIS. Refer also to FEIS Chapter 3, Section 3.2 for additional details on the development of NOAA's proposed action.

NOAA submits there were more environmentally preferable alternatives assessed in the DEIS; however, ONMS has identified the Final Preferred Alternative as one that, based on strong input from the public and the Sanctuary Advisory Council, provides a significant environmental benefit, can be managed with current FGBNMS operational capacity, and minimizes negative impact to industry activities.

NOAA has determined the Final Preferred Alternative remains within the range of alternatives and impacts analyzed in the 2016 DEIS. Also refer to NOAA's Supplemental Information Report (SIR) and FEIS Chapter 3, Section 3.2 for additional details on the development of the Final Preferred Alternative.

4. **Comment:** NOAA received comments requesting additional areas and banks to be considered in the proposed expansion process, including: Coffee Lump, 32 Fathom, Claypile, Applebaum, 29 Fathom, Fishnet, Phleger, Sweet, and Jakkula Banks, Florida Middle Grounds, Madison/Swanson, and Alabama Pinnacles, north central Gulf of Mexico, Ewing Bank (whale shark aggregation), Bryant Bank, more of Bright Bank complex, and the Deep Water Horizon (Deepwater Horizon) rig/well area.

Response: NOAA rejects the requests to add these additional banks and areas for two primary reasons, 1) there was insufficient data to characterize these areas as nationally

significant, or 2) they were too far from the existing sanctuary. NOAA considered including 32 Fathom Bank, Applebaum Bank, Coffee Lump Bank, Fishnet Bank, Phleger Bank, Sweet Bank, Diaphus Bank, and Sackett Bank but determined insufficient data were available to adequately characterize the sites or available data does not indicate sufficiently unique, diverse, productive, or otherwise nationally significant biological communities or geologic features.

Sites in biogeographic regions other than the north central Gulf of Mexico were also eliminated from further consideration; areas to both the east and west of the area roughly defined by the 87th and 95th west meridians reflect geologic/sedimentary and hydrologic/oceanographic settings, as well as biological communities, that are distinctly different from those of the north central Gulf of Mexico and are faced with distinctly different threats or other conservation issues. Features eliminated from further consideration based on this distinction include Big Dunn Bar, Small Dunn Bar, Blackfish Ridge, Mysterious Bank, the South Texas Banks (Dream Bank, Southern Bank, Hospital Bank, North Hospital Bank, Aransas Bank, Baker Bank, and South Baker Bank), Madison-Swanson, the Florida Middle Grounds, and Pulley Ridge.

Although these additional areas were rejected for consideration in the current FEIS, FGBNMS will consider extending sanctuary protection and management to these additional biogeographic regions and habitat types during the next management plan review.

For more information on how the Final Preferred Alternative was developed and selected, refer to FEIS Chapter 1, Sections 1.5 and Chapter 3, Sections 3.1 and 3.2.

5. **Comment:** NOAA received a comment that requested the agency identify areas to redraw boundaries to reduce impact on fishing (i.e., northern boundary of MacNeil, northern boundary of Sonnier, and northeast boundary of Bouma).

Response: NOAA considered this request, and following the DEIS, slightly reduced the boundaries at these banks to more closely align with BOEM designated NAZs. The decrease in proposed expansion area in the Final Preferred Alternative was partly in response to requests, such as this, to reduce impacts to historical fishing activities. Moreover, ONMS has completed consultation with the GMFMC pursuant to NMSA section 304(a)(5) regarding the boundaries and fishing regulations in the Final Preferred Alternative, and GMFMC concurred with this action. See Appendix G of the FEIS for more details on the 304(a)(5) consultation.

6. **Comment:** NOAA received a comment that requested coordinates for all proposed alternatives be included.

Response: NOAA disagrees and rejects this suggestion as requested. NOAA provides the coordinates of NOAA's Final Preferred Alternative in Appendix H of the FEIS. Additionally, the coordinates of NOAA's Final Preferred Alternative are included as Appendix A to the final rule which will be codified in 15 C.F.R. part 922, subpart L. NOAA does not believe inclusion of coordinates for all other alternatives is necessary. However, maps of all alternatives can be reviewed in Chapter 3.

7. **Comment**: NOAA received comments requesting an explanation of how the FGBNMS Advisory Council's recommendations were incorporated throughout the expansion process.

Response: The Sanctuary Advisory Council was involved in developing DEIS Alternative 2, reviewing DEIS Alternative 3, and providing recommendations to modify the alternative. Ultimately, NOAAs Final Preferred Alternative was largely developed by recommendations proposed by the Sanctuary Advisory Council. Refer to FEIS Chapter 1, Section 1.5, which provides background information on development of the DEIS alternatives and the process by which NOAA modified DEIS Alternative 3 to develop the Final Preferred Alternative, including information of the Sanctuary Advisory Council's involvement. See response to comment #3 pertaining to the Revised Preferred Alternative.

8. **Comment:** NOAA received comments that requested a buffer around reefs to enhance connectivity, compliance, and enforcement, as well as to keep out any structure that may act as a vector for invasive species spread.

Response: Buffers were considered during the FGBNMS Advisory Council's Boundary Expansion Working Group meetings and were rejected due to potential impacts to the oil and gas and fisheries industries. The 2018 Sanctuary Advisory Council recommendation for sanctuary expansion did not include buffers. Refer to FEIS Chapter 1, Section 1.5 for details regarding development of the Final Preferred Alternative and associated interagency consultations and coordination.

9. **Comment:** NOAA received comments suggesting the boundaries proposed in the Revised Preferred Alternative (NOAA's Final Preferred Alternative) were too complicated for enforcement purposes, stating that simpler boundaries make enforcement easier, which results in better compliance of user groups.

Response: Along with input for NOAA's Office of Law Enforcement (OLE), ONMS considered this concern and determined the expansion boundaries are enforceable as proposed in NOAA's Final Preferred Alternative. The boundaries achieve a polygonal configuration, which is recommended by the OLE, and closely follow the existing BOEM designated NAZ boundaries. This polygonal approach uses fewer vertices, simplifying the NAZ boundaries and allowing for heightened enforceability and user compliance.

ONMS believes that vessels visiting the sanctuary are likely to be equipped with onboard mapping technology (e.g., Global Positioning System) that would inform operators of their vessel's position relative to the expanded sanctuary boundary. In light of the technological capabilities of onboard positioning systems, ONMS decided to continue with the boundary configuration of the Final Preferred Alternative, confident that user compliance and agency enforcement can be achieved.

Please refer to FEIS Chapter 3, Section 3.2 for more details regarding development of the Final Preferred Alternative boundaries.

10. **Comment:** NOAA received comments related to the influence of the oil and gas industry on the boundary configurations of the proposed expansion of banks and reefs, including a claim

that the FGBNMS Advisory Council's Boundary Expansion Working Group was biased (towards the oil and gas industry).

Response: The BEWG included Advisory Council members representing multiple stakeholder groups including the oil and gas industry, commercial and recreational fishing industries, recreational diving, science, and conservation. The BEWG presented its revised FGBNMS expansion boundaries recommendation to the full FGBNMS Advisory Council, representing all user groups, on May 9, 2018, and the recommendation was accepted by the Advisory Council and subsequently by ONMS as proposed. Refer to responses to comments #3 and #7 and FEIS Chapter 3, Section 3.2, which details the Sanctuary Advisory Council's BEWG process for developing the Revised Preferred Alternative.

Purpose and Need for Proposed Expansion/Regulations

11. **Comment:** NOAA received comments suggesting that the purpose and/or need for the proposed expansion was not warranted, citing several reasons including: (1) need for protection was not demonstrated; (2) expansion would offer no benefit of protection; (3) government overreach; (4) majority of sites are already protected from oil and gas development by the existing BOEM's No Activity Zones; and (5) proposed expansion areas are not nationally significant or unique.

Response: Pursuant to the National Environmental Policy Act (NEPA), NOAA has established a strong purpose and need to expand FGBNMS (See FEIS Chapter 2). Through the management plan review and scoping process, NOAA identified several gaps in management of reefs and banks near the current sanctuary where habitats were experiencing damage from anchoring and fishing gear in addition to potential for further industrial development. NOAA determined that extending sanctuary management to these areas would assist in addressing these gaps in protections by supplementing and complementing existing authorities established by BOEM and the GMFMC. While BOEM designated NAZ's protect from oil and gas development, without sanctuary management efforts, habitats would remain vulnerable to anchor damage, detrimental fishing impacts, and other threats.

NOAA disagrees with the comment that the expansion demonstrates government overreach. The NMSA provides NOAA with the authority to designate, as marine sanctuaries, areas of the marine environment which are of special national significance that possess conservation, ecological, and scientific qualities. Through decades of scientific research and exploration, NOAA has determined that the sanctuary expansion areas contain some of the highest reported densities of corals in the U.S. and other unique deepwater habitats that are not found elsewhere in the world, thus making them nationally significant and worthwhile to protect.

Sanctuary Regulations and Enforcement

12. **Comment:** NOAA received comments requesting changes to existing regulations including: (1) allow anchoring for fishing; (2) a reasonable range of alternative management actions; (3) allow spearfishing; and (4) an exemption for pelagic longline fishing.

Response: NOAA rejected these requests because it was determined that granting them would negate the overall effectiveness of the existing regulations in the expansion areas. Current sanctuary regulations will address gaps in protection of the expansion areas. In the NPRM for sanctuary expansion, NOAA requested public comments on two fishery exemption requests: to allow pelagic longlining and spearfishing. NOAA received very limited support for exempting these activities (see fishing section below) and has determined that extension of existing fishing regulations to the expansion area is appropriate. Refer to FEIS Chapter 3, Section 3.1.2 for alternatives considered but rejected.

13. **Comment:** NOAA received comments that suggested the agency should provide enforcement policies to enhance the effectiveness of sanctuary expansion.

Response: The FGBNMS management plan details the enforcement policy for the expansion areas. NOAA will continue to work with Federal and state enforcement partners to maintain water and aerial surveillance, update patrol guides and regulatory handbooks, and conduct interpretive/outreach patrols within all of FGBNMS.

Air Quality and Climate Change

14. **Comment:** NOAA received comments requesting that NOAA evaluate how the sanctuary expansion would affect the climate (i.e., potential impacts to greenhouse gas emissions within sanctuary expansion areas).

Response: NOAA agrees with the need to evaluate the impacts of sanctuary expansion on the climate and has provided analysis of the potential beneficial effects of the expansion on physical and biological resources, including beneficial impacts derived from prohibiting harmful activities. NOAA also estimates that this action will help offset impacts of climate change (see FEIS Chapter 5, Section 5.3.1).

15. **Comment:** NOAA received comments requesting an assessment of how climate change affects FGBNMS, how it will affect proposed additions, and methods to reduce greenhouse gases with sanctuary expansion areas. One comment also requested a program-wide evaluation of climate adaption management gaps and needs.

Response: The management plan for FGBNMS contains Conservation Science Action Plans, which include goals to increase knowledge and understanding of the sanctuary's ecosystem, develop new and continue ongoing research and monitoring programs to identify and address specific resource management issues, and encourage information exchange, and cooperation. FGBNMS participated in development of the Ocean Acidification Action Plan for national marine sanctuaries. The plan has numerous research recommendations for studying ocean acidification, a common consequence expected of future climate change. Please also visit NOAA's website for program-wide climate change initiatives, data, observations, and outreach materials. ONMS is standing up a Focus Group on climate, with

the goal to develop the ONMS Climate Strategic Plan. FGBNMS is an active participant in this initiative, and the sanctuary, including the expansion areas, will be integrated into the overall plan. Ocean Acidification, specifically, has been integrated into FGBNMS long-term monitoring programs.

16. **Comment:** NOAA received recommendations that the agency use newer emissions inventory for the analysis on air monitoring and pollutants.

Response: NOAA used the best available data for their environmental analysis of air emissions and pollutants when developing the FEIS. Please refer to FEIS Chapter 4, Section 4.2.1 for detailed information about the data and resources used for air quality and climate change.

17. **Comment:** NOAA received a comment that suggested the No Action Alternative (Alternative 1) does contribute to climate change over time as it does not prevent climate change from progressing, and requested the agency amend the analysis in DEIS Section 5.3.1.

Response: Since implementation of the No Action Alternative is expected to leave the existing environment unchanged except for continuation of existing impacts, including on-going impacts of climate change, the effect of this alternative is the same as described in Chapter 4. The "No Action" Alternative served as a baseline for the impact analysis to compare all other alternatives, as such, there would be no additional change to climate expected under this alternative. The text has been slightly amended in FEIS Chapter 5, Section 5.2 to offer clarification in response to this comment.

Biological Resources

18. **Comment:** NOAA received comments related to biological resource concerns. Biological comments focused on how sanctuary expansion would protect resources against damages (e.g., anchoring, invasive species), the benefits sanctuary protection would provide (e.g., improvements in fish stocks and productivity, preservation of biodiversity, continued discovery of new species), and requests for protection of specific species/groups (e.g., *Mobula* rays, sea turtles, sharks, coral).

Response: NOAA concurs with the importance of protecting vulnerable biological resources and believes that this action helps to address many of the remaining gaps that threaten biological resources in the expanded sanctuary. With this action, NOAA is prohibiting the following activities in the sanctuary: anchoring; drilling into, dredging, or altering the seabed; discharging or depositing of material; any injury to coral, rays, or whale sharks; fishing except for with conventional hook and line gear; and take of marine mammals and turtles except when permitted under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). Collectively, these prohibitions will help to protect fishes from unsustainable harvest by limiting fishing; help to maintain biodiversity of benthic habitats by protecting the seafloor; and allow further protection of many vulnerable living marine resources including rays, sea turtles and other ESA and MMPA-

listed species. Please also refer to FEIS Chapter 5, Section 5.3.6 and 5.3.8 for additional details regarding impacts of sanctuary expansion to biological resources.

19. **Comment:** NOAA received comments requesting the sanctuary protect resources from negative impacts of fishing. Commenters noted the vulnerability of the expansion area to fishing injury, and urged protection of fish species in order to achieve fishing sustainability. Requests for fishery management included: (1) limiting fishing locations; (2) prohibiting bottom-dragging gear; and (3) continuing to limit fishing to hook and line only. Some of the comments received in support of expansion were from members of the fishing sector.

Response: NOAA intends to extend the current sanctuary regulations to the proposed expansion areas, which includes restricting fishing activities to conventional hook and line techniques only (i.e., any fishing apparatus operated aboard a vessel and composed of a single line terminated by a combination of sinkers and hooks or lures and spooled upon a reel that may be hand- or electrically-operated, hand-held or mounted). NOAA prohibits the use of any bottom tending fishing gear to protect delicate corals and important benthic habitat from fishing impacts, which will continue in the expansion areas. A detailed list of the current regulations can be reviewed in Table 1.1, Chapter 1, Section 1.4.

20. **Comment:** NOAA received a comment requesting projections of ecosystem services (i.e., estimates for the increase in value of managing protected species and habitats such as hard and soft corals, fish, and mesophotic reefs) be included in the final analysis.

Response: Analysis of ecosystem services is beyond the scope of the environmental analysis necessary for this action, and thus, NOAA rejects this request. Instead, NOAA provided an economic analysis in the FEIS that estimated a passive economic value (i.e. non-use value) of the sanctuary expansion. For details on the economic analysis, please refer to Chapter 4, Section 4.4.7 of the FEIS or the peer-reviewed publication that resulted from this study, Stefanski and Shimshack (2016).

21. **Comment:** NOAA received a comment which indicated that the BEWG was informed that higher coral counts had been observed outside of the NAZs, than inside NAZs, and requested an explanation for why this was not considered during the boundary configuration of the Revised Preferred Alternative.

Response: Additional areas containing higher coral colony counts were quantified during remotely operated vehicle (ROV) surveys, and the data was considered during the National Centers for Coastal Ocean Sciences (NCCOS) collaboration with the FGBNMS Advisory Council's BEWG. The BEWG selected smaller boundaries, which closely follow the NAZs, primarily to reduce impacts to the oil and gas industry and to retain access for historical fishing practices. Outside of the expansion process, NOAA will provide the processed data and associated publication to both BOEM and NMFS, for consideration during review of regulations, and for future oil and gas, and fishing activities. While this will not provide blanket protection measures, it will be valuable in protections from potential major impacts.

22. **Comment:** NOAA received comments requesting an analysis of the impacts sustained to the environment from run-off of toxic and hazardous elements, sewage, pollution, and potential

expansion of the Gulf of Mexico hypoxic zone, or 'dead zone', into the proposed sanctuary expansion areas.

Response: NOAA used the best available data to evaluate the environmental impacts to the expansion areas as required under NEPA and the Council of Environmental Quality's (CEQ's) 1978 NEPA regulations. NOAA, however, is studying these issues and plans to continue analyzing the impacts in its next management plan review process.

23. **Comment:** NOAA received comments regarding disturbances (vessel traffic) related to the noise environment, including a request to quantify the additional impact from an increased number of boaters.

Response: NOAA continues to study the issue of noise impacts on sanctuary resources. Sanctuary regulations prohibit the disturbance of marine mammals and turtles except when permitted under the MMPA and ESA. With respect to sonar testing, Section 304(d) of the NMSA provides for consultation with other federal agencies if their actions have the likelihood to injure sanctuary resources. NOAA has previously used this mechanism in consultations to minimize impacts of noise on marine mammals and other species. FGBNMS is actively engaged in a vessel traffic and noise assessment and monitoring program within the sanctuary, which will be expanded to the new areas.

Please refer to FEIS Chapter 4, Section 4.2.2 for detailed information about the noise environment in the current FGBNMS, as well as expansion areas. Additionally, refer to FEIS Chapter 5, Section 5.3.2 for NOAA's analysis of environmental consequences to marine resources with respect to noise disturbances.

24. **Comment:** NOAA received comments requesting protection for fish spawning aggregations with the expansion.

Response: NOAA concurs with commenters and believes the expansion of the sanctuary will assist in the protection of fish spawning aggregations in the northwestern Gulf of Mexico. With this action, NOAA will extend sanctuary regulations to the expansion areas which limit fishing activities to conventional hook and line techniques, prohibit bottom tending gear, and restrict the use of anchors within sanctuary boundaries. This action will thereby complement protections for fish spawning habitats provided under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Fish spawning aggregations have been observed and recorded during ROV explorations at reefs and banks included in the expansion areas, therefore, NOAA determined that sanctuary designation will directly protect habitat where the aggregations occur. NOAA intends to consider further protection of spawning aggregations during the next management plan review.

25. **Comment:** NOAA received a comment requesting NOAA consider designating areas within the sanctuary as "no take" marine reserves.

Response: NOAA considered this request and does not intend to designate any "no-take" marine reserves within the sanctuary through this action. With this action, NOAA extends the current fishing regulations to the expansion areas which limit fishing activities to conventional hook and line techniques and exclude any bottom tending gear. Anchoring will

also be prohibited in the expanded sanctuary, and mooring buoys will be installed so that fishers and vessels (< 100 feet long) can safely moor within the sanctuary boundaries.

To evaluate the impact of conventional hook and line fishing to managed fish species in the sanctuary, NOAA conducted an environmental impact analysis on living marine resources, including fish in relation to the different expansion alternatives (see Chapter 5, Section 5.36). Overall, NOAA determined none of these resources would sustain any significant adverse impacts with sanctuary designation. NOAA determined that this action will provide benefit to fish, given the added protection to critical habitat and restrictions to fishing techniques.

Designating areas as a "no take" marine reserve is an important issue and NOAA plans to consider it in the next review of the FGBNMS management plan.

26. **Comment:** NOAA received a comment requesting that a Gulf Sperm Whale/Pelagic Ecosystem national marine sanctuary be established.

Response: NOAA does not intend to establish a Gulf Sperm Whale/Pelagic Ecosystem National Marine Sanctuary. The request is beyond the scope of this proposed action.

Visual Resources

27. **Comment:** NOAA received a comment on DEIS Section 5.3.2.3 - Scenic and Visual Resources requesting that negative impacts to scenic and visual resources that could occur because of an increased number of boaters and/or increased use of fishing line be considered in the analysis.

Response: NOAA evaluated both beneficial and adverse impacts to each resource area and determined there would be no adverse impacts to scenic and visual resources. NOAA predicts beneficial impacts on the scenic and visual resources of the proposed expansion areas by reducing marine debris including derelict fishing gear, vessel traffic, and industrial infrastructure. Refer to FEIS Chapter 5, Section 5.3.3.

Fishing, Fishery Regulations, and Fishery Management

28. **Comment:** NOAA received a comment that requested the agency to analyze recreational fishing activities in the proposed expansion areas.

Response: NOAA addressed the request for this analysis by evaluating the level of recreational fishing activity expected to occur in the proposed expansion areas, using the best available data, to capture the socioeconomic impact to this industry. Ultimately, NOAA determined that there would be no significant adverse impacts to recreational fishers. For analysis of recreational fishing activities, please refer to FEIS Chapter 4, Section 4.4.1.2 for a description of the data used and Chapter 5, Section 5.3.9.2 for the expected environmental impact.

29. **Comment:** NOAA received a comment that requested the agency clarify benefits of the expansion to commercial fishers and improve the socioeconomic analysis of commercial fishers.

Response: NOAA updated FEIS Chapter 4, Section 4.4.1 to supplement the analysis on commercial fisheries with additional and current VMS data to assess socioeconomic impacts imposed by the expansion on commercial (Section 4.4.1.1) and recreational (Section 4.4.1.2) fishers. Overall, NOAA determined that no significant adverse impacts to fishers would result from the proposed expansion (See Chapter 5, Section 5.3.9.1 and 5.3.9.2). NOAA provides an explanation of the minor benefits that commercial fishers may have with the expansion of the sanctuary in Chapter 5, Section 5.3.9.1, in that fish production may increase in general with the decreased fishing pressure and habitat protections of specific locations.

30. **Comment:** NOAA received comments regarding spearfishing, with the majority requesting a prohibition on this activity. Some commenters offered conditional support of spearfishing, suggesting allowing the activity: (1) in a limited capacity with access at a limited number of banks and reefs in the expansion area; (2) only for the removal of lionfish, an invasive species present in the current and proposed sanctuary areas; or (3) by breath hold only.

Response: NOAA intends to extend the current sanctuary regulations to the expansion areas proposed in the Final Preferred Alternative. As such, NOAA will not be implementing any additional fishing regulations as part of the final rulemaking. NOAA prohibits spearfishing in the current boundary to protect delicate corals, including threatened species, and important benthic habitat from fishing impacts, which will continue in the expansion areas. Spearfishing for lionfish is not a permissible activity within sanctuary borders; however, spearfishing with pole spears has been performed opportunistically by research staff through permitted long-term monitoring activities at FGBNMS. Additionally, lionfish invitational research cruises have been a permitted activity since 2015 at FGBNMS to remove the invasive species with highly skilled, qualified recreational divers and contribute to a variety of research projects with external academic and agency partners. NOAA intends to continue to permit lionfish removals, with restrictions and obligations to properly train divers in effective removal techniques that prioritize coral and ecosystem health. A detailed description of sanctuary regulations is described in FEIS Table 1.1, Chapter 1, Section 1.4.

31. **Comment:** NOAA received a comment that suggested the spearfishing community has been excluded from access.

Response: NOAA disagrees, as the spearfishing community was invited to participate in public meetings regarding the proposed sanctuary expansion, and NOAA requested public comments on allowing spearfishing in the expanded sanctuary in the NPRM.

32. **Comment:** In response to the DEIS, NOAA received a request seeking a pelagic longline exemption from the otherwise applicable sanctuary fishing prohibitions proposed for the expansion areas. NOAA also received a few similar comments in response to the NPRM, however, there were also a significant number of NPRM commenters that opposed this exemption.

Response: NOAA considered the request made during the public review of the DEIS for a pelagic longline exemption to the proposed fishing prohibitions in the expansion area. In response, NOAA solicited public comments pertaining to pelagic longline fishing in the NPRM. Based on strong public support to prohibit this activity, NOAA has rejected the

request for an exemption for pelagic longlining and, instead, intends to extend the current sanctuary regulations to the expansion areas. Under existing regulations, fishing will only be allowed with conventional hook and line gear (i.e., any fishing apparatus operated aboard a vessel and composed of a single line terminated by a combination of sinkers and hooks or lures and spooled upon a reel that may be hand- or electrically operated, hand-held or mounted). NOAA believes the expansion of FGBNMS to additional reefs and banks in the northwestern Gulf of Mexico will add critical protection for fish, marine mammals, threatened and endangered species, as well as their habitat. NOAA determined the existing regulations would best accomplish this protection and fulfill the NMSA obligation to protect nationally significant environmental features.

A detailed description of sanctuary regulations is described in the FEIS Table 1.1, Chapter 1, Section 1.4. NOAA has been in consultation with NMFS and GMFMC throughout the entire scoping process of sanctuary expansion, please refer to FEIS Chapter 1, Section 1.5.4.2, for additional details on these consultations.

33. **Comment:** NOAA received a comment requesting its fisheries analysis in the DEIS include more types of fishing gear and data to determine what areas were used by fishers and the value of these areas to those fisheries.

Response: NOAA provided a detailed list of the types of commercial vessel and recreation vessels that operate within the proposed sanctuary boundaries in the DEIS. NOAA has added a new table to the FEIS to include gear types used by commercial fishers that were observed in the vicinity of the Final Preferred Alternative. Please review Section 5.3.9.1 and 5.3.9.2 for a description of the commercial and recreational fishing vessels that operate within the proposed sanctuary boundaries based on permit or gear type. This analysis estimates the number of vessels within the vicinity of the boundaries under each alternative.

34. **Comment:** NOAA received a comment requesting an analysis of the potential impact(s) of weights used in bandit reel gear configurations on the benthic habitat and corals, as well as more information on the types of gear used in this type of fishing configuration.

Response: NOAA has evaluated impacts of recreational fishing gear on the expansion areas, and FGBNMS intends to continue investigating impacts of recreational fishing in the sanctuary, including bandit reel gear, and will address this in more detail during the next management plan review.

35. **Comment:** NOAA received a comment requesting a comprehensive commercial endorsement and certification program be developed to allow commercial fishers to continue to operate within the proposed boundaries. Additionally, there was a request to create an exemption for shrimpers in the Royal Red Shrimp industry to continue their historical practices.

Response: NOAA has considered this request, and following consultation with GMFMC pursuant to NMSA section 304(a)(5), decided not to establish a commercial endorsement and certification program or provide an exemption for shrimpers or other fishers in the sanctuary, based on the reduction in size of the new areas. Facilitating commercial fishing in the sanctuary, even through an endorsement and certification process, could make corals and other sensitive bottom habitats vulnerable to injury. NOAA believes that the reduction

in boundaries between the 2016 original preferred alternative and the Final Preferred Alternative, in addition to allowing conventional hook and line fishing in the expanded sanctuary, facilitates an appropriate balance between environmental protection and user access dictated by the NMSA. A detailed description of sanctuary regulations is described in FEIS Table 1.1, Chapter 1, Section 1.4. FEIS Chapter 1, Section 1.5.2 provides additional details on this consultation.

36. **Comment:** NOAA received a comment that suggested specific language be added for the discharge of natural waste of farmed fish related to open gulf mariculture, stating that fish farming operations outside of sanctuary boundaries may discharge sinking organic material that deposit within the sanctuary with prevailing currents.

Response: NOAA determined this request is outside the scope of this action. While sanctuary regulations do not specifically prohibit aquaculture, some associated activities are prohibited such as discharge of certain material, alteration of the seabed, and injury to sanctuary resources. Furthermore, the suitability of the area for aquaculture is being separately considered under other authorities including EO 13921, (October 23, 2020; 85 Fed. Reg. 67,519). FGBNMS will further consider aquaculture and its potential impacts during the next management plan review.

Military Uses

37. **Comment:** NOAA received a comment related to the Department of the Navy and its activities within the proposed sanctuary areas. More specifically, NOAA received suggestions to: (1) include in the FEIS, Department of Defense (DoD) use of water space in the vicinity of proposed expansion and current sanctuary; (2) provide a map of the Gulf of Mexico warning areas for military use; (3) add military uses to marine-use categories; and (4) add an analysis of the potential impact to military uses.

Response: Homeland security and military uses of the expanded sanctuary are subject to compliance with NEPA and NMSA, in addition to all applicable environmental regulations. DoD would be required to consult with ONMS pursuant to NMSA section 304(d) on any new military activities in the expansion area that are likely to injure sanctuary resources. NOAA believes the existing regulatory framework sufficiently addresses DoD impacts on sanctuary resources. Existing military uses and an analysis of their environmental effects in the expansion area have been added to Chapter 4, Section 4.4.5 and Chapter 5, Section 5.3.9.7 of the FEIS.

NEPA Process

38. **Comment:** NOAA received comments regarding the NEPA process. Commenters requested NOAA conduct a new NEPA analysis because of: (1) the difference in methodologies used to configure the Final Preferred Alternative and Alternative 3 in the DEIS; and (2) new circumstances and/or information available (e.g., fishing exemptions, removal of buffer zones).

Response: NOAA evaluated the changes made from the 2016 original preferred alternative (Alternative 3) to the Final Preferred Alternative presented in the NPRM and this FEIS. The Final Preferred Alternative revised Alternative 3 boundaries to be more tightly drawn near the shallowest portions of the geological features of interest, largely in response to existing fishing activity and oil and gas activity (see response to comment #3). The new polygons included all of the same reefs and banks, excluding Bryant Bank, which is not included in the Final Preferred Alternative. Ultimately, NOAA determined the changes reflected in the Final Preferred Alternative were not "substantial changes in the proposed action that are relevant to environmental concerns" (40 C.F.R. § 1502.9(c)(1)(i)). NOAA further determined the comments received on the 2016 DEIS did not "constitute significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts" (40 C.F.R. § 1502.9(c)(1)(ii)). As such, NOAA concluded preparing a supplemental environmental impact statement or new NEPA analysis is neither required, nor necessary under NEPA. NOAA has documented the agency's rationale for revising the Final Preferred Alternative (see Chapter 3, Section 3.2) and provided updated information on the affected environment in FEIS Chapter 5, Section 5.3, and related Record of Decision. Please refer to NOAA's Supplemental Information Report that was provided with the release of the NPRM for further information.

39. **Comment:** NOAA received a comment that requested the Protected Species analysis in Section 5.3.2.7 of the DEIS be public and open for review/comment.

Response: ONMS conducted an ESA Section 7 consultation with NMFS in conjunction with the development of both the DEIS and NPRM. In the DEIS, ONMS included a list of protected species which may be affected by the proposed action, and the DEIS was subsequently submitted for public comment. Additional species were included in the NPRM consultation. See FEIS Chapter 4, Section 4.3.4 for additional information on protected species with an updated list of protected species and Appendix G for a summary of how ONMS satisfied ESA consultation requirements including ONMS's ESA consultation correspondence.

40. **Comment:** NOAA received a comment stating that the Notices to Lessees are not simply guidance because they contain requirements for oil and gas.

Response: NOAA disagrees. Please refer to the Bureau of Safety and Environmental Enforcement Notice to Lessees 2009-G39, which provides and consolidates guidance for oil and gas.

National Marine Sanctuaries Act

41. **Comment:** NOAA received comments that suggested the expansion of sanctuaries must be conducted through an act of Congress, otherwise it violates Congressional intent found in the NMSA.

Response: NOAA disagrees. NOAA can administratively designate and expand sanctuaries pursuant to Section 303 of the NMSA (16 U.S.C. 1433), and using procedures set forth in

section 304 (16 U.S.C. 1434). It is also possible for Congress to legislatively designate a sanctuary, and Stetson Bank (Pub. L. 104–283) in the current FGBNMS serves as an example of a legislatively designated sanctuary.

42. **Comment:** NOAA received comments stating the NPRM did not comply with the NMSA and the FGBNMS 2012 management plan to prioritize conservation of surrounding reefs and banks.

Response: The proposed action responds to the need to provide additional protection of sensitive underwater features and marine habitats associated with continental shelf-edge reefs and banks in the northwestern Gulf of Mexico. NOAA adds 14 additional reefs and banks, for a total of 17 features to be protected, expanding the sanctuary by approximately three times its current spatial extent. In addition to prioritizing the conservation of nationally significant biological features, the NMSA section 301 (16 USC 1431) directs NOAA to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities. Thus, compliant with the NMSA, NOAA believes the current expansion in this FEIS and final rule, as proposed in the NPRM, maximizes conservation and user group interests to allow for greater protection of these areas.

Oil & Gas Exploration and Development

43. **Comment:** NOAA received comments from the oil and gas industry in response to the 2016 DEIS alternatives regarding recognition and inclusion of existing oil and gas leases. Commenters expressed concern that sanctuary expansion could be more costly or difficult for oil and gas production, new leases would be precluded, and the loss of oil and gas exploration may lead to reliance on foreign oil. Industry representatives noted their reliance on the 2007 Sanctuary Advisory Council recommendation for expansion (Alternative 2) to inform their investment in resources for the industry's development and growth, or their decision to relinquish certain lease blocks. Industry representatives requested oil and gas access, leasing, produced water discharge requirements, and seismic acquisition should remain as is, with no additional regulations.

Response: To address concerns from the oil and gas industry, the FGBNMS Sanctuary Advisory Council's BEWG underwent an extensive process to evaluate how protecting biologically significant areas may impact the oil and gas industry. They proposed modifying DEIS Alternative 3 to develop the Revised Preferred Alternative (see comment #3). This process also involved input from the Sanctuary Advisory Council, the GMFMC, and coordination within NOAA. The new boundaries closely follow BOEM's No Activity Zones, encompassing the shallowest portions of the banks, which are already protected from oil and gas exploration and development. Furthermore, ONMS consulted with BOEM pursuant to EO 13795 - Implementing an America-First Offshore Energy Strategy, which determined that expanding the sanctuary would not have a significant economic impact on oil and gas exploration and development. BOEM's analysis is summarized in Appendix G.

44. **Comment:** NOAA received a comment requesting an analysis of the inclusion of four oil and gas platforms within the expansion areas for advantages and disadvantages, especially in the context of Sanctuary Expansion Action Plan Objective 6C.

Response: NOAA's Final Preferred Alternative does not include any additional oil and gas platforms within the existing or expanded sanctuary boundaries, thus the requested analysis is not necessary. NOAA did, however, consider inclusion of certain oil and gas platforms as part of the alternatives considered in the NEPA analysis for this action. See Alternatives 4 and 5 of this FEIS. Please also refer to FEIS Chapter 5, Section 5.3.9.5 for analysis of impacts to offshore energy resources. Finally, NOAA intends to continue analyzing the advantages and disadvantages of oil and gas structure inclusion within FGBNMS as part of its ongoing management plan review process.

45. **Comment:** NOAA received a comment that requested an economic analysis of: (1) impacts to oil and gas resources due to directional drilling; (2) affected lease blocks; and (3) a comparison in area between NAZs and proposed sanctuary expansion areas. There was also a request to identify any future management actions/mitigations which may affect oil and gas activities.

Response: BOEM analyzed potential impacts to oil and gas resources pursuant to EO 13795, and these results are presented in Appendix Gof this FEIS. BOEM determined expanding the sanctuary would not have significant economic impacts on the oil and gas industry, and NOAA accepted BOEM's findings. NOAA will continue to coordinate with BOEM to co-manage these resources and mitigate any impacts to oil and gas activities. Refer to FEIS Section 5.3.9.5 for additional analysis of the impacts to oil and gas activities.

46. **Comment:** NOAA received a comment to incorporate BOEM lease sales and stipulations into BOEM's Record of Decision and Final Notice of Sale.

Response: As a non-voting member on the Sanctuary Advisory Council, and a cooperating agency in the preparation of the 2016 DEIS, BOEM has incorporated lease sales and stipulations into BOEM's Record of Decision and Final Notice. FEIS Chapter 5, Section 5.3.9.5 and Appendix G show that there were 13 active lease blocks, as reported by BOEM in their 2019 report. However since publication of that report, two leases were relinquished. There are currently 11 active leases in the expansion area, averaging approximately 17% of the lease blocks falling within the Final Preferred Alternative boundaries. Lease sales issued between 1996 and 2001 provided Information for Lessees indicating "Minimizing Oil and Gas Structures near Flower Garden Banks". Lease sales issued between 2002 through 2014 did not specifically mention FGBNMS, but the lease sales do refer to the Notice to Lessees outlining the topographic and live bottom stipulations. The sanctuary regulations track the operational requirements established by BOEM in those stipulations. Lease sales issued between 2015 to present provide notice to prospective leaseholders of the proposed expansion. More information regarding BOEM lease sales may be found on BOEM's website.

47. **Comment:** NOAA received a comment that requested the agency develop an appropriate regulatory "firewall" that will set a precedent for other sanctuaries to protect those areas from offshore drilling practices.

Response: NOAA believes this request is beyond the scope of this action, but will continue to work toward balancing multiple user interests with the NMSA's primary goal of resource protection.

48. **Comment:** NOAA received comments related to environmental impacts of the oil and gas industry. Of these, nearly half requested the sanctuary update the regulations to prohibit oil and gas development and to ensure management protects against damages from this industry. Concerns raised included: (1) oil spills and leaks; (2) extraction practices; (3) encroaching drilling and exploration; and (4) the vulnerability of biological resources to oil and gas activities. Comments also requested that NOAA prohibit fracking and analyze the potential for fracking fluids and directional hydraulic fracturing to impact the area in and near the sanctuary. A few comments related specifically to methane hydrate extraction.

Response: NOAA determined the Final Preferred Alternative balances protecting vulnerable habitats with multiple uses of the region. See FEIS Chapter 3, Section 3.2 for more details regarding the Final Preferred Alternative. NOAA intends to extend the current FGBNMS regulations to the new expansion areas. Please refer to FEIS Table 1.1 in Chapter 1, Section 1.4 for a list of current sanctuary regulations and management efforts from impacts of oil and gas activities. Additionally, sanctuary regulations prohibit discharge of any kind from oil and gas activities that may be harmful to the benthic environment.

49. **Comment:** NOAA received comments related to the prohibition of oil and gas development. Specifically, NOAA was requested to prohibit: (1) new oil and gas directional drilling, infrastructure, and transport; (2) oil and gas leasing within new boundary areas; and (3) directional drilling under new boundary areas.

Response: With this action, NOAA intends to extend existing sanctuary prohibitions, which allow, and regulate oil and gas exploration and development to the expansion areas. Directional drilling permits for oil and gas will continue to be considered in the expansion areas, given existing prohibitions, outside of the BOEM-designated No Activity Zones. Pursuant to NMSA Section 301(b)(6), NOAA will continue "to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities". Please also refer to comment #49 and FEIS Table 1.1, Section 1.4 for current sanctuary regulations.

50. **Comment:** NOAA received comments from oil and gas industry companies in support of this expansion that recognized the balance between conservation, extraction, and user groups achieved through the Sanctuary Advisory Council's process in developing the Revised Preferred Alternative (NOAA's Final Preferred Alternative).

Response: NOAA has carried forward the 2018 BEWG's recommendation, which is now NOAA's Final Preferred Alternative. Please refer above to the Boundaries section and to FEIS Chapter 3, Sections 3.1 and 3.2 for more information regarding the development of alternatives and selection of the Final Preferred Alternative.

Sanctuary Management and Administration, Funding, Education and Outreach, and Sanctuary Advisory Council

51. **Comment:** NOAA received comments requesting that FGBNMS develop a Resilient Habitat Plan, which seeks to enhance habitat resilience to uncertain and unpredictable effects of future change, such as climate change.

Response: The current FGBNMS management plan serves as a framework for addressing issues facing the sanctuary and lays the foundation for protecting, conserving, and enhancing FGBNMS and its regional environment in the Gulf of Mexico. Following this expansion, NOAA will begin the process to review and update the FGBNMS Management Plan as needed. NOAA acknowledges the growing need to integrate resiliency plans into their habitat management schemes and are beginning to implement sanctuary climate assessment and adaptations plans sitewide. As determined during management plan review, FGBNMS will aim to integrate adaptation and resiliency strategies into their habitat and resource management. Additionally, FGBNMS will begin development of a Condition Report describing the current status of sanctuary resources, including the expansion areas. As described in the FEIS Executive Summary, NOAA will be extending the existing sanctuary management plan and regulations to the newly expanded area.

52. **Comment:** NOAA received a comment on DEIS Section 5.3.6 - Irreversible and Irretrievable Commitments of Resources requesting NOAA include costs of expansion and evaluate potential impacts to conservation and management activities.

Response: NEPA requires an analysis of the extent to which the proposed project's primary and secondary effects would commit nonrenewable resources to uses that future generations would be unable to reverse (42 U.S.C. 4332(C)(v); 40 C.F.R. § 1502.16). See FEIS Chapter 5, Section 5.6.4 which describes any impacts, or losses, to resources that cannot be recovered or reversed associated with the proposed action or alternatives. Alternatives 1-3 and the Final Preferred Alternative are within the current operational budget, and NOAA expects field operations to continue at current intensity in the expanded sanctuary. Also refer to the 2012 FGBNMS Management Plan for additional budgetary information.

53. **Comment:** NOAA received comments requesting the FEIS to clearly describe "best diving practices" in Section 5.3.9.4, how they will be implemented, how they will protect FGBNMS, and how NOAA will enforce their use.

Response: With this final rule, the existing sanctuary regulations (15 C.F.R. § 922.122(a)(2)(iii)) that require any vessel moored in the sanctuary to exhibit the blue and white International Code flag "A" ("alpha" dive flag) or red and white "sports diver" flag whenever a scuba diver from that vessel is in the water and remove the "alpha" dive flag or "sports diver" flag after all divers exit the water and return on board the vessel, consistent with U.S. Coast Guard guidelines relating to sports diving as contained within "Special Notice to Mariners" (00-208) for the Gulf of Mexico, will be applied in the expanded areas and must be followed. The FGBNMS Trip Prep webpage provides recreational divers with information to prepare for their trip to the sanctuary, information about the challenging

diving conditions that can be experienced at FGBNMS, and how to safely prepare for these visits, and includes information on best diving and boating practices to ensure the safety of visitors. Additionally, the FGBNMS Trip Prep webpage includes a link to reef etiquette, which provides information about the best diving practices to ensure the protection of the environment. A link to this reef etiquette webpage has been added to Section 5.3.6. NOAA believes when these practices are followed, reefs sustain very minimal, if any, damage. While compliance with the sanctuary regulations is mandatory, some of the best diving practices set forth on the FGBNMS Trip Prep webpage are voluntary.

FGBNMS also has regulations prohibiting resources from being taken from the sanctuary (e.g. shells, coral, invertebrates) and restricting harassment of marine wildlife (e.g., *Mobula* rays, whale sharks). A list of the regulations is provided in FEIS Chapter 1, Section 1.4, Table 1.1. The USCG and NOAA's OLE are jointly responsible for enforcing regulations at FGBNMS.

54. **Comment:** NOAA received comments regarding sharing its coral and habitat information with the GMFMC so the data could be included in the coral portal. Also, FGBNMS was asked to collaborate with NOAA's National Resource Damage Assessment's (NRDA) Trustee Council's Open Ocean Trustee Implementation Group to restore mesophotic and deep benthic communities (MDBC).

Response: NOAA welcomes the opportunity to collaborate with organizations to build community partnerships for education, outreach, research, monitoring, and resource protection. Before, during, and after the release of the DEIS and the NPRM, the FGBNMS Superintendent presented information to the GMFMC on the FGBNMS proposed sanctuary expansion. Additionally, FGBNMS provides benthic (e.g., coral) data from the current and expanded FGBNMS, as well as other offshore banks and reefs in the northwestern Gulf of Mexico to GMFMC for its publicly accessible coral portal. FGBNMS has been intently involved as an Active Management Project Partner with NRDA's Mesophotic Deepwater Benthic Community's planning projects. Project goals include: (1) enhancing public awareness and performing active management and protection activities by undertaking education and outreach targeting MDBC resource users and the general public; (2) engaging stakeholders and developing socioeconomic analyses to evaluate potential impacts of management or protection actions; and (3) directly addressing threats to MDBC through management activities.

55. **Comment:** NOAA received a comment requesting a Critical Habitat Assessment of the banks be included in the proposed expansion as required in the International Finance Corporation (IFC) Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources).

Response: To develop each alternative, NOAA identified nationally significant coral habitats that are vulnerable to multiple threats as detailed in the FEIS and final rule's Need for Action sections. For more detail regarding how specific habitats were selected in the alternatives, refer to Chapter 3 of the FEIS. In summary, ONMS determined the selected

habitats were most in need of protection based on the best available scientific information as well as through public comment and interagency coordination.

56. **Comment:** NOAA received a comment that requested the agency incorporate and address management of artificial reefs within sanctuary boundaries, specifically decommissioning of oil and gas platforms.

Response: NOAA's Final Preferred Alternative does not include any artificial reef structures. Federal policy on artificial reefs is discussed in the FEIS Appendix G and in the 2012 FGBNMS Management Plan.

57. **Comment:** NOAA received a comment requesting the use of collaborative, consensus-building, transparent processes for selection and management of sanctuary resources.

Response: ONMS uses several public, stakeholder-driven processes to ensure collaborative, transparent selection and management of resources. National marine sanctuaries have sanctuary advisory councils, composed of voting and non-voting members that represent a variety of government agencies, local user groups, and the general public, that advise sanctuary superintendents on priority issues. Sanctuary advisory councils may choose to establish committees and working groups to further delve into issues; and working groups provide an opportunity to involve more stakeholders from the community in developing recommendations for consideration by the full sanctuary advisory councils. Additionally, through NEPA and the federal rulemaking processes, ONMS is required to solicit, consider, and respond to public comments during each stage in an expansion, designation, or regulatory update. All comments received are made available and considered by ONMS.

58. **Comment:** NOAA received comments requesting the use of British Petroleum (BP) restoration funds to justify expansion to Alternatives 4 and 5. One comment noted specific issues affecting FGBNMS' operational capacity to manage alternatives with greater environmental benefit had changed (i.e. substantial resources have since been dedicated to managing mesophotic and deep benthic communities in the Gulf of Mexico through the Deepwater Horizon NRDA).

Response: FGBNMS is engaged in collaborative efforts with NOAA Fisheries through the MDBC project funded through NRDA. NOAA has determined, for the purpose of this action, that Alternatives 4 and 5 are beyond the geographic scope that is feasible for the sanctuary to effectively manage (see comment #54 and refer to Chapter 3 of the FEIS).

59. **Comment:** NOAA received a comment requesting FGBNMS design, develop, and commission a research vessel dedicated to studying marine mammal population growth in the pelagic environment.

Response: FGBNMS currently operates the R/V *Manta*, a research vessel that can be used as a platform to research marine mammals, and thus rejects this request. NOAA Fisheries conducts marine mammal population studies and their Southeast Fisheries Science Center

develops a report every 5 years. Further, the sanctuary collaborates with external organizations and partners to support marine mammal research.

60. **Comment:** NOAA received a comment requesting the creation of an interpretive center in support of the sanctuary.

Response: NOAA will evaluate opportunities for an interpretive center through the next FGBNMS management plan review process.

61. **Comment:** NOAA received a comment requesting inclusion of a user education and enforcement program to ensure the public is aware of new boundaries and requirements.

Response: Existing online and print materials created for the proposed action contain select maps and several photographs. When the proposed action becomes final, NOAA will work to update and distribute printed and online materials to reflect the features and boundaries of FGBNMS.

62. **Comment:** NOAA received comments regarding input from the FGBNMS Sanctuary Advisory Council and other stakeholders. More specifically, commenters asked why the FGBNMS Sanctuary Advisory Council was not informed of new information and proposed boundaries for NOAA's original preferred alternative in the DEIS (Alternative 3) prior to publication, and asked why NOAA selected Alternative 3 instead of the 2007 FGBNMS Advisory Council's recommendation (Alternative 2).

Response: FGBNMS received input from its Sanctuary Advisory Council through a Boundary Expansion Working Group comprised of stakeholders from varied constituent seats. In 2007, the working group presented its recommendation for sanctuary expansion to the full Advisory Council, after which the 2007 Sanctuary Advisory Council recommendation (Alternative 2) was approved, based on the criteria developed by the original BEWG. Their recommendation became the foundation for NOAA's original preferred alternative (Alternative 3), which also included additional research in the northwestern Gulf of Mexico. After the release of the DEIS, a Sanctuary Advisory Council working group reformed. Based on the Sanctuary Advisory Council recommendations in response to the DEIS, NOAA made a number of changes to the boundaries of the polygons surrounding the banks and submerged features. In 2018, the BEWG brought forth its recommendation for sanctuary expansion to the full Advisory Council, which was approved and became NOAA's Revised Preferred Alternative for the NPRM and the Final Preferred Alternative in this FEIS.

NOAA's Final Preferred Alternative represents the collaborative efforts between constituent/stakeholder groups and the sanctuary's multi-use management. Refer to FEIS Chapter 3, Sections 3.2 and 3.5 which details development of the Final Preferred Alternative and provides the rationale for the selection of Alternative 3 as the original preferred alternative in the DEIS, respectively.

63. **Comment:** NOAA received a comment suggesting FGBNMS form an Advisory Council working group on maritime shipping traffic regarding shipping routes.

Response: NOAA will consider this suggestion in the future.

64. **Comment**: NOAA received comments claiming science was disregarded during the development of the boundary configuration for the Revised Preferred Alternative presented in the NPRM.

Response: The bank boundaries of the Revised Preferred Alternative presented in the NPRM (NOAA's Final Preferred Alternative) closely follow BOEM's No Activity Zones, which were based on information available in 1970-1980's, and designated to protect active reef building benthic communities, associated with the shallowest portions of the geographic features. NOAA reduced the size of the expansion areas proposed in the 2016 DEIS original preferred alternative to minimize user conflicts and potential economic impacts to the offshore energy industry in accordance with NMSA section 301 (16 USC 1431) which supports establishing compatible uses with public and private resource users.

Socioeconomic Issues and Access

65. **Comment:** NOAA received comments stating that the economic impact analysis in the DEIS was insufficient and requested updates to data pertaining to scuba diving, commercial fishing, air emissions, and oil and gas.

Response: NOAA used the best available scientific information to conduct the economic analysis for the DEIS and incorporated updated data and analysis, if available, in the FEIS (see Chapter 5). Specifically, ONMS updated analyses of impacts to commercial and recreational fishing and impacts to oil and gas resources in the FEIS.

66. **Comment:** NOAA received comments related to the positive socioeconomic impacts resulting from sanctuary expansion on local tourism/businesses and the recreation industry. Commenters noted some fishing practices were harmful and therefore, fishing restrictions in the expansion areas would benefit the recreational fishing industry, the commercial fishing industry, and fisheries/seafood production.

Response: Potential positive and adverse impacts to socioeconomic resources (e.g., recreation, fishing) are detailed in FEIS Chapter 5. NOAA does not anticipate any significant adverse impacts to be incurred on the commercial or recreational fishing industry as a result of this expansion. Rather, fishers may find a minor beneficial impact with an increase in fish production with the protection of these important areas. Please review FEIS Chapter 5, Section 5.3.9.1 and 5.3.9.2 for more details on the expected impact to commercial and recreational fishing industries, respectively.

67. **Comment:** NOAA received comments suggesting the proposed action removes an asset from public use for both commercial and recreational purposes, restricts recreational diving access, and restricts recreational fishing opportunities. Commenters urged NOAA to allow for multiple use of the sanctuary, with reasonable access regulations and reasonable mitigation measures that directly address threats.

Response: By expanding the sanctuary's boundaries and extending existing regulations to the expansion areas, NOAA is not restricting access to divers or hook and line fishers in any part of the sanctuary as long as users do not injure or possess any sanctuaries resources (see FEIS regulations Table 1.1, Chapter 1, Section 1.4). NOAA determined through the Sanctuary Advisory Council process and through public input that the expansion would allow for multiple uses of the sanctuary while addressing threats to sanctuary resources as is set forth in NMSA Section 301. For additional details pertaining to impacts to socioeconomic resources such as recreational diving, please refer to FEIS Chapter 5.

68. **Comment:** NOAA received comments from the diving industry and scuba divers supporting sanctuary expansion. Divers urged NOAA to install mooring buoys in the expansion areas to increase access and to provide better maintenance of the mooring buoys and longlines.

Response: NOAA intends to extend the current management regime to the expansion areas, under which, the sanctuary would provide and maintain mooring buoys so that vessels (< 100 feet long) could safely moor in the sanctuary boundaries, as is logistically feasible. See the current FGBNMS Management Plan.

Technical Document Edits

These edits have been made to the relevant sections, where appropriate and are not further addressed in the response to comments. Other minor typographical corrections have been made to the relevant documents and are also not further addressed here.

69. **Comment:** NOAA received a comment that asked for a definition of "immediate surroundings of the proposed boundaries" in Section 5.1.4.

Response: The language in the FEIS has been updated to clarify the definition of "immediate surroundings of the proposed boundaries". Please see FEIS Chapter 5, Section 5.1.4 for the amended text.

70. **Comment:** NOAA received comments that suggested human environment include physical and biological environment in Section 5.1.5, citing that NEPA requires all of these to be considered the "human environment".

Response: NOAA concurs and has updated language in the FEIS Chapter 5, Section 5.1.5 to address specific resource areas (e.g., cultural and historic) acknowledging they are all part of the human environment.

71. **Comment:** NOAA received comments that stated air quality and climate were listed in geographic extent as localized, in Table 5.2, but suggested they are not localized.

Response: ONMS updated the text in the table in the FEIS. See Section 5.2.

72. **Comment:** NOAA received a comment that suggested the "No Action" Alternative (Alternative 1) does contribute to climate change over time, and requested the agency amend the analysis in Section 5.2.

Response: Since implementation of the “No Action” Alternative is expected to leave the existing environment unchanged except for continuation of existing impacts, including on-going impacts of climate change, the effect of this alternative is the same as described in Chapter 4. The “No Action” Alternative served as a baseline for the impact analysis to compare all other alternatives, as such, there would be no additional change to climate expected under this alternative. The text has been slightly amended in FEIS Chapter 5, Section 5.2 to offer clarification to this comment.

73. **Comment:** NOAA received comments stating "reasonably foreseeable future within the study area" in the DEIS Section 5.1.2 and 5.1.3 and Table 5.8 was not defined as a specific time period. In addition to this, the comments suggested that all cumulative actions and impacts from oil and gas were not included in Table 5.8.

Response: Reasonably foreseeable future is defined as within the next 5 to10 years. ONMS updated the definition in FEIS Sections 5.1.2 and 5.1.3 to clarify this timeframe. The purpose of Table 5.8 is to evaluate activities that could contribute to cumulative impacts (i.e. from sanctuary expansion and past, present, or future actions) to resource areas assessed in Chapter 4. NOAA considered the effects to the actions listed in Table 5.8 in combination with the impacts to industry that may occur as a result of sanctuary expansion. The table is not used to summarize all cumulative actions and impacts from oil and gas activities to resource areas. NOAA has fulfilled its requirements under NEPA with information provided in Table 5.8 and rejects the above suggestion.

74. **Comment:** NOAA received a comment that requested a definition for “would be negligible” be added to Section 5.1.5 as it was used in Section 5.4 Cultural and Historic Resources.

Response: NOAA has changed the text in FEIS Chapter 5, Section 5.4 to “minor” for consistency within the impacts analysis.

75. **Comment:** NOAA received a comment that stated Section 5.3.2.8 in the DEIS says "major benefits beyond the proposed boundaries" will occur, thus claiming there are no "significant impacts" earlier in the document is not accurate as impacts include both negative and positive effects.

Response: Major impacts have the potential to be significant, but are not necessarily significant. Please refer to FEIS Chapter 5, Section 5.1.5 for definitions of the magnitude of impact as perceived in the impact analysis.

76. **Comment:** NOAA received a comment that requested "slightly greater adverse impacts" (DEIS Section 5.3.1 and 5.2.4) be defined so that differences in impact levels can be compared.

Response: ONMS clarified the meaning of “slightly greater adverse impacts” in these sections (now FEIS sections 5.2 and 5.1.5, respectively) .

77. **Comment:** NOAA received comments that requested it differentiate between minor, moderate, and severe impacts in DEIS Section 5.2.4.

Response: Impacts were categorized as minor, moderate, and major; see FEIS Chapter 5, Section 5.1.5 for these categorizations and definitions.

Appendix B
Site Evaluation Processes

B.1 Boundary Expansion Working Group Ranking Criteria and Modifications Applied in the Development of the DEIS

The Flower Garden Banks National Marine Sanctuary (FGBNMS) Advisory Council Boundary Expansion Working Group (BEWG) that developed the 2007 Sanctuary Advisory Council (Advisory Council) recommendation (Alternative 2) consisted of the following individuals:

Clint Moore – BEWG Chair; FGBNMS Advisory Council Oil and Gas Industry Representative
Ian MacDonald – FGBNMS Advisory Council Research Representative
John Embesi – FGBNMS Advisory Council Alternate Research Representative
Frank Burek – FGBNMS Advisory Council Recreational Diving Representative
James Sinclair – FGBNMS Advisory Council Minerals Management Service Representative
Steve Gittings – ONMS National Science Program Coordinator
Emma Hickerson – FGBNMS Research Coordinator

In 2007, the BEWG developed the following Issue Description and Problem Statements in response to substantial public comment in support of sanctuary expansion, received during public scoping for the FGBNMS management plan review.

B.1.1 Issue Description

Potentially vulnerable geological and biological features associated with protected areas are outside the current Sanctuary boundaries. Additional features were revealed through the collection of high resolution multibeam bathymetry after the present sanctuary boundaries were established. Numerous banks associated features in the northwestern Gulf of Mexico may be ecologically linked to the Flower Garden Banks National Marine Sanctuary and like the Flower Garden Banks, may be highly vulnerable to certain anthropogenic impacts that alter the physical, chemical, biological, or acoustic environment. It is proposed that selected features be evaluated for inclusion under the management and protection through the Flower Garden Banks National Marine Sanctuary.

B.1.1.1 Problem Statement I

Consider expanding Sanctuary boundaries around Stetson Bank to include vulnerable habitat known as the Stetson Bank Ring. This semi-continuous ring of features is structurally and biologically part of the Stetson Bank ecosystem.

B.1.1.2 Problem Statement II

Consider expanding Sanctuary boundaries to include vulnerable habitats between and adjacent to the Flower Garden Banks that are structurally and biologically linked to the Flower Garden Banks ecosystem.

B.1.1.3 Problem Statement III

Numerous banks and associated topographic features in the northwestern Gulf of Mexico, like the Flower Garden Banks, have unique or unusual structural features, are populated by potentially vulnerable hard bank assemblages, and may be ecologically linked to each other. These should be assessed for effectiveness of current protection, and evaluated for inclusion under the management and protection of the FGBNMS.

B.1.2 Site Ranking

An initial list of potential boundary expansion sites was compiled from the scoping comments, and Advisory Council and Sanctuary comments, and a Bureau of Land Management (BLM) ranking document resulting from explorations in the 1970s and 1980s in response to oil and gas pressures in the northwestern Gulf of Mexico. FGBNMS staff expanded this list based on additional input from other NOAA offices and federal agencies, the research community, and the public during scoping following the Notice of Intent to prepare the DEIS.

The ranking process described here was employed by the BEWG to evaluate sites for potential inclusion in their expansion proposal, and later applied, with modifications as described below, to additional sites or to re-evaluate sites considered by the BEWG in light of new information by FGBNMS staff. It was agreed by the BEWG to apply a rating from 1-3 for each of the criteria described below.

B.1.2.1 Zone Priority Index

Biological and/or Geological Significance and/or uniqueness based on BOEM (formerly Minerals Management Service, MMS, or BLM criteria (Rezak and Bright 1981), FGBNMS data acquisition through remotely operated vehicle (ROV) and submersible surveys and biological data collection (Schmahl and Hickerson 2006; Rezak et al. 1985). Rankings were assigned as follows:

3 = high zone priority
2 = med zone priority
1= low zone priority

The original BLM criteria Zone Priority Index is a numerical average of the rankings of criteria applied to the seven potential benthic biotic zones of the banks described in the study. Each bank in the study area was evaluated as to whether it included a particular benthic biotic zone and the zone priority index for that zone was applied. The BLM criteria Bank Priority Rating is a sum of the applicable zone priority index numbers. Therefore, the highest Bank Priority Rating had the most benthic biotic zones with the highest Zone Priority Indices.

The “Zone Priority Index” ranking for the BEWG purposes began by subdividing the banks in the BLM study into three groups based on their BLM Bank Priority Rating. The “high” category included banks with a Bank Priority Rating of 7.8 – 31.2, as these included significant known hard coral resources and were banks with the greatest diversity of habitats and associated biota. The “medium” category included banks with a rating of 6, none of which have significant hard coral assemblages. The “low” category included banks with a rating of 3 and were those with the lowest degree of assemblage or habitat diversity.

This index published by BLM was the base value used to begin the evaluation of the banks. Additional information revealed through recent ROV and submersible surveys conducted by the FGBNMS was included in the final Zone Priority Index, including sites not considered by the BEWG.

B.1.2.2 Structural Connectivity Index

High resolution multibeam bathymetry (Gardner and Beaudoin 2005) was used to better understand the extent of individual banks and associated features (e.g. faults and dissolution basins) in the north central Gulf of Mexico (this evaluation was furthered by the GIS analysis of local relief described below). This ensured that features were considered in their entirety prior to recommending options for individual bank boundaries. Rankings were assigned as follows:

3 = Structures that are part of the same geologic formation as the banks currently protected by FGBNMS, but were not included in the initial designation because they were not known to exist.

2 = Structures or banks that are laterally connected with current FGBNMS features. They form a virtually continuous structure by virtue of their proximity.

1 = In the geographic region of interest to the BEWG (northwestern Gulf of Mexico between Stetson Bank and Jakkula Bank) or the study area evaluated by FGBNMS staff (north central Gulf of Mexico), and of similar geologic origin (salt diapirs and pinnacles) with surface expressions that promote thriving hard bottom and fish assemblages.

B.1.2.3 Biological Connectivity

Based on distance from closest neighbor (Steneck, 2006; Cowen et al. 2006), this criterion captures the biological connections that occur through adult movement and larval dispersal, and which is often reflected in the similarity of populations among banks. It recognizes the dependence of populations on each other (e.g., predator-prey interactions and recruitment) and on the habitats that they require. Values of the ratings reflect scientific investigations and published literature on probable larval and adult dispersal patterns and distances in the marine environment. This literature is currently being used to inform decisions about spacing between marine protected areas. The higher ratings indicate a higher likelihood that a particular bank provides resources or services for species on another at some point in their life. This could include being a source of food for transitory species like jacks or rays, a nursery area for juvenile fish, a shelter area for migrating turtles, or a larval source for any number of species. Biological connectivity ranking by the BEWG established specific distances associated with high, medium, and low connectivity, as shown below:

3 = 1-10 kilometers (high likelihood of movement or larval transport by many species, and a higher probability of multi-bank resource use)

2 = 11-20 kilometers (somewhat fewer species are likely to depend on resources of multiple banks)

1 = 21-30 kilometers (lowest likelihood of movement or transport, and therefore less likely that there are important multi-bank functional connections for most species)

Staff also considered more recent documentation of biological connectivity over much greater distances (e.g., from Schill et al. 2015) in evaluating the sites considered in the range of alternatives.

B.1.2.4 Threat Index

Level of threat, known or perceived (e.g., visitation, fishing, debris, structural fragility and renewability). This index accounts for the number of known destructive activities taking place at any given site, as well as detrimental activities not currently regulated, e.g. anchoring, treasure salvage. Rankings were assigned as follows:

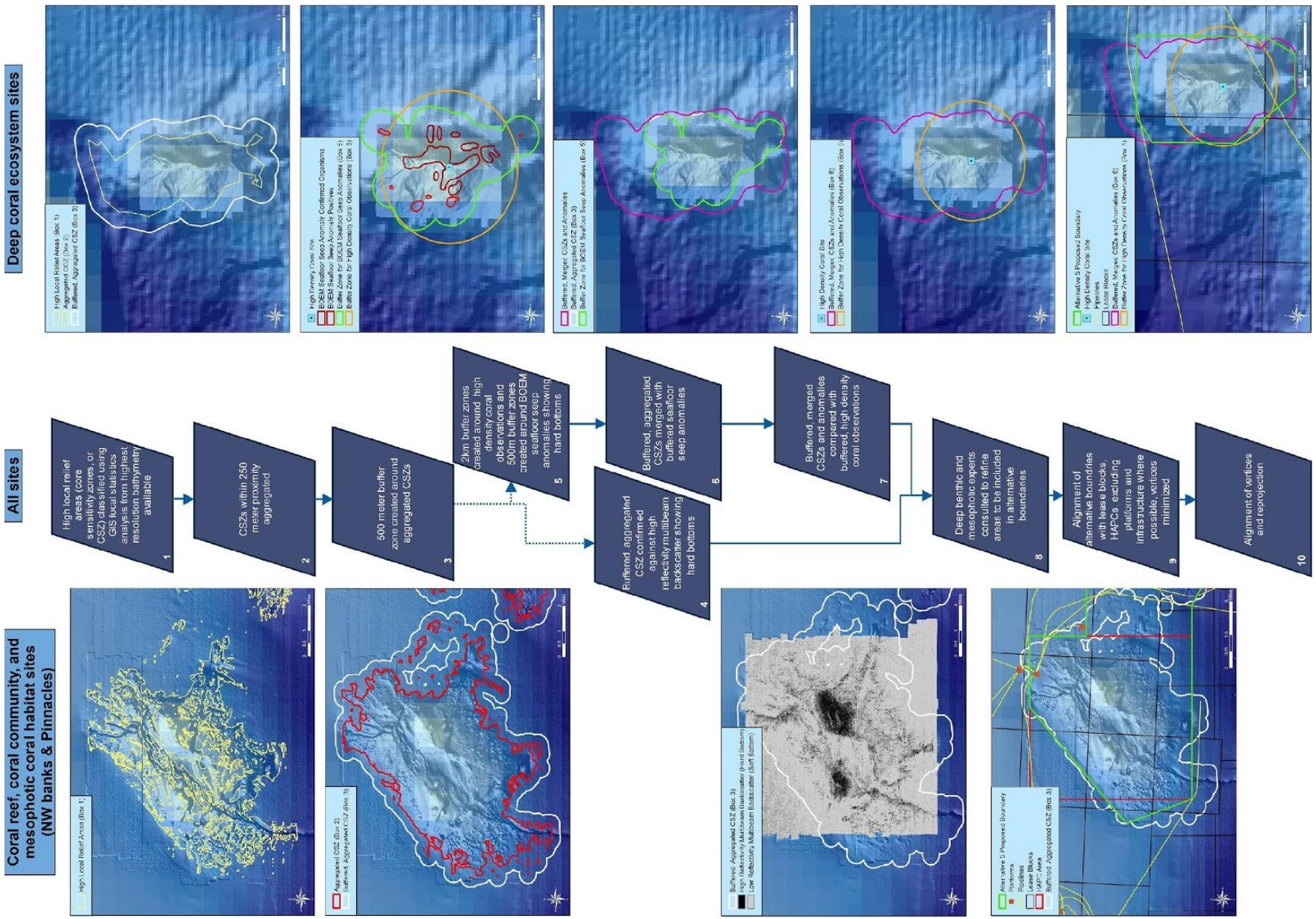
3 = high (three or more known types of activities)
2 = medium (two known types of activities)
1 = low (one known type of activity)

B.1.2.5 Public and Sanctuary Priority

Level of interest to incorporate sites into alternatives as expressed through public scoping and agency priorities. Rankings were assigned as follows:

3 = high
2 = medium
1 = low

B.2 Geographic Information System Boundary Polygon Development Flow Diagram



B.3 Boundary Expansion Working Group and Methodology Applied in the Development of the Revised Preferred Alternative

Similar to the process of developing the 2007 recommendation, in 2016, the Sanctuary Advisory Council created a new BEWG. The new BEWG evaluated the boundaries proposed in the DEIS Alternative 3 based on public comments from the DEIS and concerns of the impact to industries, primarily oil and gas and fishing. The BEWG considered a variety of topics related to the proposed sanctuary boundary and regulatory issues. In May 2018, the BEWG presented their revised boundary configuration (revised preferred alternative) to the full Sanctuary Advisory Council, and their recommendation was accepted. The FGBNMS Advisory Council BEWG that developed the revised preferred alternative consisted of the following individuals:

Clint Moore – BEWG Co-Chair; FGBNMS Advisory Council Oil and Gas Industry Representative
Shane Cantrell – BEWG Co-Chair; FGBNMS Advisory Council Commercial Fishing Representative
Natalie Davis – FGBNMS Advisory Council Diving Operations Representative
Jesse Cancelmo – FGBNMS Advisory Council Recreational Diving Representative
Scott Hickman – FGBNMS Advisory Council Recreational Fishing Representative
Keith "Buddy" Guindon – FGBNMS Advisory Council Commercial Fishing Representative
Adrienne Simoes-Correa – FGBNMS Advisory Council Research Representative
Jacqui Stanley – FGBNMS Advisory Council Education Representative
Charles Tyer – FGBNMS Advisory Council NOAA Office of Law Enforcement Representative
Randy Widaman – FGBNMS Advisory Council Diving Operations Representative
Jake Emmert – FGBNMS Advisory Council Conservation Representative

The BEWG considered a variety of topics, including a range of boundary and regulatory issues, described below.

B.3.1 New Circumstances or Information since the DEIS

This section presents circumstances/information that were new or updated since the analysis conducted in the 2016 DEIS. The circumstances/information fall within two broad categories: fishing activity and oil and gas activity.

B.3.1.1 Fishing Activity

The National Marine Fisheries Service (NMFS) Office of Sustainable Fisheries (OSF), Gulf of Mexico Fishery Management Council (GMFMC), and the FGBNMS Advisory Council each submitted comments offering new boundary and/or regulatory recommendations. The complete comments and recommendations may be found online[1] and are summarized below.

The OSF submitted comments and a request for exemption for the use of pelagic longline gear in the expanded sanctuary in a letter dated August 17, 2016. OSF states that pelagic longline gear does not touch the ocean floor or benthic habitats so the gear would not harm sanctuary resources. However, since pelagic longline extends over such a long distance, it is likely that

[1] https://flowergarden.noaa.gov/management/sacexpansionrecommendation.html

drifting gear may enter one or more of the small additional banks and the more banks there are, the more likely the gear is to drift into a restricted area.

Pursuant to the consultation required under Section 304(a)(5) of the National Marine Sanctuaries Act, the GMFMC submitted comments and recommendations relating to proposed fishing regulations in a letter dated November 8, 2016. The GMFMC requested that NOAA consider a tiered approach for fishing regulations within the expansion area, based on areas previously designated by the Bureau of Ocean Energy Management (BOEM) as "No Activity Zones" (NAZ). The GMFMC recommended that the existing FGBNMS regulations only apply within the NAZ portions of the expanded area, and that the areas outside NAZ remain open to historical fishing practices.

In 2018, the Advisory Council recommended modifications be made to sanctuary regulations with regards to fishing prohibitions. The Advisory Council recommended allowances for the possession of spearfishing gear in the existing sanctuary, and the ability to conduct breath-hold spearfishing in the expanded sanctuary areas (May 2018).

B.3.1.2 Oil and Gas Activity

Pursuant to NMSA Section 304(a)(2)(B)(ii) and through the Cooperative Agency Agreements dated September 2015, NOAA consulted with the Department of Interior, BOEM during the development of the DEIS to determine potential economic impacts to the oil and gas industry. Subsequently, after the development of the expansion boundaries presented in the DEIS, NOAA consulted with BOEM again to address potential economic impacts to the oil and gas industry. In November 2016, NOAA received comments on the DEIS from DOI which expressed concerns that an expanded sanctuary as originally proposed in Alternative 3 would result in economic costs to the oil and gas industry and to the Federal government from loss of potential energy resources.

The cost analysis of the socioeconomic impacts to the oil and gas industry that might arise from sanctuary expansion and extension of the sanctuary regulations in the DEIS did not include information on the volumes of undiscovered and/or contingent resources within the Gulf of Mexico that might be impacted by the proposed expansion. Prior to the release of the DEIS, DOI asserted privilege/confidentiality and did not provide NOAA with comprehensive data and information on the undiscovered and/or contingent resources. Therefore, this new information could not be analyzed in the 2016 DEIS. Subsequent to the release of the DEIS, DOI provided additional information in the comment letters referenced above.

B.3.2 Modifications to NOAA's original preferred alternative (Alternative 3) as determined by the BEWG

At the request of FGBNMS and in consultation with the BEWG, beginning in April 2017, NOAA's National Centers for Coastal Ocean Science (NCCOS) developed an analysis tool to assist the BEWG in evaluating NOAA's DEIS preferred alternative (Alternative 3). As part of this analysis, NCCOS synthesized available information on biology, ecology, human use, and management designations for the study area, and created a geodatabase that helped visualize and evaluate various boundary expansion options. The analysis used a geospatial planning software tool known as *Marxan*, which is designed to help decision makers find solutions to conservation

planning issues. A variety of geospatial datasets were included in the analysis, including commercial fishing vessel activity, oil and gas infrastructure, known locations of sensitive biological communities, shipping activity, and existing management zones.

The various data components were assigned weights, as determined by the BEWG, to give priority and identify potential outcomes. The analysis focused on the locations of the BOEM designated NAZs. NAZs are areas within which no operations, anchoring, or structures are allowed for oil and gas operations. These areas are outlined in BOEM's Western and Central Gulf of Mexico Topographic Features Stipulation Map Package, and further described Notice to Lessees (NTL) No. 2009-G39. The NAZs were developed in the 1970-1980's to protect the shallowest portion of the reefs and banks (i.e., "topographic features") under consideration for oil and gas development. The focus on the NAZs by the BEWG was in response to concerns raised primarily by the oil and gas industry regarding potential impacts to offshore energy operations from FGBNMS expansion in this portion of the Gulf of Mexico. Ultimately, the BEWG considered the NAZs as the primary geographically bound characteristic by which to develop recommendations for revisions to the proposed sanctuary expansion boundaries.

In April and May 2018, the BEWG adopted a series of recommendations for expansion of 14 of the 15 additional banks proposed in the DEIS original preferred alternative (Alternative 3). The BEWG presented its revised FGBNMS expansion boundaries recommendation to the full FGBNMS Advisory Council on May 9, 2018, and the recommendation was accepted by the Advisory Council as proposed.

Pursuant to E.O. 13795 Section 4(a) consultation, DOI subsequently provided NOAA (letter dated February 25, 2019) with additional information and an updated analysis of the anticipated impacts associated with the modified alternative presented by the Advisory Council BEWG in 2018 (Revised Preferred Alternative).

Appendix C
Supplemental Information Report

Supplemental Information Report

To the

2016 Flower Garden Banks National Marine Sanctuary Expansion

Draft Environmental Impact Statement (RIN 0648–BA21)

March 22, 2019

Introduction

Pursuant to the National Environmental Policy Act (NEPA), the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Office of National Marine Sanctuaries (ONMS) issued a Draft Environmental Impact Statement (DEIS) for the Flower Garden Banks National Marine Sanctuary Expansion (2016 DEIS) in June 2016. The U.S. Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM), and Bureau of Safety and Environmental Enforcement (BSEE) are cooperating agencies in developing the DEIS. NOAA intends to revise the preferred alternative identified in the 2016 DEIS (2016 Preferred Alternative). This Supplemental Information Report (SIR) evaluates the adequacy of the 2016 DEIS and determines whether a Supplemental Environmental Impact Statement (SEIS) is required or necessary for NOAA to comply with NEPA for the Revised Preferred Alternative.

Summary

The proposed action of the 2016 DEIS is to expand the boundaries of the Flower Garden Banks National Marine Sanctuary (FGBNMS) and apply existing sanctuary regulations and management actions to the expanded area. Sanctuary regulations, set forth in 15 CFR 922.122, provide protection only to three nationally significant coral reefs and banks named East Flower Garden Bank, West Flower Garden Bank, and Stetson Bank. These regulations also protect from physical injury and death certain marine species (including rays and whale sharks) that are found within the boundaries of FGBNMS.

Section 2.2 of the 2016 DEIS (Need for Action) explains that the proposed action is needed to address episodic and ongoing threats arising from bottom-disturbing activities (e.g., activities related to oil and gas exploration and production, fishing with bottom-tending gear, infrequent but damaging large ship anchoring on shelf-edge features near shipping fairways, frequent anchoring by smaller commercial or recreational vessels, and salvage activities) on the sensitive biological resources and geological features located in the northern Gulf of Mexico. To address these threats, the 2016 DEIS considers a no action alternative and a reasonable range of other alternatives that would expand the geographic size and increase the number of nationally significant reefs, banks, and other features that enjoy protection under the National Marine Sanctuaries Act (NMSA). In response to comments received on the 2016 DEIS, NOAA plans to revise the preferred alternative by slightly modifying the geographic boundary and reducing the total size of the protected area (Revised Preferred Alternative).

NOAA finds that the changes reflected in the Revised Preferred Alternative are not "substantial changes in the proposed action that are relevant to environmental concerns" (40 C.F.R. § 1502.9(c)(1)(i)). NOAA further finds that the comments received on the 2016 DEIS do not constitute "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts" (40 C.F.R. § 1502.9(c)(1)(ii)). As such, preparing a supplement to the 2016 DEIS is neither required, nor necessary under NEPA. Pursuant to applicable CEQ Guidance, NOAA will document the rationale for revising the preferred alternative in the Final Environmental Impact Statement (FEIS) and related Record of Decision (ROD).

Criteria for Supplementing a Previous NEPA Analysis

The White House Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA requires a federal agency to prepare supplements to either Draft or Final Environmental Impact Statements if: (1) the agency makes substantial changes to the proposed action that are relevant to environmental concerns; or (2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 C.F.R. § 1502.9(c)(1)). Where these two criteria are not satisfied, an agency may still choose to exercise discretion and "prepare supplements when the agency determines that the purposes of [NEPA] will be furthered" (40 C.F.R. § 1502.9(c)(2)). The determination is made on a case-by-case basis.

A federal agency has a continuing duty to evaluate new information relevant to the environmental impacts of its actions, even after the release of an Environmental Impact Statement (EIS). A Supplemental Information Report (SIR) is a written decision tool prepared by an agency to inform the decision whether to supplement an existing NEPA analysis. When performing this review, consideration is given to whether new information or changed conditions are within the scope and range of effects considered in the original analysis. If the agency determines that the new information or changed conditions fall within the scope and range of effects considered in the original environmental analysis, then a supplemental environmental document is not required. However, if the agency determines that changes to the analysis are needed to address environmental effects not previously addressed in the original environmental analysis and that have a bearing on the proposed action or its impacts, then the proposed action will be delayed until the supplemental analysis is completed.

Applicable CEQ Guidance

The decision whether to supplement a draft EIS is based on CEQ Guidance[1]. Specifically, question 29b asks, "How must an agency respond to a comment on a draft EIS that raises a new alternative not previously considered in the draft EIS?" CEQ responds,

> This question might arise in several possible situations. First, a commenter on a draft EIS may indicate that there is a possible alternative which, in the agency's view, is not a reasonable alternative. Section 1502.14(a). If that is the case, the agency must explain why the comment does not warrant further agency response, citing authorities or reasons that support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response. Section 1503.4(a) . . .
>
> A second possibility is that an agency may receive a comment indicating that a particular alternative, while reasonable, should be modified somewhat, for example, to achieve certain mitigation benefits, or for other reasons. If the modification is reasonable, the agency should include a discussion of it in the final EIS. For example, a commenter on a draft EIS on a proposal for a pumped storage power facility might suggest that the applicant's proposed alternative should be enhanced by the addition of certain reasonable mitigation measures, including the purchase and set-aside of a wildlife preserve to substitute for the tract to be destroyed by the project. The modified alternative including the additional mitigation measures should be discussed by the agency in the final EIS.
>
> A third slightly different possibility is that a comment on a draft EIS will raise an alternative which is a minor variation of one of the alternatives discussed in the draft EIS, but this variation was not given any consideration by the agency. In such a case, the agency should

[1] CEQ. 1981. Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations. 46 FR 18026 (March 23, 1981). https://www.energy.gov/sites/prod/files/G-CEQ-40Questions.pdf accessed on 8/8/18

develop and evaluate the new alternative, if it is reasonable, in the final EIS. If it is qualitatively within the spectrum of alternatives that were discussed in the draft, a supplemental draft will not be needed. For example, a commenter on a draft EIS to designate a wilderness area within a National Forest might reasonably identify a specific tract of the forest, and urge that it be considered for designation. If the draft EIS considered designation of a range of alternative tracts which encompassed forest area of similar quality and quantity, no supplemental EIS would have to be prepared. The agency could fulfill its obligation by addressing that specific alternative in the final EIS.

A fourth possibility is that a commenter points out an alternative which is not a variation of the proposal or of any alternative discussed in the draft impact statement, and is a reasonable alternative that warrants serious agency response. In such a case, the agency must issue a supplement to the draft EIS that discusses this new alternative. For example, a commenter on a draft EIS on a nuclear power plant might suggest that a reasonable alternative for meeting the projected need for power would be through peak load management and energy conservation programs. If the permitting agency has failed to consider that approach in the Draft EIS, and the approach cannot be dismissed by the agency as unreasonable, a supplement to the Draft EIS, which discusses that alternative, must be prepared. (If necessary, the same supplement should also discuss substantial changes in the proposed action or significant new circumstances or information, as required by Section 1502.9(c)(1) of the Council's regulations.)

This SIR was prepared in accordance with NOAA Administrative Order (NAO) 216-6A, "Compliance with the National Environmental Policy Act, Executive Orders 12114, Environmental Effects Abroad of Major Federal Actions; 11988 and 13690, Floodplain Management; and 11990, Protection of Wetlands" and the related Companion Manual for NOAA Administrative Order 216-6A, Section 5(c) and Appendix C-14.

Background

FGBNMS currently consists of three nationally significant coral reefs and banks; namely, East Flower Garden Bank, West Flower Garden Bank, and Stetson Bank. These geological features are located along the continental shelf of the northwestern Gulf of Mexico, approximately 70 to 115 miles off the coasts of Texas and Louisiana (Figure 1.).

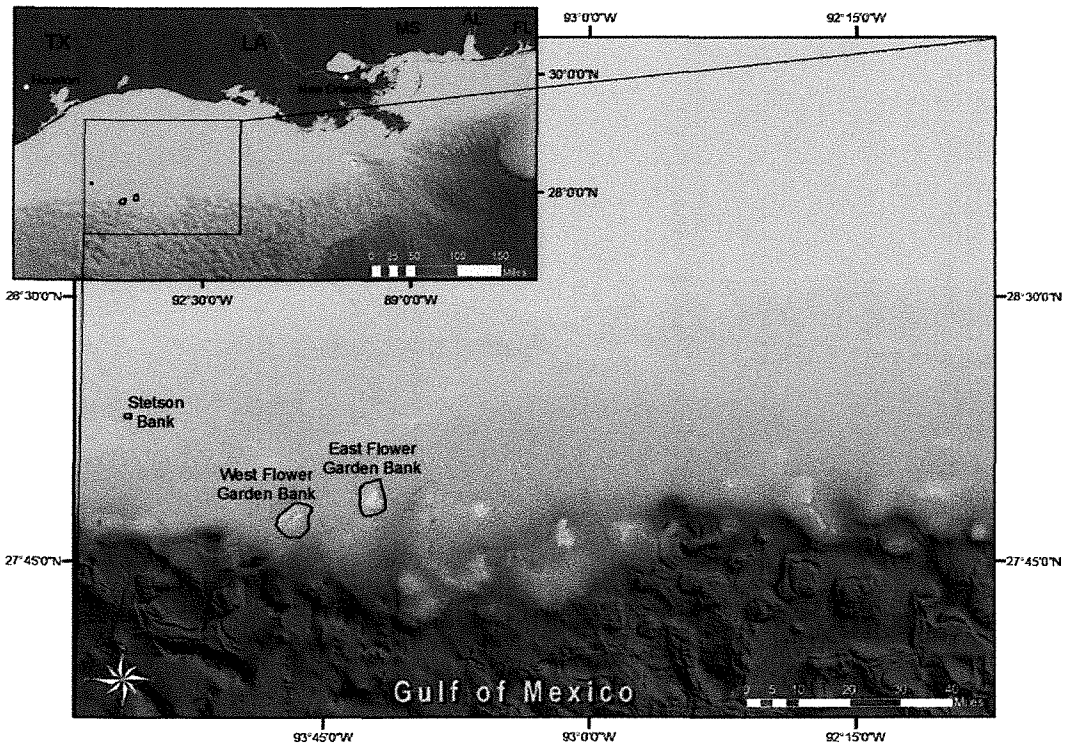


Figure 1. Flower Garden Banks National Marine Sanctuary Existing Boundaries

The northern Gulf of Mexico is a heavily utilized and industrialized region with sensitive biological resources and geological features associated with area coral reefs and banks. These coral reefs, banks, and marine life are threatened by bottom-disturbing human related activities (e.g., activities related to oil and gas exploration and production, fishing with bottom-tending gear, infrequent but damaging large ship anchoring on shelf-edge features near shipping fairways, frequent anchoring by smaller commercial or recreational vessels, and salvage activities). To address these threats and conserve sensitive biological resources and geological features, the 2016 DEIS considers five spatial alternatives, including the no action alternative, and evaluates the reasonably anticipated environmental impacts stemming from the proposed expansion of the network of protected areas and extending application of the existing sanctuary regulations and management actions to those expanded area.

Table 1 summarizes the five alternatives considered in the 2016 DEIS.

Table 1. Alternatives Analyzed in the 2016 DEIS

Topic Area	Alt. 1: No Action	Alt. 2: 2007 Sanctuary Advisory Council (SAC) Rec.	Alt. 3: 2016 Preferred Alt. in DEIS	Alt. 4: + high priority mesophotic & deep coral sites	Alt. 5: Comprehensive Protection
# of Banks / Features	3	12 (9 new)	18 (15 new)	43 (40 new)	57 (54 new)
# of Areas (polygons / units)	3	9 (6 new)	11 (9 new)	29 (26 new)	45 (42 new)
Total size (mi^2)	56.21	281.15	383.19	633.76	935.18
Management Plan and Regulations	Apply current management plan and regulations	Apply current management plan and regulations	Apply current management plan and regulations	Apply current management plan and regulations	Apply current management plan and regulations

Changes to Preferred Alternative

In response to comments and recommendations received on the 2016 DEISs, NOAA intends to revise the geographic boundary and size of the protected areas identified in the 2016 Preferred Alternative (Alt. 3). Compared to the 2016 Preferred Alternative (Alt. 3), the Revised Preferred Alternative would reduce the total size of the proposed sanctuary expansion by 223 mi^2 (from ~383 mi^2 to 160 mi^2), reduce the number of additional banks from 15 to 14, and increase the number of new polygons from 8 large areas encompassing multiple features to 16 smaller areas more closely bounding the shallowest portions of the geological features of interest. This revision would increase the total number of banks to 17, and increase the total number of polygons to 19.

Table 2 and Figure 2 compare the 2016 Preferred Alternative (as described in the DEIS) and the Revised Preferred Alternatives.

Table 2. Comparison between the 2016 and Revised Preferred Alternatives

Topic Area	Alt. 3: 2016 Preferred Alternative in DEIS	Revised Preferred Alternative
# of Banks	18 (15 new)	17 (14 new)
# of Areas (polygons / units)	11 (8 new)	19 (16 new)
Total size (mi^2)	383.19	160.35
Management Plan and Regulations	Apply current management plan and regulations	Apply current management plan and regulations
Note: The smaller size of the area surrounding individual banks established under the Revised Preferred Alternative results in a greater number of areas (polygons/units) as some of the continuous areas in the 2016 Preferred Alternative would be separated.		

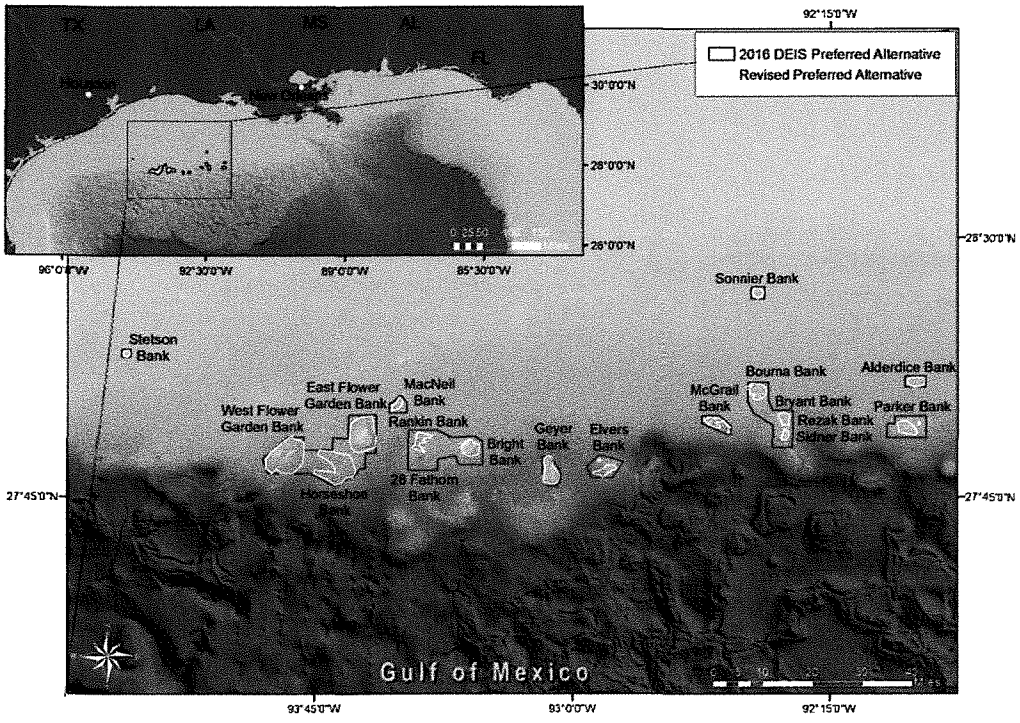


Figure 2. Flower Garden Banks National Marine Sanctuary 2016 DEIS Preferred Alternative and Revised Preferred Alternative

The 2016 Preferred Alternative (Alt. 3) analyzed the impacts of increasing the number of nationally significant banks from 3 to 18, expanding the protected area polygons from 3 to 11, and enlarging the size of the sanctuary from ~56 square miles to ~383 square miles. Although the Revised Preferred Alternative increases the number of protected area polygon / units presented in the 2016 Preferred Alternative (Alt. 3) from 11 to 19, Figure 2 shows that the discrete polygons / units include all of the same reefs and banks that were presented in Alternative 3 of the original NEPA analysis (with one exception). In other words, no new reefs and banks are included within the boundaries of the Revised Preferred Alternative. The Revised Preferred Alternative boundaries are just more tightly drawn around the shallowest portions of the geological features of interest that were originally identified in the 2016 Preferred Alternative (Alt. 3). The smaller boundaries established under the Revised Preferred Alternative were developed from the recommendations of the Sanctuary Advisory Council (SAC) (with minor corrections to the Stetson Bank Boundary consistent with Pub. L. 104-283 (Oct. 11, 1996)). Based on the foregoing, NOAA finds that the Revised Preferred Alternative does not constitute "substantial changes in the proposed action that are relevant to environmental concerns" under NEPA. Under the Revised Preferred Alternative, more area now remains outside the sanctuary boundary than in the 2016 Preferred Alternative (Alt. 3), and left unrestricted for other public use. Because the Revised Preferred Alternative would designate an area larger than the no action alternative (Alt. 1) but smaller than the largest alternative (Alt. 5), these impacts are expected to be within the range of those analyzed in the DEIS. The Revised Preferred Alternative does not consider any areas, sanctuary regulations, or management measures that were not already considered in the 2016 DEIS. There is no change to the overall nature and scope of the effort (i.e., the expansion of FGBNMS), and the Revised Preferred Alternative remains within the range of alternatives and impacts already analyzed in the 2016 DEIS. Therefore, an SEIS is not required under the first criterion for

supplementing a previous NEPA analysis (i.e., the agency did not make substantial changes to the proposed action that are relevant to environmental concerns).

New Circumstances or Information

This section presents circumstances/information that are new or that have been updated since the analysis conducted in the 2016 DEIS. The circumstances/information fall within two broad categories: 1) fishing activity; and 2) oil and gas activity. Upon review of the circumstances/information under each category and applying the CEQ Guidance discussed above, NOAA finds that an SEIS is also not required under the second criterion for supplementing a previous NEPA analysis (i.e., there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts).

1. Fishing Activity

The National Marine Fisheries Service (NMFS) Office of Sustainable Fisheries (OSF), Gulf of Mexico Fishery Management Council (GMFMC), and the FGBNMS Advisory Council (SAC) have each submitted comments offering new boundary and/or regulatory recommendations. The complete comments and recommendations may be found at https://flowergarden.noaa.gov/management/sacexpansionrecommendation.html and are summarized below:

- OSF submitted comments and a request for exemption for the use of pelagic longline gear in the expanded sanctuary (letter dated August 17, 2016). OSF states that pelagic longline gear does not touch the ocean floor or benthic habitats so the gear would not harm sanctuary resources. However, since pelagic longline extends over such a long distance, it is likely that drifting gear may enter one or more of the small additional banks and the more banks there are, the more likely the gear is to drift into a restricted area.

- Pursuant to the consultation required under section 304(a)(5) of the National Marine Sanctuaries Act, the GMFMC submitted comments and recommendations relating to proposed fishing regulations (letter dated November 8, 2016). GMFMC requested that NOAA consider a tiered approach for fishing regulations within the expansion area, based on areas previously designated by the Bureau of Ocean Energy Management (BOEM) as "No Activity Zones" (NAZ). GMFMC recommended that the existing FGBNMS regulations only apply within the NAZ portions of the expanded area, and that the areas outside NAZ remain open to historical fishing practices.

- In 2018, the SAC also recommended modifications to NOAA's 2016 Preferred Alternative: allowances for the possession of spearfishing gear in the existing sanctuary, and the ability to conduct breath-hold spearfishing in the expanded sanctuary areas (May 2018).

Essentially, the commenters seek an exemption to the fishing gear restrictions established by the Sanctuary regulations at 15 C.F.R. 922.122 and analyzed in Sections 4 and 5 of the DEIS. Although the analysis that was conducted in 2016 did not contemplate any exemptions to the existing Sanctuary regulations applying across the expanded area, NOAA finds that the present new information is within the scope of the 2016 DEIS. The exemption is simply a minor variation to the alternatives addressed in the 2016 DEIS. The new information from the comments on fishing activity in the expanded area is consistent with the information and associated impacts analyzed in the No Action Alternative (Alt. 1). NOAA, thus, concludes the new circumstances/information from the commenters are not "significant" for purposes of the NEPA inquiry required in the CEQ regulations. As discussed above, NOAA revised its preferred alternative to respond to many of these comments by creating more open spaces between the network of protected areas. Pursuant to CEQ guidance, NOAA will fulfill its NEPA obligations by

addressing the OSF, GMFMC, and SAC comments with greater detail and specificity in the Final EIS and associated ROD.

2) Oil and Gas Activity

Pursuant to NMSA Section 304(a)(2)(B)(ii) and through the Cooperative Agency Agreement dated September 2015, NOAA consulted with DOI, BOEM during the development of the DEIS, and subsequently, after the development of the final expansion boundaries, to determine potential economic impacts to the oil and gas industry. In November 2016 comments received by NOAA on the DEIS, DOI expressed concerns that an expanded sanctuary as originally proposed in the 2016 Preferred Alternative (Alt. 3) would result in economic costs to the oil and gas industry and to the federal government from loss of potential energy resources. Pursuant to E.O. 13795 Section 4(a) consultation, DOI subsequently provided NOAA (letter dated February 25, 2019) with additional information and an updated analysis of the anticipated impacts associated with the Revised Preferred Alternative.

The 2016 DEIS included analysis of the socioeconomic impacts to the oil and gas industry that might arise from sanctuary expansion and extension of the sanctuary regulations to the expanded area. However, the cost analysis did not include information on the volumes of undiscovered and/or contingent resources within the Gulf of Mexico that might be impacted by the proposed expansion. Prior to the release of the DEIS, DOI asserted privilege/confidentiality and did not provide NOAA with comprehensive data and information on the undiscovered and/or contingent resources. Therefore, this new information could not be analyzed in the 2016 DEIS. Subsequent to the release of the DEIS, DOI provided additional information in the comment letters referenced above. Despite this new information, NOAA has concluded that preparing a supplement to the 2016 DEIS to address DOI's new information is neither required, nor necessary under NEPA. As explained above and pursuant to CEQ regulations, NOAA shall prepare a supplement DEIS when there "are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts". Since the new DOI information is economic and is not "relevant to environmental concerns", supplemental analysis is not required under NEPA. The DOI new information will be addressed in the Final EIS and associated ROD in accordance with applicable CEQ guidance.

Conclusion/Decision

After evaluating the comments and recommendations received on the 2016 DEIS, NOAA has determined that a supplemental DEIS for the proposed action is not required or necessary pursuant to 40 C.F.R. § 1502.9(c)(2). Under the present circumstances, NOAA finds that the purposes of NEPA would not be furthered by the preparation of a supplemental DEIS. The potential impacts of this Revised Preferred Alternative are fully analyzed in the 2016 DEIS. There are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts that would justify supplementation at this time. Further, under relevant CEQ guidance, all concerns or recommendations raised by the OSF, GMFMC, SAC, DOI, and the general public may be appropriately addressed in the Final EIS and ROD.

NOAA therefore concludes that the existing NEPA analysis adequately addresses the impacts of the proposed action on the human environment (including the Revised Preferred Alternative) and that no supplemental NEPA analysis is required to implement the proposed action. If the proposed action to expand FGBNMS is further revised in response to comments on the proposed rule, NOAA would re-examine the acceptability of the existing NEPA documents and the need for any supplemental analysis.

Approved:

R Holyoke

Rebecca R. Holyoke, Ph.D.
Deputy Director, Office of National Marine Sanctuaries
National Ocean Service, NOAA

03/27/2019
Date

Appendix D
Site Profiles of Nationally Significant Natural Features Included in Alternatives

D.1 Purpose

This appendix provides a brief descriptive overview of each of the natural features included in the range of alternatives evaluated in this FEIS. The descriptions are organized according to the subregion of the north central Gulf of Mexico (generally recognized as the area between the 87th and 95th west meridians) in which the features are situated. The site descriptions below are ordered generally from west to east within each subregion, which includes the northwestern Gulf of Mexico (D.2, generally recognized as the area from the Texas-Mexico border to the state line between Louisiana and Mississippi), Pinnacles Area off the coasts of Mississippi and Alabama (D.3), and the continental slope (D.4).

Maps are included showing the bathymetry at each site, proposed alternative boundaries, and existing regulatory zones and infrastructure. As described in Chapter 3, proposed boundaries are simplified to the greatest extent possible while still encompassing features of interest as documented by observations, for ease of enforcement and consistency with existing regulatory regimes. When only a partial boundary or multiple proposed boundaries are visible in a single map image, that map image is centered on the feature or boundary of interest. The bathymetry presented in the maps included with each description was collected by Dr. Jim Gardner (then of USGS-Menlo Park, now of University of New Hampshire), NOAA, and the former Minerals Management Service (MMS) – now Bureau of Ocean Energy Management (BOEM). NOAA adapted the maps to illustrate proposed boundaries under each alternative, infrastructure (e.g., platforms and pipelines), shipping fairways, and other regulatory management zones (e.g., HAPCs & BOEM lease blocks).

GIS data presented for BOEM regulatory zones (NAZs, buffer zones) and regulated infrastructure (platforms, pipelines) is from a working database derived from documents submitted to the federal government from oil companies, other government agencies, and/or the public (BOEM 2015a, 2015b). Some errors may exist in this data and BOEM is constantly working to find and eliminate them. For example, NAZ boundaries are based on bathymetry, which the GIS shapefiles approximate, but which requires site-specific surveying to establish with certainty. Copies of the original documents on which BOEM's GIS data are based are available for inspection and copying at BOEM's Public Information Office. Though this data aided in the preparation and evaluation of the alternatives presented in this FEIS, BOEM does not represent this data as legally binding and it is not intended for navigational use.

D.2 Northwestern Gulf of Mexico Banks

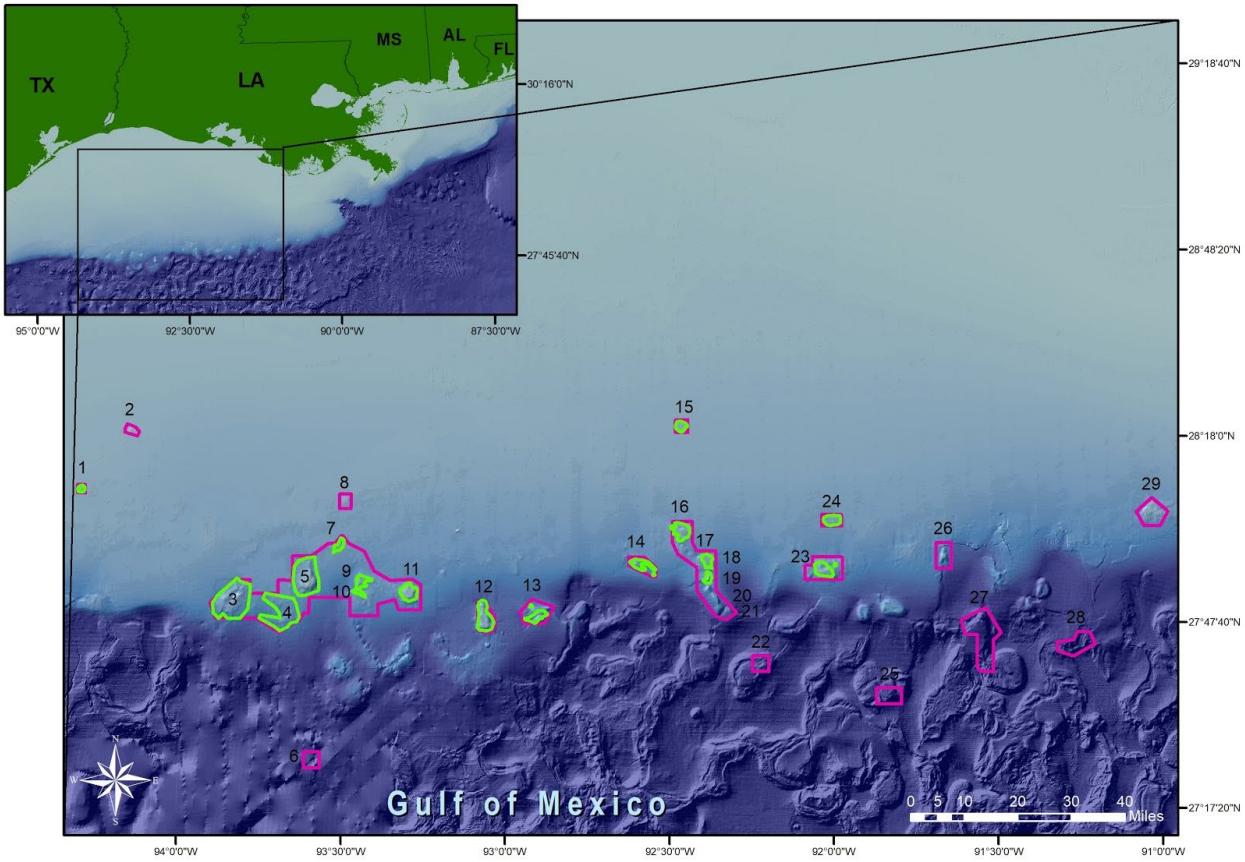


Figure D.1 Overview of the 17 reef and bank features encompassed by the Final Preferred Alternative (with proposed sanctuary boundaries outlined in green) and twelve additional features encompassed by the most comprehensive alternative (Alternative 5, with extended or additional boundaries outlined in magenta), in the context of the northwestern Gulf of Mexico. The banks located in the northwestern Gulf of Mexico subregion are: 1. Stetson Bank; 2. Claypile Bank; 3. West Flower Garden Bank; 4. Horseshoe Bank; 5. East Flower Garden Bank; 6. Galvez/Frye Basin Ridge; 7. MacNeil Bank; 8. 29-Fathom Bank; 9. Rankin Bank; 10. 28-Fathom Bank; 11. Bright Bank; 12. Geyer Bank; 13. Elvers Bank; 14. McGrail Bank; 15. Sonnier Bank; 16. Bouma Bank; 17. Bryant Bank; 18. Rezak Bank; 19. Sidner Bank; 20. Tresslar Bank; 21. Antoine Bank; 22. Tunica Mound; 23. Parker Bank; 24. Alderdice Bank; 25. Jeanerette Dome; 26. Jakkula Bank; 27 Assumption Dome; 28. Penchant Basin Dome; 29. Ewing Bank. Image: NOAA

D.2.1 Stetson Bank (amend current boundaries)

This action would increase the area from 0.84 sq. miles to 1.43 sq. miles, to encompass the Stetson Ring feature.

Depth Range: 56-194 feet (17-59 meters)

Habitats Present: coral communities, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: "moonscape" appearance, with distinct uplifted siltstone and claystone pinnacles that push out of the seafloor for approximately 1,500 feet along the northwest face of the bank; pinnacles dominated by fire coral and sponges, with cover exceeding 30% (Bernhardt 2000), and at least 20 stony coral species present; algae, sponges and rubble dominate the flats; “ring” of claystone outcroppings dominated by black corals, octocorals, sponges, invertebrates, and fish, at approximately 165-200 feet (50-61 meters) around the main feature of Stetson Bank (Gardner et al. 1997)

Observed Impacts: derelict fishing gear (trawl nets, shrimping doors, stabilizers, line), anchors, engine blocks, invasive species (orange cup coral and lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: HIA502, HIA513 (None active)

Figure D.2. *Madracis* outcropping on the shallow pinnacles at Stetson Bank. Photo: E. Hickerson/NOAA

Figure D.3. One of many nets impacting the ring around Stetson Bank. Photo: NOAA/UNCW-UVP

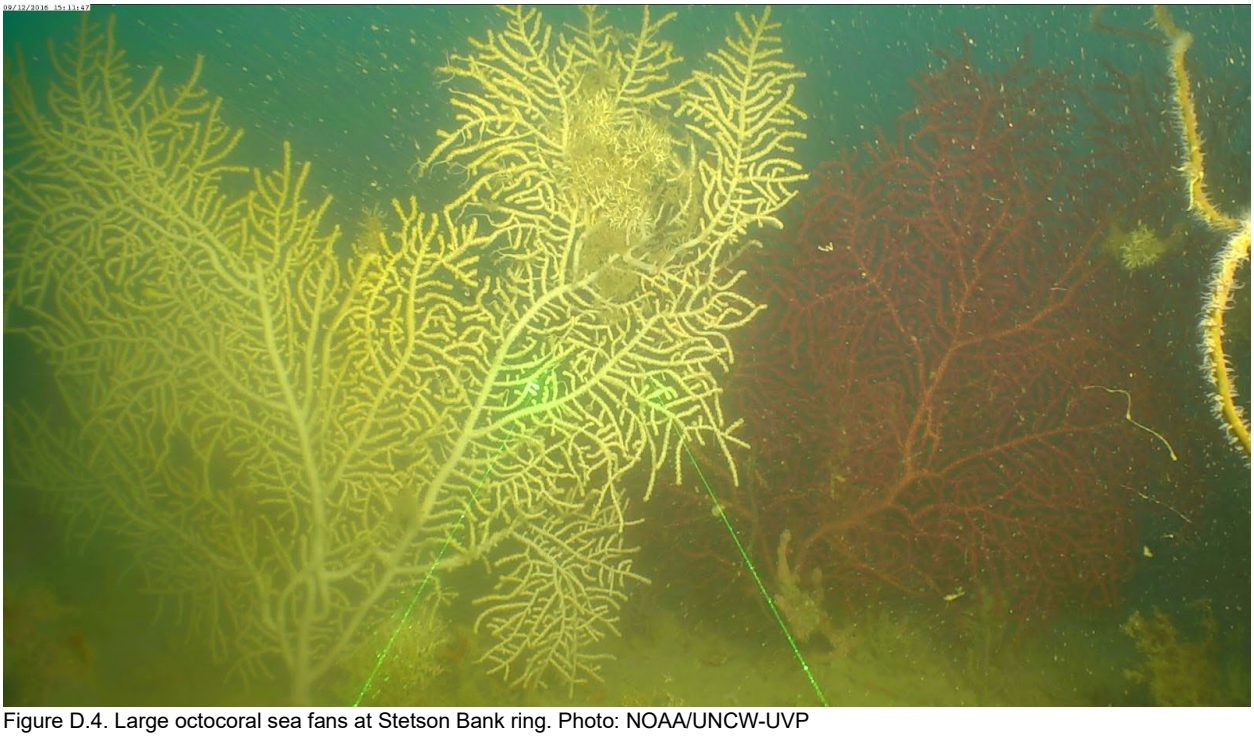


Figure D.4. Large octocoral sea fans at Stetson Bank ring. Photo: NOAA/UNCW-UVP

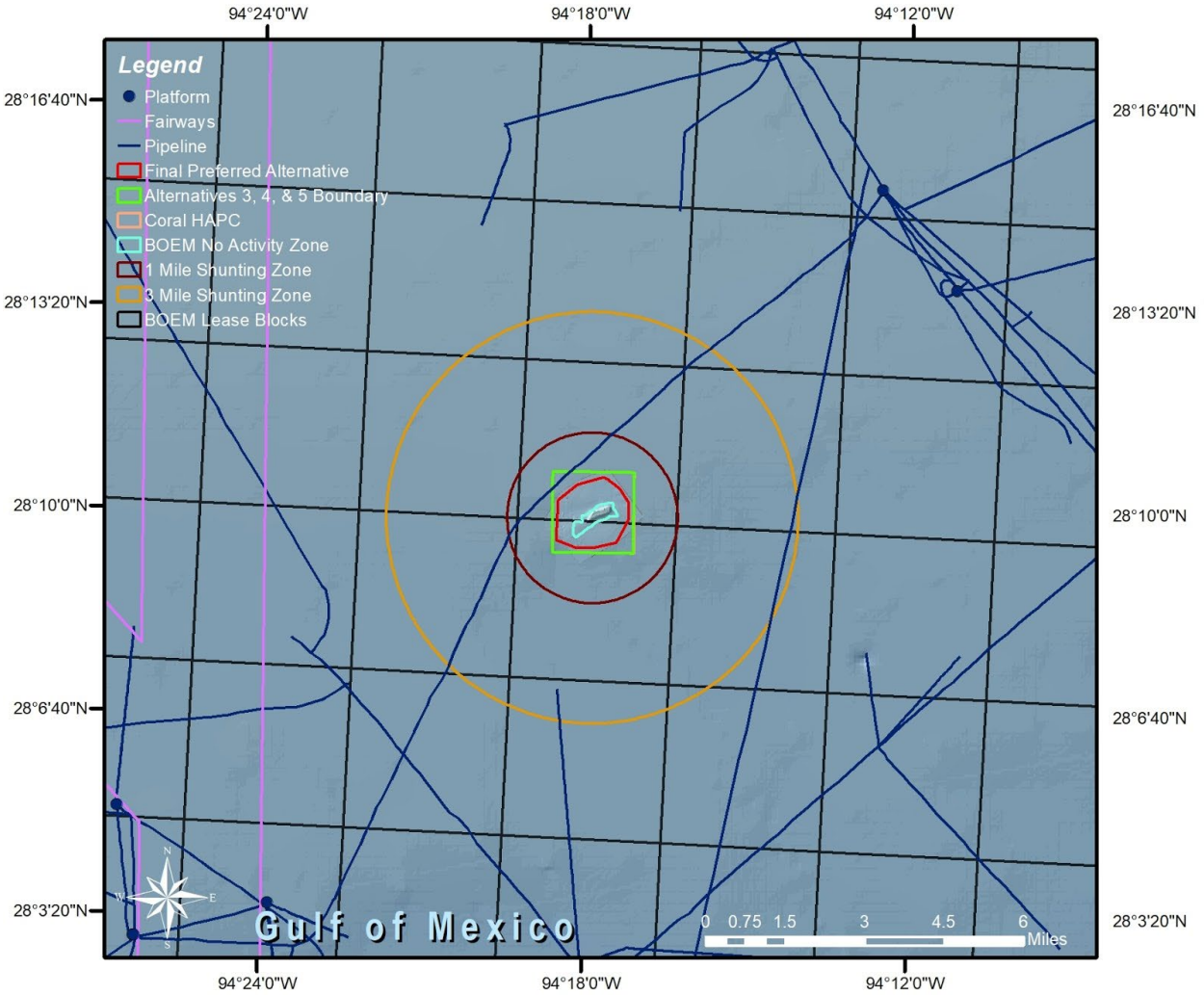


Figure D.5. Stetson Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure (existing coral HAPC boundary matches final preferred alternative boundary). Image: NOAA

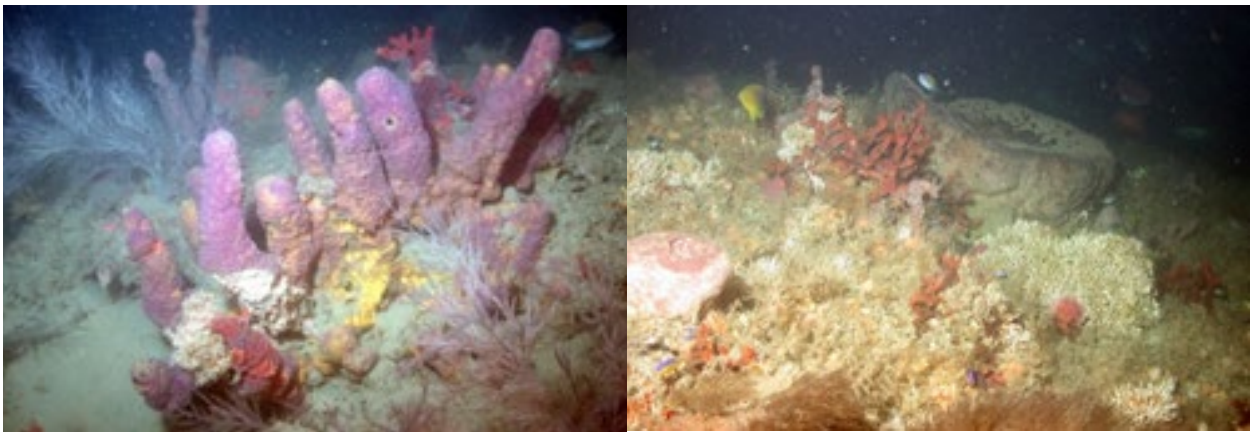


Figure D.6. Sponges and black corals around Stetson Ring. Photo: NOAA/UNCW-UVP

D.2.2 Claypile Bank

Depth Range: 130-165 feet (40-50 meters)

Habitats Present: coral community, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: Midshelf claystone/siltstone outcroppings, fire coral, scattered blushing star coral colonies, algae, sponges

Observed Impacts: None

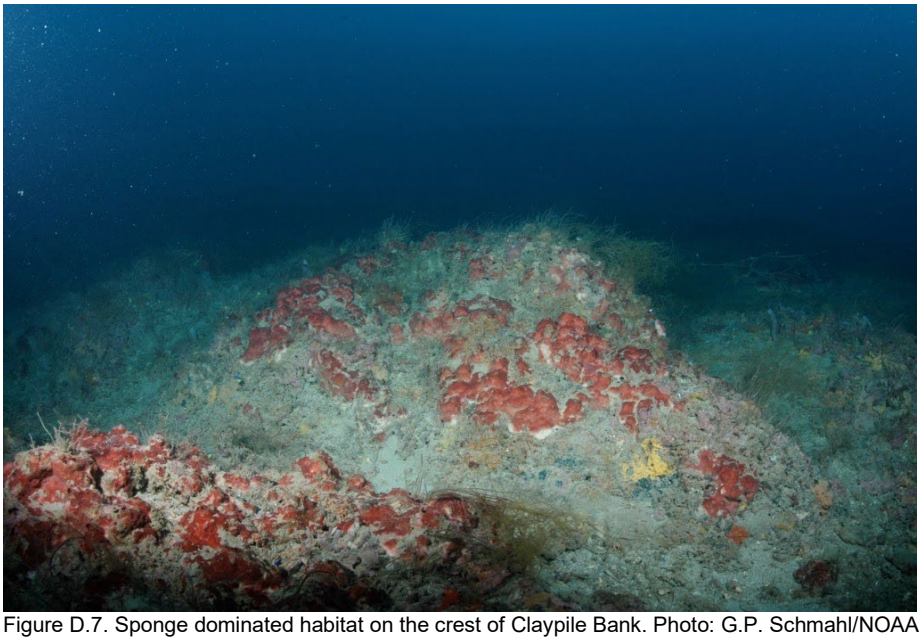


Figure D.7. Sponge dominated habitat on the crest of Claypile Bank. Photo: G.P. Schmahl/NOAA

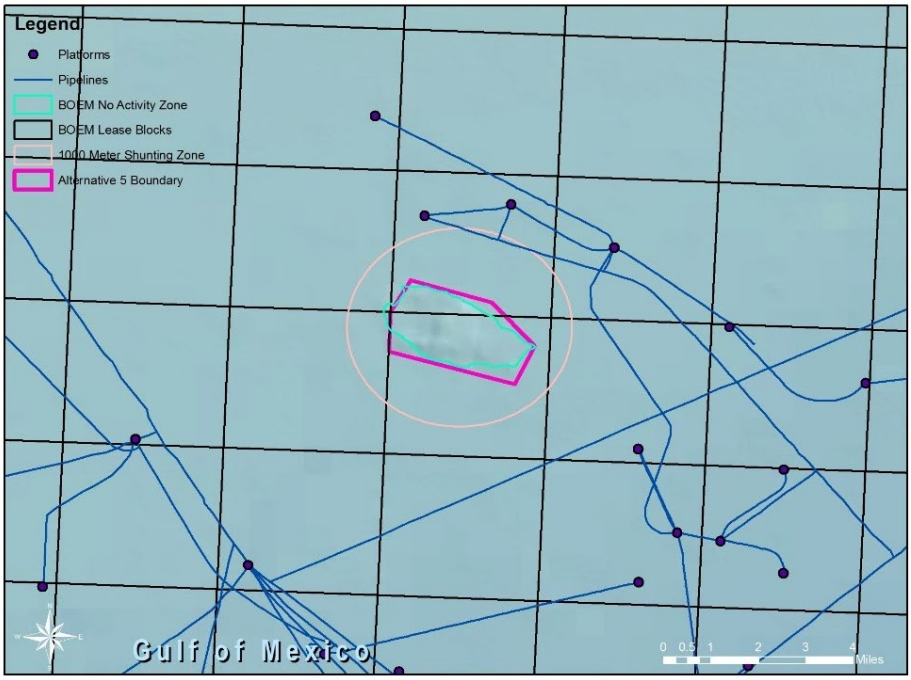


Figure D.8. Claypile Bank boundary alternative, existing regulatory zones, and infrastructure. Image: NOAA

D.2.3 West Flower Garden Bank (amend current boundaries)

This action would increase the area from 29.94 sq. miles to 37.15 sq. miles to better encompass the mesophotic coral habitat.

Depth Range: 59-545 feet (18-166 meters)

Habitats Present: coral reef, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: well-known, highly developed coral reef in excellent health (Lang et al. 2001); bank is approximately 6.8 by 5 miles in size and includes approximately 100 acres (41 hectares) of coral reef cap area rising to within 60 feet (18 meters) of the water surface; coral cap dominated by brain and star corals, with a few coral heads exceeding 20 feet (6 meters) in diameter; reefs show some of highest coral percent cover for the region, with at least 24 species of coral on the coral cap, covering over 50% of the bottom to depths of 100 feet (30 m), and exceeding 70% coral cover in places to at least 130 feet (40 m) (Schmahl et al. 2008, and references therein); extensive mesophotic habitats, including coralline algae zones, "honeycomb" reefs (highly eroded outcroppings), mud flats, mounds, mud volcanoes and at least one brine seep system, with extensive coralline algae pavements and algal nodules, sea fans, sea whips and black corals, deep reef fish, basket stars and feather stars

Observed Impacts: derelict fishing gear (trawl nets, longlines, line), seismic cable, oil and gas industry debris, anchors, diver impacts, invasive species (orange cup coral and lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: approximately 0.25 miles pipeline

Lease blocks: HIA384*, HIA385*, HIA397*, HIA398, HIA399, HIA400, HIA401 (*Active)

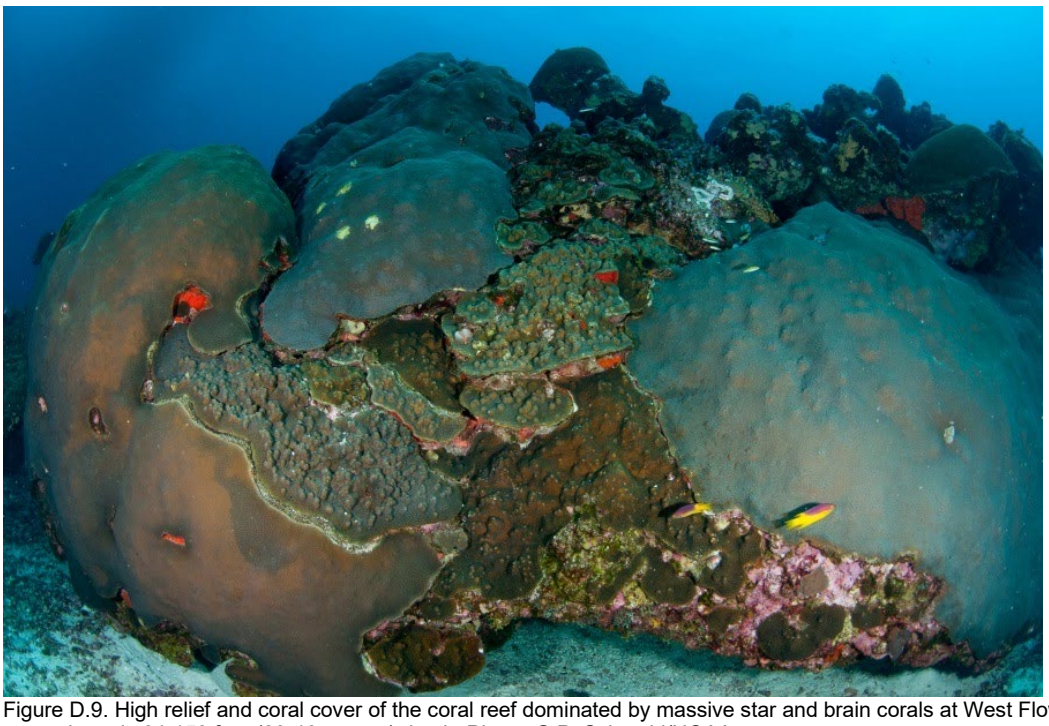


Figure D.9. High relief and coral cover of the coral reef dominated by massive star and brain corals at West Flower Garden Bank – approximately 64-150 feet (20-46 meters) depth. Photo: G.P. Schmahl/NOAA

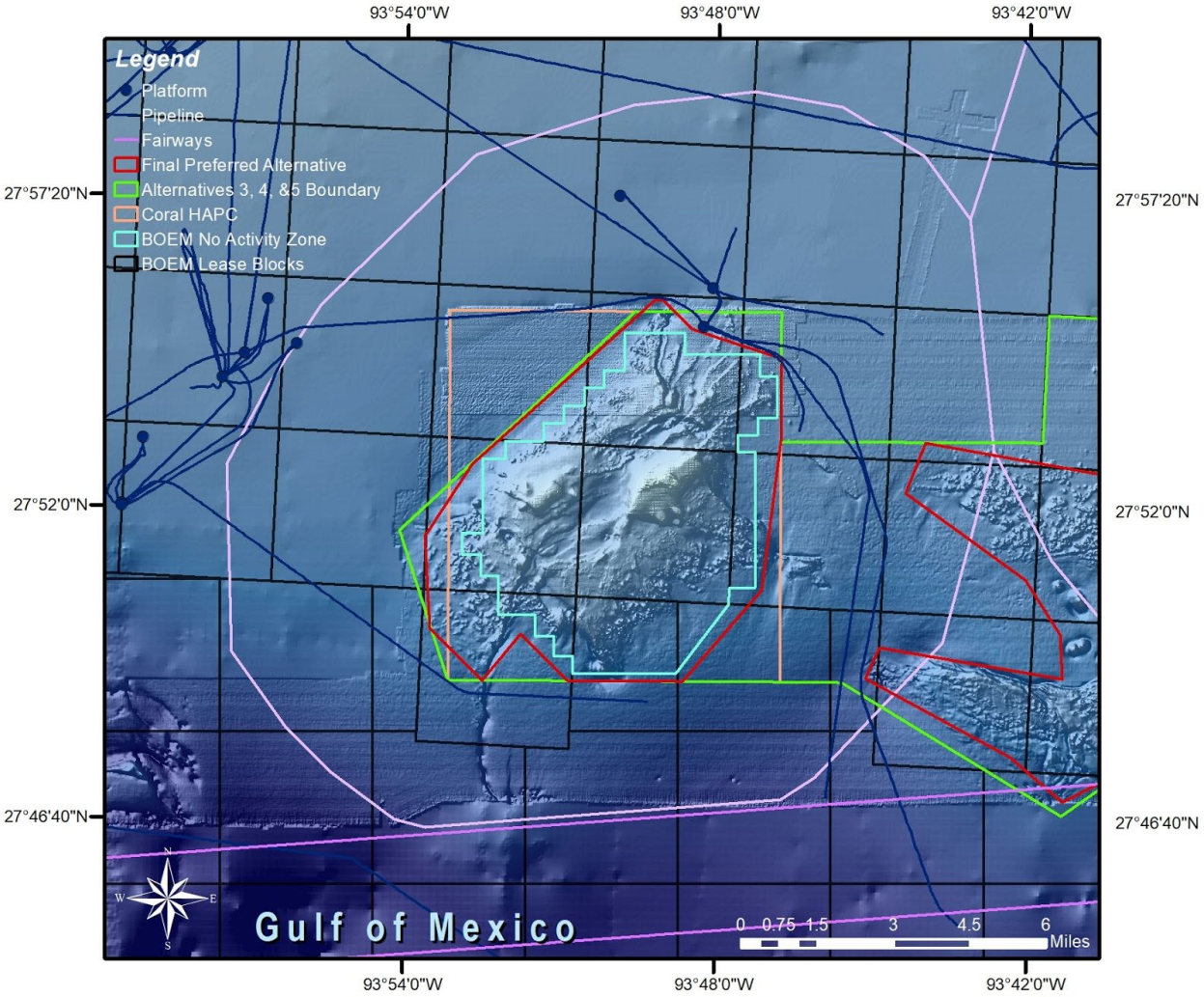


Figure D.10. West Flower Garden Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.4 Horseshoe Bank

Proposed addition of 28.68 sq. miles

Depth Range: 243-614 feet (74-187 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: extensive deepwater habitat in the form of hundreds of patchy outcroppings covering an area approximately 3 kilometers wide and having 5-15 meters of relief above the seafloor, with extensive mesophotic coral assemblages, sponges, algae, invertebrates, and fish inhabiting these discontinuous outcroppings; several conical-shaped mud volcanoes clustered near the center of the feature, with one rising 100 meters above the seafloor

Observed Impacts: derelict fishing gear (line/rope), invasive species (lionfish).

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: GB136, GB138, GB181, HIA386*, HIA394, HIA395, HIA396*, HIA402, HIA403, HIA387 (*Active)

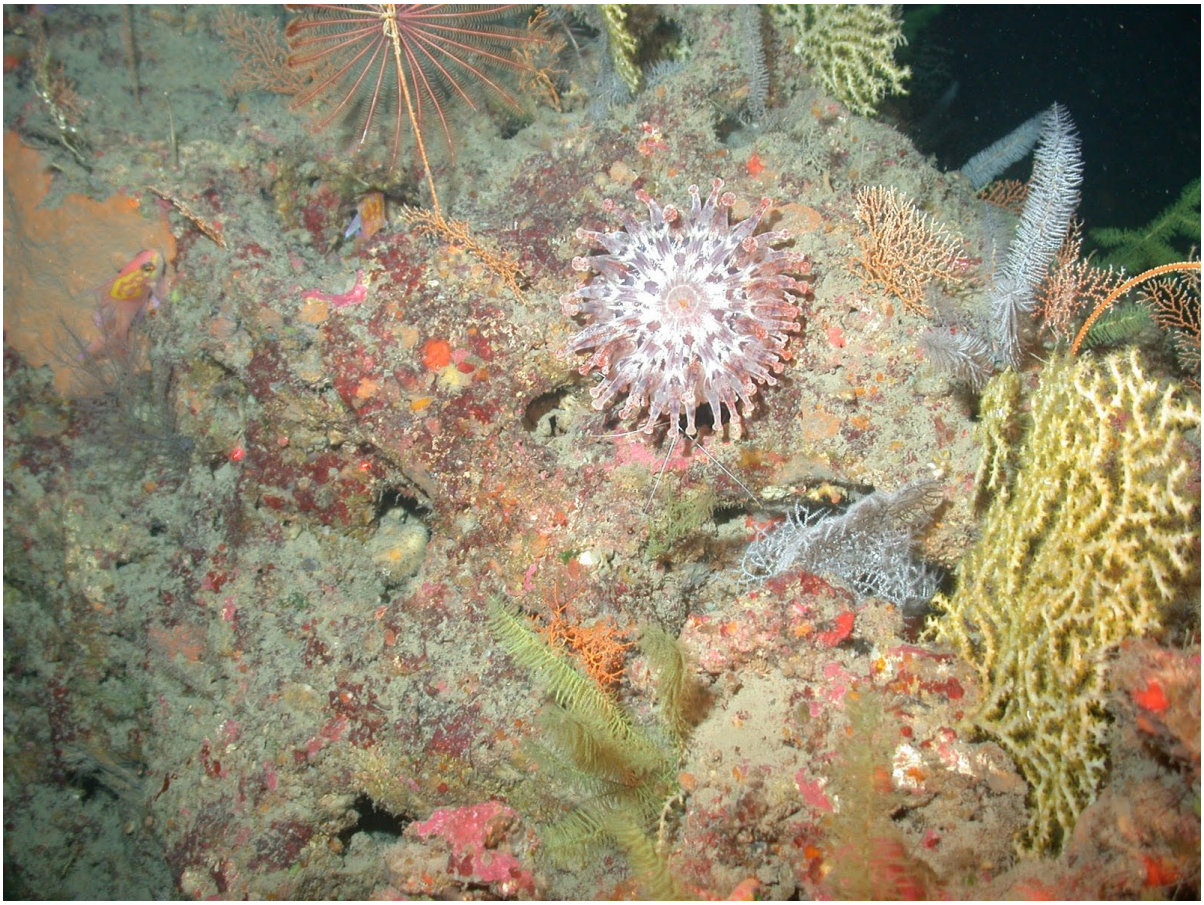


Figure D.11. Octocorals and invertebrates at Horseshoe Bank. Photo: NOAA/UNCW-UVP

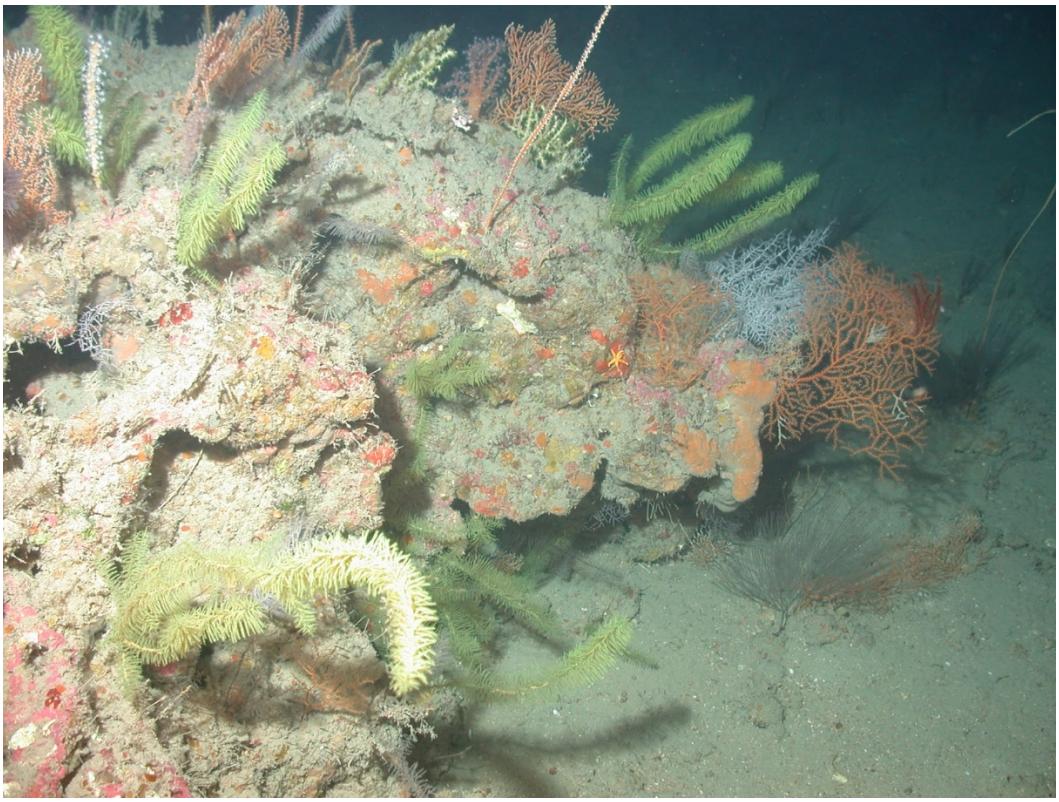


Figure D.12. Octocorals and black corals at Horseshoe Bank. Photo: NOAA/UNCW-UVP

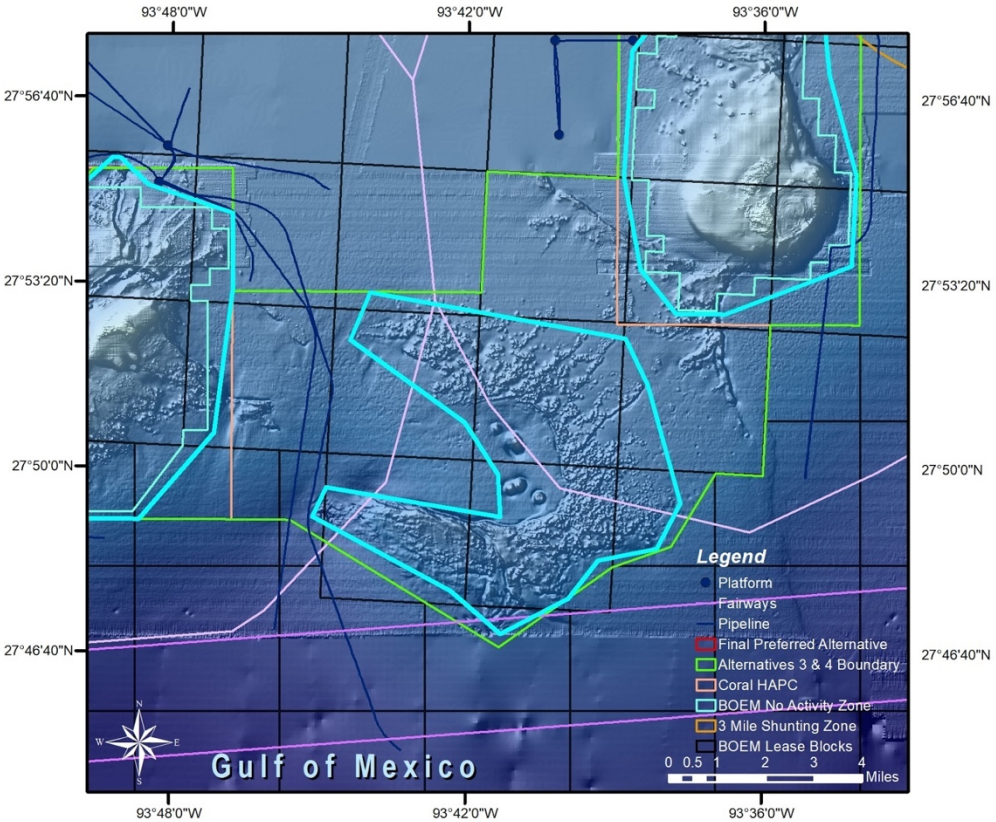


Figure D.13. Figure D13. Horseshoe Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.5 East Flower Garden Bank (amend current boundaries)

This action would increase the area from 25.43 sq. miles to 27.82 sq. miles

Depth Range: 52-446 feet (16-136 meters)

Habitat Types Present: coral reef zone, coral community zone, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: well-known, highly developed coral reef in excellent health (Lang et al. 2001); northernmost coral reef in the continental United States; bank is approximately 5.4 by 3.2 miles (8.7 by 5.1 kilometers) in size, capped by 250 acres (101 hectares) of coral reef that rise to within 55 feet (17 meters) of the surface; coral cap dominated by brain and star corals, with a few coral heads exceeding 20 feet (6 meters) in diameter; reefs show some of highest coral percent cover for the region, with at least 24 species of coral on the coral cap, covering over 50% of the bottom to depths of 100 feet (30 meters), and exceeding 70% coral cover in places to at least 130 feet (40 meters) (Schmahl et al. 2008, and references therein); extensive mesophotic habitats, including coralline algae zones, "honeycomb" reefs (highly eroded outcroppings), mud flats, mounds, mud volcanoes and at least one brine seep system, with extensive coralline algae pavements and algal nodules, sea fans, sea whips and black corals, deep reef fish, basket stars and feather stars

Observed Impacts: derelict fishing gear (trawl nets, longlines, line), anchors, seismic cable, diver impacts, contaminated sediment from shunting operations, invasive species (orange cup coral and lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: approximately1.63 miles of pipeline

Lease Blocks: HIA366, HIA367, HIA374, HIA376*, HIA3897, HIA388, HIA389 (*Active)

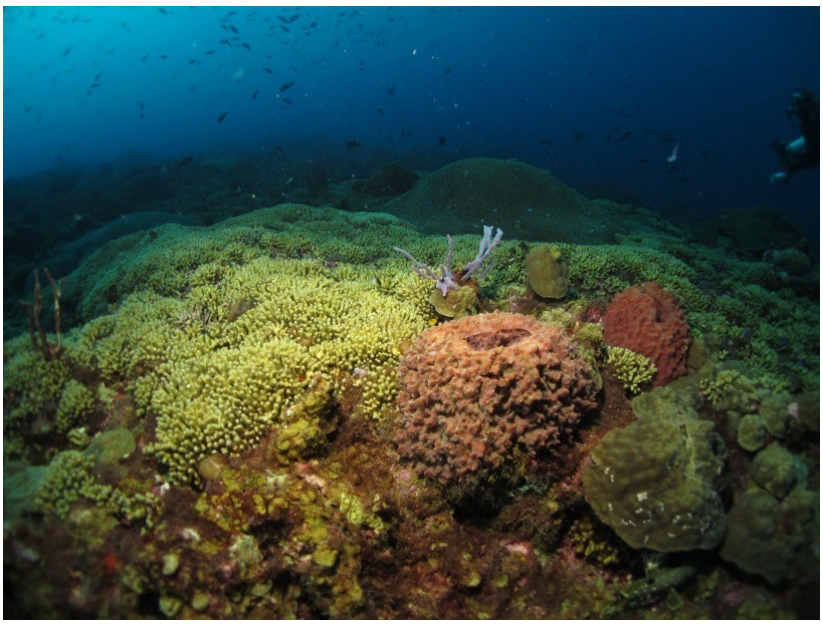


Figure D.14. Low relief reef dominated by yellow pencil coral (*Madracis auretenra*) on the flanks of the coral reef at East Flower Garden Bank – approximately 100 feet (30 meters) depth. Photo: E. Hickerson/NOAA

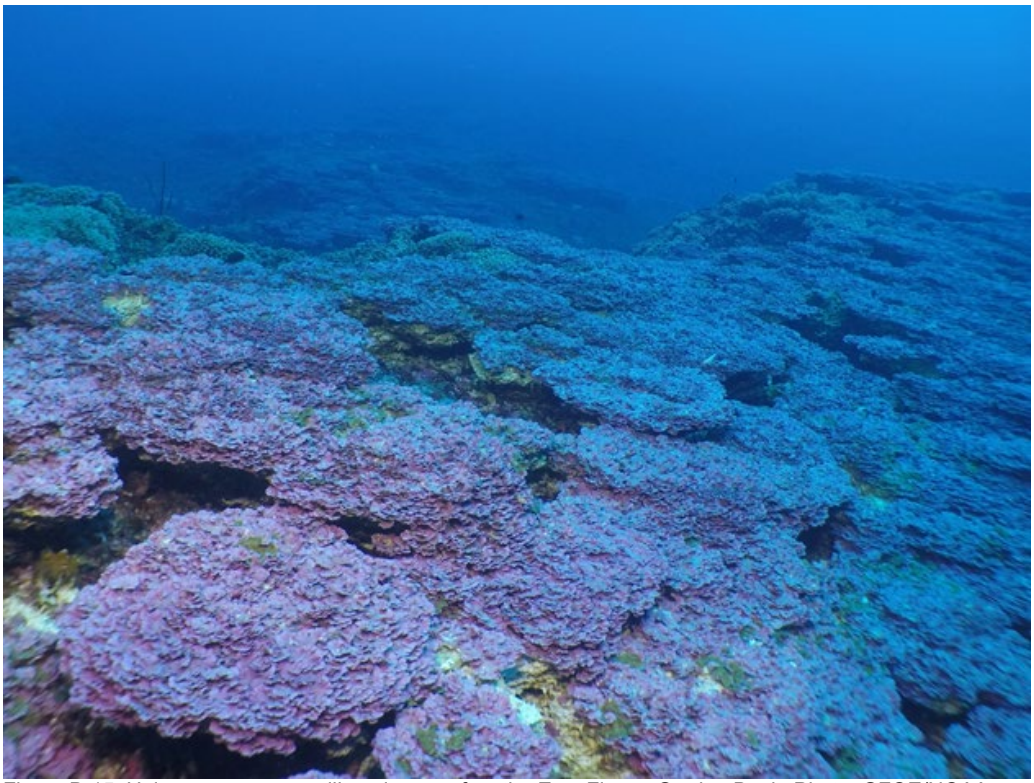


Figure D.15. Unique crustose coralline algae reef on the East Flower Garden Bank. Photo: GFOE/NOAA

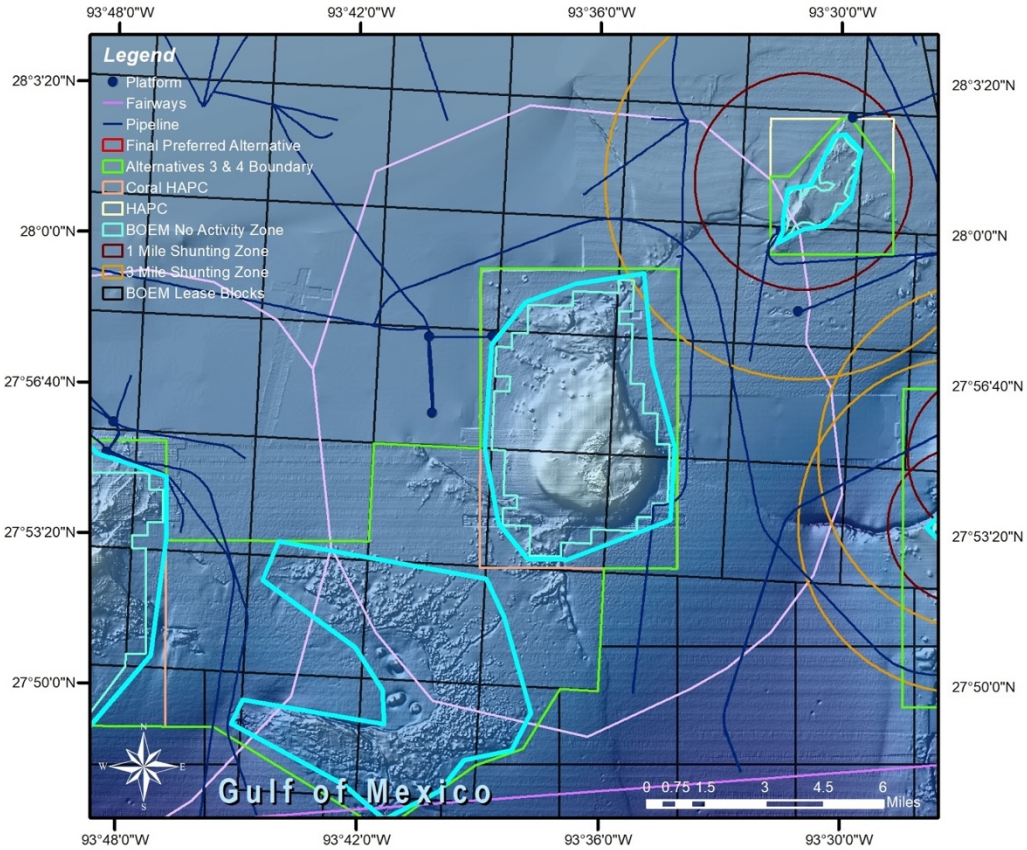


Figure D.16. East Flower Garden Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.6 MacNeil Bank

Proposed addition of 2.72 miles

Depth Range: 210-315 feet (64-96 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: approximately 3.75 miles long by 0.25 mile wide (6 x 0.4 kilometers) tilted fault block standing approximately 50 feet (15 meters) above the sea floor and lying on the edge of a 15-20 foot (4.5-6 meters), south-facing escarpment, with the major fault trending northeast-southwest and outcrops of bedrock that have been encrusted by thick deposits of coral-algal limestone; structure occurs at the intersection of two fault systems, which creates a zone of weakness along which the salt diaper has risen; a field of isolated high relief pinnacles in the southern portion rises from a much lower-relief surface; structurally connected to East Flower Garden Bank and Rankin Bank by a ridge that runs between the three features; harbors mesophotic habitat including black corals, Alcyonacea (formerly gorgonians), sponges, and fish, and at least one species of stony coral

Observed Impacts: anchor scars, invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: HIA351*, HIA368* (*Active)

Figure D.17. Mesophotic coral habitat at MacNeil Bank. Photo: NOAA/UNCW-UVP

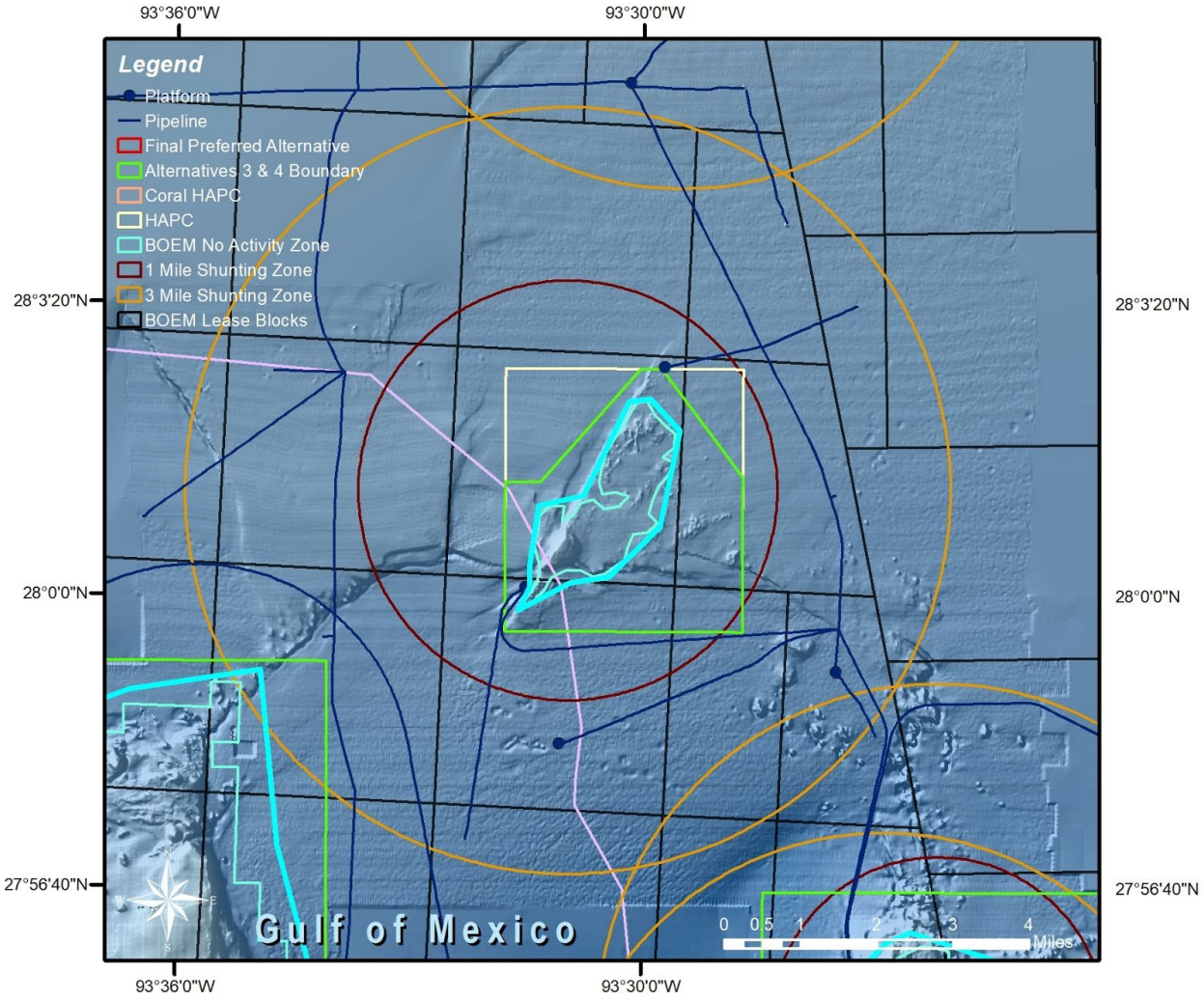


Figure D.18. MacNeil Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.7 29-Fathom Bank

Depth Range: approximately 165-250 feet (50-76 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: a 2-kilometers diameter circular dome stands 32 feet (10 meters) above the main structure of the bank; surface is a series of roughly concentric platforms with irregular surfaces that are found in water depths of approximately 177 feet (54 meters), approximately 184 feet (56 meters), and approximately 190 feet (58 meters); a prominent ridge with asymmetric flanks and a smooth top, approximately 1700 feet (518 meters) long and rising approximately 26 feet (8 meters) above the bank surface, is located on the northeastern rim of the bank (Gardner & Beaudoin 2005); sparsely scattered outcroppings in primarily soft sediment. Outcroppings are inhabited by coralline algae, sponges, octocorals, and black corals.

Observed Impacts: derelict fishing gear (line/rope, trawl nets)

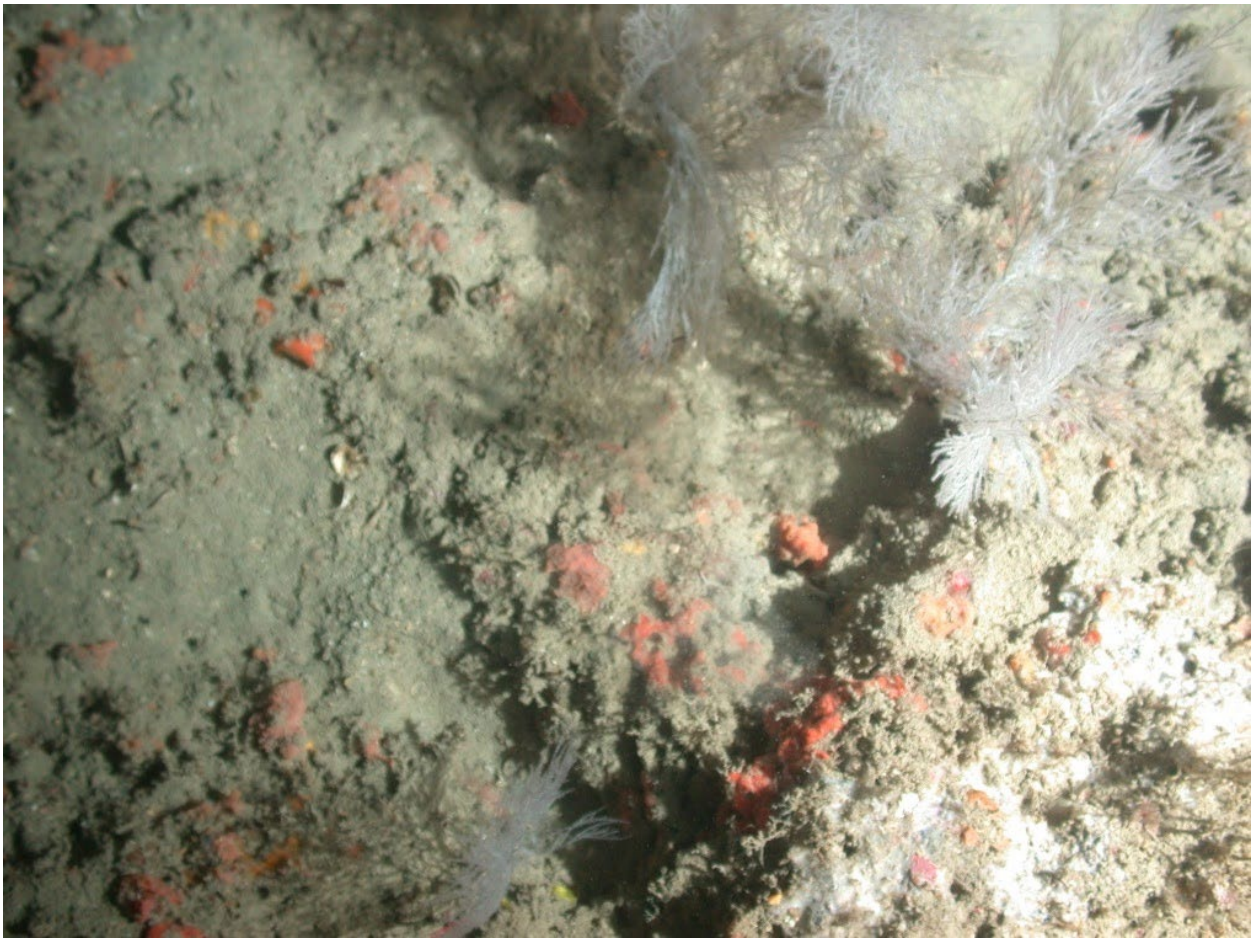


Figure D.19. Black corals and sponges in the mesophotic coral habitat at 29-Fathom Bank. Photo: NOAA/UNCW-UVP

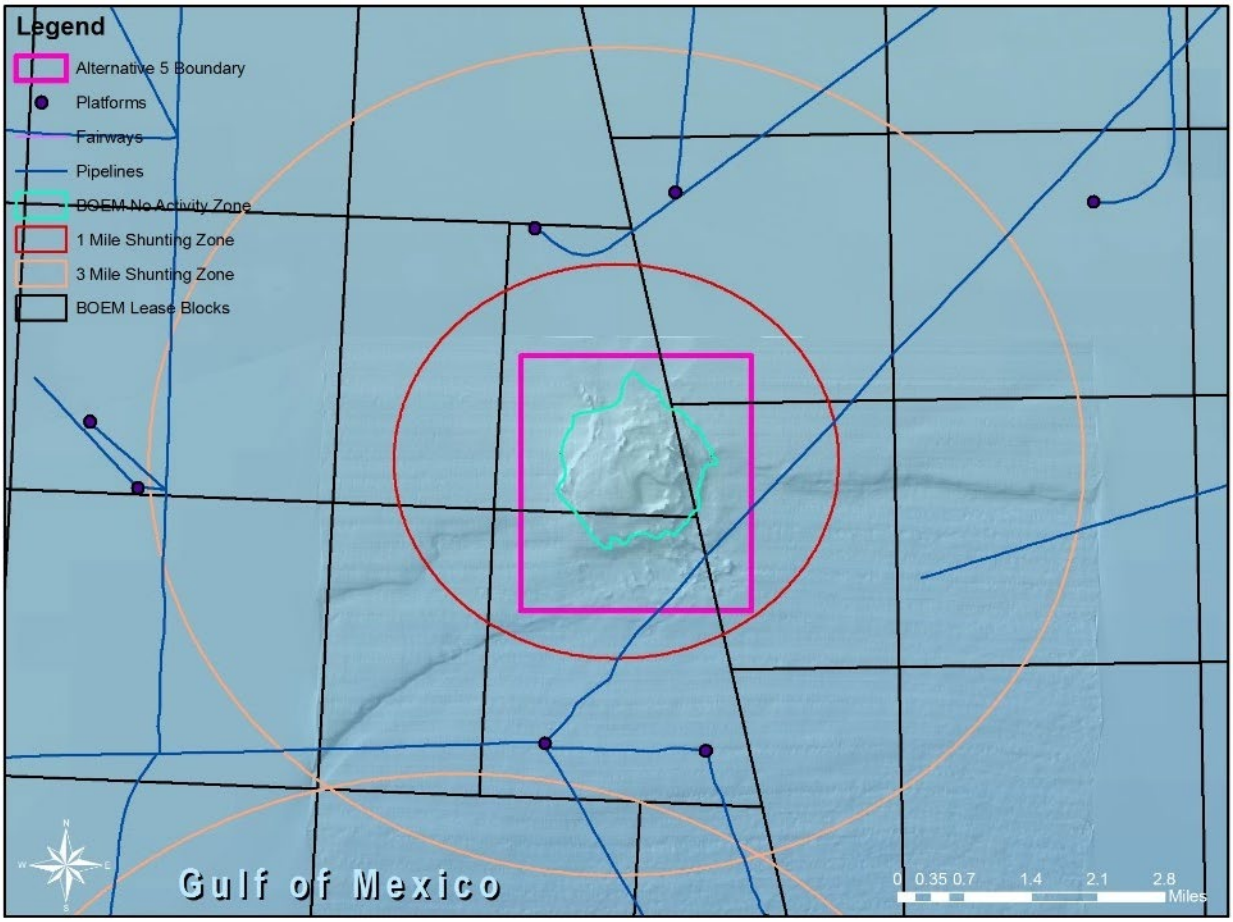


Figure D.20. 29-Fathom Bank boundary alternative, existing regulatory zones, and infrastructure (boundary alternative matches existing HAPC). Image: NOAA

D.2.8 Rankin Bank

Proposed action at Rankin and 28 Fathom would include in a single polygon, and adds 5.57 sq. miles

Depth Range: approximately 165-570 feet (50-174 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: encompassing approximately 1.2 kilometers^2 and structurally connected to MacNeil Bank to the northwest via the ridge feature that continues on to East Flower Garden Bank, Rankin Bank is just north of 28 Fathom Bank and separated from it by a approximately 1640 foot (500 meters) wide, approximately 6070-foot (1.85 kilometers) long trough which extends to a depth of approximately 570 feet (174 meters); ridges and patch reefs connect Rankin, 28-Fathom, and Bright Banks; bank harbors mesophotic habitat consisting of black corals, Alcyonacea, algae, sponges, stony corals, and a variety of invertebrates; extensive fields of an algae, *Codium sp*., have been documented during ROV surveys; mud volcanoes exist in several locations; surface of the bank is very smooth with rounded edges, unlike the edges of 28 Fathom Bank; pinnacles occur around the western base of the bank in water depths greater than 360 feet (110 meters), whereas hard bottoms occur just beyond the eastern and southeastern flank in water depths deeper than 260 feet (79 meters; Gardner & Beaudoin 2005)

Observed Impacts: fishing debris (longline, fishing line, anchors), invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: HIA371, HIA391, HIA392, WC653, WC654 (None active)

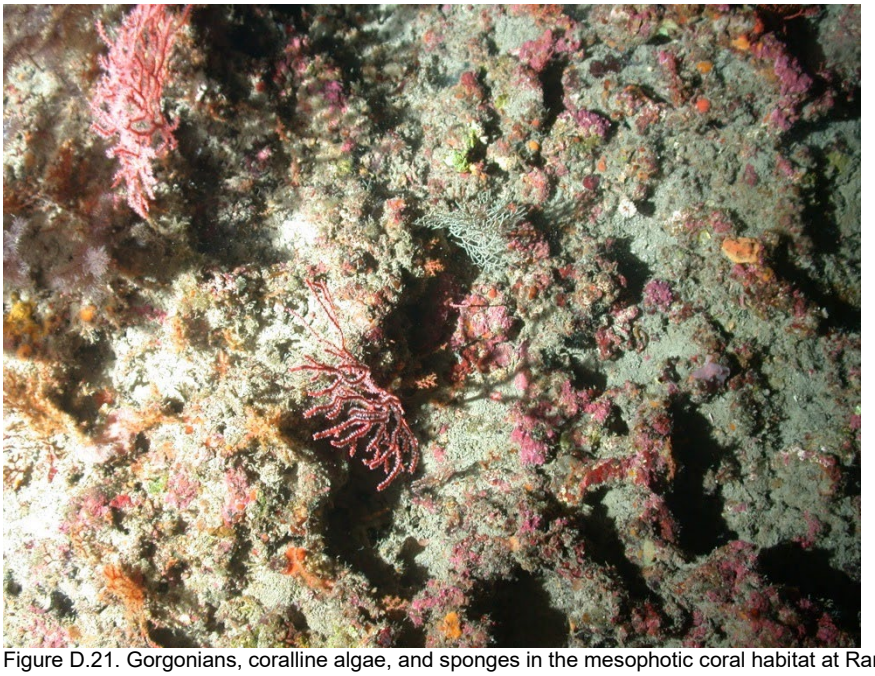


Figure D.21. Gorgonians, coralline algae, and sponges in the mesophotic coral habitat at Rankin Bank. Photo: NOAA/UNCW-UVP

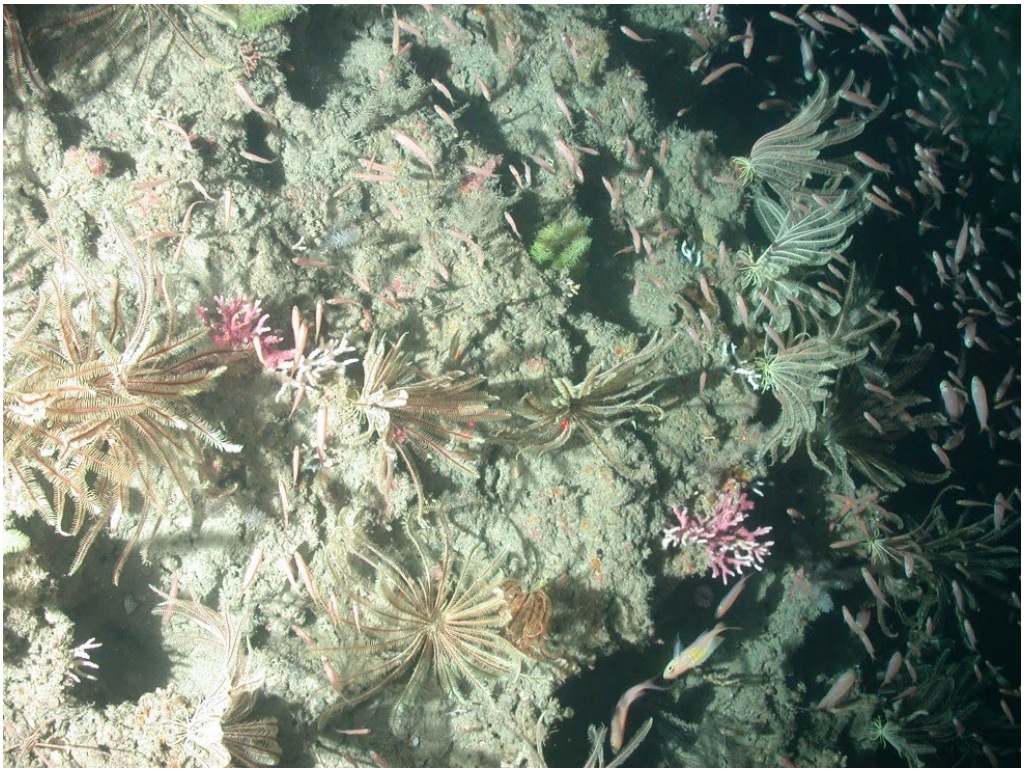


Figure D.22. Mesophotic coral habitat with branching stony coral, crinoids, and anthiid fish at Rankin Bank. Photo: NOAA/UNCW-UVP

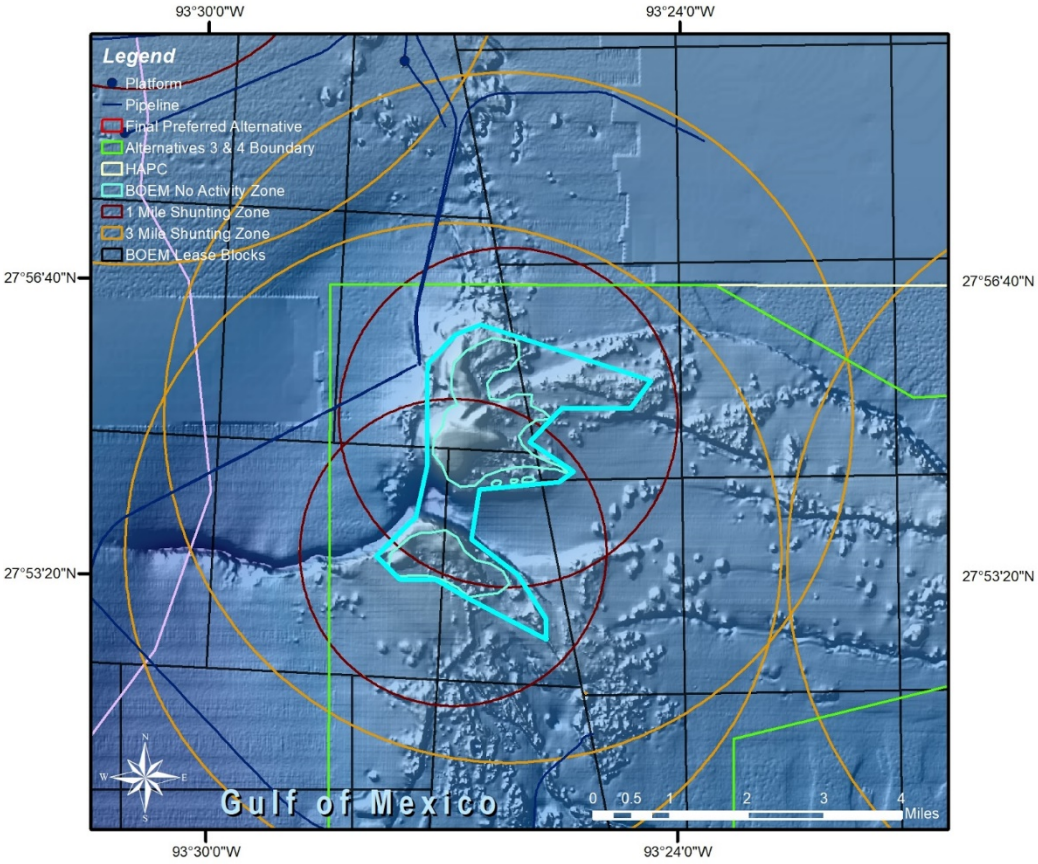


Figure D.23. Rankin Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.9 28-Fathom Bank

Proposed action at 28 Fathom and Rankin would include a single polygon, and adds 5.57 sq. miles

Depth Range: approximately 210-570 feet (64-174 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: encompassing approximately 1.8 kilometers^2, 28-Fathom Bank is just south of Rankin Bank and separated from it by a approximately 1640 foot (500 meters) wide, approximately 6070-foot (1.85 kilometers) long trough which extends to a depth of approximately 570 feet (174 meters); ridges and patch reefs connect Rankin, 28-Fathom, and Bright Banks; bank harbors mesophotic habitat consisting of black corals, Alcyonacea (formerly gorgonians), algae, sponges, stony corals, and a variety of invertebrates; extensive fields of an algae, *Codium sp.*, have been documented during ROV surveys; mud volcanoes exist in several locations; the top of the bank is very smooth but gives way to small (10 foot high) pinnacles and hard bottoms that occur in water depths deeper than 253 feet (77 meters) immediately to the south

Observed Impacts: anchor scars, fishing line/longline, invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: HIA351, HIA392 (None active)

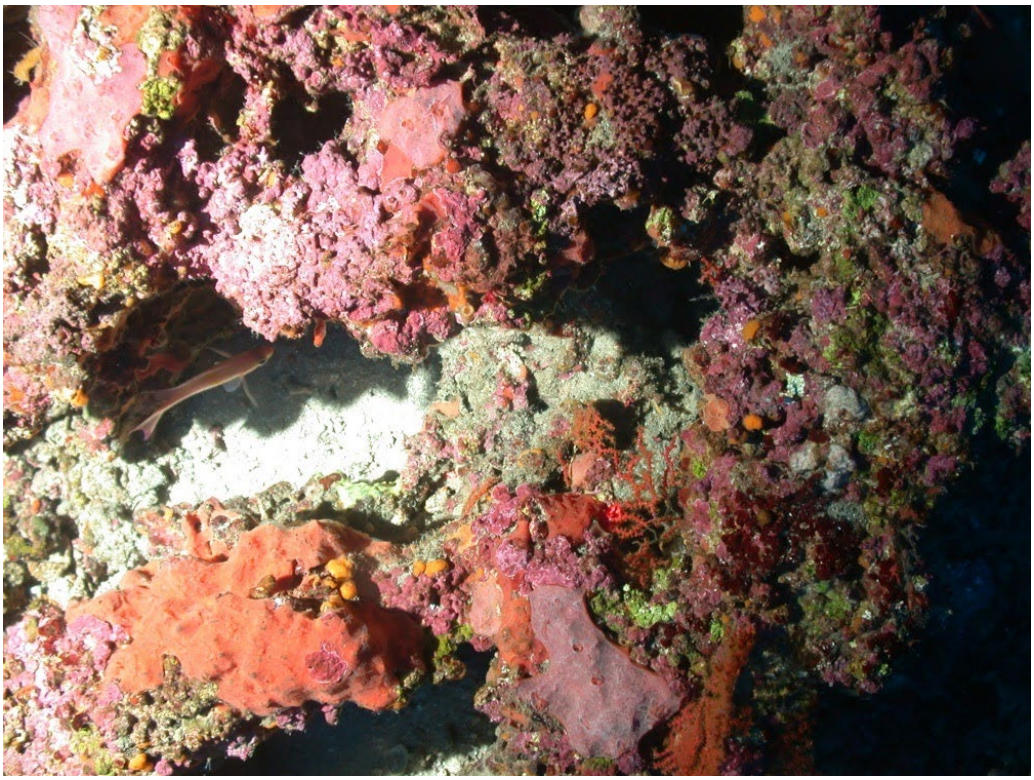


Figure D.24. Coralline algae zone in the mesophotic coral habitat at 28-Fathom Bank. Photo: NOAA/UNCW-UVP

Figure D.25. Mesophotic coral habitat at 28-Fathom Bank. Photo: NOAA/UNCW-UVP

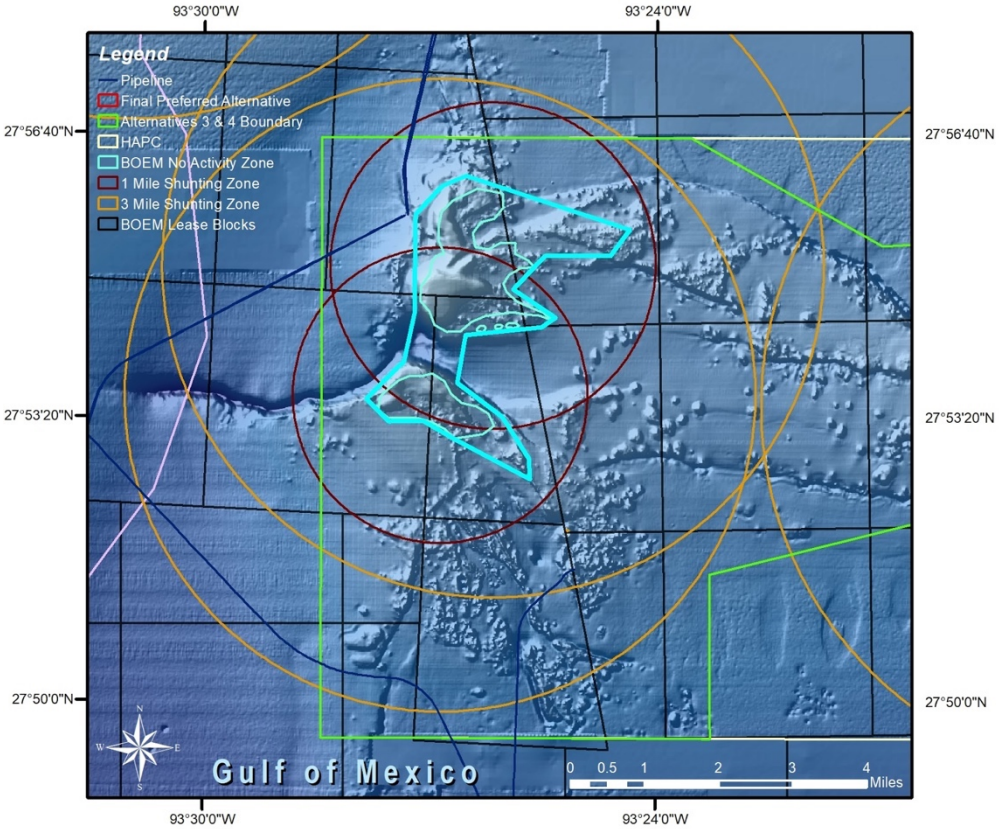


Figure D.26. 28-Fathom Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.10 Bright Bank

Proposed addition of 7.65 sq. miles

Depth Range: 112-384 feet (34-117 meters)

Habitat Types Present: coral community, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: previously harbored coral reef; approximately 36.5 kilometers^2 in size, the total relief ranges from approximately 165-215 feet (50-66 meters); bank surface features linear outcrops covered by reef growth and hard bottom without reef development; steep slopes surrounding the bank are most probably the expression of a peripheral fault; outcrops of Pleistocene reef rock are interspersed with large areas of coarse sand, coral, and algal nodules; bank harbors mesophotic habitat consisting of black corals, Alcyonacea (formerly gorgonians), algae, sponges, stony corals, and a variety of invertebrates; extensive fields of an algae, *Codium sp*., have been documented during ROV surveys; mud volcanoes exist in several locations; reported boulder-like reefal structures 5 feet (1.5 meter) or less in height and 3-6 feet (0.9-1.8 meters) in diameter, occurring singly or clustered into reef patches up to 165 feet (50 meters) in diameter in shallow depths (Bright and Rezak, 1978); in spite of the damage to the bank from salvage and mining activities, sixteen species of stony corals reported; extensive coralline algae and deep coral habitats exist in deep water

Observed Impacts: salvage activities in the 1980s (treasure hunting) employing dynamite for excavation damaged many coral features; fishing debris (longline, fishing line, anchors); oil and gas industry debris, salvage equipment, invasive species (lionfish and orange cup coral)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: None

Lease Blocks: WC650, WC651, WC656, WC657, WC660 (None active)

Figure D27. Remnants of coral reef habitat on Bright Bank crest – results from treasure hunting activities using explosives. Photo: G.P. Schmahl/NOAA

Figure D.28. Black corals and branching corals in the mesophotic coral habitat at Bright Bank. Photo: NOAA/UNCW-UVP

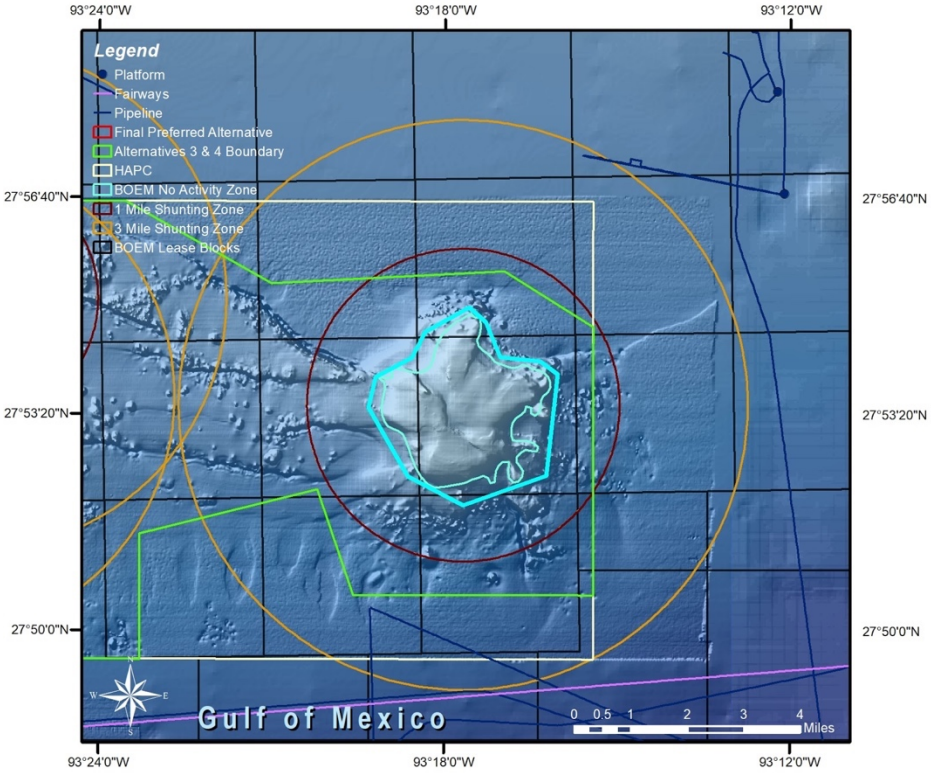


Figure D.29. Bright Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.11 Geyer Bank

Proposed addition of 11.52 sq. miles

Depth Range: 105-722 feet (32-220 meters)

Habitat Types Present: coral community, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: situated on an active salt diapir on the upper continental slope, the entire bank is essentially fault-bounded and the top of the structure is broad and relatively flat, with prominences on the north and south ends separated by a "saddle"; supports a coral community, as well as mesophotic coral habitats including black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; nine stony corals have been reported; observations have documented a *Sargassum* bloom on the coral community crest, and divers have documented enormous numbers of reef butterflyfish at specific times of year

Observed Impacts: large ship anchoring just outside the safety fairway; fishing debris (line/rope); invasive species (lionfish and orange cup coral)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: None

Lease Blocks: GB105, GB106, GB149, GB150, GB193, GB194 (None active)

Figure D.30. A large school of reef butterflyfish around the coral community dominated by fire coral, algae and sponges, on the crest at Geyer Bank. Photo: G.P. Schmahl/NOAA

Figure D.31. *Plumapathes* black coral in mesophotic depths at Geyer Bank. Photo: NOAA/UNCW-UVP

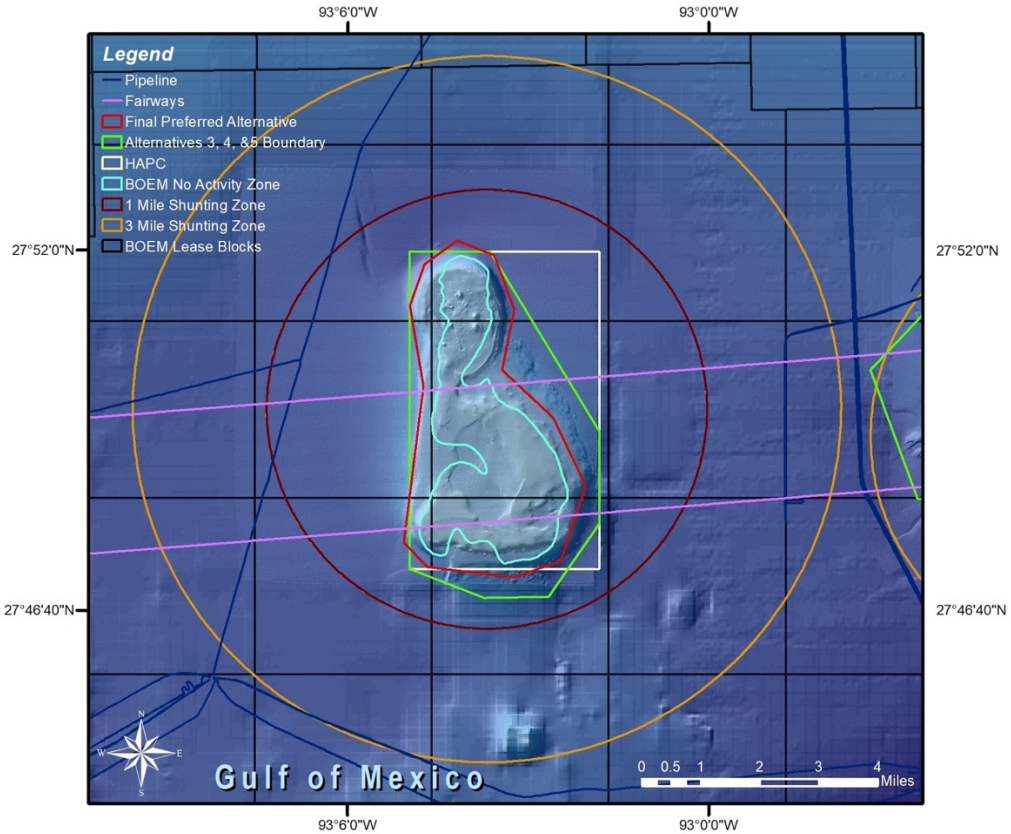


Figure D.32. Geyer Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.12 Elvers Bank

Proposed addition of 4.62 sq. miles

Depth Range: 213-686 feet (65-209 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: situated at the very edge of the shelf, this site harbors a variety of habitats, including mesophotic habitats dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; five scleractinian corals have been reported; an algal nodule field visited during ROV operations was dominated by a small orange/red sponge (possibly *Ptilocaulis* sp.), that provided habitat for (at least one) dwarf frogfish (*Antennarius pauciradiatus*) – a species rarely seen in this part of the Gulf of Mexico; fields of sea pens and yellow stalked crinoids have been documented here, as well as outcroppings covered in glass sponges, which are long-lived animals and are rare throughout the region. A new species of black coral was described from Elvers Bank in 2020 (*Distichopathes hickersonae*) (Opresko et al., 2020), however, the boundaries do not encompass the locations where this new species has been documented.

Observed Impacts: fishing debris (line/rope, anchors), invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: approximately 1.67 miles of pipeline

Lease Blocks: GB109, GB152, GB153, GB154 (None active)

Figure D.33. Glass sponge fields at 160 meters in the mesophotic coral habitat at Elvers Bank. Photo: NOAA/UNCW-UVP

Figure D.34. Algal nodules dominated by orange sponges at 70 meters in the mesophotic coral habitat at Elvers Bank. Photo: NOAA/UNCW-UVP

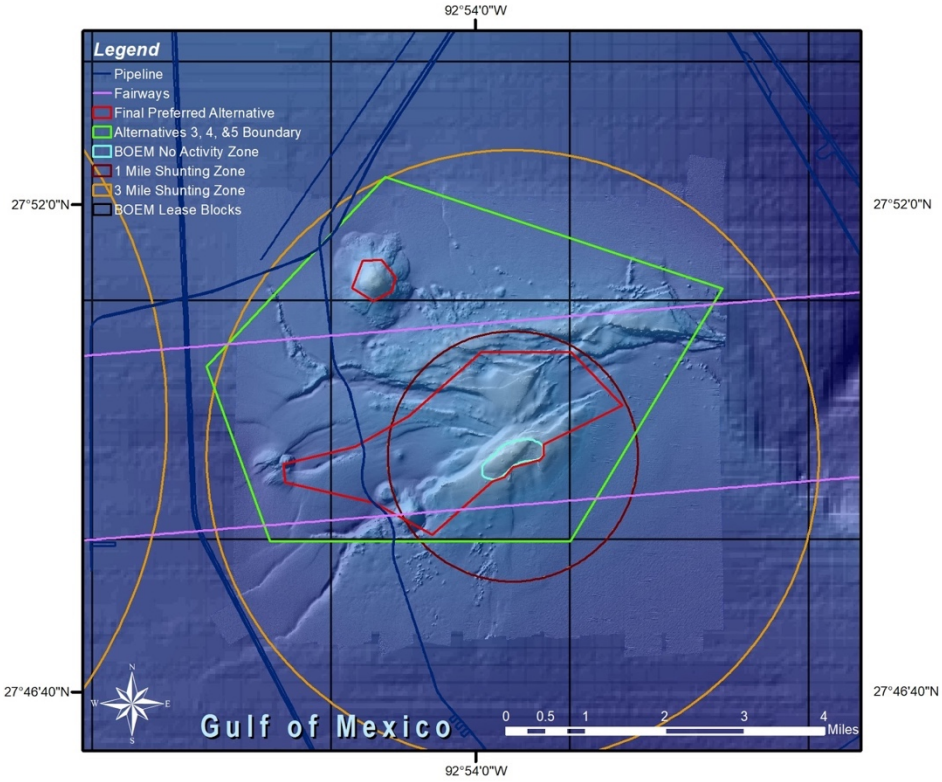


Figure D.35. Elvers Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.13 McGrail Bank (formerly known as 18 Fathom Bank)

Proposed addition of 4.71 sq. miles.

Depth Range: 144-512 feet (44-156 meters)

Habitat Types Present: coral reef, coral community, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: areas of coral reefs dominated by large colonies of the blushing star coral, *Stephanocoenia intersepta* with coral cover approximately 28% in discreet areas; unique in the sense that no other coral reef is known that is dominated by this species; pinnacles varying in diameter from approximately 80 to 395 feet (24-120 meters) across and as high as approximately 25 feet (8 meters) are found on the southwest rim of the main feature, along east- and southeast-trending scarps that lead away from the bank and in concentrated fields to the south and southeast of the bank; a significant portion of the depth zone between 145 and 170 feet (44-52 meters) is dominated by coral colonies up to 5 feet (1.5 meters) tall, covering an area approximately 37 acres; at least 16 species of scleractinian corals; deeper portions harbor mesophotic coral communities including black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates

Observed Impacts: marine debris (e.g., discarded 55-gallon drum, large metal springs, steel cable); fishing debris and damage (e.g., longline/fishing line, anchors, several mechanically overturned coral heads, linear area of disturbance (approximately 10-13 feet (3-4 meters) wide and several hundred meters long likely related to trawling); invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: approximately 0.34 miles pipeline

Lease Blocks: GB28, GB72*, VR408*, VR409, VR410 (*Active)

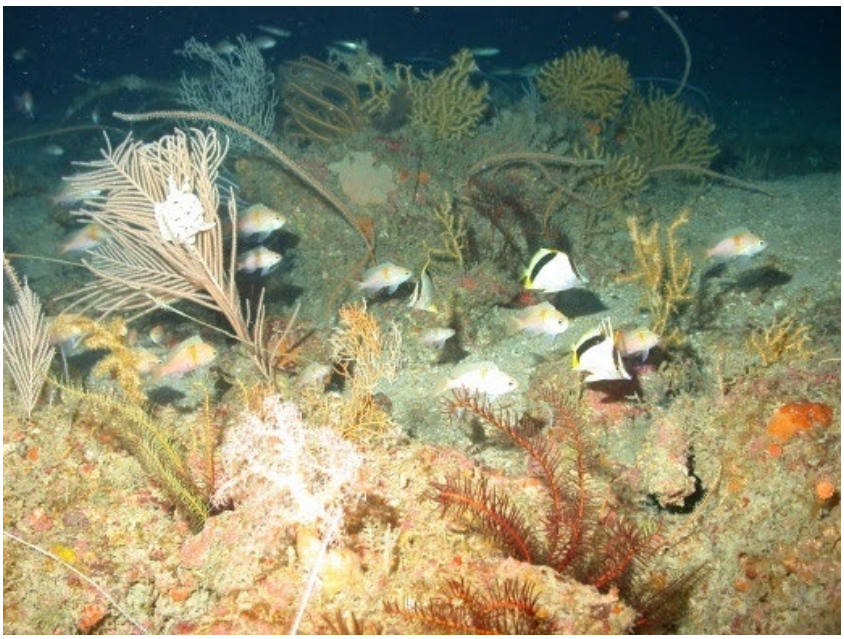


Figure D.36. Mesophotic coral habitat at McGrail Bank in 91 meters. Photo: NOAA/UNCW-UVP

Figure D.37. Large colonies of blushing star coral dominate the crest of McGrail Bank at around 47 meters. Photo: National Geographic Society/Sustainable Seas Expedition

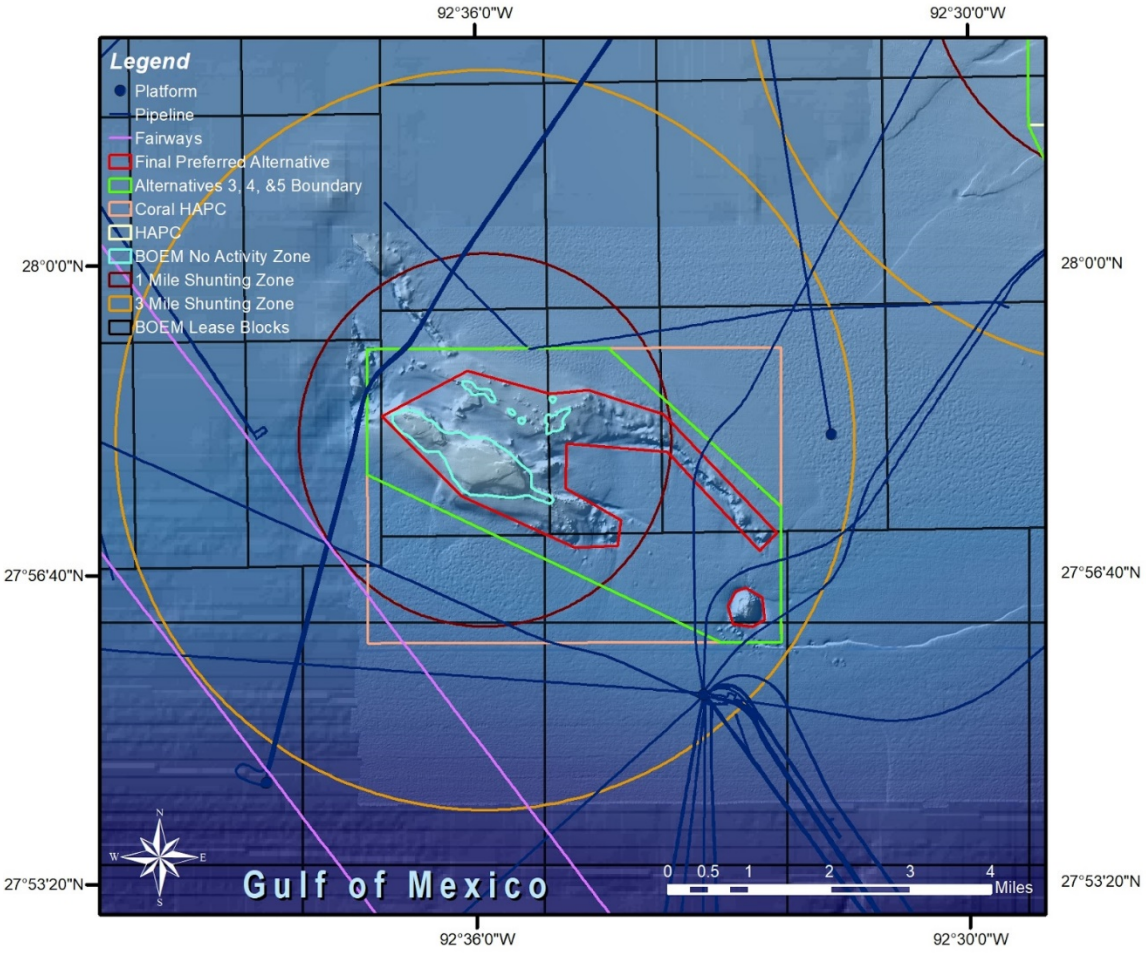


Figure D.38. McGrail Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.14 Sonnier Bank (formerly known as Three Hickey Rock, Candy Mountain)

Proposed addition of 3.06 sq. miles

Depth Range: 62-210 feet (19-64 meters)

Habitat Types Present: coral communities, mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: a series of isolated clusters of pinnacles rise mostly around the perimeter of a single roughly circular ring 3.2 kilometers in diameter; two peaks are accessible and popular with recreational scuba divers; substrate of uplifted siltstone and claystone; a large (1.3 x 1.5 kilometers), 3-m-deep depression occupies the southern half of the feature that is thought to be the result of the collapsed crest of an underlying salt diapir; peaks dominated by coral communities featuring fire coral, sponges, and algae; at least 12 species of stony corals have been reported; deeper portions harbor mesophotic coral habitats

Observed Impacts: fishing debris (fishing line, trawl nets), anchors, anchor scars, cables, hurricane damage to substrate, invasive species (lionfish and orange cup coral)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: VR304, VR305 (None active)

Figure D.39. Sponges and fire coral dominated habitat on the crest at Sonnier Bank. Photo: NOAA/UNCW-UVP

Figure D.40. Sponge dominated ridge at Sonnier Bank. Photo: NOAA/UNCW-UVP

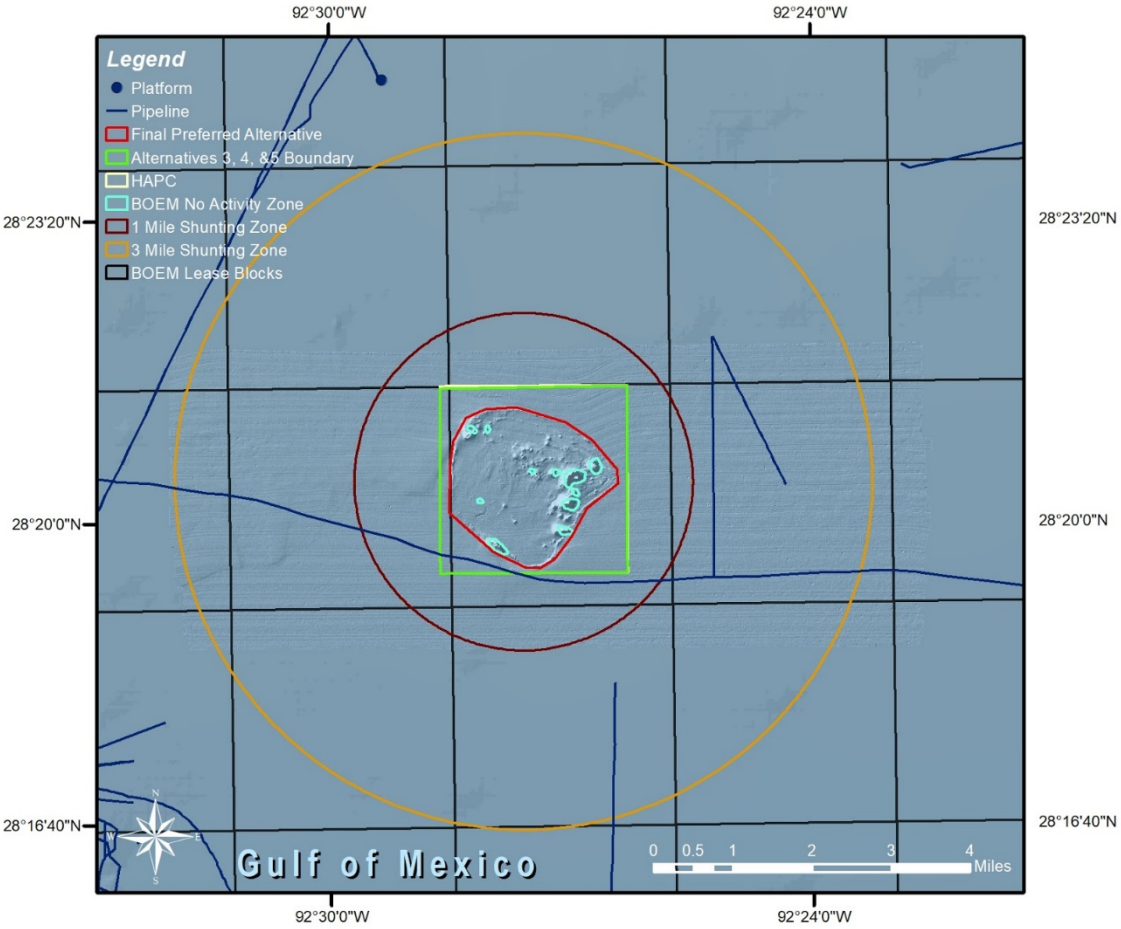


Figure D.41. Sonnier Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.15 Bouma Bank

Proposed addition of 7.67 sq. miles

Depth Range: 187-322 feet (57-98 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; Bouma Bank is a mature salt dome that shows evidence of crestal collapse, and the occurrence of siltstone without encrustations of coralline algae indicates very recent exposure due to faulting; local features vary in size from less than 3 feet (0.9 meters) to greater than 15 feet (4.5 meters) in height; at least six species of stony coral have been reported

Observed Impacts: anchors, fishing debris (line/rope), invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: approximately 0.33 miles pipeline

Lease Blocks: VR369*, VR370*, VR371*, VR384, VR385*, VR392, VR393, VR369* (*Active)

Figure D.42. Squirrelfish and black corals at coralline algae habitat at Bouma Bank. Photo: NOAA/UNCW-UVP

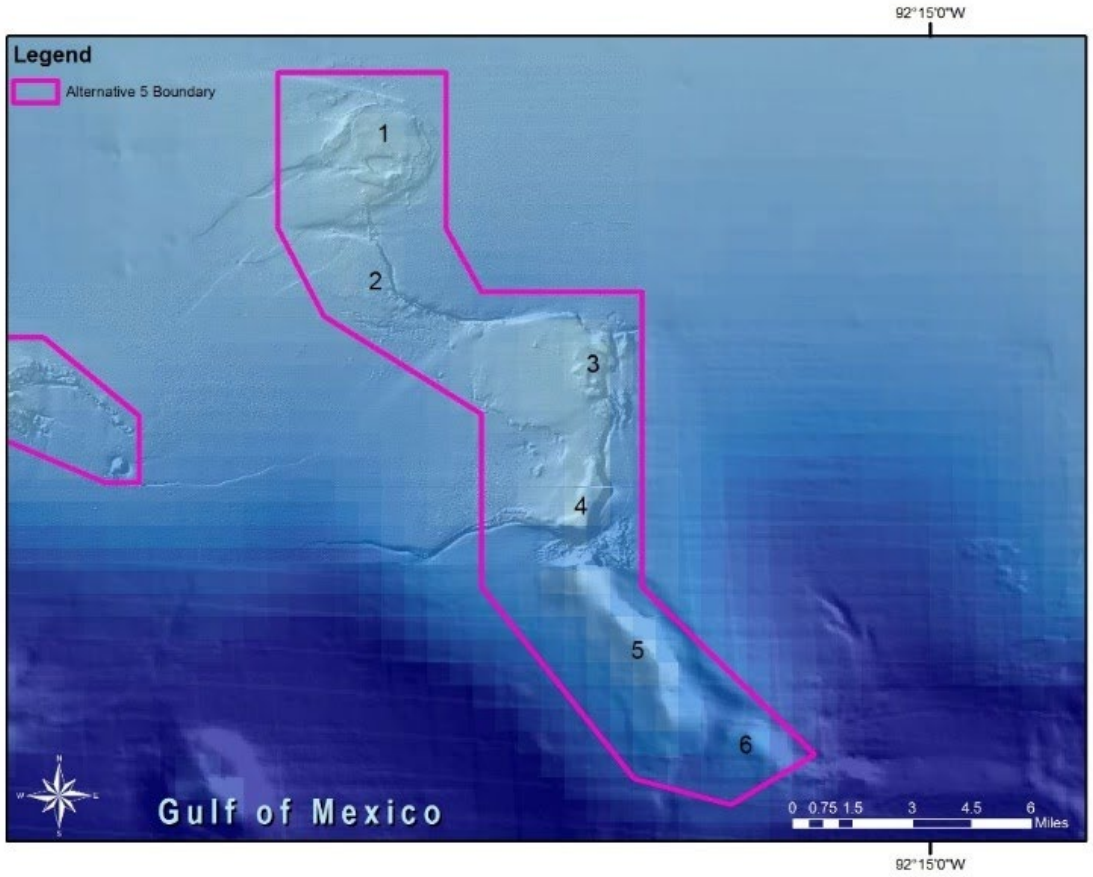


Figure D.43. Bouma Bank (labeled 1) in context of Alternative 5 boundary. Image: NOAA

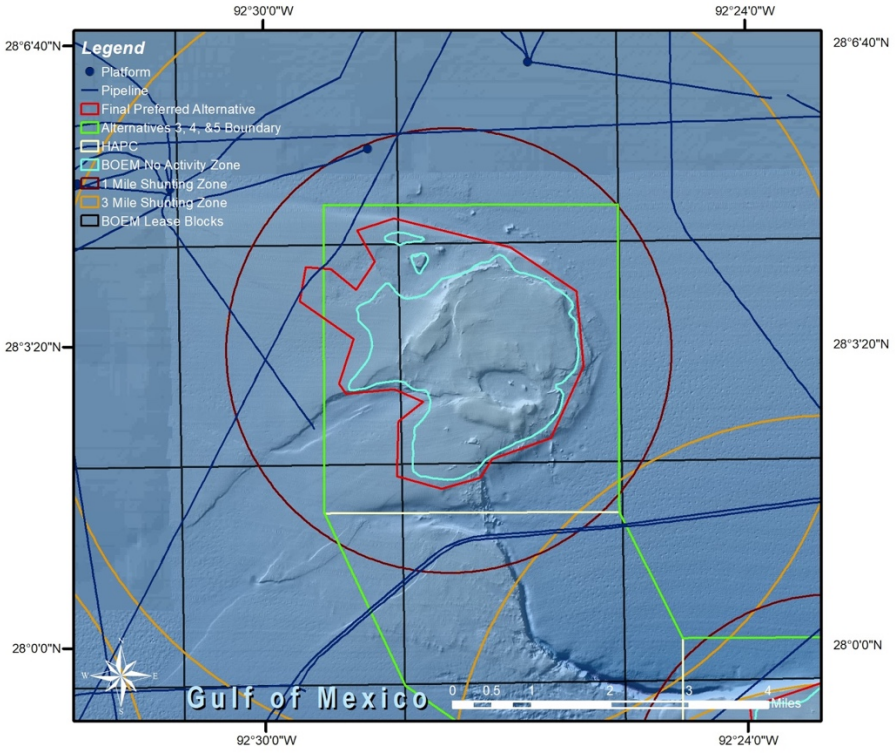


Figure D.44. Bouma Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.16 Bryant Bank

Depth Range: approximately 295-560 feet (90-171 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; at least three species of stony coral reported

Observed Impacts: None

Figure D.45. Octocorals and basket stars at Bryant Bank. Photo: NOAA/UNCW-UVP

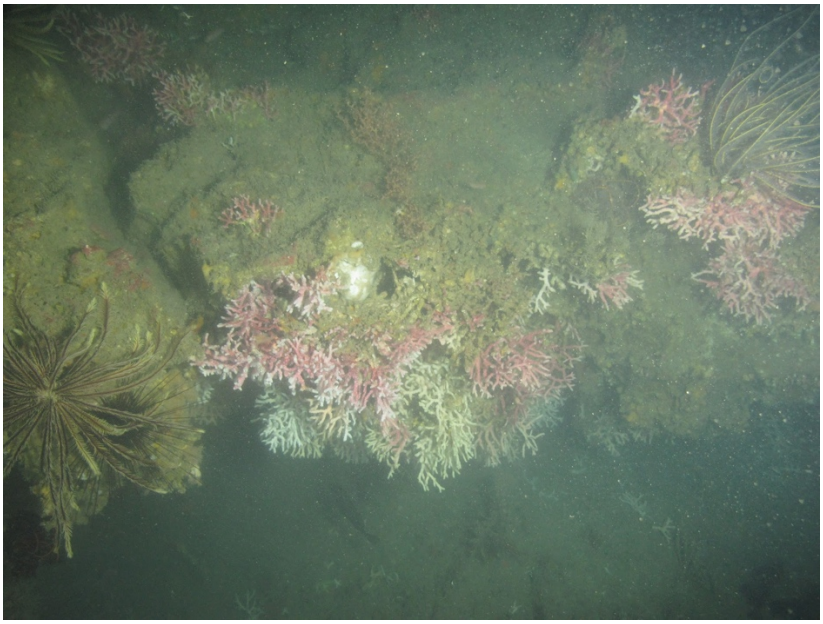


Figure D.46. Branching stony corals and crinoids at Bryant Bank. Photo: NOAA/UNCW-UVP

Figure D.47. Bryant Bank (labeled 2) in context of Alternative 5 boundary. Image: NOAA

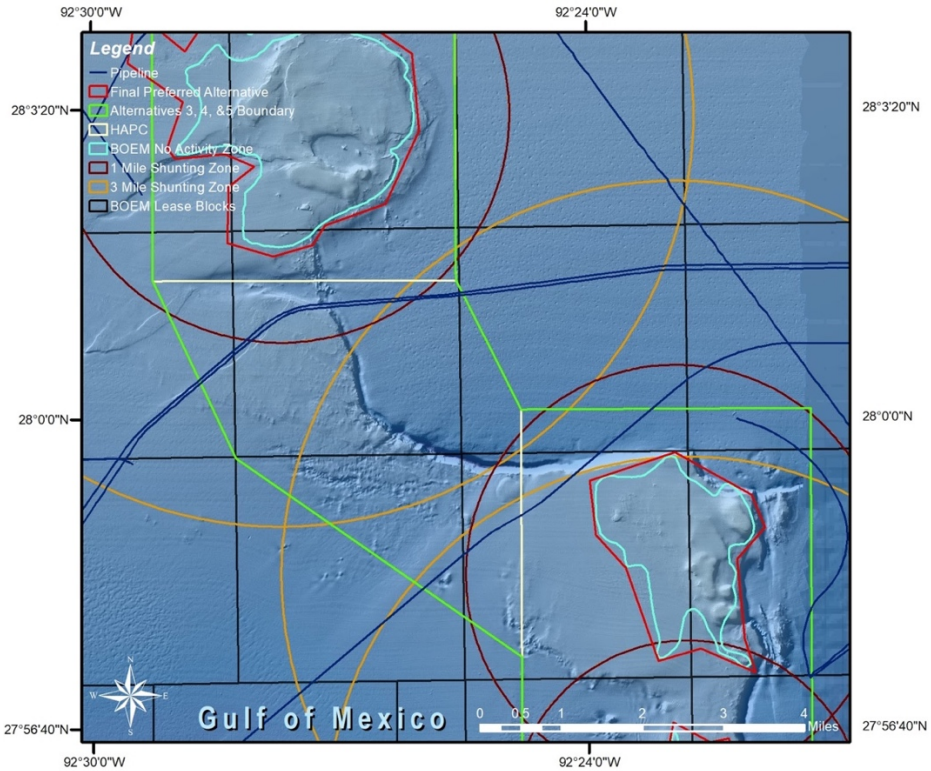


Figure D.48. Bryant Bank with reference to the Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Bryant Bank is excluded from the Final Preferred Alternative boundaries, but lies between Bouma (top left) and Rezak (bottom right) banks. Image: NOAA

D.2.17 Rezak Bank

Proposed addition of 3.68 sq. miles

Depth Range: 197-430 feet (60-131 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; constructed on a gently sloping tilted fault block related to salt intrusion, Rezak Bank is a series of five elongate to circular mounds with plan dimensions of 650–3280 feet (198-1,000 meters) that rise 16-23 feet (5-7 meters) the surface; similar in profile to Sidner Bank, its steepest flank faces the edge of the large structure the two banks are built upon; at least eight species of stony coral reported

Observed Impacts: anchor, fishing debris (longline/fishing line, rope), invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Preferred Alternative Boundary: none

Lease Blocks: VR404, VR405 (None active)

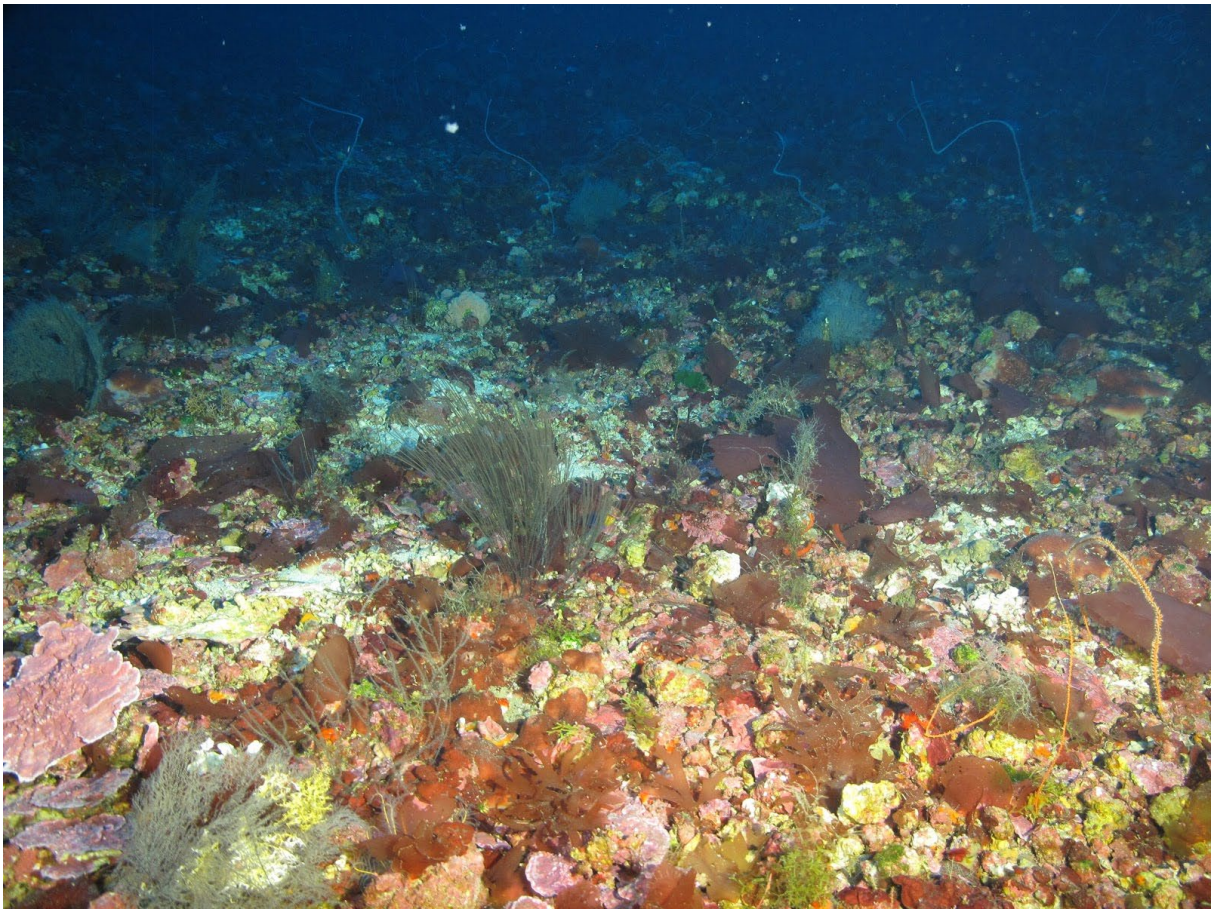


Figure D.49. Black corals, octocorals, and leafy algae in coralline algae habitat at Rezak Bank. Photo: NOAA/UNCW-UVP

Figure D.50. Rezak Bank (labeled 3) in context of Alternative 5 boundary. Image: NOAA

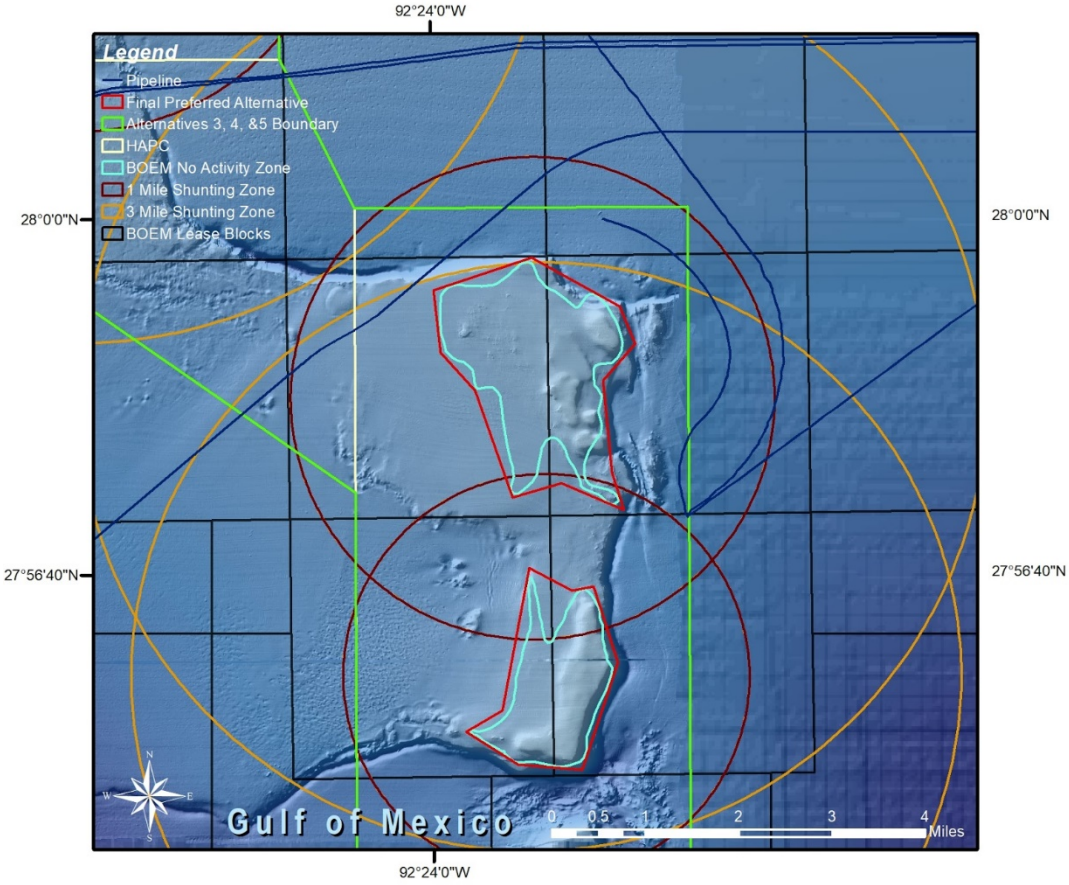


Figure D.51. Rezak Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.18 Sidner Bank

Proposed addition of 2.03 sq. miles

Depth Range: 190-420 feet (58-128 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; constructed on a gently sloping tilted fault block related to salt intrusion, Sidner Bank is a approximately 9500-foot-long (2.9-meter-long) bathymetric high that rises 50-65 feet (15-20 meters) above the surrounding seafloor and is similar to Rezak Bank in profile with its steepest flank facing the edge of the large structure it is built upon; at least eight species of stony coral reported

Observed Impacts: fishing debris (longline, fishing line, rope), anchor, oil and gas industry debris, invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: None

Lease Blocks: VR411, VR412 (None active)

Figure D.52. *Agelas clathrodes* sponge and green and coralline algae in the mesophotic coral habitat at Sidner Bank. Photo: NOAA/UNCW-UVP

Figure D.53. Sidner Bank (labeled 4) in context of Alternative 5 boundary. Image: NOAA

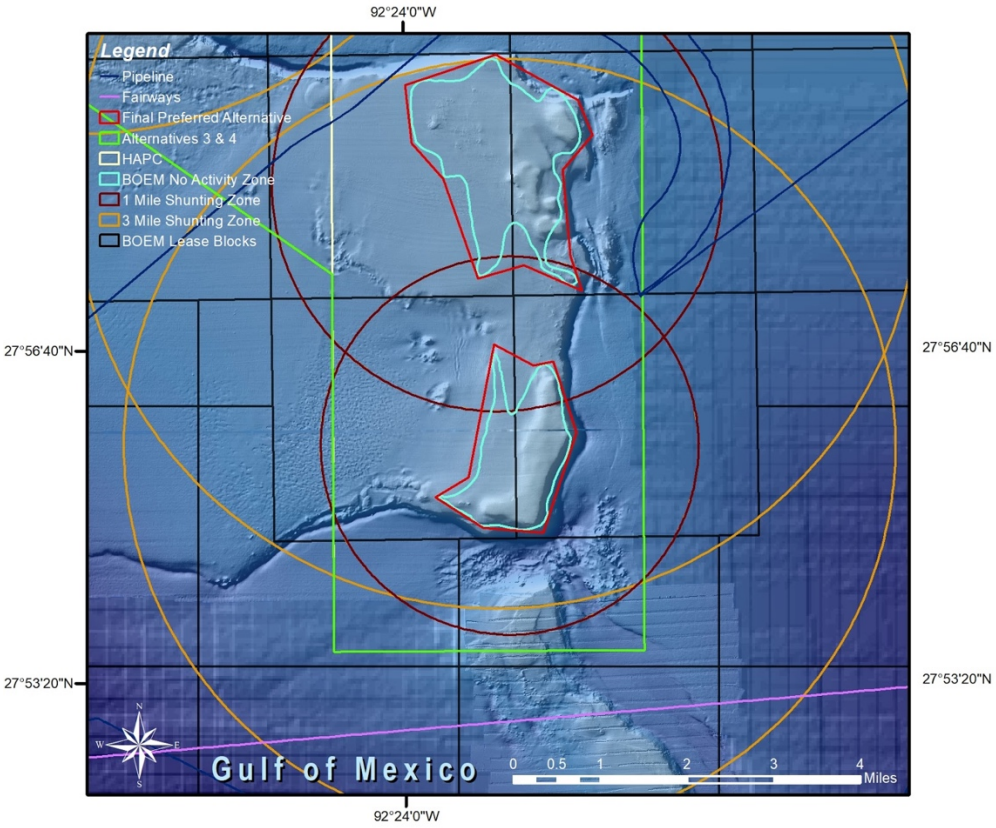


Figure D.54. Sidner Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.19 Tresslar Bank

Depth Range: approximately 310-820 feet (94-250 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; at least one species of stony coral reported

Observed Impacts: Anchor chain

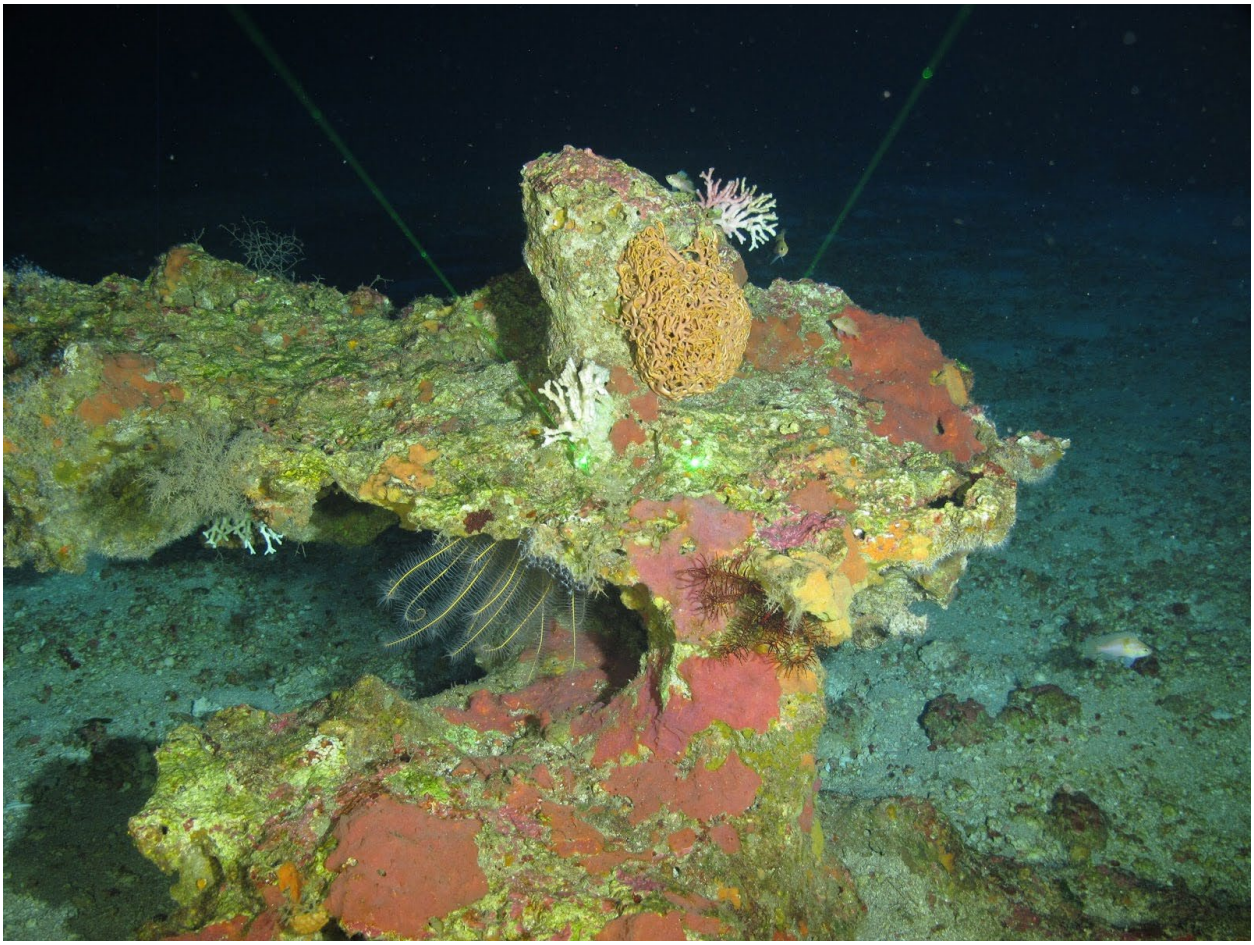


Figure D.55. Sponges, branching stony coral, basket stars, and crinoids at Tresslar Bank. Photo: NOAA/UNCW-UVP

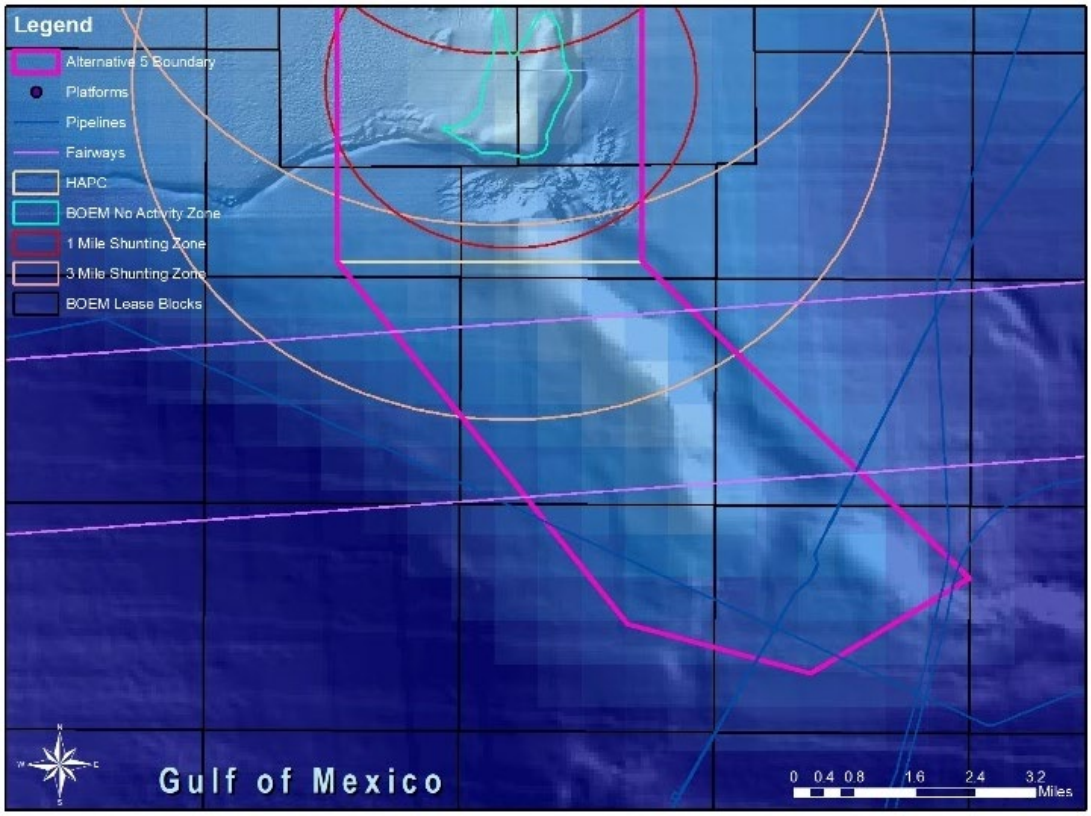


Figure D.56. Tresslar Bank boundary alternative, existing regulatory zones, and infrastructure. Image: NOAA

D.2.20 Antoine Bank

Depth Range: approximately 575-820 feet (175-250 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: mesophotic habitat is prevalent throughout the complex, and is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates

Observed Impacts: None

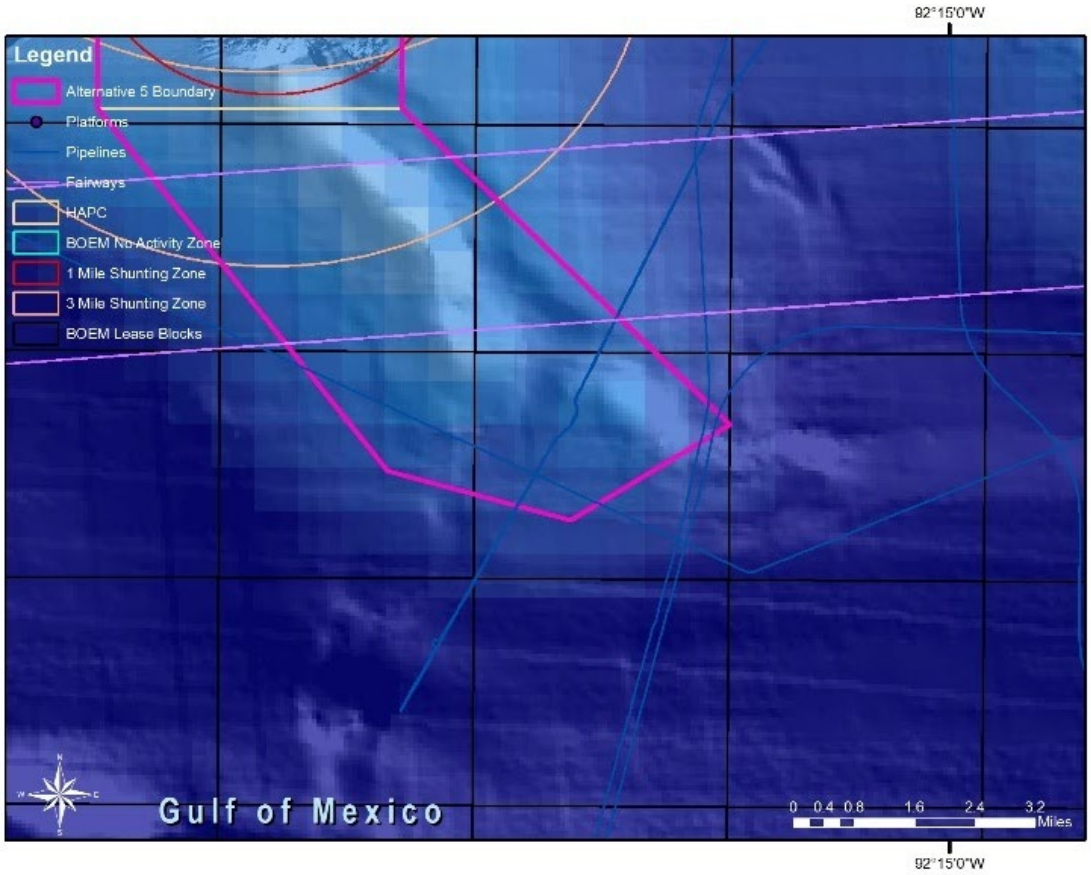


Figure D.57. Antoine Bank boundary alternative, existing regulatory zones, and infrastructure. Image: NOAA

D.2.21 Parker Bank

Proposed addition of 7 sq. miles

Depth Range: 187-387 feet (57-118 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: bank harbors significant mesophotic habitat that is dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; a large field of abundant *Hypnogorgia* was encountered during ROV surveys, as well as high relief ridges providing habitat for fish and invertebrates; at least four species of stony coral reported

Observed Impacts: fishing debris (line/rope), invasive species (lionfish)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: none

Lease Blocks: SM194, SM195, SM202, SM203 (None active)

Figure D.58. A large black coral colony, *Plumapathes pennacea*, in the mesophotic coral habitat at Parker Bank at 57 meters depth. Photo: NOAA/UNCW-UVP

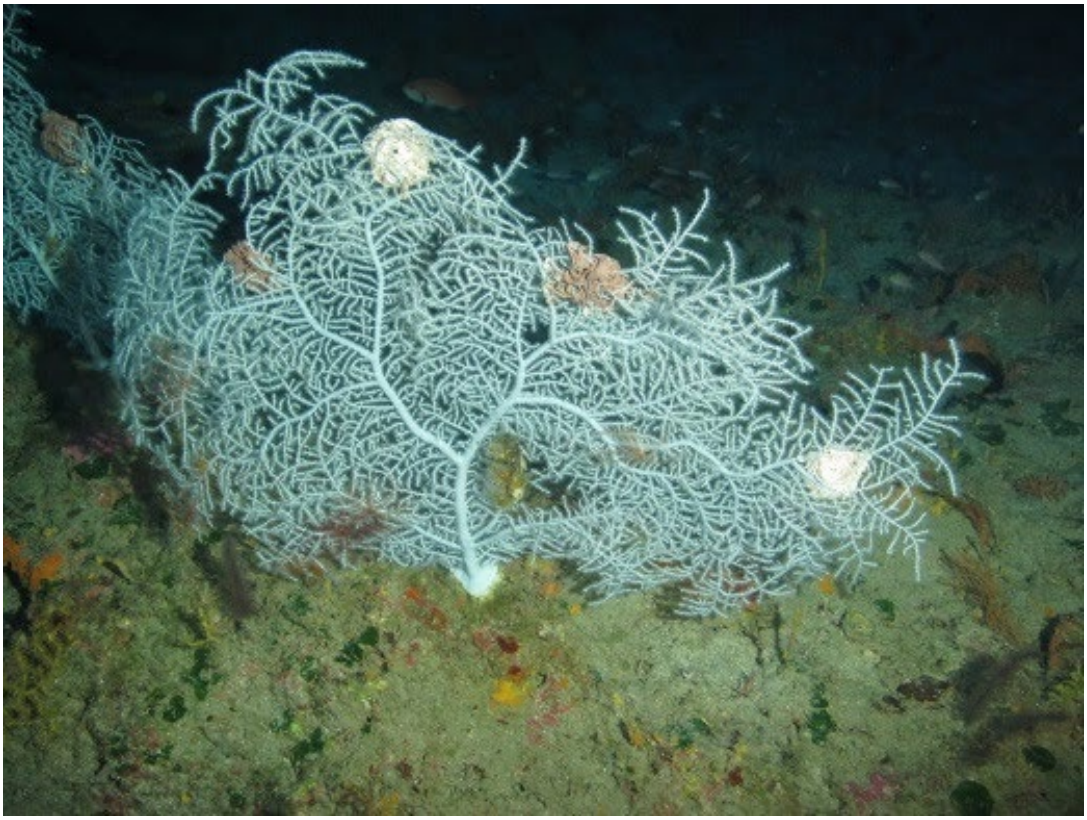


Figure D.59. Basket stars harboring in the branches of a large *Hypnogorgia* in the mesophotic coral habitat at Parker Bank at around 96 meter depth. Photo: NOAA/UNCW-UVP

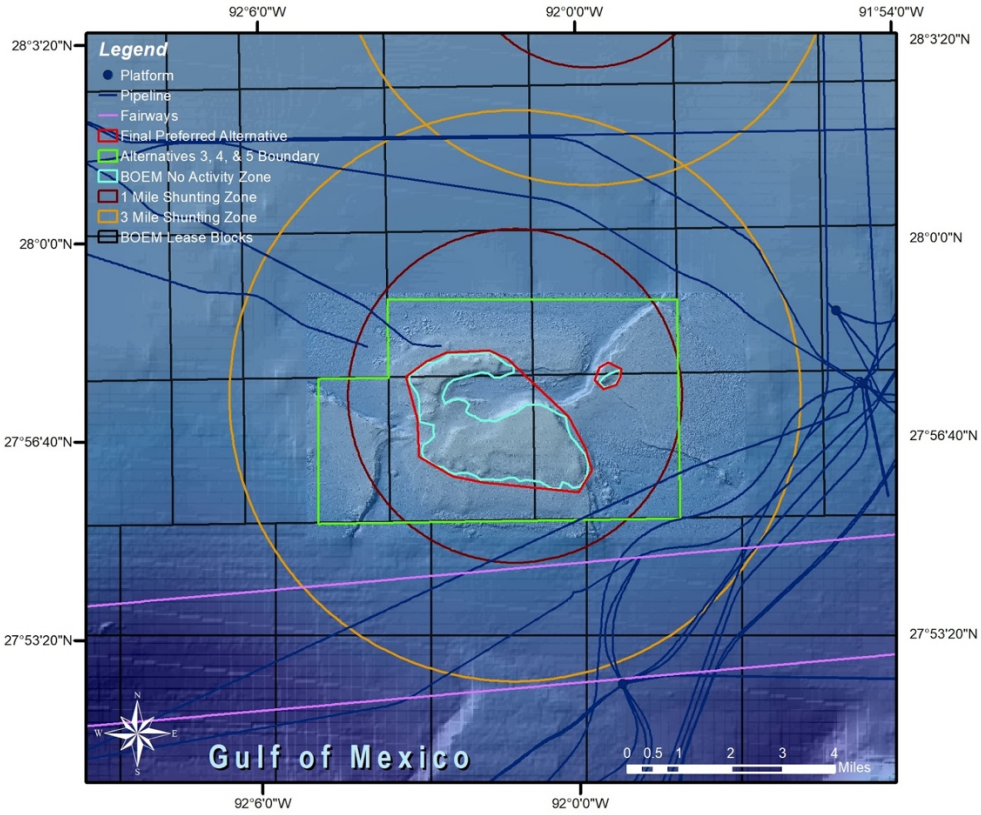


Figure D.60. Parker Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.22 Alderdice Bank

Proposed addition of 5.03 sq. miles

Depth Range: 187-322 feet (57-98 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: spectacular basalt outcrops of Late Cretaceous origin (approximately 77 million years old) represent the oldest known rock exposed on the continental shelf off of Louisiana and Texas; outcrops bear a diverse assemblage of epibenthic organisms and fishes, most conspicuous of which are sea whips, sponges, and branching bryozoan colonies on the peaks, along with swarms of reef fish; habitats below the spires are dominated by black corals, Alcyonacea (formerly gorgonians), fish, sponges, algae, and invertebrates; at least seven species of stony coral reported

Observed Impacts: fishing debris (longline/fishing line, anchors/chain), barrel, invasive species (lionfish and orange cup coral)

Oil and Gas Industry Infrastructure Present in Final Preferred Alternative Boundary: None

Lease Blocks: SM170, SM171, SM178, SM179 (None active)

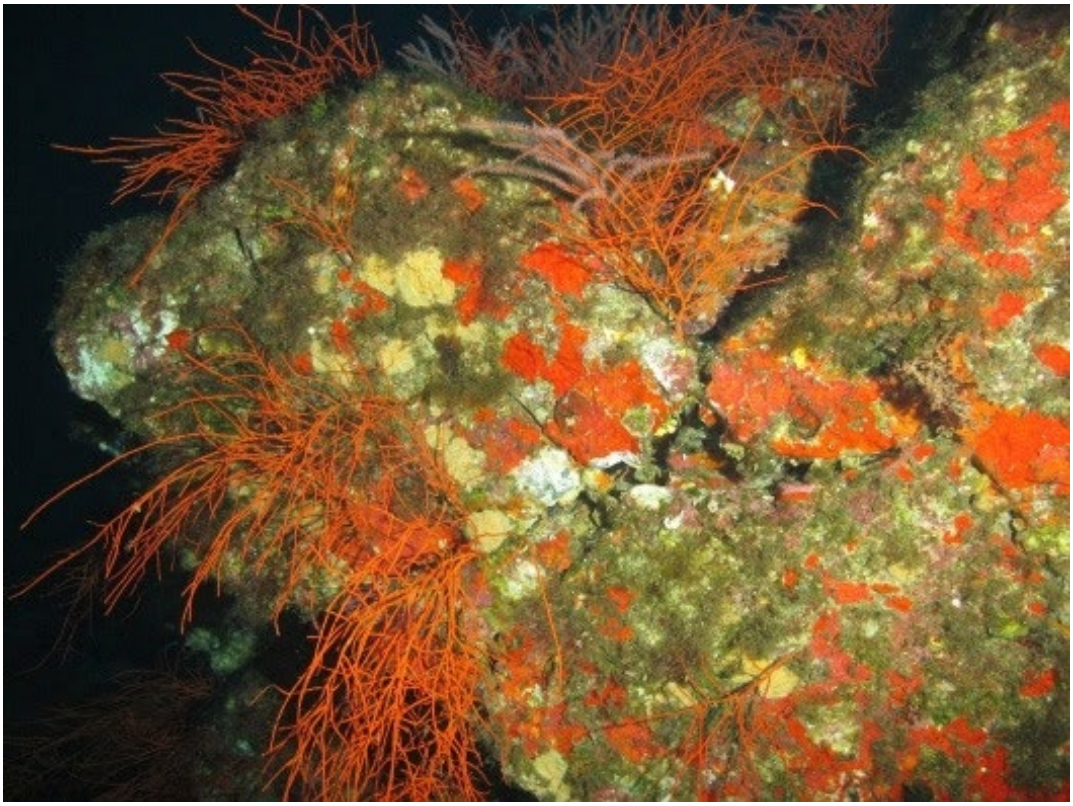


Figure D.61. Basalt blocks making up a portion of one of the Alderdice Bank spires, covered in orange Alcyonacea, encrusting sponges and coralline algae. Photo: NOAA/UNCW-UVP

Figure D.62. Basalt spire at Alderdice Bank. Photo: NOAA/UNCW-UVP

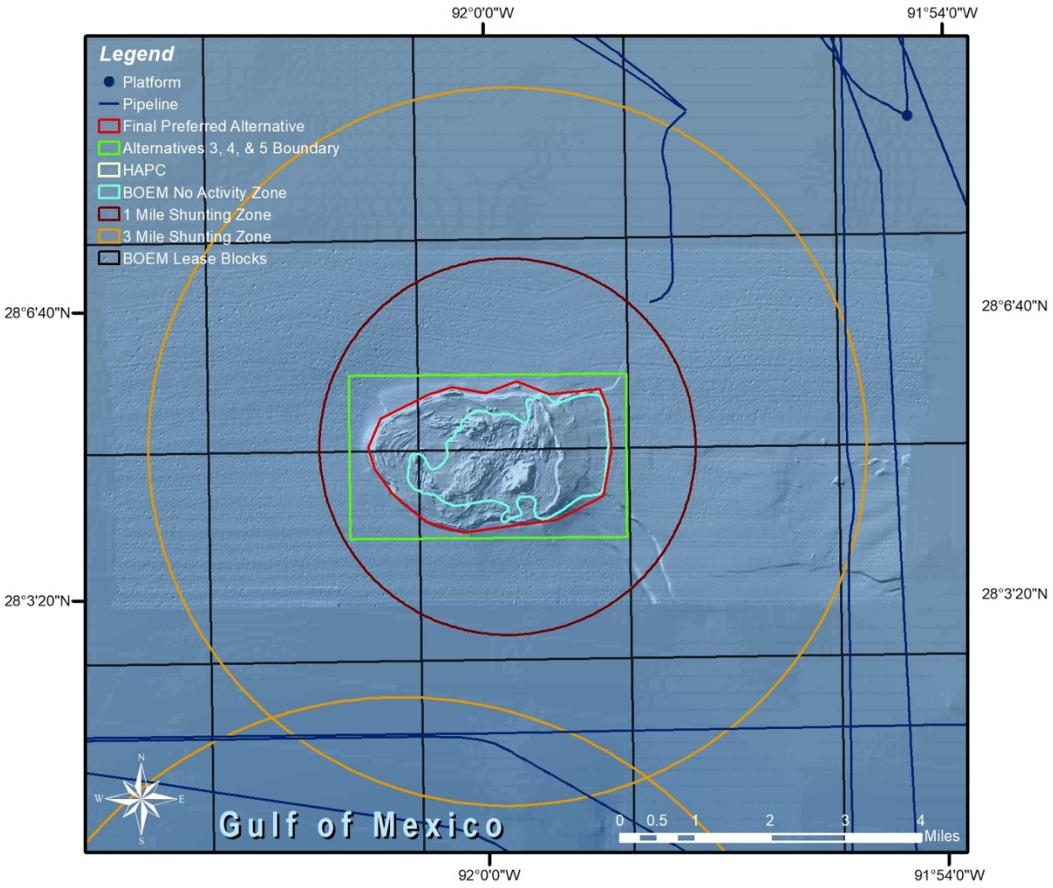


Figure D.63. Alderdice Bank Final Preferred Alternative boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.2.23 Jakkula Bank

Depth Range: approximately 245-720 feet (75-219 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: located on the uppermost continental slope, the overall bank structure is composed of a basal platform with a roughly circular outline about 1 mile in diameter that rises about 66 feet (20 meters) above the adjacent seafloor. The basal platform is topped with a smaller summit platform with a diameter of 0.8 miles that rises 150 feet (46 meters) above the smooth margins of the basal platform, with a shoal area of 200 feet (61 meters) depth. The bank itself has no associated pinnacles, but numerous pinnacles occur just beyond the flanks of the bank flanks. A large, flat-topped mesa, extends northward from the north margin of Jakkula Bank for about 0.5 miles and then abruptly changes trend to the west for more than 4 miles. Large stands of black corals and Alcyonacea (formerly gorgonians) have been documented on the ridge to the northwest of the bank.

Observed Impacts: None

Figure D.64. Large colonies of black corals and associated crinoids in the mesophotic coral habitat on the escarpment at the Jakkula Bank escarpment. Photo: National Geographic Society/Sustainable Seas Expedition/NOAA

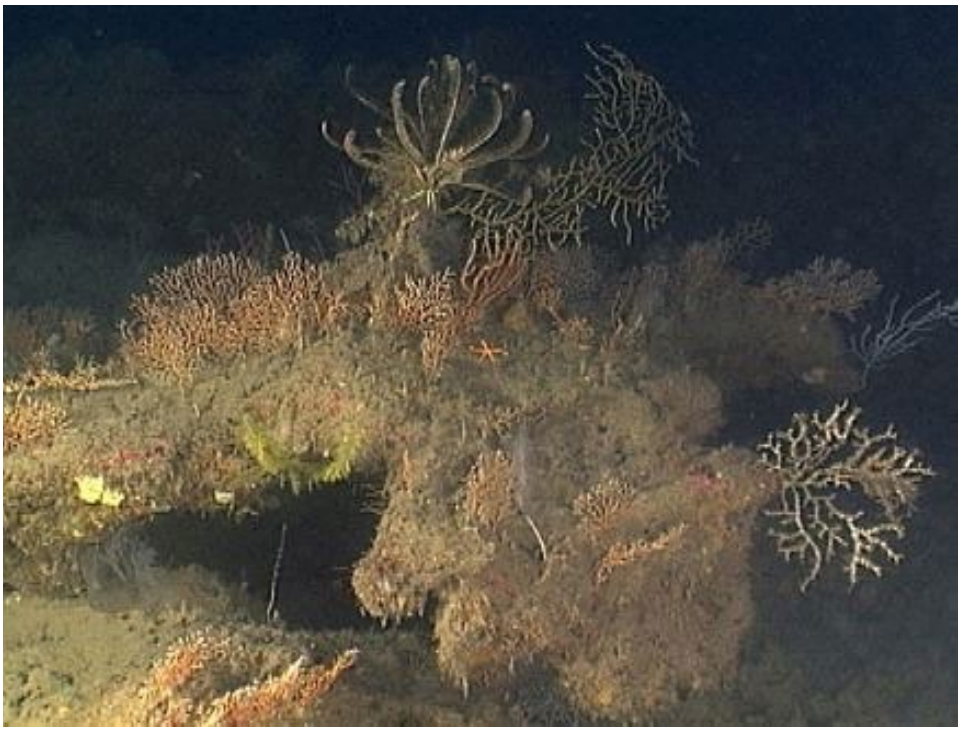


Figure D.65. Gorgonians and black corals in the mesophotic coral habitat at Jakkula Bank escarpment. Photo: National Geographic Society/Sustainable Seas Expedition/NOAA

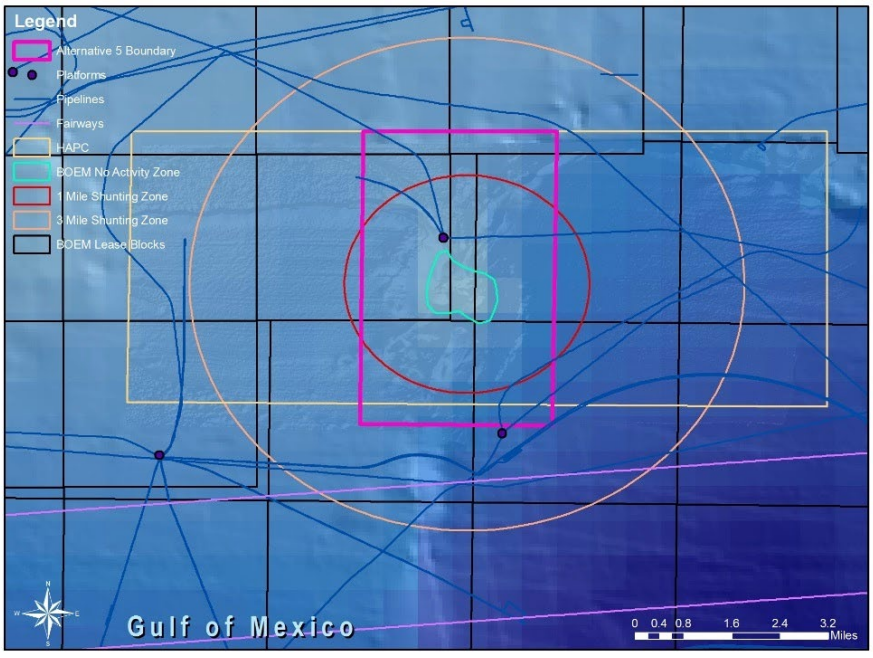


Figure D.66. Jakkula Bank boundary alternative, existing regulatory zones, and infrastructure. Image: NOAA

D.2.24 Ewing Bank

Depth Range: approximately 180-395 feet (55-120 meters)

Habitat Types Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: known as an occasional aggregation point for whale sharks, though this aggregation targets spawning little tunny, which are associated with water column convergence zones rather than topographic features. Dominated by algal nodule habitat.

Observed Impacts: Possible impacts from Deepwater Horizon oil spill (Fredericq personal observation 2015)

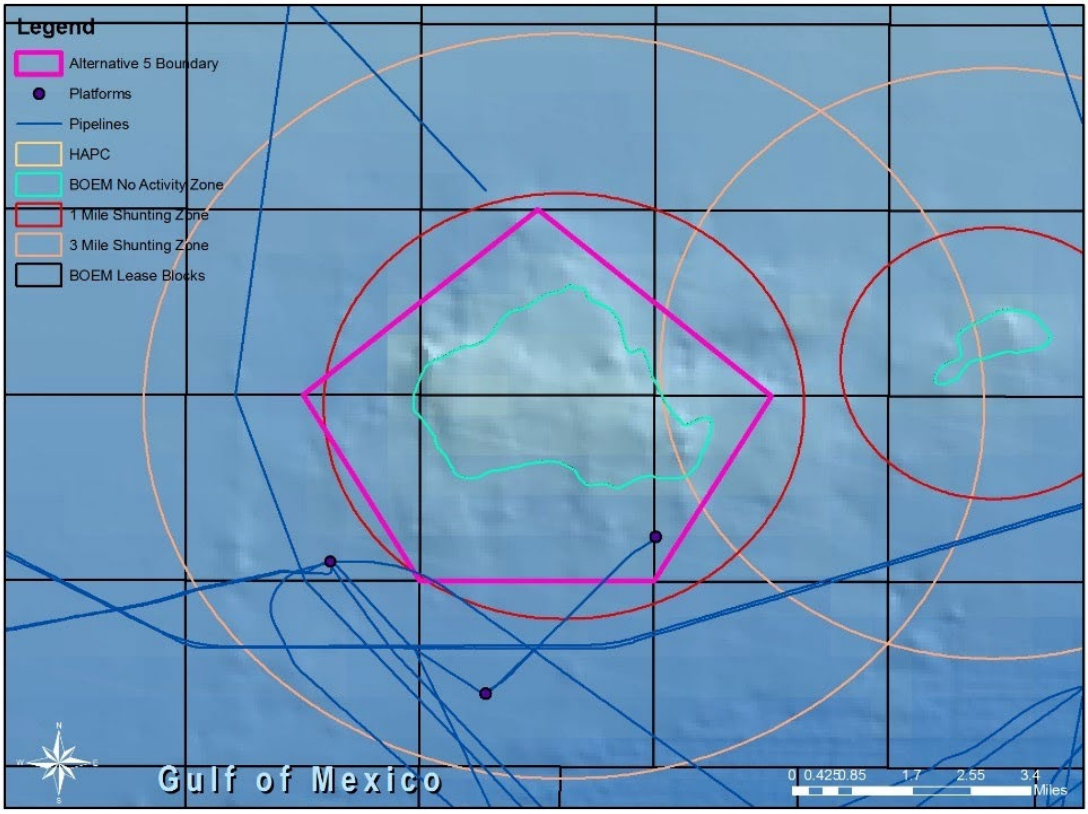


Figure D.67. Ewing Bank boundary alternative, existing regulatory zones, and infrastructure. Image: NOAA

D.3 Pinnacles Area

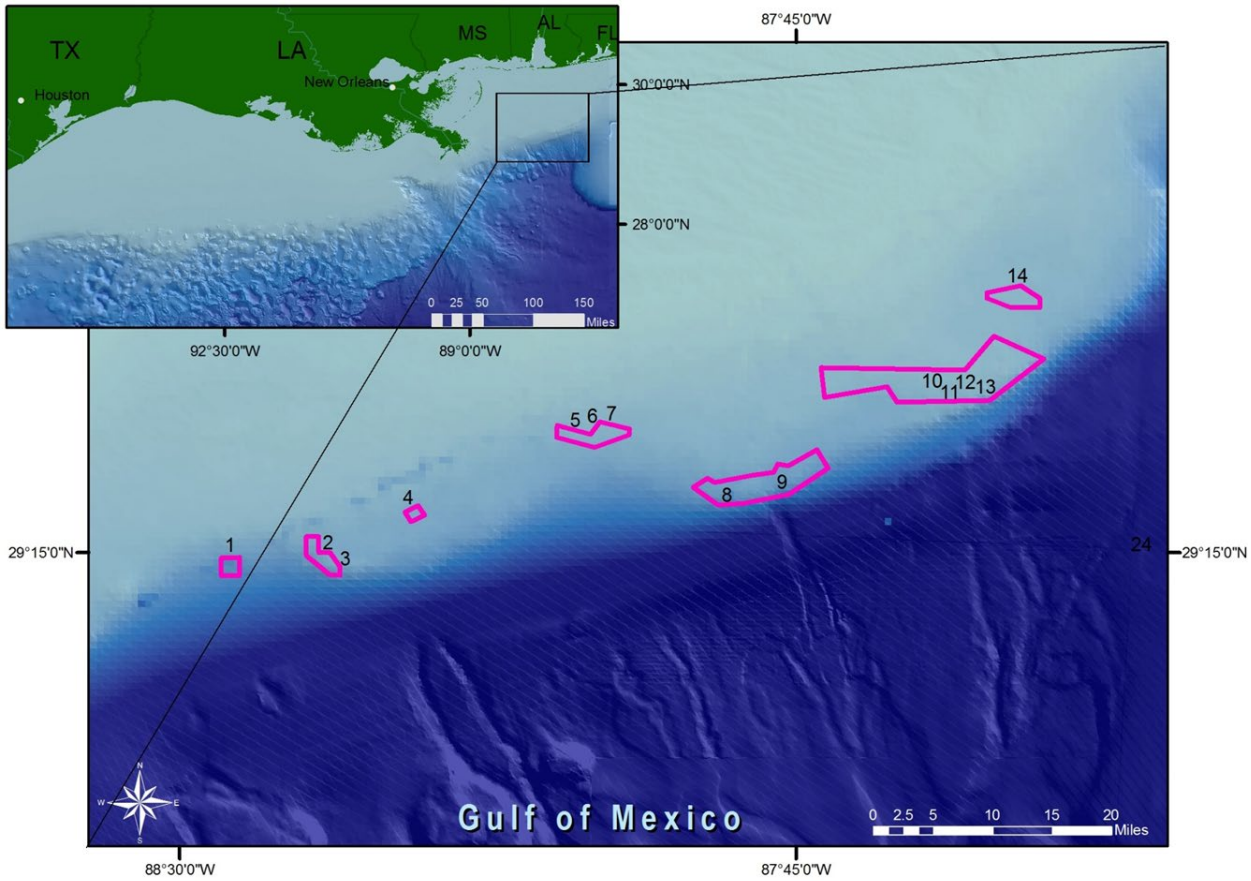


Figure D.68. Overview of the 14 primary mesophotic coral habitat features encompassed by Alternatives 4 & 5 in the context of the Pinnacles Area. The banks located in the Pinnacles subregion are: 1. Mountain Top; 2. Alabama Alps; 3. 36-Fathom Ridge; 4. West Addition Pinnacles; 5. Shark Reef; 6. Triple Top; 7. Double Top; 8. West Delta Mounds; 9. Ludwick-Walton Pinnacles; 10. Yellowtail Reef; 11. Cat's Paw Reef; 12. Roughtongue Reef; 13. Corkscrew Reef; 14. Far Tortuga. Image: NOAA

D.3.1 Mountain Top

Depth Range: approximately 175-475 feet (53-145 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: among the shallowest features in the Pinnacles area, the bank is moderate in size (about 1.6 by 1.0 kilometers); found on the western end of the Pinnacles area, unlike most features to its east it was likely formed by salt diapirism rather than induration and reef growth on deltaic bedding; on its surfaces, Mountain Top has low to intermediate relief (6-20 feet), and its small pinnacles and reefs support coralline algae and mixed octocoral, antipatharian and sponge communities; density and species composition of dominant inhabitants varies considerably across habitats on the feature; reef associated invertebrate assemblage is dominated by comatulid crinoids; numerous bacterial mats, gas seeps, and associated biological assemblages (e.g., sulfide oxidizing bacteria) are present, possibly enhancing biological production in the vicinity

Observed Impacts: derelict fishing gear (trawl nets, line), anchors

Figure D.69. Mesophotic coral habitats at Mountain Top. Photo: National Geographic Society/Sustainable Seas Expedition/NOAA

Figure D.70. Mesophotic coral habitats at Mountain Top. Photo: National Geographic Society/Sustainable Seas Expedition/NOAA

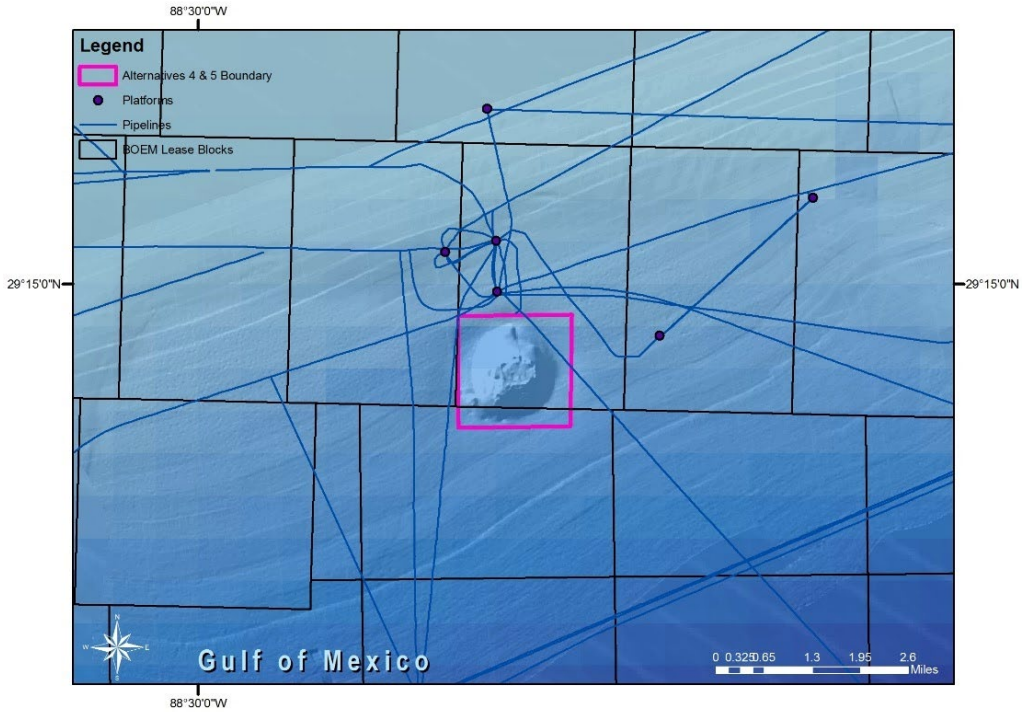


Figure D.71. Mountain Top boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.2 Alabama Alps

Depth Range: approximately 230-295 feet (70-90 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: among the largest and highest features in the Pinnacles area, Alabama Alps supports abundant and diverse populations of benthic invertebrates and reef fish; coral assemblage is composed of small and large Alcyonacea (formerly gorgonian) octocorals, antipatharian black corals, and sponges; large corals are densely populated in areas on the reef top, with densities far exceeding the definition of a coral garden, following international recommendations (ICES); Alabama Alps supports a moderately diverse and highly productive fish community; planktivorous reef fish are especially abundant and contribute to sustaining populations of larger piscivores like grouper and snapper; USGS perspective view accessible online[2]

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure and injury

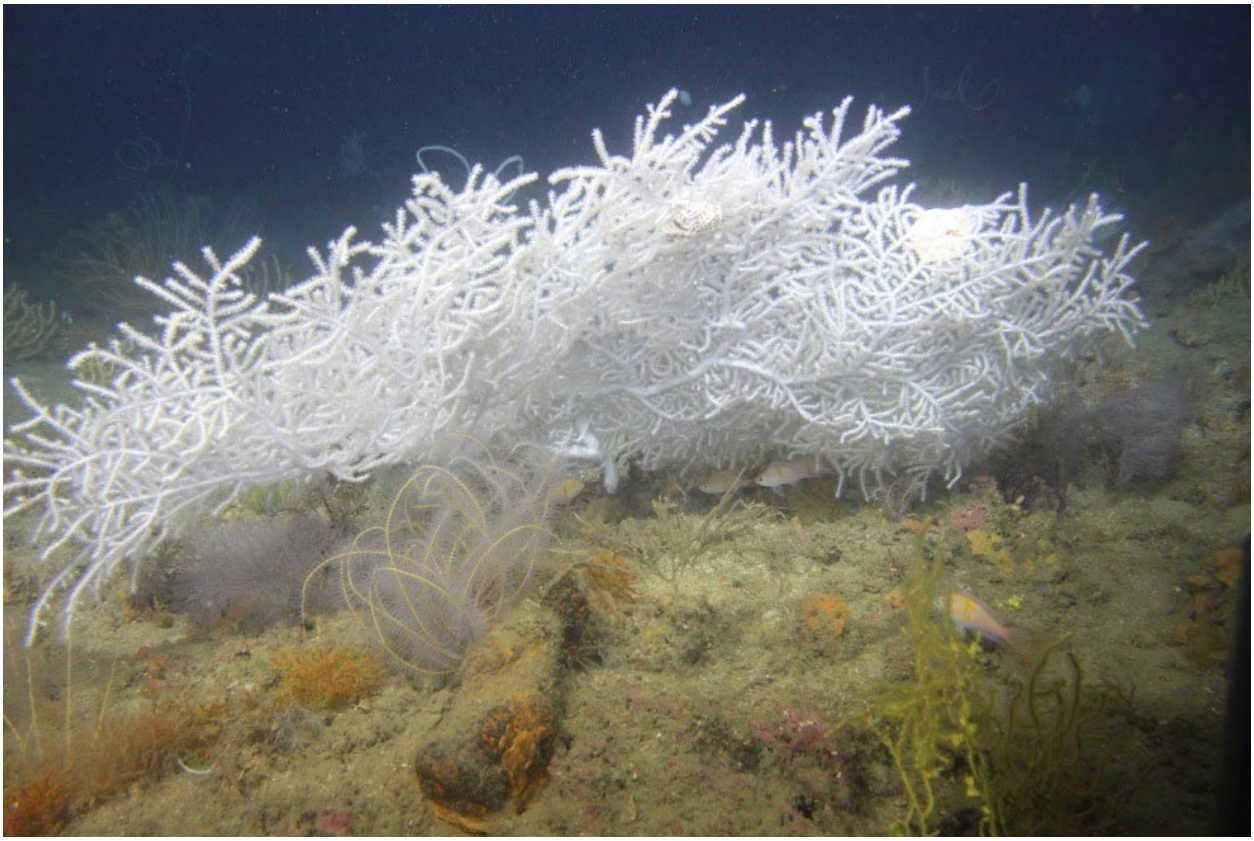


Figure D.72. Mesophotic coral habitats at Alabama Alps. Photo: NOAA/Etnoyer and USGS/Randall

[2] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

Figure D.73. Alabama Alps boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.3 36-Fathom Ridge

Depth Range: approximately 245-395 feet (75-120 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: extending to the southeast from Alabama Alps, 36-Fathom Ridge similarly supports abundant and diverse populations of benthic invertebrates and reef fish; coral assemblage is composed of large and small Alcyonacea (formerly gorgonian) octocorals, antipatharian black corals, and sponges; large corals are densely populated in areas on the reef top, with densities far exceeding the definition of a coral garden, following international recommendations (ICES); supports a moderately diverse and highly productive fish community; planktivorous reef fish are especially abundant and contribute to sustaining populations of larger piscivores like grouper and snapper; USGS perspective view accessible online[3]

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure (within 50 kilometers of the Deepwater Horizon wellhead and below the slick for 35 days, subject to dispersant application); many of the large octocorals and reef fish appear to have been negatively impacted, with a dramatic reduction in reef fish numbers and an increase in sea fan injury rates noted following the spill; some evidence of reef fish numbers rebounding and overall more than 50% of colonies of large sea fans were still intact in 2014, offering potential for recovery

Figure D.74. 36-Fathom Ridge boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[3] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

D.3.4 West Addition Pinnacles

Depth Range: approximately 235-295 feet (72-90 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: small, high relief spires with an impressively high diversity and abundance of hard and soft corals, sponges, and fish; West Addition Pinnacles are very high relief (approximately 60 feet) features supporting relatively high frequencies and richness of select taxa of octocorals, scleractinians, antipatharians and sponges in relation to other reefs; levels of species richness and animal density nearly as high as Yellowtail and Roughtongue Reefs; dense aggregations of fish dominated by planktivorous anthiids, wrasses, butterflyfish, and damselfish

Observed Impacts: None (not sampled following Deepwater Horizon)

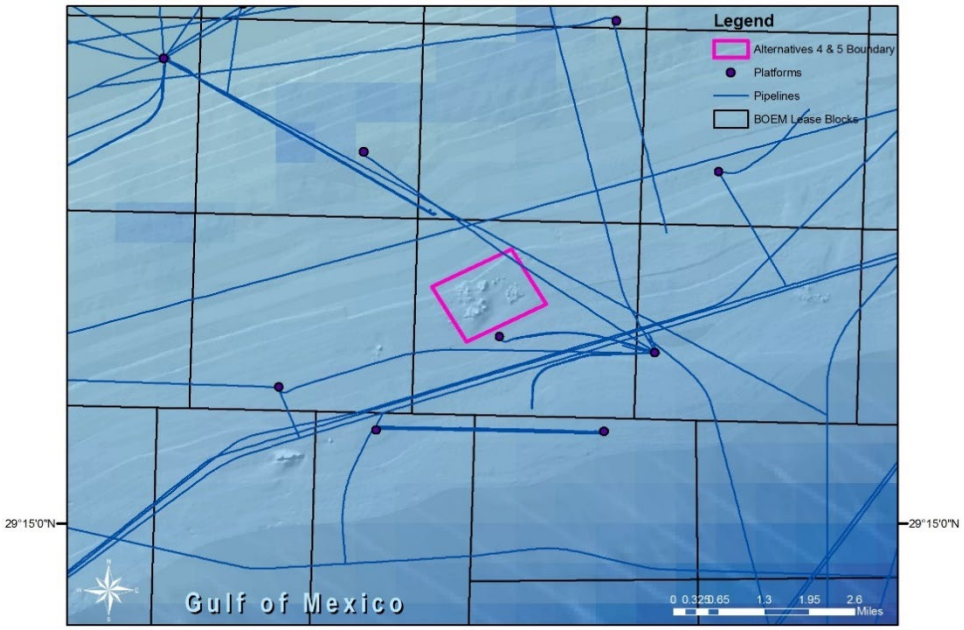


Figure D.75. West Addition Pinnacles boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.5 Shark Reef

Depth Range: approximately 245-265 feet (75-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: moderate sized reefs with dense stands of black and soft corals on reef flats, transitioning to solitary hard corals on the walls and slopes; Shark Reef, to the west of Double Top and Triple Top, has a much lower relief (approximately 10 feet or 3 meters) and does not currently support a live sessile invertebrate assemblage on the heavily silted reef top; numerous invertebrates populate the vertical rock surfaces, including dense clusters of *Rhizopsammia manuelensis* stony corals; fish communities of moderate diversity but high abundance have been reported on these features, with dominant species being Roughtonge Bass and Vermilion Snapper

Observed Impacts: derelict fishing gear (line, ropes, chain), anchors; not sampled following Deepwater Horizon

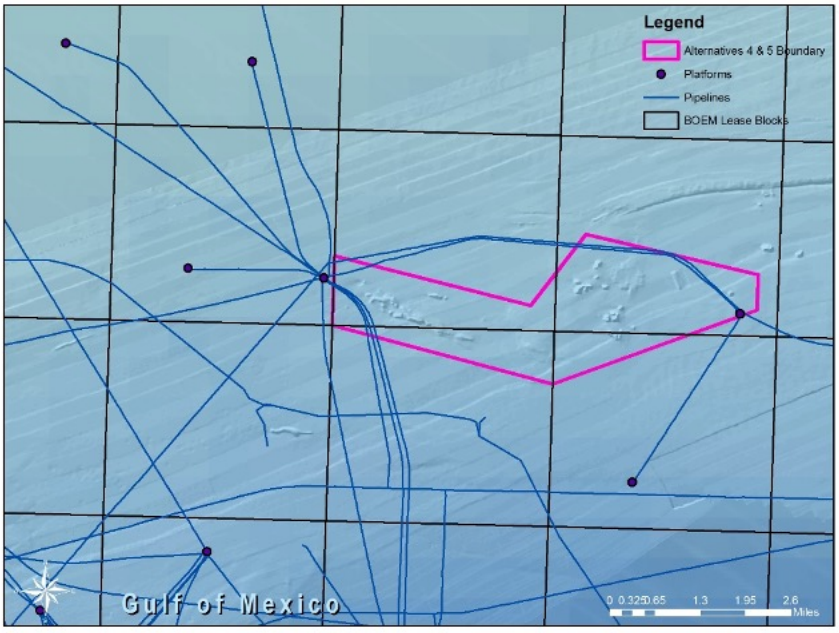


Figure D.76. Shark Reef boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.6 Triple Top

Depth Range: approximately 230-265 feet (70-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: with 25-40 feet (8-12 meters) of relief, Triple Top is a series of pinnacles with flat reef crest communities supporting dense assemblages of octocorals and antipatharians along with some solitary hard corals which are especially prevalent on vertical reef walls and slopes; fish communities of moderate diversity but high abundance have been reported on these features, with dominant species being Roughtongue bass and Vermilion snapper; USGS profile view is accessible online[4]

Observed Impacts: derelict fishing gear (line, ropes, and chains); not sampled following Deepwater Horizon

Figure D.77. Triple Top boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[4] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

D.3.7 Double Top

Depth Range: approximately 245-265 feet (75-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: with 25-40 feet (8-12 meters) of relief, Double Top is a series of pinnacles with flat reef crest communities supporting dense assemblages of octocorals and antipatharians along with some solitary hard corals which are especially prevalent on vertical reef walls and slopes; fish communities of moderate diversity but high abundance have been reported on these features, with dominant species being Roughtongue bass and Vermilion snapper; USGS profile view is accessible online[5]

Observed Impacts: derelict fishing gear (trawl nets, line), anchors; not sampled following Deepwater Horizon

Figure D.78. Double Top boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[5] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

D.3.8 West Delta Mounds

Depth Range: approximately 310-410 feet (94-125 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: tall, rugged spires inhabited by solitary and branching hard corals, octocorals, and black corals, and associated invertebrates like crinoids and basket stars; a collection of at least a hundred small to mid-sized reefs up to approximately 55 feet (17 meters) tall along the shelf-edge, ranging from approximately 650 to 3,280 feet (198-1,000 meters) in diameter; situated in the deeper range of Pinnacles reefs, they are composed of the remains of coralline algae, serpulid worms, bryozoans, ahermatypic corals, and forams, and they exhibit highly sculpted and eroded rock surfaces with many caves and depressions; they support relatively dense populations of the solitary coral *Rhizopsammia manuelensis* and *Madrepora carolina* on patch reefs and vertical walls, as well as high numbers of comatulid crinoids; due to their depth, they do not support coralline algae growth

Observed Impacts: None (not sampled following Deepwater Horizon)

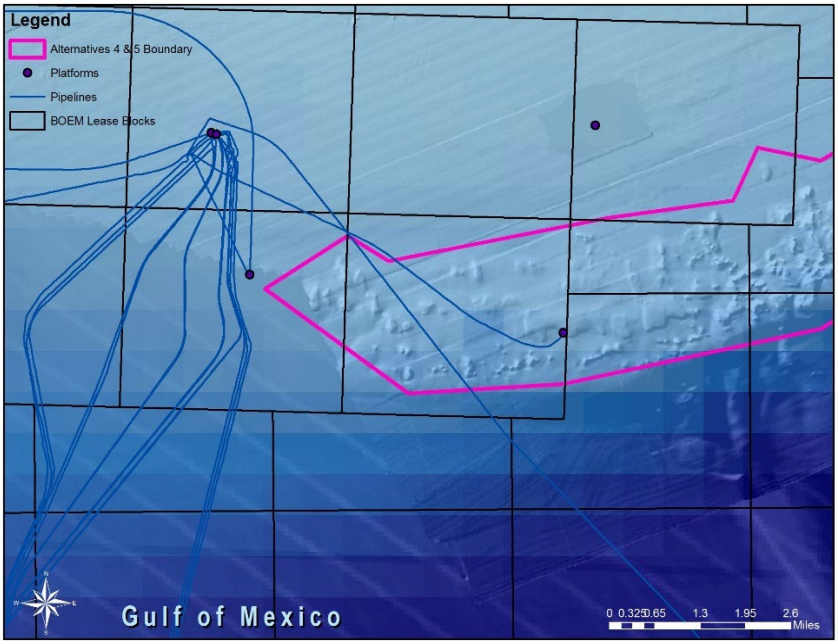


Figure D.79. West Delta Mounds boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.9 Ludwick-Walton Pinnacles

Depth Range: 310-510 feet (94-155 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: tall, rugged spires inhabited by solitary and branching hard corals, octocorals, and black corals, and associated invertebrates like crinoids and basket stars; a collection of at least a hundred small to mid-sized reefs up to approximately 55 feet (17 meters) tall along the shelf-edge, ranging from approximately 650 to 3,280 feet (198-1,000 meters) in diameter; they are composed of the remains of coralline algae, serpulid worms, bryozoans, ahermatypic corals, and forams; they exhibit sculpted, eroded rock surfaces with caves and depressions; they support relatively dense populations of the solitary coral *Rhizopsammia manuelensis* and *Madrepora carolina* on patch reefs and vertical walls, as well as high numbers of comatulid crinoids; due to depth, they do not support coralline algae growth; USGS profile views are accessible online[6]

Observed Impacts: None (not sampled following Deepwater Horizon)

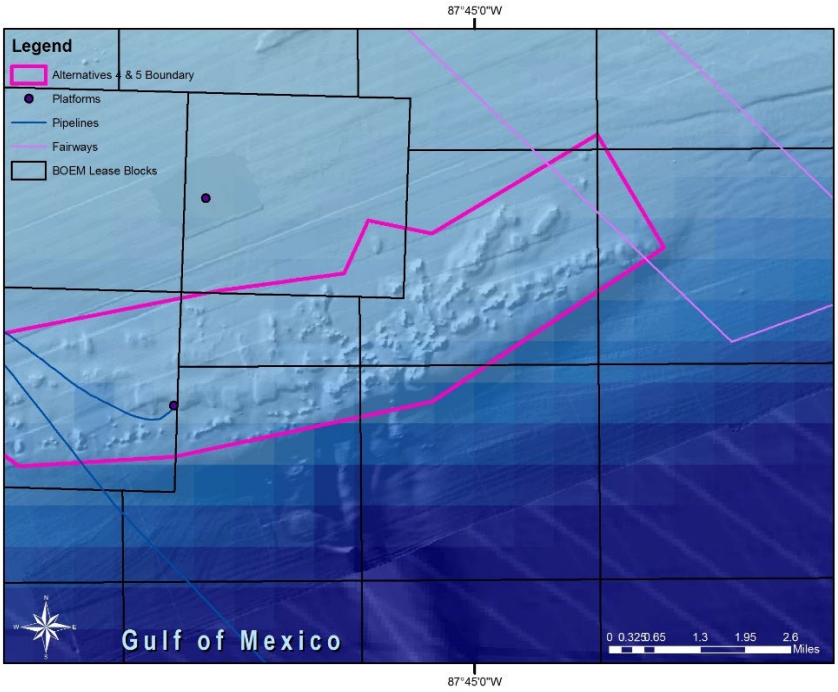


Figure D.80. Ludwick-Walton Pinnacles boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[6] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

D.3.10 Yellowtail Reef

Depth Range: approximately 195-265 feet (59-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: dense mesophotic coral gardens containing black corals, Alcyonacea (formerly gorgonian), and hard corals, sponge, and fish communities on numerous flat-topped features surrounded by rugged, vertical drop-offs; second largest concentration of hard bottom in the Pinnacles area, comprised of several large to small reefs with medium to high vertical profiles (15-50 feet relief), some with extensive, relatively flat reef tops, and rugose reef faces and marginal habitats; perimeter of the reef is comprised of low-relief hard bottom interspersed with a soft sediment veneer; shallowest sites among the seven proposed boundaries in the Pinnacles area, with the most abundant faunal communities; exhibited highest diversity and abundance of reef fish (40 fish taxa) in the Pinnacles area; USGS profile view is accessible online[7]

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure and injury

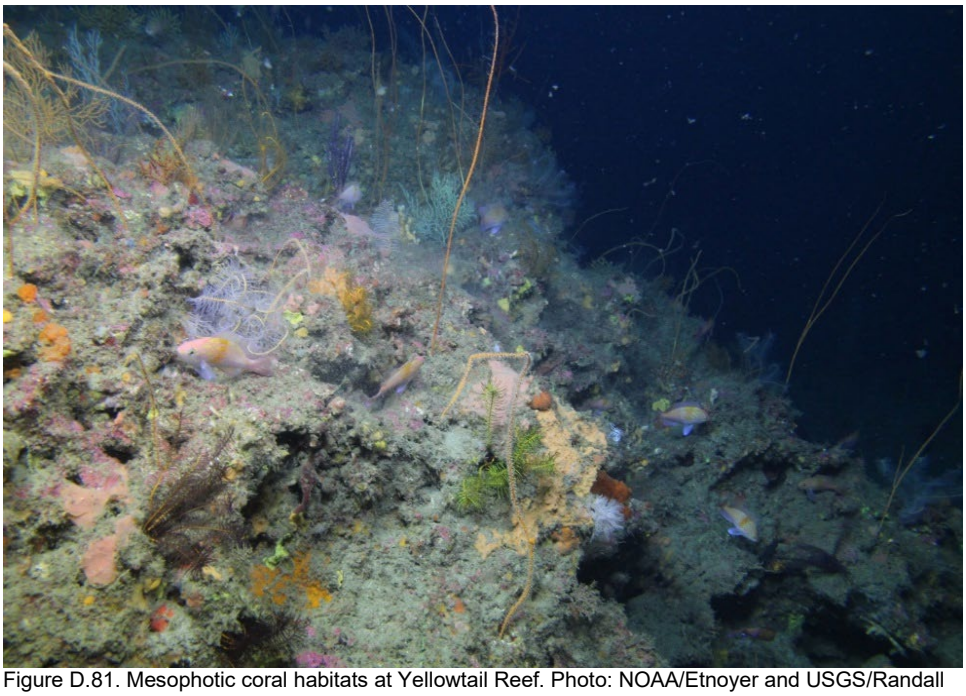


Figure D.81. Mesophotic coral habitats at Yellowtail Reef. Photo: NOAA/Etnoyer and USGS/Randall

[7] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

Figure D.82. Dense field of octocorals and black corals in the mesophotic coral habitats at Yellowtail Reef. Photo: NOAA/Etnoyer and USGS/Randall

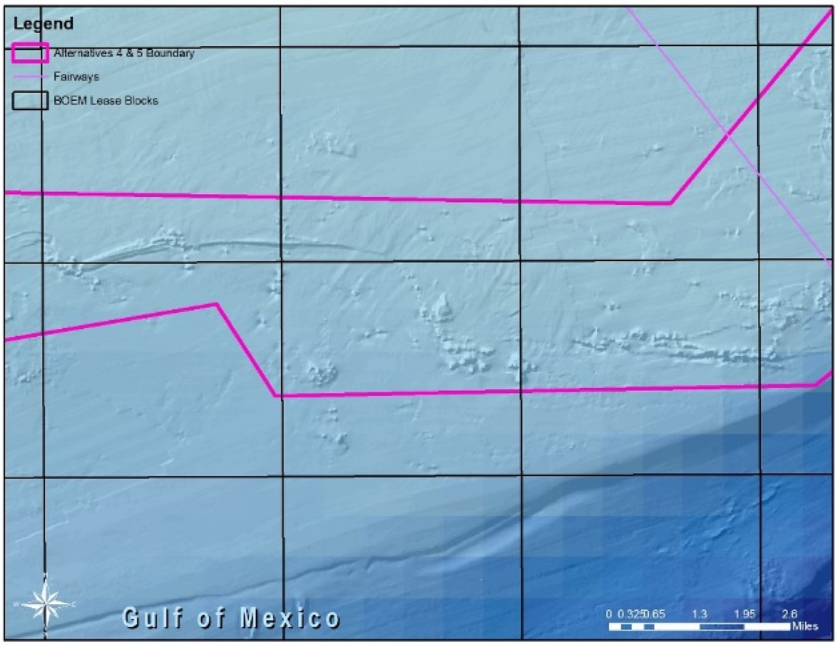


Figure D.83. Yellowtail Reef boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.11 Cat's Paw

Depth Range: approximately 230-265 feet (70-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: dense mesophotic coral gardens containing black corals, Alcyonacea (formerly gorgonian), and hard corals, sponge, and fish communities on numerous flat-topped features surrounded by rugged, vertical drop-offs; second largest concentration of hard bottom in the Pinnacles area, comprised of several large to small reefs with medium to high vertical profiles (15-50 feet relief), some with extensive, relatively flat reef tops, and rugose reef faces and marginal habitats; perimeter of the reef is comprised of low-relief hard bottom interspersed with a soft sediment veneer; shallowest sites among the seven proposed boundaries in the Pinnacles area, with the most abundant faunal communities; exhibited highest diversity and abundance of reef fish (40 fish taxa) in the Pinnacles area; USGS profile view is accessible online[8]

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure and injury

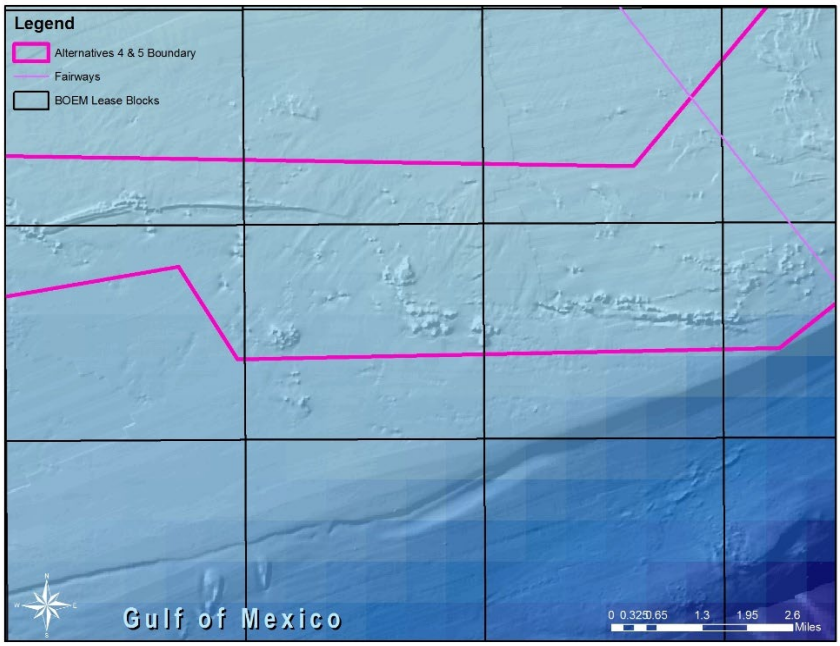


Figure D.84. Cat's Paw boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[8] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

D.3.12 Roughtongue Reef

Depth Range: 215-265 feet (66-81 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: dense mesophotic coral gardens containing black corals, Alcyonacea (formerly gorgonian), and hard corals, sponge, and fish communities on numerous flat-topped features surrounded by rugged, vertical drop-offs; second largest concentration of hard bottom in the Pinnacles area, comprised of several large to small reefs with medium to high vertical profiles (15-50 feet relief), some with extensive, relatively flat reef tops, and rugose reef faces and marginal habitats; perimeter of the reef is comprised of low-relief hard bottom interspersed with a soft sediment veneer; shallowest sites among the seven proposed boundaries in the Pinnacles area, with the most abundant faunal communities; exhibited highest diversity and abundance of reef fish (40 fish taxa) in the Pinnacles area; USGS profile view is accessible online.[9]

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure and injury

Figure D.85. Large *Hypnogorgia* colony in mesophotic coral habitats at Roughtongue Reef. Photo: NOAA/Etnoyer and USGS/Randall

[9] https://cmgds.marine.usgs.gov/data/pacmaps/index.html

Figure D.86. Mesophotic coral habitats at Roughtongue Reef. Photo: NOAA/Etnoyer and USGS/Randall

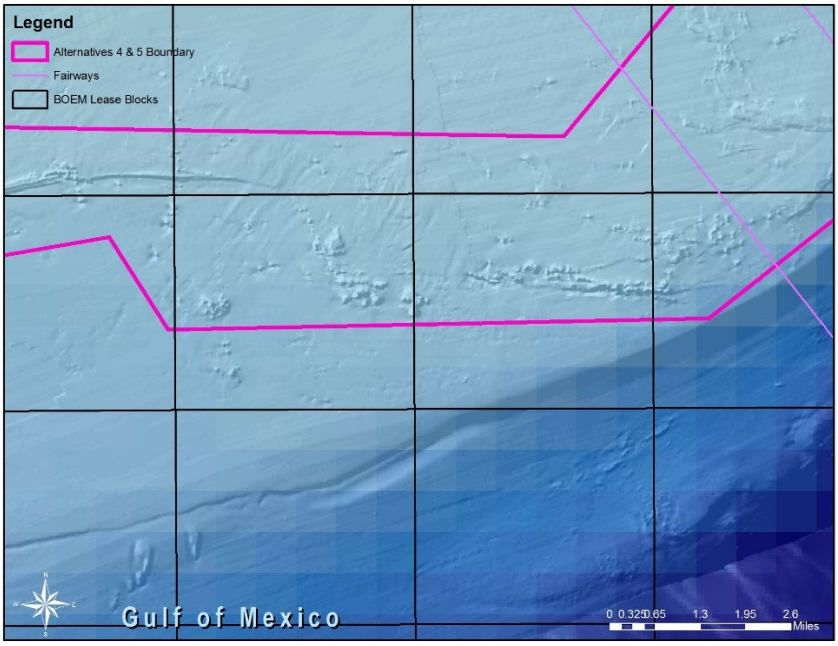


Figure D.87. Roughtongue Reef boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image:NOAA

D.3.13 Corkscrew

Depth Range: approximately 230-295 feet (70-90 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: dense mesophotic coral gardens containing black corals, Alcyonacea (formerly gorgonian), and hard corals, sponge, and fish communities on numerous flat-topped features surrounded by rugged, vertical drop-offs; second largest concentration of hard bottom in the Pinnacles area, comprised of several large to small reefs with medium to high vertical profiles (15-50 feet relief), some with extensive, relatively flat reef tops, and rugose reef faces and marginal habitats; perimeter of the reef is comprised of low-relief hard bottom interspersed with a soft sediment veneer; shallowest sites among the seven proposed boundaries in the Pinnacles area, with the most abundant faunal communities; exhibited highest diversity and abundance of reef fish (40 fish taxa) in the Pinnacles area

Observed Impacts: derelict fishing gear (line), Deepwater Horizon oil and dispersant exposure and injury

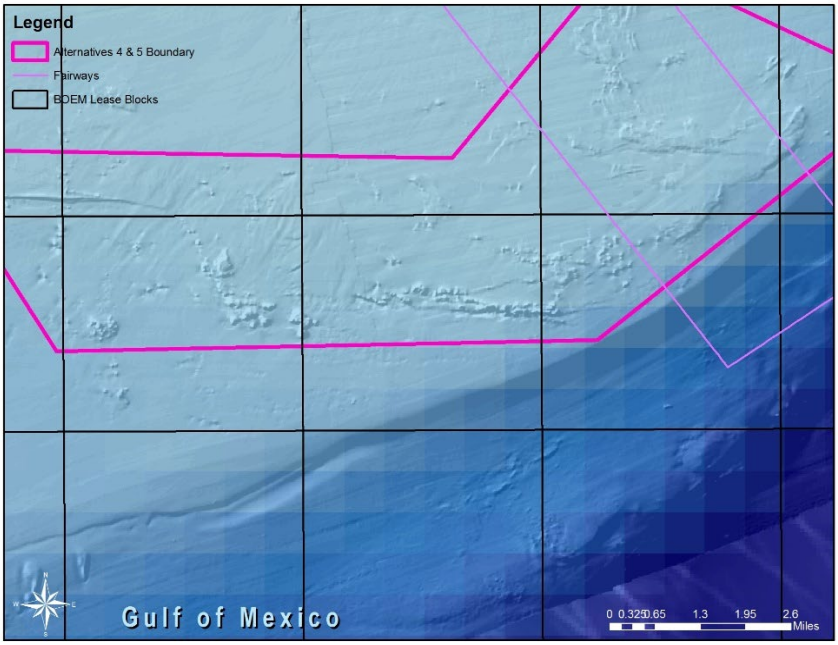


Figure D.88. Corkscrew boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.3.14 Far Tortuga

Depth Range: approximately 215-245 feet (66-75 meters)

Habitats Present: mesophotic coral habitats, soft bottom communities

Biological/Geological Characteristics: a large, gently sloping intermediate relief reef found on the easternmost edge of the Pinnacles area; replacing the common flat-top reef environment found throughout the area are scattered rock outcrops supporting fairly dense communities of small octocorals (*Bebryce* sp., orange and white Plexauridae), antipatharians, solitary corals and sponges; though fish numbers and taxa richness were low relative to other Pinnacles features, a variety of small reef fish were seen in association with antipatharian black coral and small sea fans

Observed Impacts: None

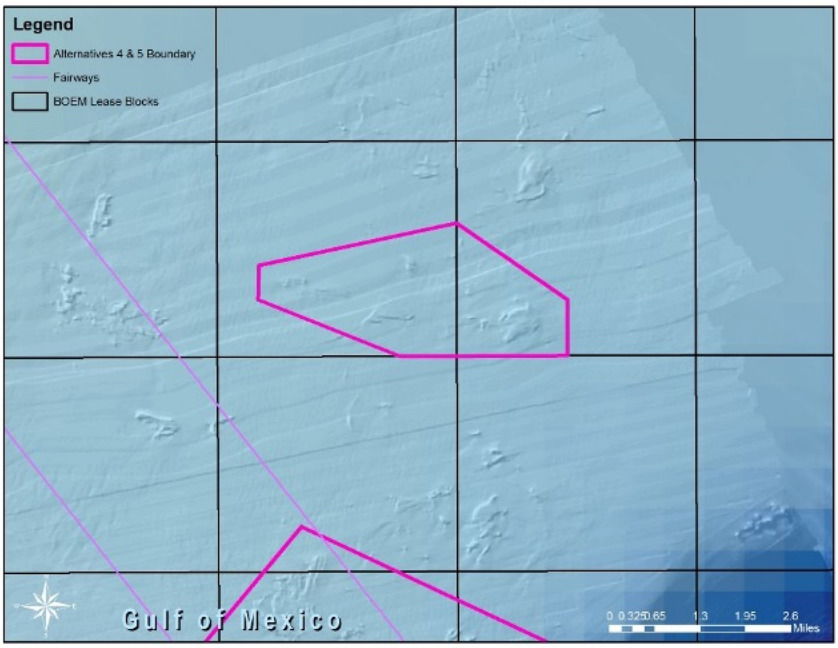


Figure D.89. Far Tortuga boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4 Continental Slope

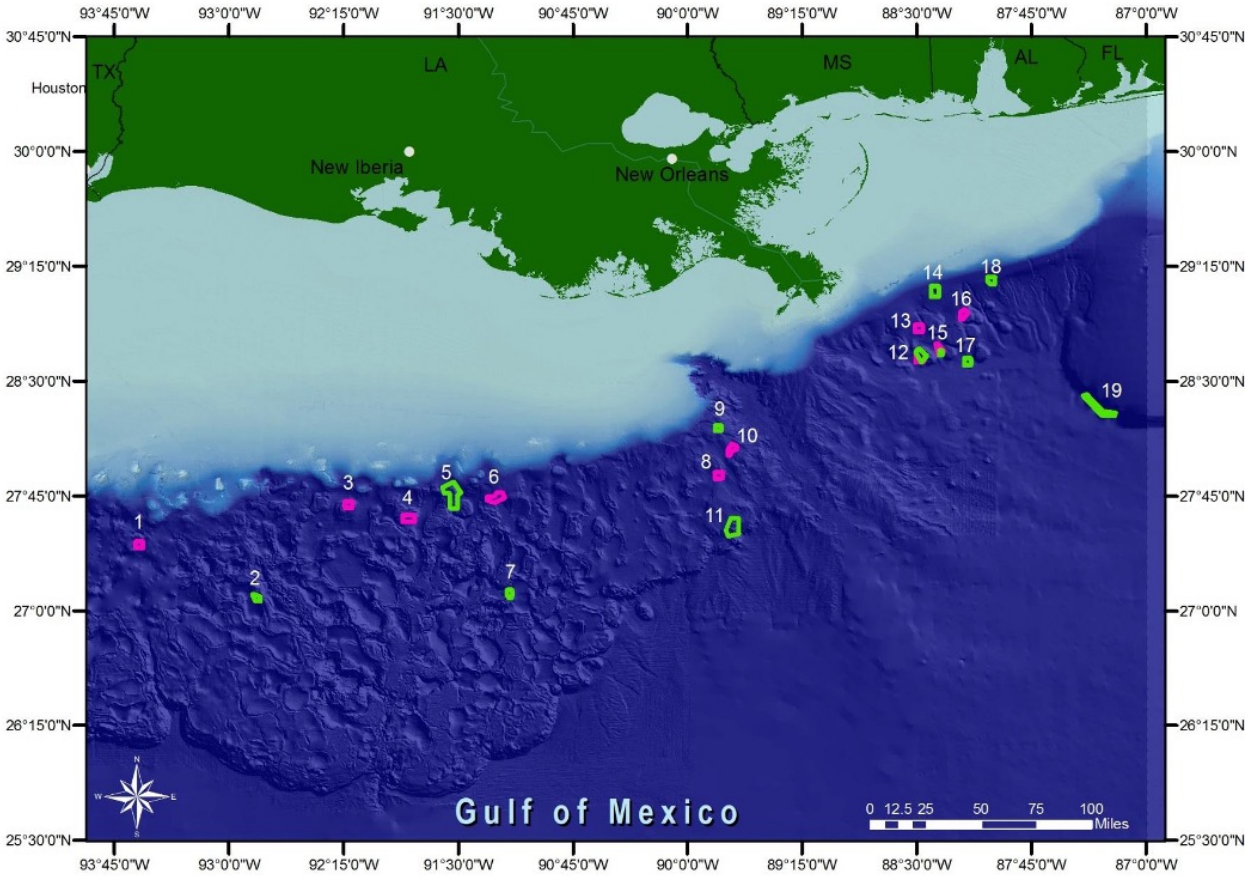


Figure D.90. Overview of the 11 primary deep coral ecosystem features encompassed by Alternative 4 (with proposed boundaries outlined in green) and eight additional features encompassed by the most comprehensive alternative (Alternative 5, with extended or additional boundaries outlined in magenta) in the context of the continental slope. The banks located in the continental slope subregion are: 1. Galvez/Frye Basins Ridge; 2. Hidalgo Basin Rim; 3. Tunica Mound; 4. Jeanerette Dome; 5. Assumption Dome; 6. Penchant Basin Rim; 7. St. Tammany Basin Rim; 8. Henderson Ridge Mid-South; 9. Henderson Ridge North; 10. Henderson Ridge Mid-North; 11. Henderson Ridge South; 12.Biloxi Dome; 13. Whiting Dome; 14. Viosca Knolls West; 15. Gloria Dome; 16. Horn Dome; 17. Dauphin Dome; 18. Viosca Knolls East; 19. DeSoto Canyon/West Florida Escarpment. Image: NOAA

D.4.1 Galvez/Frye Basins Ridge (GB535)

Depth Range: approximately 1,590-2,135 feet (485-651 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: hosts high octocoral diversity and has a low aragonite saturation state (important for monitoring climate change), yet hosts numerous small live *Lophelia pertusa* mounds

Observed Impacts: None

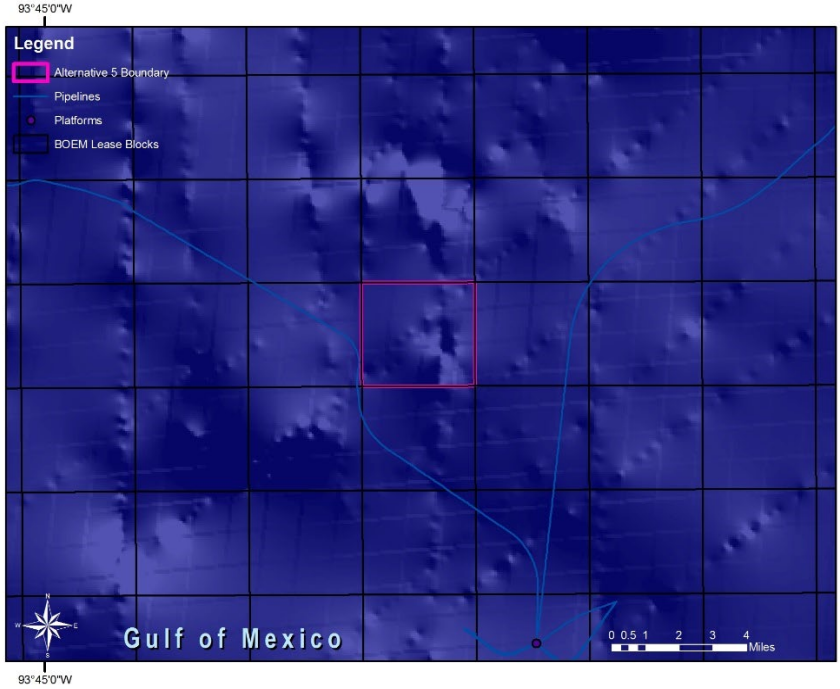


Figure D.91. Galvez/Frye Basins Ridge Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.2 Hidalgo Basin Rim (GB903)

Depth Range: approximately 3,445-4,230 feet (1,050-1,289 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: fractured carbonate pavement over shallow salt dome; at similar depth and geologically similar to the Henderson Ridge South site, Hidalgo Basin Rim has more active seepage including brine flows and "brine waterfalls" along with mussel beds and chemosynthetic tubeworms; the most extensive development of the bubble gum coral *Paragorgia* in the Gulf and is also the only know *Paragorgia*-dominated site in the Gulf; the genus *Paragorgia* has only been known from the Gulf since 2009, and this site was first discovered by the Okeanos Explorer in 2014

Observed Impacts: None

Figure D.92. Hidalgo Basin Rim Alternatives 4 & 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.3 Tunica Mound (GB299)

Depth Range: approximately 1,130-1,475 feet (344-450 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: a relatively shallow site among the deep coral sites evaluated, Tunica Mound hosts abundant large *Callogorgia americana* and *Leiopathes gaberrima*, the latter of which are likely quite old

Observed Impacts: None

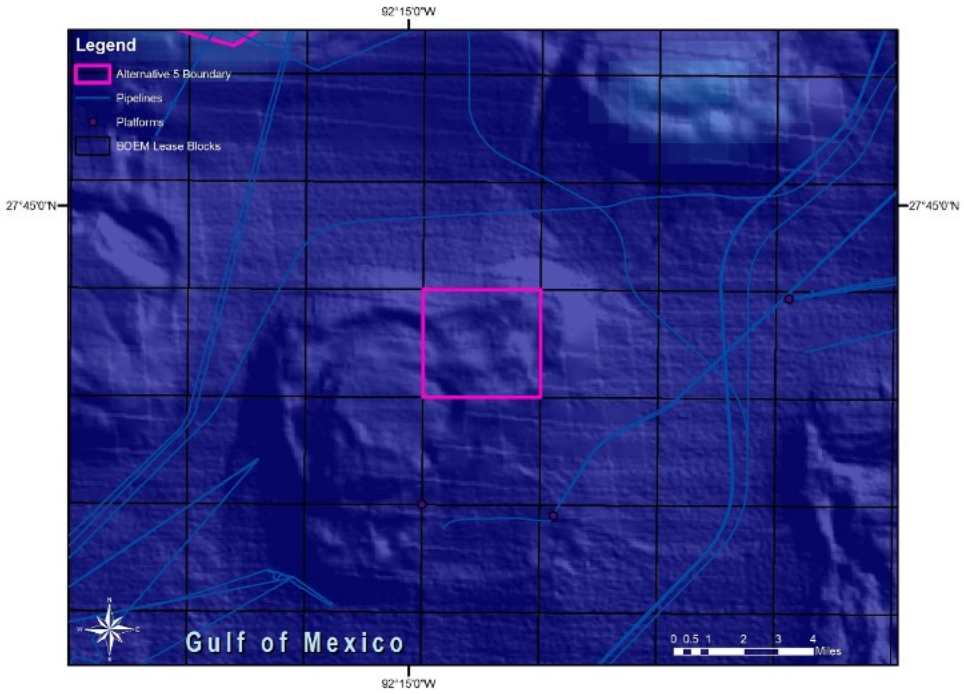


Figure D.93. Tunica Mound Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.4 Jeanerette Dome (GC354)

Depth Range: approximately 1,690-2,955 feet (515-901 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: highest octocoral diversity known from any site in its depth range; the site also has the lowest aragonite saturation state of any site hosting *Lophelia pertusa* known in the Gulf of Mexico, making it a key site for climate change monitoring

Observed Impacts: None

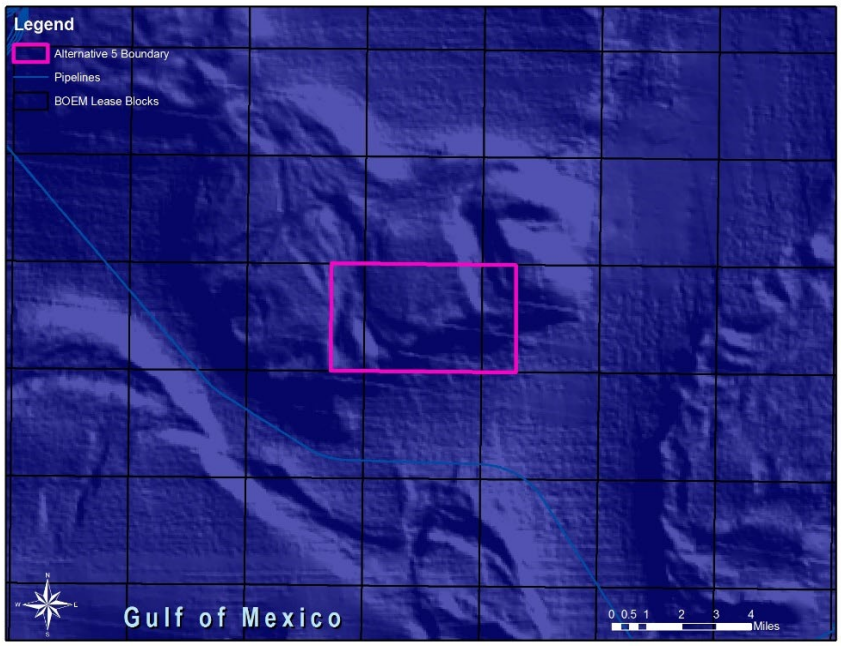


Figure D.94. Jeanerette Dome Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.5 Assumption Dome (GC140)

Depth Range: approximately 770-2,890 feet (235-881 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: extensive carbonate hard bottom consisting of large boulders and massive outcrops; very large *Leiopathes* black coral colonies (3-7 feet across), some of which are likely in excess of thousands of years old, as *Leiopathes* can grow to more than 1,600 years old in the Gulf of Mexico; Anthiinae fishes are closely associated with the large colonies, and can be seen nestled in large black coral branches; snowy grouper and boarfish are present; site of the shallowest known occurrence of seep tubeworms at approximately 950 feet

Observed Impacts: derelict fishing gear (line)

Figure D.95. Deep coral ecosystem at Assumption Dome. Photo: Brooks et al. 2013

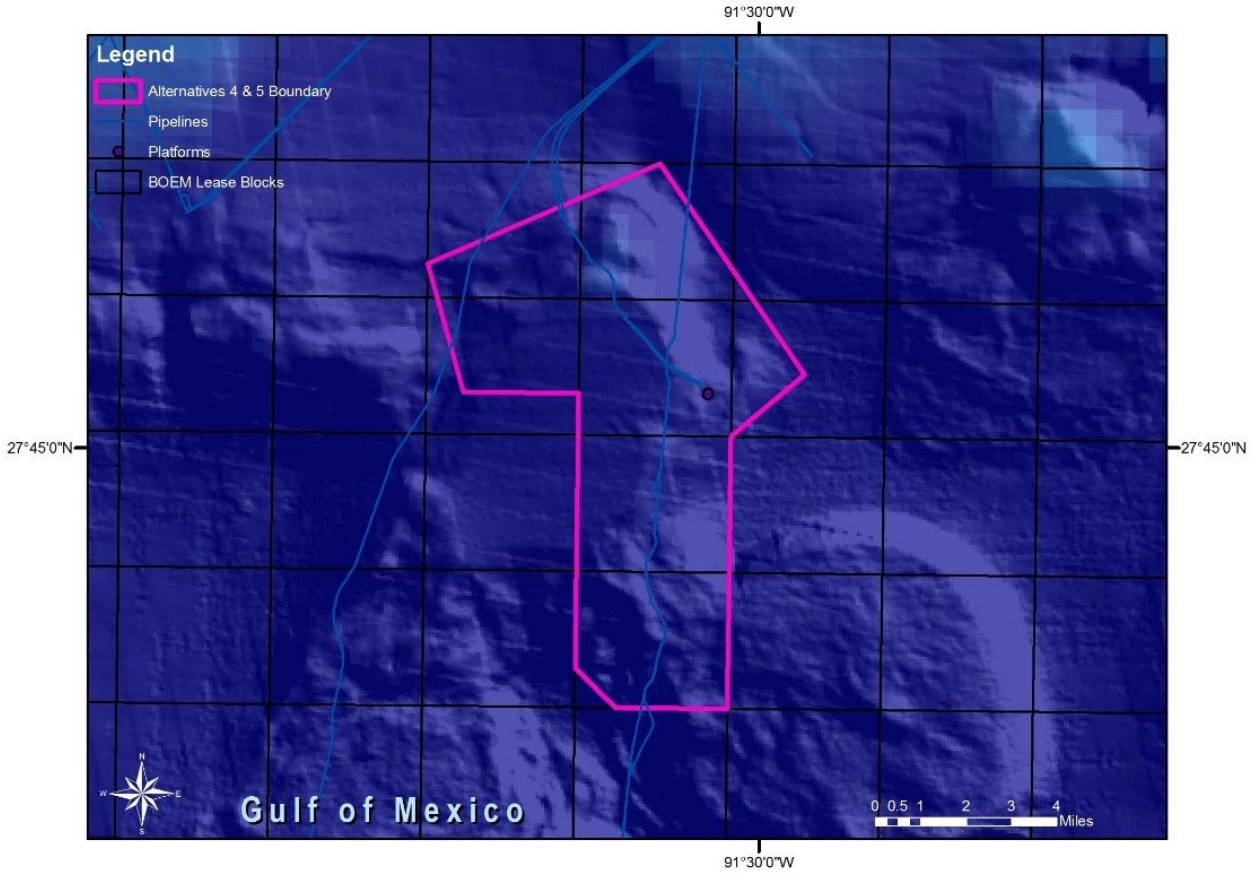


Figure D.96. Assumption Dome boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.6 Penchant Basin Rim (GC234)

Depth Range: approximately 1,475-2,705 feet (450-824 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: hosts one of the most spectacular seep macrofauna communities known in the Gulf of Mexico; includes the largest aggregation of tubeworms known in the Gulf of Mexico and additional areas spread over kilometers hosting numerous large spherical aggregations of very old tubeworms (over 500 individuals/ aggregation, with each individual over 6 feet in length and over 200 years old) as well as numerous seep mussel beds and areas with iceworms colonizing gas hydrates; areas with abundant large *Callogorgia delta* corals and an older ridge of (mostly dead) *Lophelia pertusa* to the west of the tubeworm site; very well mapped and has been extensively studied for nearly 30 years

Observed Impacts: None

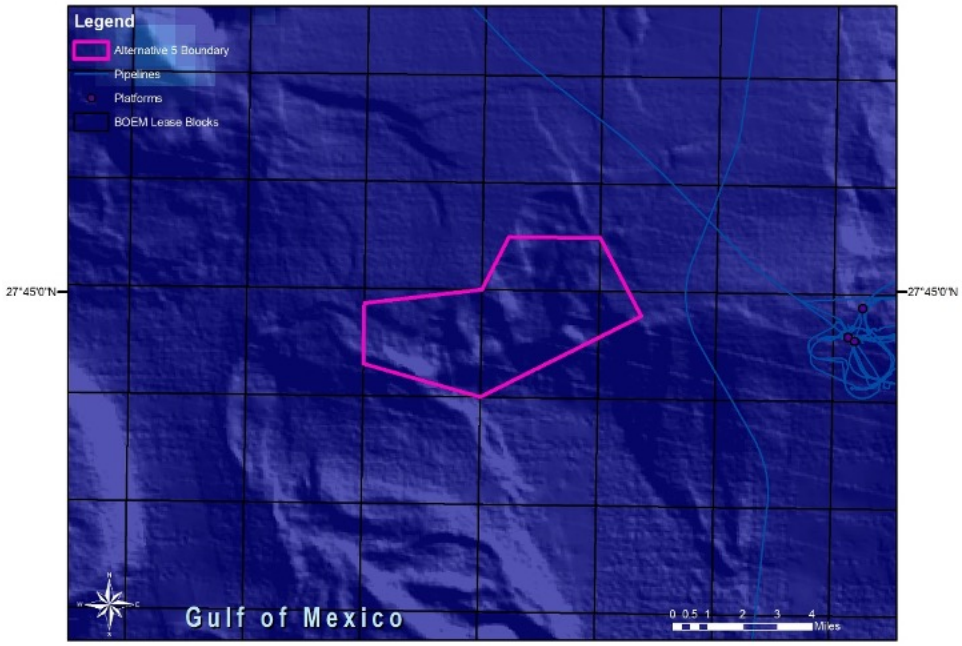


Figure D.97. Penchant Basin Rim Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.7 St. Tammany Basin Rim (GC852)

Depth Range: approximately 4,595-5,855 feet (1,401-1,785 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: relatively small area of high density and very diverse deepwater coral (approximately half an acre) in an area of exposed large carbonate boulders; the only known Gulf of Mexico site with the co-occurrence of the colonial hard corals *Enallopsammia, Madrepora,* and *Solenosmilia*; *Paramuricea biscaya* (the primary species of colonial coral known to have been impacted by the Deepwater Horizon oil spill) is also abundant at this site, which was not directly impacted by the Deepwater Horizon spill but is at same depth as sites impacted by the spill

Observed Impacts: None

Figure D.98. Deep coral ecosystem at St. Tammany Basin Rim. Photo: Brooks et al. 2013

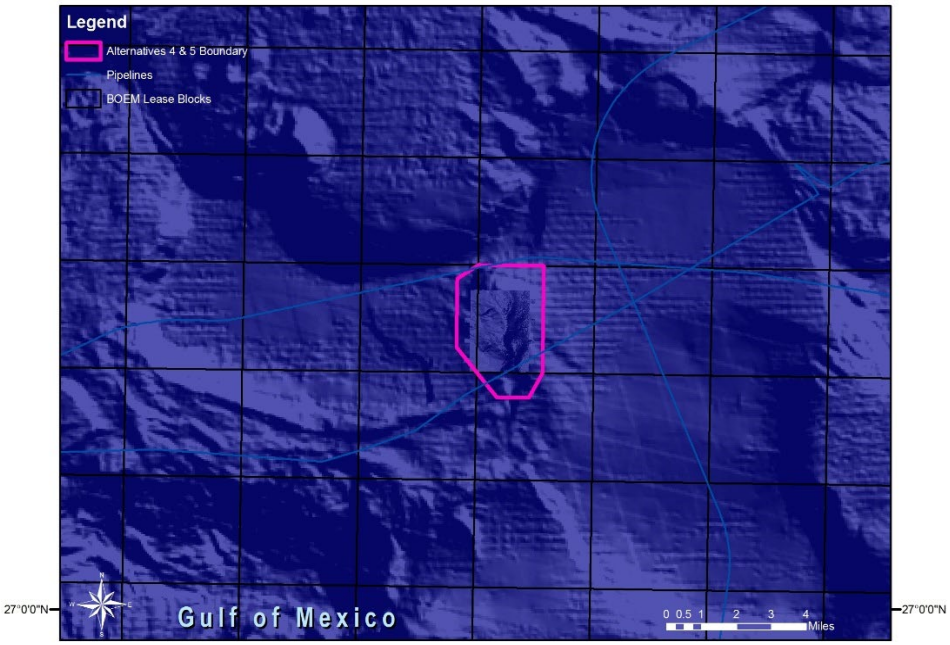


Figure D.99. St. Tammany Basin Rim boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.8 Henderson Ridge Mid-South (AT047)

Depth Range: approximately 2,475-3,295 feet (754-1,004 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: hosts several large mounds of *Madrepora* and numerous red crabs

Observed Impacts: None

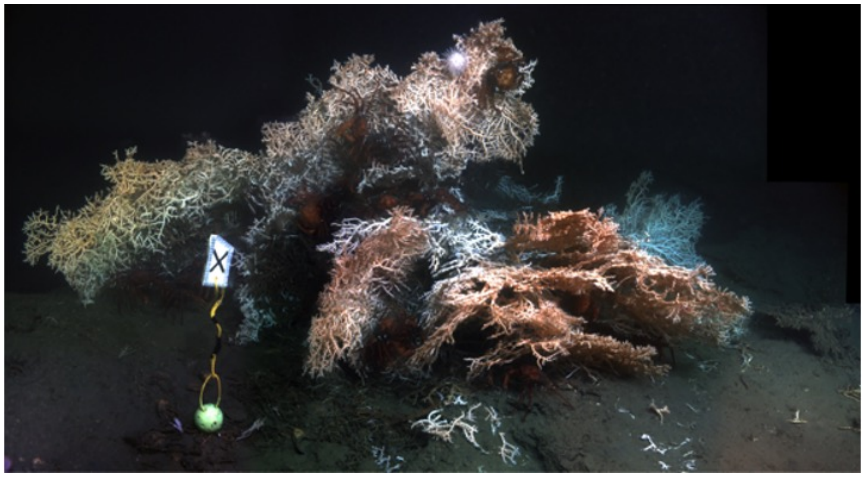


Figure D.100. Deep coral ecosystem at Henderson Ridge Mid-South. Photo: ECOGIG/Ocean Exploration Trust

Figure D.101. Henderson Ridge Mid-South Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.9 Henderson Ridge North (MC751)

Depth Range: approximately 1,410-1,655 feet (430-504 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: unique canyon feature with a high percentage of live *Lophelia pertusa* forming small mounds at the head of a canyon at approximately 1,475 feet (450 meters) depth, extending to the rim of the canyon to the east; a high diversity of octocorals, including relatively rare bubblegum octocorals; in some areas coral density and diversity is quite high and in other areas corals spread over a relatively large extent; location is unique in that in some areas corals are co-existing in very close spatial proximity to seeps, with living *L. pertusa* attached to living tubeworms; site is well mapped and imaged, with a new area discovered in 2014; video of the site is accessible online[10]

Observed Impacts: oil and gas-industry related impacts observed

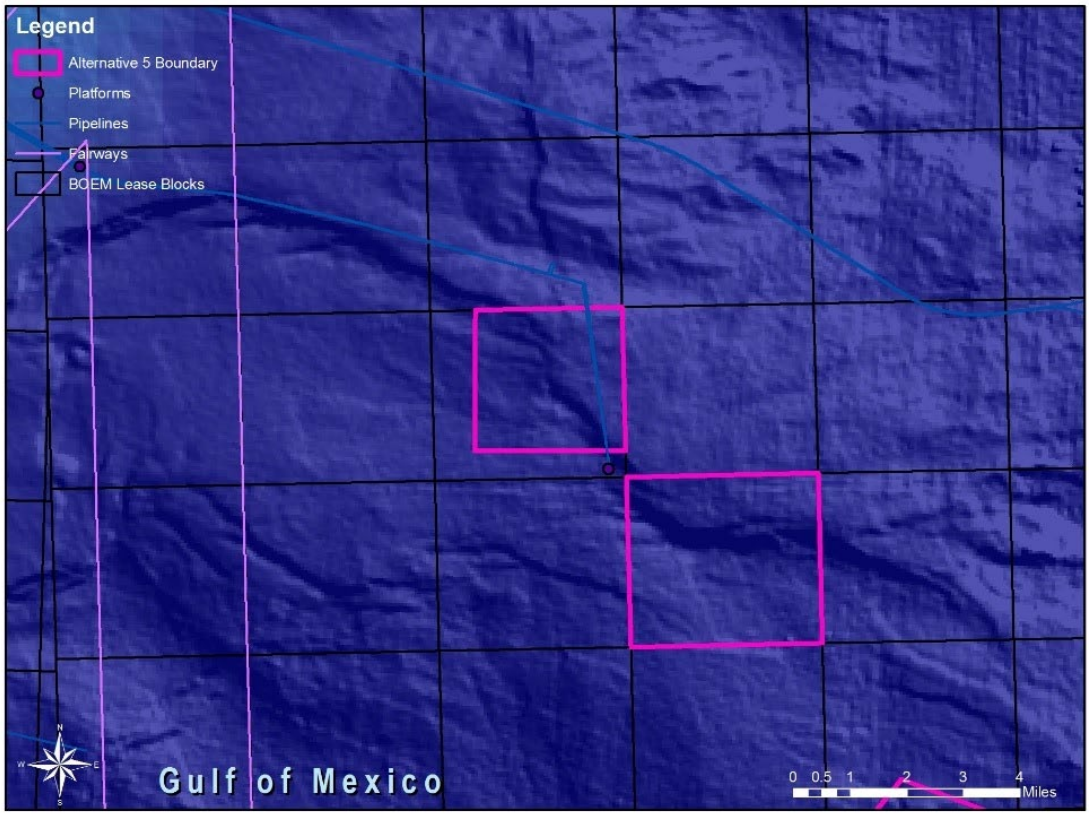


Figure D.102. Henderson Ridge North boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

[10] https://www.youtube.com/watch?v=CyMSvhx_r0A

D.4.10 Henderson Ridge Mid-North (MC885)

Depth Range: approximately 2,050-2,360 feet (625-719 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: chain catshark egg cases have been observed attached to numerous corals on every visit since their discovery in 2003 at this apparent catshark breeding site; site has the most extensive development of *Callogorgia delta* of any known site in the Gulf of Mexico, and seep communities are interspersed with aggregations of *Lophelia pertusa* and *Callogorgia delta* at this site; overlapping *Lophelia*, *Callogorgia*, and seep communities is rarely documented in the Gulf of Mexico

Observed Impacts: None

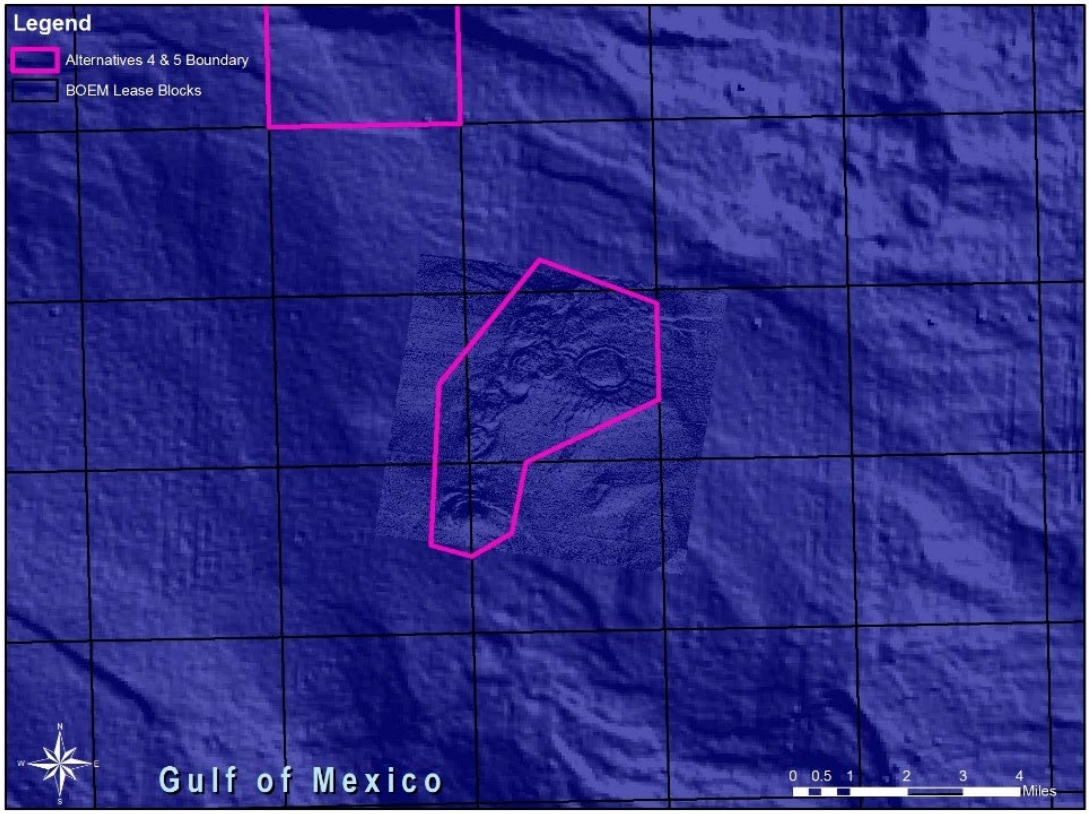


Figure D.103. Henderson Ridge Mid-North Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.11 Henderson Ridge South (AT357)

Depth Range: approximately 3,410-5,085 feet (1,039-1,550 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: substrate at this site is a fractured carbonate pavement over a shallow salt dome and there is active seepage in parts of this site; largest deep water (i.e., >3,000 foot or 914 meters depth) coral site currently known in the Gulf of Mexico, with extensive development of both *Paramuricea* sp and *Madrepora* and the fauna associated with these corals; size of the *Paramuricea* colonies (in excess of 6-10 feet) and diversity of visible and photogenic macrofauna at this site is spectacular; similar geology to the Hidalgo Basin Rim site, but with less seepage

Observed Impacts: None

Figure D.104. Deep coral ecosystem at Henderson Ridge South. Photo: Schmidt Ocean Institute/Etnoyer

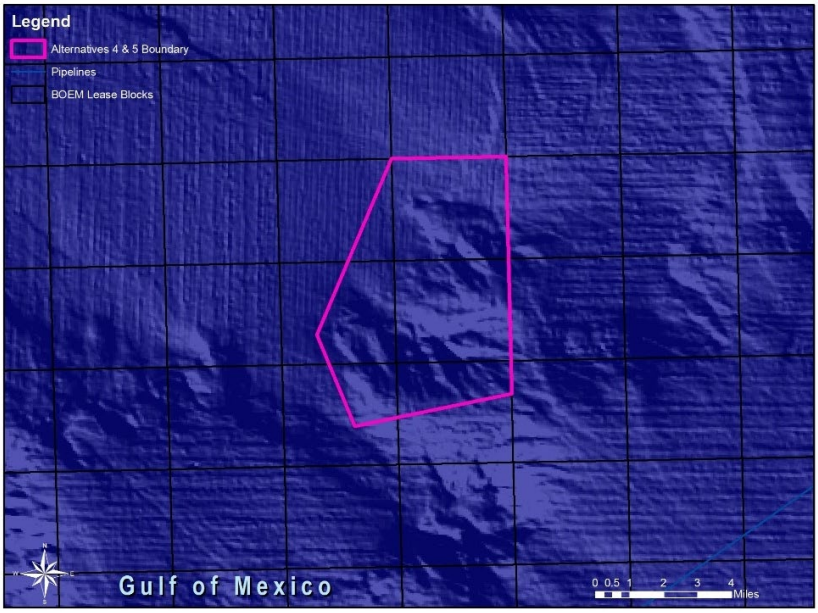


Figure D.105. Henderson Ridge South boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.12 Biloxi Dome (MC294 & MC338)

Depth Range: approximately 4,330-5,365 feet (1,320-1,635 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: first site discovered to have been impacted by the Deepwater Horizon oil spill (White et al., 2012) and the site that has been monitored the most extensively since then (Hsing et al., 2013); about 50 colonial corals are known at this site and are limited to an area of about 20 x 20 m; although impacted, the corals are showing strong signs of recovery here, and continuing to follow recovery at this site is important to better understand the impacts of oil spills on deep water corals; Alternative 5 boundary proposal encompasses the wrecks of the *Robert. E. Lee* and the *U-166*

Observed Impacts: oil spill and response impacts

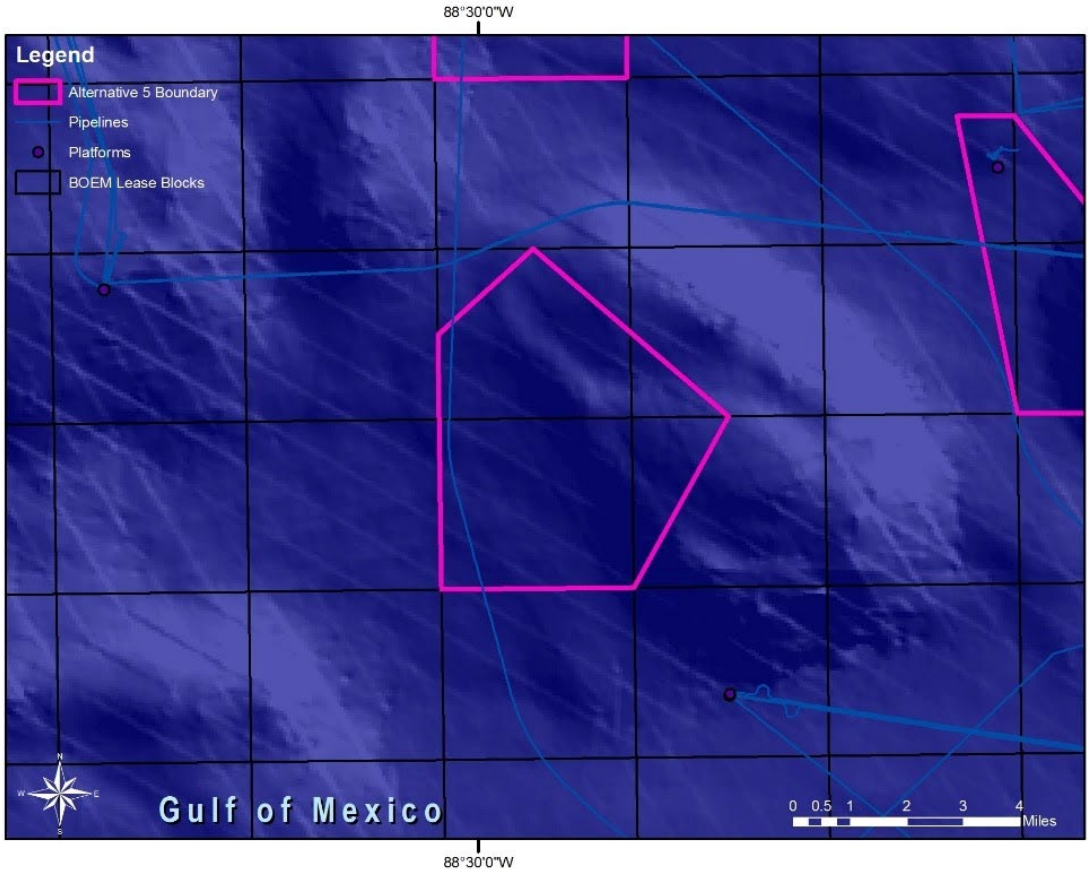


Figure D.106. Biloxi Dome Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.13 Whiting Dome (MC118)

Depth Range: approximately 2,770-3,740 feet (844-1,140 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: "hydrate observatory" site that has been monitored heavily through NOAA and other support to a consortium led by University of Mississippi and University of Southern Mississippi; in addition to very heavy seepage and exposed hydrates there is a large area with large *Paramuricea* spp. corals hosting the shallowest know *P. biscaya*; several large and old mounds of the hard coral *Madrepora* are present at this very well mapped and imaged site

Observed Impacts: None

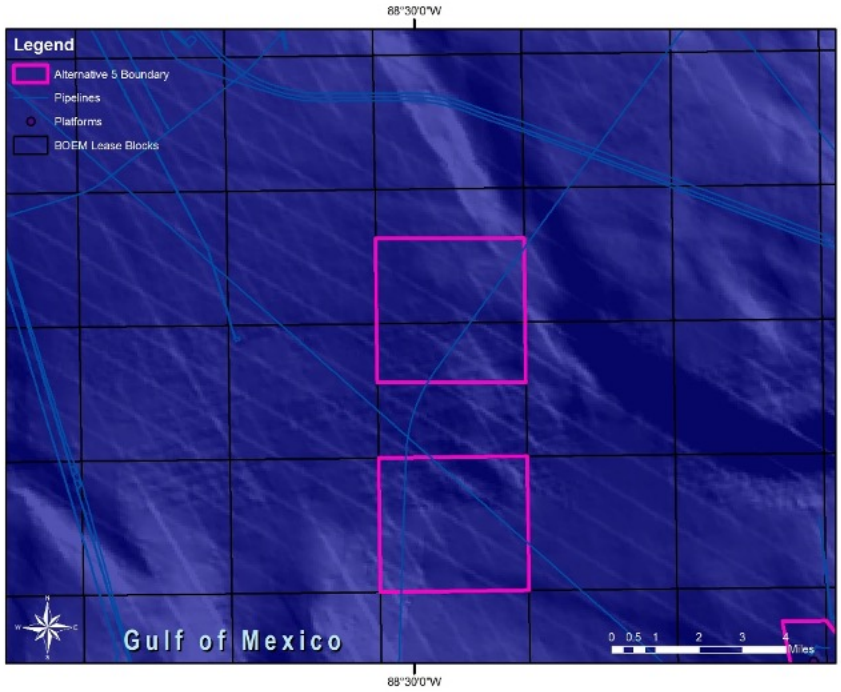


Figure D.107. Whiting Dome Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.14 Viosca Knolls West (VK862 & VK906)

Depth Range: approximately 1,040-1,900 feet (317-579 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: only known deep coral mounds (one large mound and 2 smaller mounds) in the Gulf of Mexico, composed entirely of coral framework (living and dead) and coral rubble, rising as much as 82 feet (25 meters) from the seafloor and over 300,000 years old; corals (mainly *Lophelia pertusa* and *Leiopathes glaberrima*) present in very high density; distinct, re-occurring alkalinity anomaly may be related to a unique process of subsurface seepage and skeletal dissolution; parts of this site are extremely well mapped and imaged; another area, extending from the deep coral mounds, is composed of a long ridge system with many soft corals (e.g., abundant bamboo corals, large antipatharian black corals) along the edge of a narrow canyon-like feature; barrelfishes, anthias, and squat lobsters have been commonly observed in association with the black corals; site includes a carbonate mound that hosts a moderate diversity of octocorals and very large (and old) black corals on a rocky substrate dominated by large anemones; hundreds of spotted grouper present, suggesting it may be an important feeding and/or breeding ground for this fish species

Observed Impacts: derelict fishing gear (line)

Figure D.108. Deep coral ecosystems at Viosca Knolls West. Photo: Brooks et al. 2013

Figure D.109. Deep coral ecosystems at Viosca Knolls West. Photo: Brooks et al. 2013

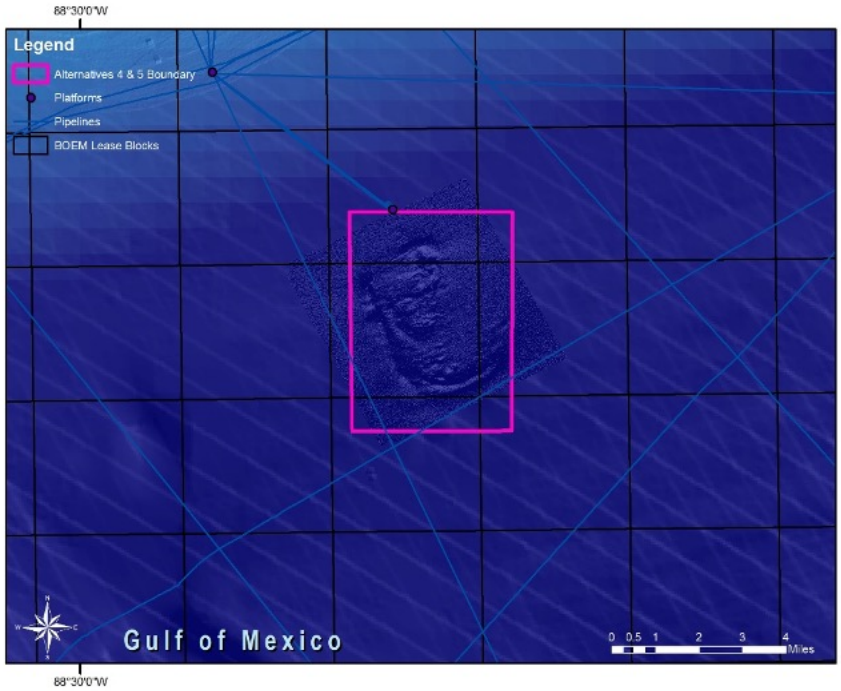


Figure D.110. Viosca Knolls West boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.15 Gloria Dome (MC297 & MC252)

Depth Range: approximately 5,185 feet (1,580 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: closer to the Deepwater Horizon well than the Biloxi Dome site, this site was also impacted heavily; it is a larger site (roughly 3 acres) with more corals and has been monitored yearly since its discovery in 2011 (Fisher et al. 2014a, 2014b); like at the Biloxi Dome site, some of the corals here did not evidence visible signs of impact and many others are showing signs of recovery; important for monitoring to understand the long-term impacts of an oil spill on deep water corals and for their recovery; Alternative 5 boundary proposal encompasses the wreck of the Deepwater Horizon drilling rig, providing opportunities for survey transects to be monitored between the wellhead to the deep coral site at Gloria Dome

Observed Impacts: oil spill and response impacts

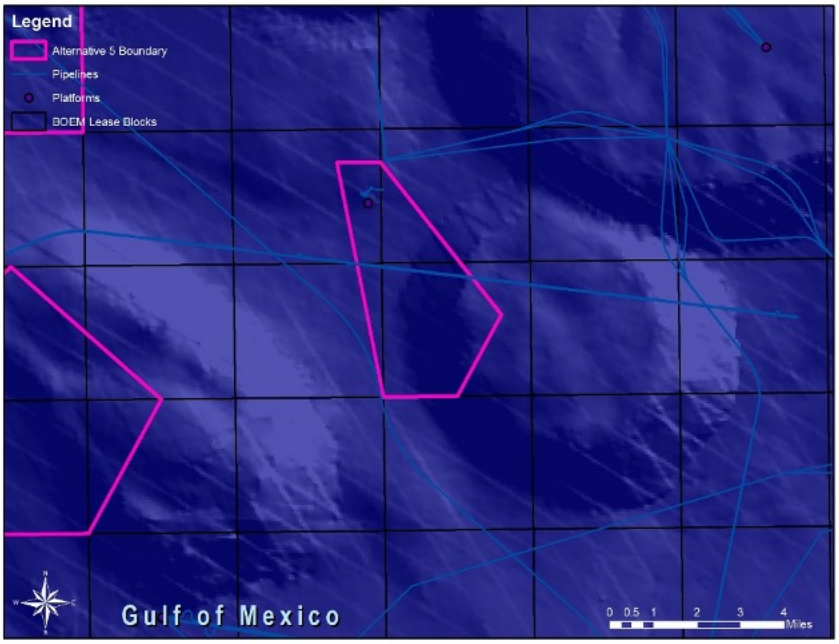


Figure D.111. Gloria Dome Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.16 Horn Dome (MC036)

Depth Range: approximately 3,410-4,115 feet (1,039-1,254 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: only 25 kilometers from the Deepwater Horizon well at a depth where impact has been observed at other sites, yet this site hosts a pristine population of healthy (un-impacted) *Paramuricea* as well as several seep communities

Observed Impacts: None

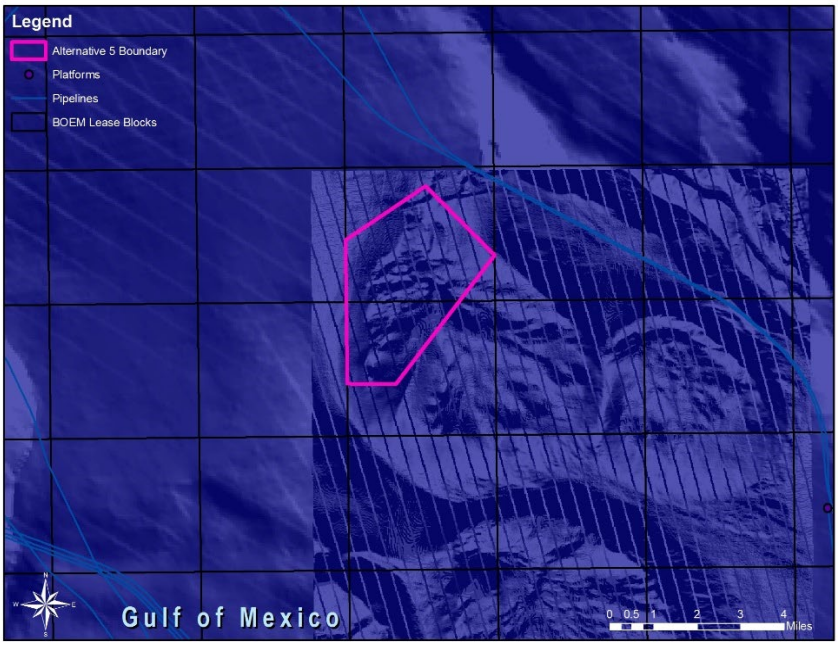


Figure D.112. Horn Dome Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

D.4.17 Dauphin Dome (MC344)

Depth Range: approximately 6,035-6,695 feet (1,840-2,041 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: further from the site of the Deepwater Horizon spill than the Biloxi Dome and Gloria Dome sites, the level of impact to coral at this site is less than at those sites; corals here are generally smaller and more spread out (lower density); this site is equally important for monitoring to understand the long-term impacts of oil spills on deep water corals

Observed Impacts: oil spill and response impacts

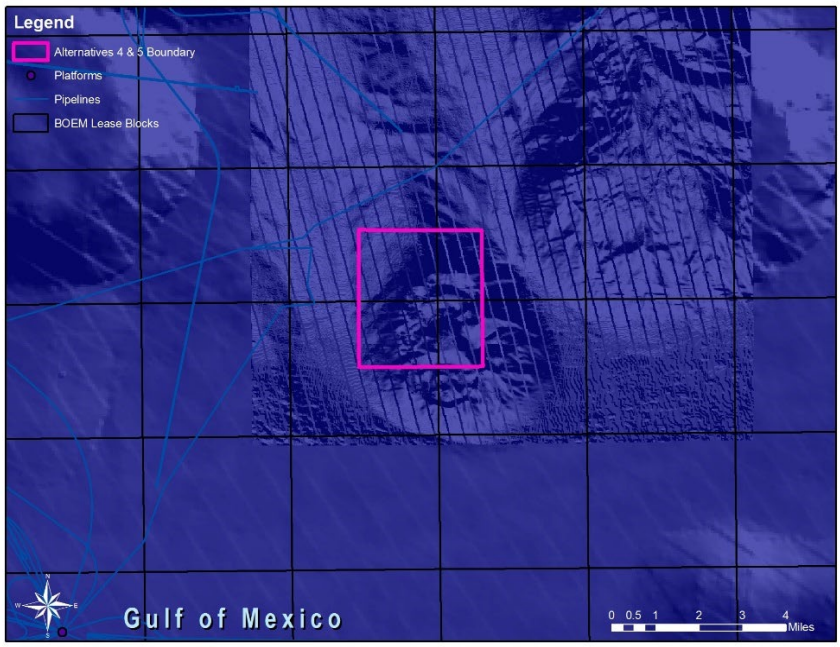


Figure D.113. Dauphin Dome boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.18 Viosca Knolls East (VK826)

Depth Range: approximately 1,380-2,690 feet (421-820 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: largest, most extensive *Lophelia pertusa* site known to occur in northern Gulf of Mexico, with high densities of live coral in many areas of the site; abundant *Callogorgia delta* and black corals (two color-morphs of *Leiopathes glaberrima*) present in high densities in many areas; aggregations of seep tubeworms that are at least 200 years old; the site has been visited by submersibles and ROVs more than any other coral site in the Gulf of Mexico over the past 20 years, and significant portions are extremely well mapped and photographed

Observed Impacts: oil and gas industry operations impacts

Figure D.114. Deep coral ecosystem at Viosca Knolls East. Photo: Brooks et al. 2013

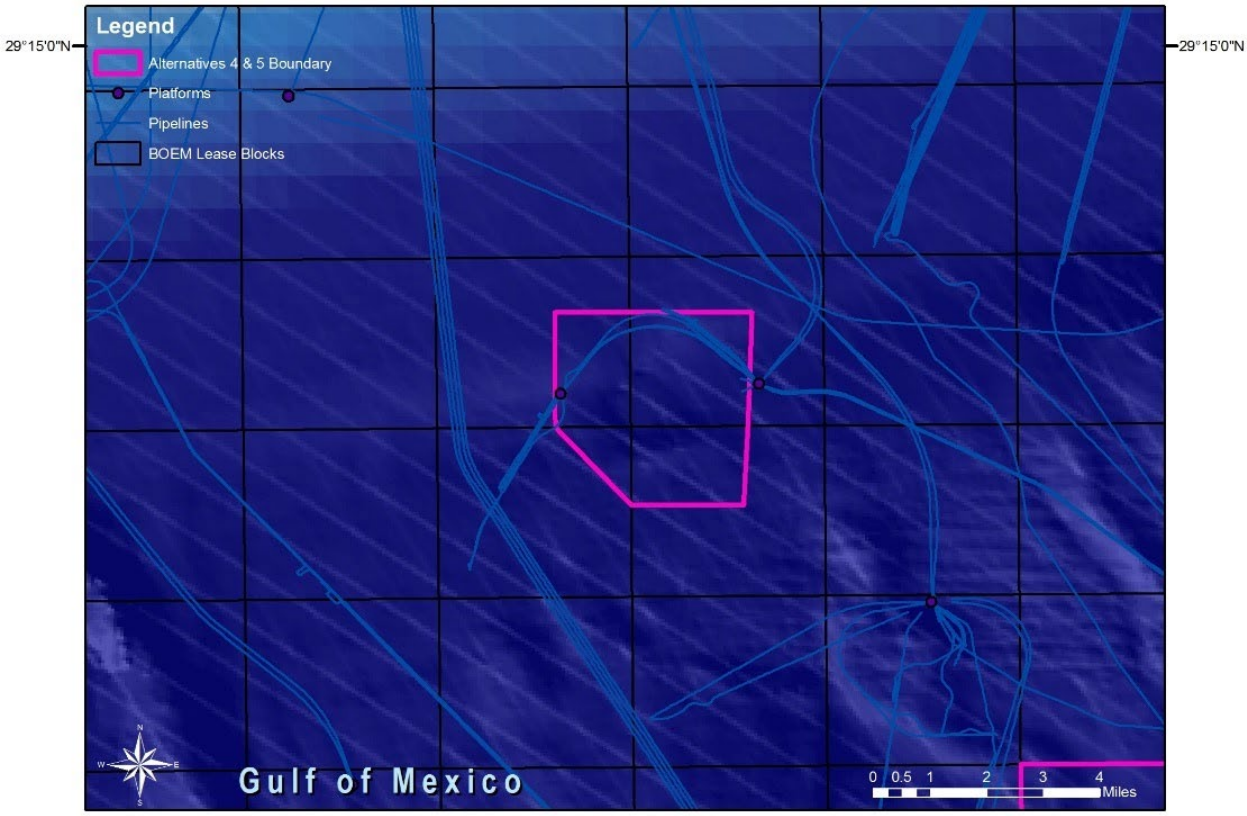


Figure D.115. Viosca Knolls East boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

D.4.19 DeSoto Canyon/West Florida Escarpment

Depth Range: approximately 4,755-8,775 feet (1,455-2,675 meters)

Habitats Present: deep coral ecosystems, soft bottom communities

Biological/Geological Characteristics: on the north end of the West Florida Escarpment, most of which is likely home to extensive coral development, but most of which remains unexplored; there is a very high diversity of corals, including octocorals, documented on the escarpment in this region, including the deepest documented site with abundant corals in the Gulf of Mexico; at the base of the vertical wall are seeps that harbor a unique species of seep mussel, only known from this site (which suggests oceanographic isolation and the possibility of other unique species and/or isolated populations on this region of the Florida Escarpment)

Observed Impacts: derelict fishing gear (trawl nets, line), anchors

Figure D.116. Deep coral ecosystem at DeSoto Canyon/West Florida Escarpment. Photo: NOAA

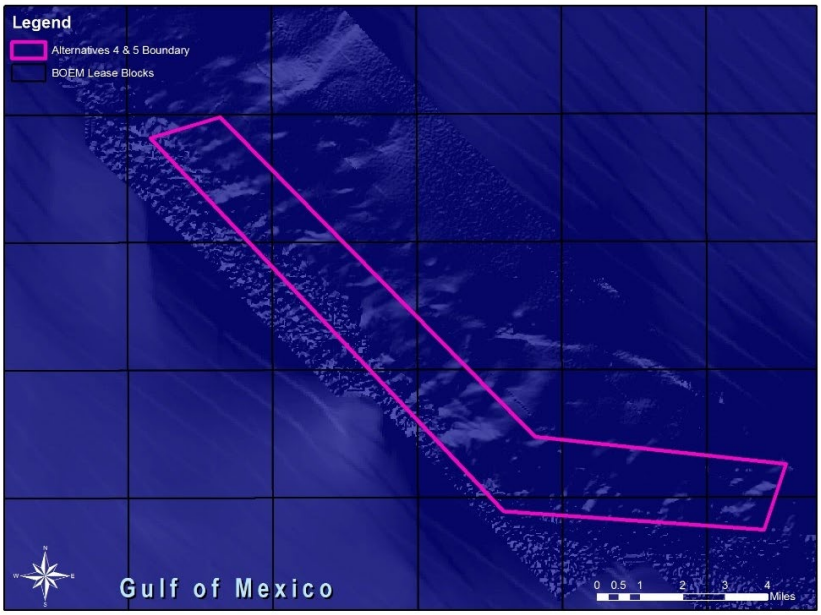


Figure D.117. DeSoto Canyon/West Florida Escarpment boundary alternatives 4 & 5, existing regulatory zones, and infrastructure. Image: NOAA

Appendix E
Site Profiles of Nationally Significant Cultural and Historic Resources Included in Alternative 5

E.1 Purpose

This appendix provides a brief descriptive overview of each of the 10 shipwrecks included in Alternative 5 and evaluated in this FEIS. The site descriptions below are ordered generally from west to east across the study area of the north central Gulf of Mexico. These shipwrecks reside in the northwestern Gulf of Mexico and continental slope subregions.

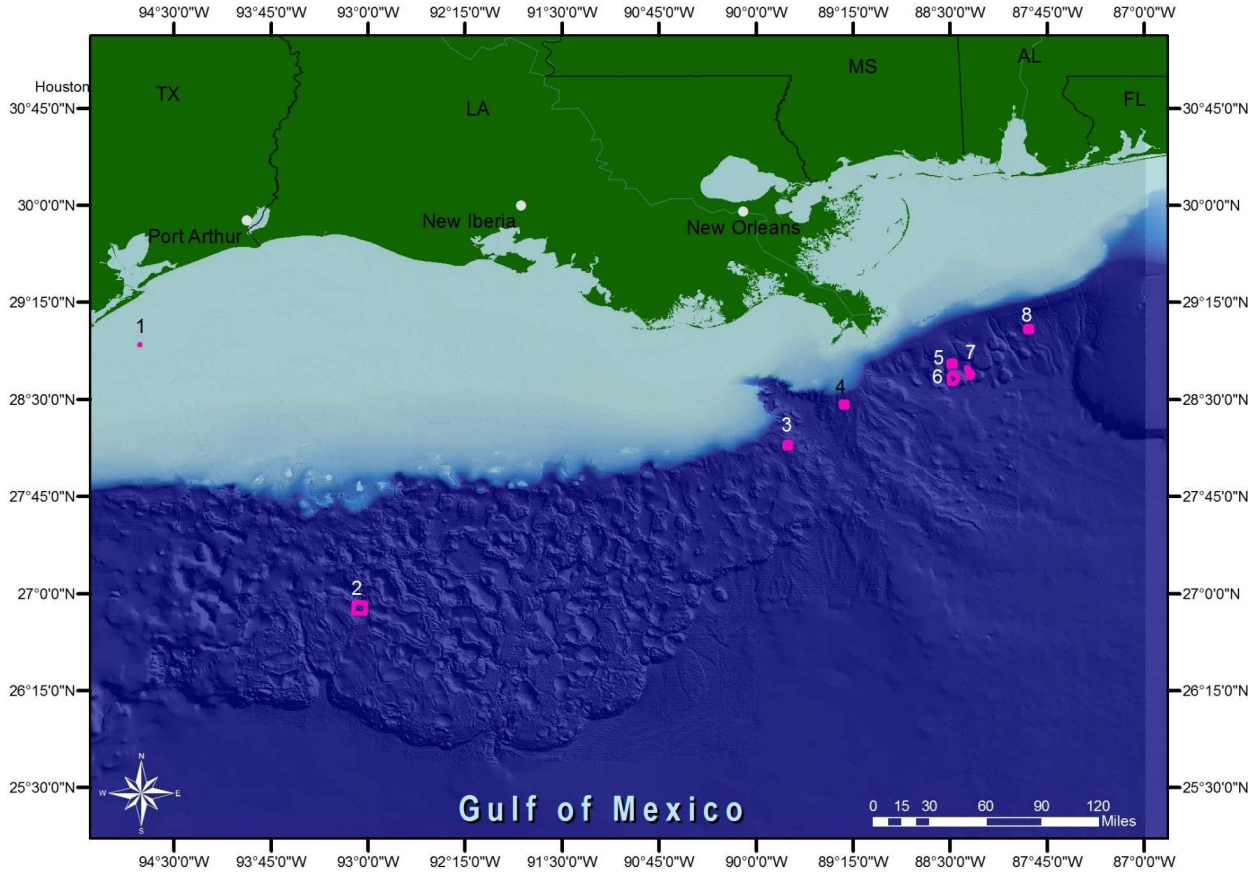


Figure E.1. Overview of the 10 shipwrecks encompassed by the eight proposed boundaries presented in Alternative 5, in the context of the north central Gulf of Mexico. These shipwrecks are contained in the northwestern Gulf of Mexico and continental slope subregions. 1. USS *Hatteras*; 2. Monterrey wrecks; 3. *GulfOil*; 4. *GulfPenn*; 5. Mardi Gras wreck; 6. *R. E. Lee* & U-*166*; 7. *Deepwater Horizon*; 8. *Anona*. Image: NOAA

E.2 USS Hatteras

Bottom Depth: approximately 57 feet (17 meters)

Approximately 20 miles south of Galveston, TX, the wreck of USS *Hatteras* is largely undisturbed. Listed in the National Register of Historic Places (NHRP) and a Texas State Landmark, *Hatteras* is a nationally significant war grave and archaeological site with strong local ties to Galveston and Texas. It is one of many historic shipwrecks that lie in the extended maritime cultural landscape off the coast of Texas' historically significant port of Galveston, part of the greater Houston region, of which is an ongoing and nationally significant hub of maritime economic activity.

In early January of 1863 the USS *Hatteras,* as part of Rear Admiral David Farragut's West Gulf Blockading Squadron, was stationed off Galveston during the Union bombardment of the city. Galveston recently had been recaptured by Confederate forces at the Battle of Galveston on January 1, 1863. When the 210-foot (64 meter) steam warship USS *Hatteras* ventured out in the Gulf in pursuit of an unknown vessel on January 11, 1863 its captain and crew did not anticipate the mark it would make on history that night or foresee its influence on protective legislation for historic shipwrecks more than 100 years later. *Hatteras* approached the unidentified steamship only to discover it was the famous Confederate commerce raider CSS *Alabama*. Following a brief exchange of cannon fire, *Hatteras* was damaged and sank in less than 15 minutes with the loss of two lives. This was the only naval battle during the Civil War to occur offshore in the Gulf of Mexico and the only engagement resulting in the loss of a Union warship at sea throughout the war. The discovery and early salvage attempt by Dr. Paul Cloutier, a Rice University physics professor, in 1976 was the first major challenge to U.S. ownership of its sunken military properties. The landmark court case inexorably established the government's claim on its historic shipwrecks.

The wreck of *Hatteras* is in federal waters and its ownership continues to rest with the U.S. Navy. It lies on the navigation track to the Flower Garden Banks National Marine Sanctuary (FGBNMS) from the FGBNMS offices in Galveston, TX. When rediscovered decades ago, the wreck lay largely buried by bottom sediments, which sealed it like a time capsule. Unauthorized digging into the wreck in the 1970s recovered a handful of well-preserved artifacts, including the ship's builder's plate, and led to a lawsuit in which the federal government litigated and the court stopped what would have been private salvage that the U.S. Navy did not desire.

Since then, the Minerals Management Service (MMS), now the Bureau of Ocean Energy Management (BOEM), working first with the Texas Antiquities Committee (later the Texas Historical Commission [THC]), the University of Western Florida, and most recently with a private cultural resources firm, Tesla Offshore LLC of Prairieville, Louisiana, has visited the site and documented what protrudes above the bottom while deploying sub-bottom profiling equipment to delineate what lies buried. Water conditions are such that visibility is limited; and photographs of the wreck are rare, close-up views.

A 1995 account of the THC and MMS (now BOEM) work on the site noted that:

> "little of the wreck is exposed above the sand. Paddlewheel hubs on both sides of the ship and some parts of the steam engine rise partially above the sand bottom. The only other

> remains showing above the bottom in 1992 and 1993 were a very small section of encrusted iron near the bow which was tentatively identified on the assumption that it was located forward of the paddlewheels and on its orientation and distance from other exposed remains. In 1994, the bow wreckage was buried."

Within the last few years, however, the wreck, as documented by Tesla Offshore LLC, BOEM, and the University of Western Florida, is more substantially exposed than it was in 1995. Recent hurricanes (such as Hurricane Ike in 2008) and storm activity on the Texas coast has removed some of the sediment and sand that once buried the USS *Hatteras*, revealing more of the ship. A more extensive site map was drawn in 2010, showing a dramatic change in the visible nature of the vessel's remains from the 1995 map.

In 2012, a coalition of sponsors and partners including NOAA, Bureau of Safety and Environmental Enforcement (BSEE), BOEM, the Texas Historical Commission, Tesla Offshore LLD, and the U.S. Navy's History and Heritage Command, as well as OceanGate Foundation and Teledyne BlueView, collected high resolution 3-D acoustic multibeam scanning sonar imagery of the wrecksite.

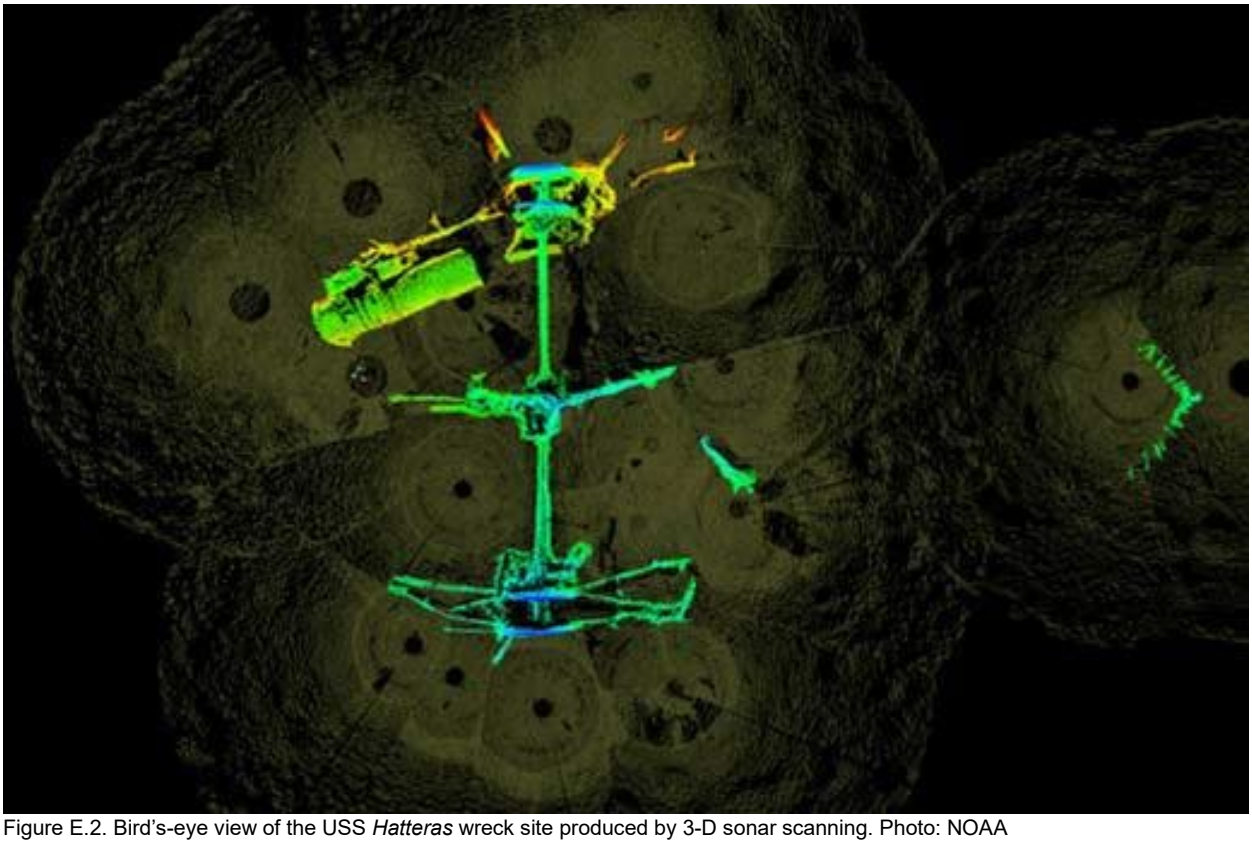


Figure E.2. Bird's-eye view of the USS *Hatteras* wreck site produced by 3-D sonar scanning. Photo: NOAA

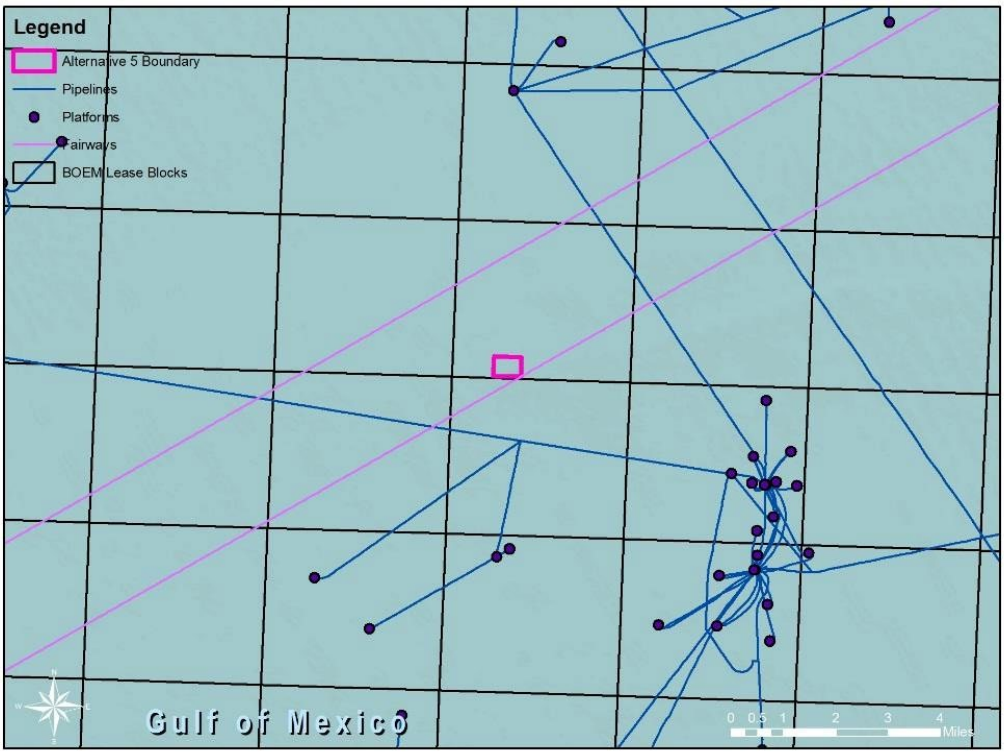


Figure E.3. USS *Hatteras* Alternative 5 boundary, existing regulatory zones, and infrastructure. Image: NOAA

E.3 "Monterrey" Wrecks

Bottom Depth: approximately 4,363 feet (1,330 meters)

In April 2012, the NOA) ship *Okeanos Explorer* conducted the first reconnaissance of a shipwreck site as part of an interdisciplinary exploration mission focusing on deepwater hard-bottom habitat, naturally occurring gas seeps, and potential shipwrecks in the Gulf of Mexico (NOAA 2012). First identified as a side scan sonar target in 2011, the brief remotely operated vehicle (ROV) dive discovered a shipwreck that appears to be an undisturbed, early 19th century, wooden-hulled, copper-clad, sailing vessel containing artillery, firearms, navigation instruments, cooking and food storage items, medicines, and personal artifacts.

The sonar target first came to light when Shell Oil notified BOEM and BSEE that a side scan sonar target resembling a shipwreck had been found in their lease area 90 miles south of FGBNMS. The target imaged in the sonar data collected by Fugro Geosciences revealed a tightly contained site with a sharp hull-formed outline measuring approximately 84 feet long by 26 feet wide (26 x 8 meters) with indications off one beam of what were thought to be the remains of two masts. This discovery is one of the more significant shipwreck sites discovered in the Gulf of Mexico to date because of its degree of preservation from a critical period in history in which new nations were forming at the end of the Colonial era and the Gulf was opening to global trade. As it has not yet been identified, the wreck is referred to as the "Monterrey Shipwreck" after Shell's name for their proposed development.

In a partnership between the Meadows Center for Water and the Environment at Texas State University and the Ocean Exploration Trust, a team of archaeologists and other scientists from NOAA's Office of Ocean Exploration and Research and ONMS, BOEM, BSEE, and the Texas Historical Commission returned to the site in July 2013 for detailed documentation. The expedition recovered a small number of artifacts in order to determine the historical and socio-cultural context within which it operated and, hopefully, to identify the shipwreck. The goal of the project was to systematically study the shipwreck through in-depth documentation, including mapping the site using ROV technology. In addition, the expedition recovered 60 diagnostic artifacts for conservation, analysis, exhibition, future study, and public outreach. To accomplish this complex operation, the team worked on board the research vessel E/V *Nautilus* stationed at the surface of the water, 4,300 feet (1,320 meters) over the site. After the mapping and documentation of the Monterrey wreck was completed and the artifacts were recovered, *Nautilus* navigated to two other potential wreck sites also identified by the Shell survey.

The targets were determined to not only be other shipwrecks, but also to be vessels likely associated with the first wreck. Now known as Monterrey A, B and C, these three vessels appear to be a privateer (vessel A), or a pirate vessel with two ships, possibly prizes captured by the first vessel. All three vessels, sharing common characteristics in the form of the artifacts seen on board, appear to have been sunk together, most likely in a violent storm. Wreck B is a small, un-coppered wooden vessel that sank with a cargo of bound rolls of cattle hides, horn and blocks of an unidentified substance that could be tallow (beef fat) or rubber, which were found preserved on the wreck. The third vessel, Wreck C, seemingly without a cargo, was a larger, copper-clad vessel with a huge anchor and stone ballast. If it did have a cargo, the cargo may have been something perishable that was not preserved. The preliminary indications have suggested to the

team that if Wreck A is a privateer and wrecks B and C are its prizes, that this may be the first time ever archaeologists have discovered a privateer/pirate ship with its captures.

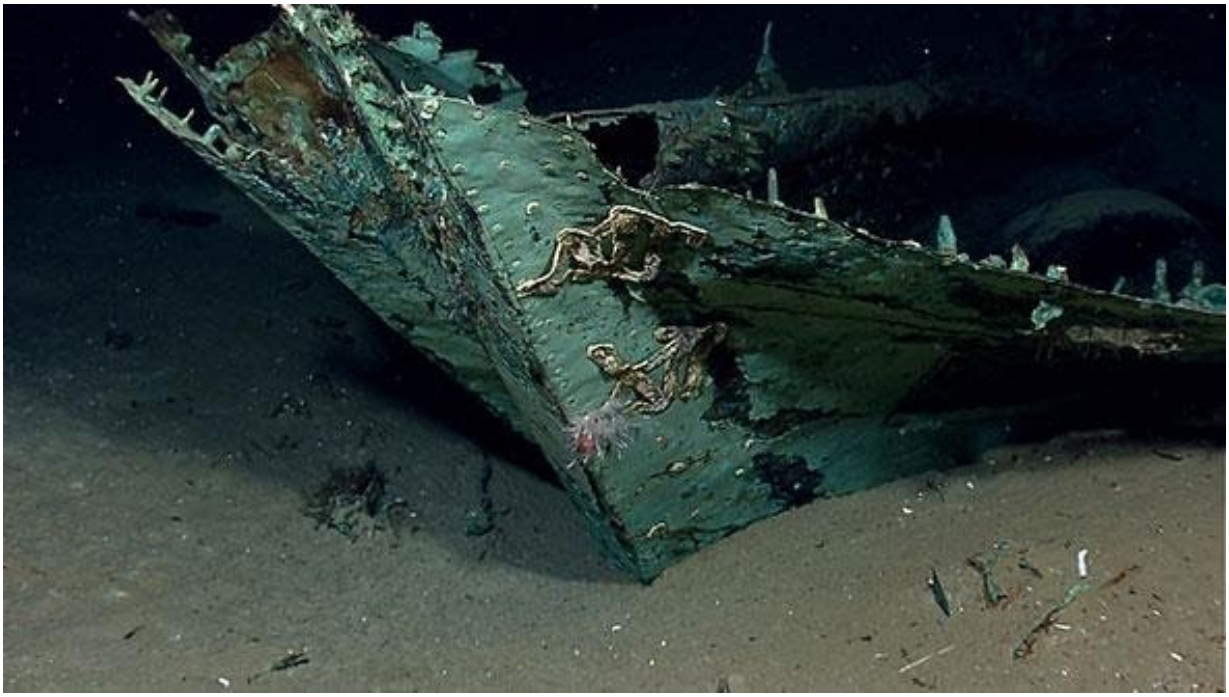


Figure E.4. Copper sheathing covers the stern post of Monterrey A. Photo: NOAA Okeanos Explorer Program

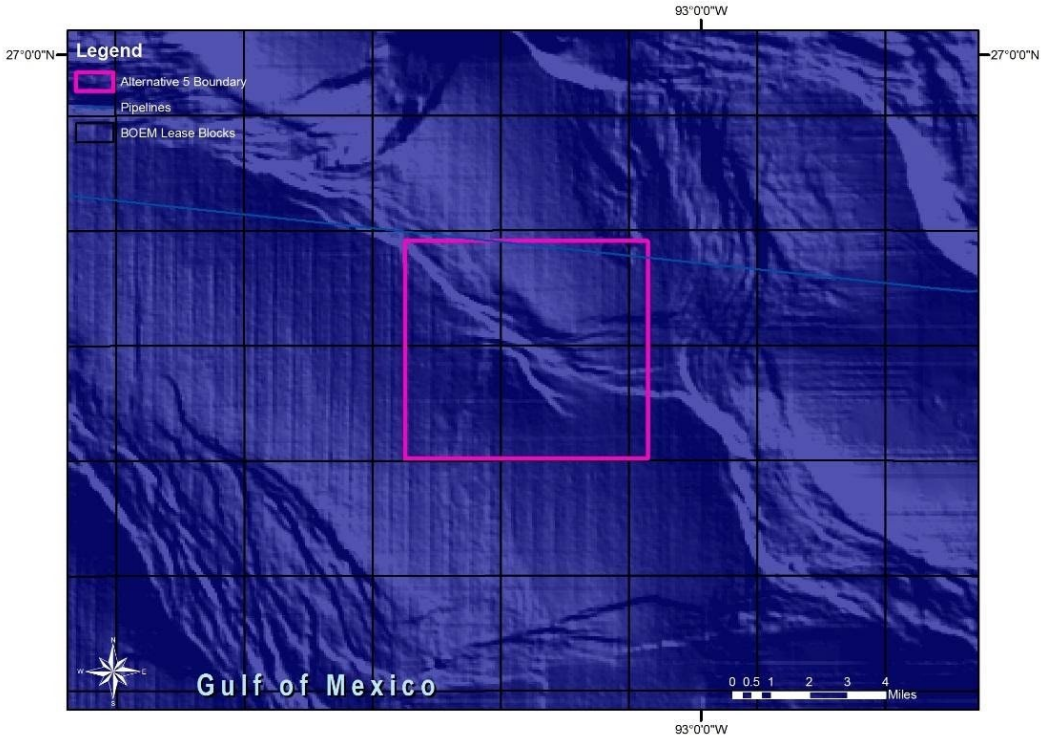


Figure E.5. “Monterrey wrecks Alternative 5 boundary, existing regulatory zones, and infrastructure.

E.4 SS GulfOil

Bottom Depth: approximately 4,363 feet (1,330 meters)

The SS *GulfOil* was a tanker built in 1912 for the Gulf Oil Corporation by the New York Shipbuilding Company. It measured 406 x 51 x 30 feet (124 x 16 x 9 meters), and was 5,188 gross tons, with primary cargoes of refined oil, crude oil, and asphalt. *GulfOil* was unique for being the first American built oil tanker to incorporate the British Isherwood system of ship construction, which used longitudinal hull framing in place of the traditional transverse framing method that was used in wooden ship construction. On May 16, 1942, the fully loaded *GulfOil* was en route from Port Arthur, Texas, to New York, when it was struck by two torpedoes from the German U-boat, U-*506*. The tanker sank so quickly that the crew did not have time to launch the lifeboats. Twenty-one of the forty crewmen perished in the attack.

GulfOil was first discovered in 2005 after a sonar and ROV survey to document sections of pipe lost from an oil rig during Hurricane Katrina. An additional industry geophysical survey recorded the wreck later in 2005, and in 2008 *GulfOil* was included in a BOEM-funded archaeological investigation of deep water shipwrecks in the Gulf of Mexico. The site consists of the main hull as well as an extensive debris field that covers an area of approximately 17 acres (9 hectares). Numerous artifacts remain *in situ* and the main hull is also covered with an abundance of *Lophelia* coral communities. *GulfOil* is one of 56 Allied vessels that were sunk by German U-boat attacks in the Gulf of Mexico between May 1942 and December 1943, making it a representative of a significant period in Gulf of Mexico maritime history, as well as one of the deadliest periods anywhere in the world for merchant mariners during World War II. The site is eligible for listing in the NRHP as a contributing member to the *World War II Shipwrecks along the East Coast and Gulf of Mexico* multiple properties nomination. It is also historically significant because of the unique Isherwood framing system used in its construction.

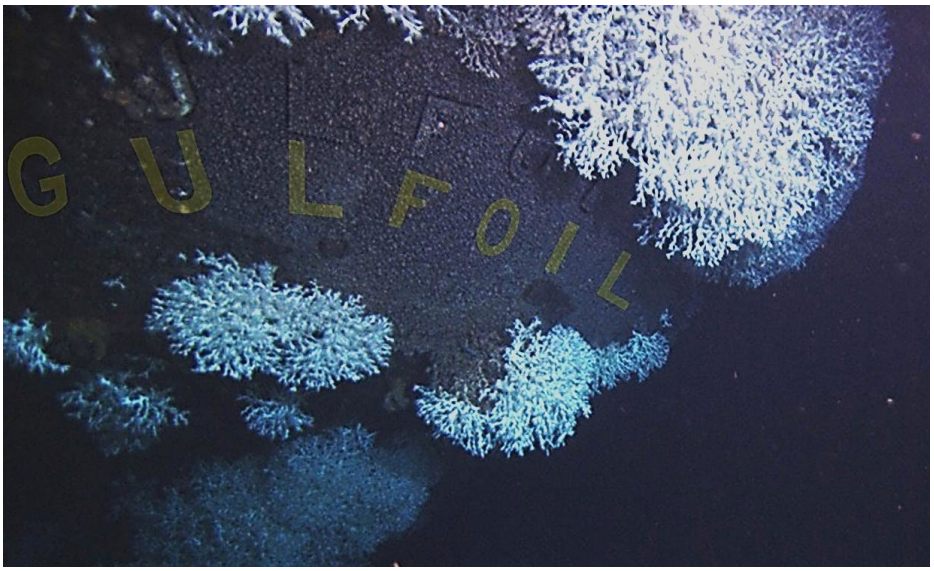


Figure E.6. The transom of *GulfOil* showing *Lophelia* growth. Photo: Brooks et al. 2013.

Figure E.7. *GulfOil* Alternative 5 boundary (center), existing regulatory zones, and infrastructure.

E.5 SS GulfPenn

Bottom Depth: approximately 1,820 feet (555 meters)

The SS *GulfPenn,* originally named *Agwhihavre*, was a tanker built in 1921 for the Atlantic, Gulf, and West Indies Steamship Line of New York, and later sold to the Gulf Oil Corporation of Philadelphia and renamed *GulfPenn*. The 8,862 gross-ton vessel was a screw steamer powered by a quadruple expansion engine, and measured 481 x 66 x 37 feet (147 x 20 x 11 meters). On May 13, 1942, *GulfPenn* was transporting 90,000 barrels of gasoline from Port Arthur, Texas, to Philadelphia, Pennsylvania, when it was attacked and sunk by the German U-boat, U-*506*. The tanker sank stern-first in five minutes; 12 of the 38 crew perished from the torpedo explosion and an additional crew member died in the lifeboat.

GulfPenn was discovered during an oil industry remote-sensing survey in 1994, and further investigated by ROV during a BOEM-funded archaeological study of deep water shipwrecks in the Gulf of Mexico (Church et al. 2007). That study determined that the wreck and its associated debris field cover an area of approximately 10 acres (4 hectares). Numerous artifacts remain *in situ* and the main hull is also covered with an abundance of *Lophelia* coral communities. *Gulfpenn* is one of 56 Allied vessels that were sunk by German U-boat attacks in the Gulf of Mexico between May 1942 and December 1943, making it a representative of a significant period in Gulf of Mexico maritime history, as well as one of the deadliest periods for merchant mariners during World War II. The site is eligible for listing in the NRHP as a contributing member to the

World War II Shipwrecks along the East Coast and Gulf of Mexico multiple properties nomination

Figure E.8. The bow of *GulfPenn* showing *Lophelia* growth. Photo: Brooks et al. 2013

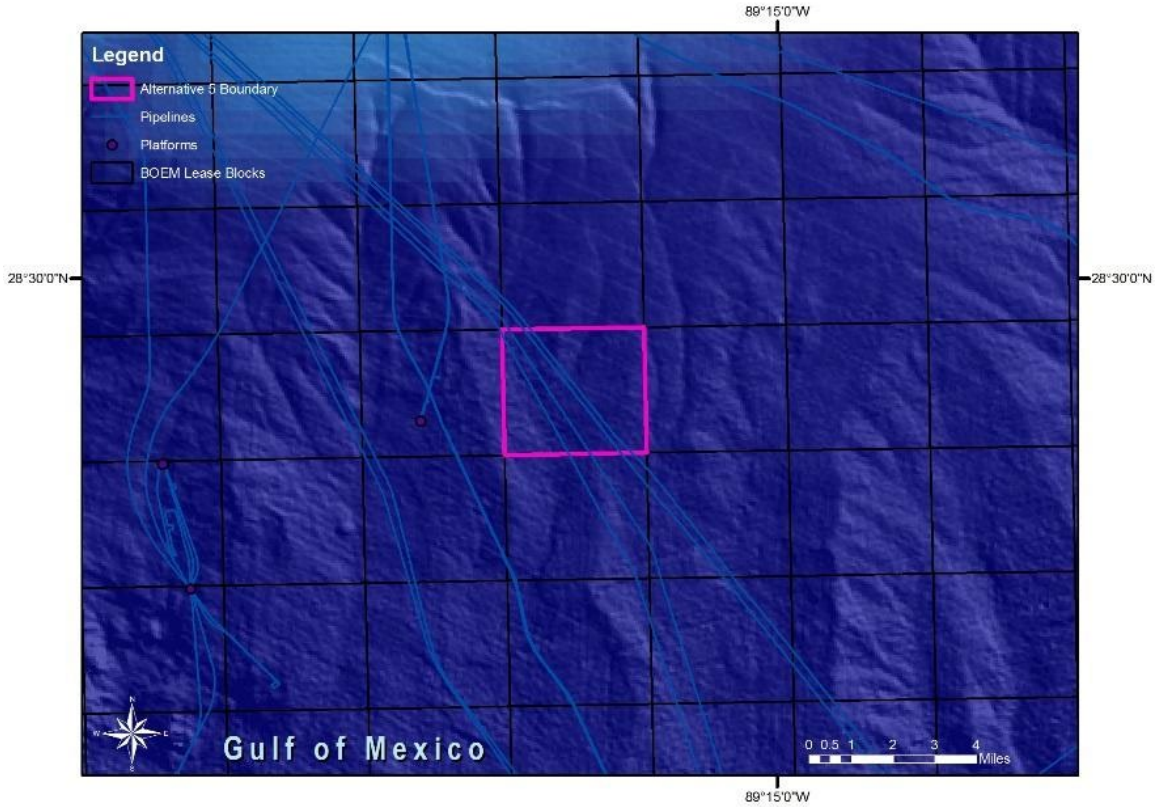


Figure E.9. *GulfPenn* Alternative 5 boundary, existing regulatory zones, and infrastructure.

E.6 SS Robert E. Lee *and U-*166

Bottom Depth: approximately 5,000 feet (1,524 meters)

The shipwrecks of the American freighter *Robert E. Lee* and the German U-boat *U-166* mark the location of one of the most noteworthy hostile encounters in the Gulf of Mexico during the Second World War. Built in 1925, the 373 x 54 x 17 foot (114 x 16 x 5 meter) *Robert E. Lee* was en route from Port-of-Spain, Trinidad, to New Orleans with a freight cargo, approximately 270 passengers, six Merchant Marine officers, and 131 general crewmembers, when it was attacked by *U-166* on July 30, 1942, southeast of the Mississippi River's Southwest Pass. A single torpedo sank the freighter within 10 minutes, killing 10 crewmembers and 15 passengers. The U.S. Navy Patrol Craft 566, traveling in escort of *Robert E. Lee*, immediately dropped depth charges on the *U-166*, sinking it with all hands on board. The remains of *Robert E. Lee* and *U-166* were discovered during a pre-construction remote-sensing survey of a pipeline route in 2001. Their combined debris fields cover an area approximately 65 acres (26 hectares) wide, and include the main hull of *Robert E. Lee*, two broken hull sections of *U-166*, two lifeboats and miscellaneous scattered debris.

Together, these wrecks are a NRHP-eligible battlefield site that represents the deadliest period in the Gulf of Mexico during World War II. Between May of 1942 and December 1943, 56 allied vessels were sunk by 21 German U-boats, only two of which, including *U-166*, were themselves lost. The vast majority of these allied casualties were sunk during the spring and summer of 1942, making this the most destructive period, in terms of vessel tonnage lost, of any area in the world during the German U-boat campaign of World War II. Of the 56 Allied vessels lost, 15 have been relocated as of this writing. Archaeologists with C&C Technologies, through a study funded by BOEM, conducted additional ROV investigations of *Robert E. Lee* and *U-166* in 2003 and 2004 (Church et al. 2007). These sites have been determined eligible for listing in the NRHP as a contributing member to the *World War II Shipwrecks along the East Coast and Gulf of Mexico* multiple properties nomination. These wrecks are encompassed by the Alternative 5 boundary for the Biloxi Dome site.

Figure E.10. The conning tower of the U-*166*. Photo: Ocean Exploration Trust

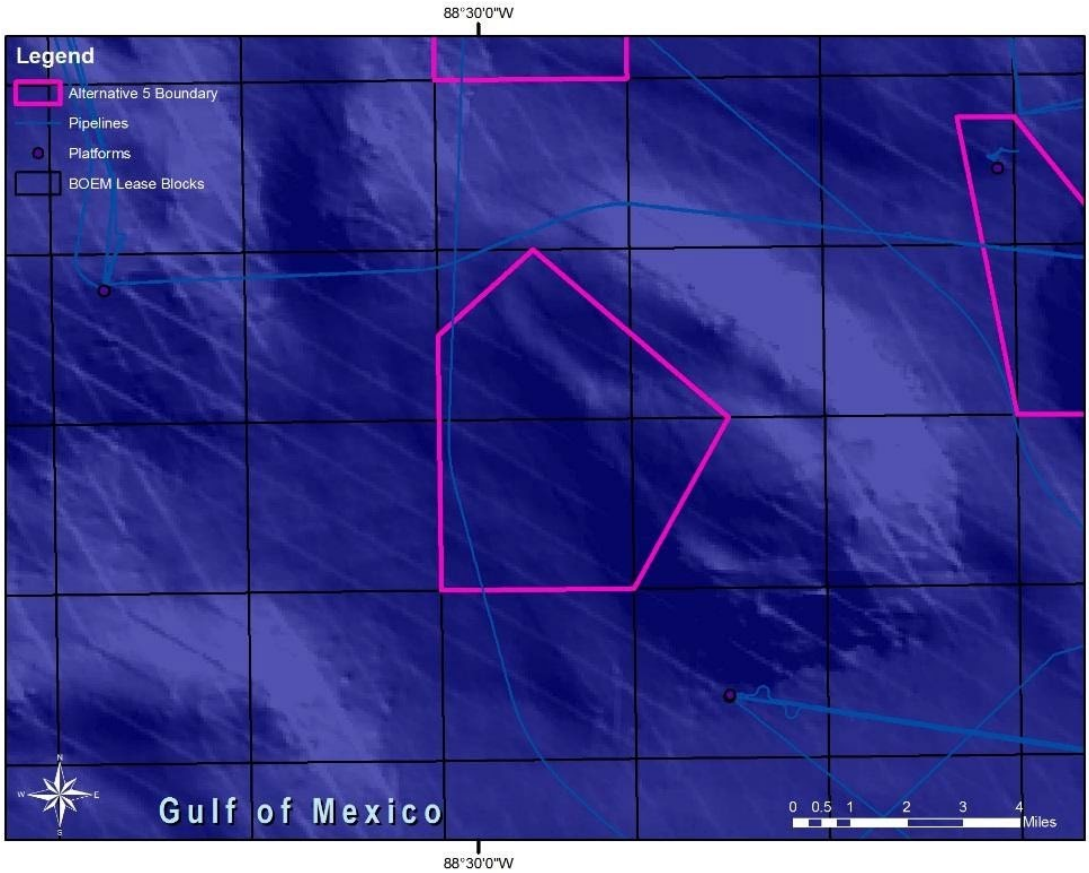


Figure E.11. SS *Robert E. Lee* and U-*166* Alternative 5 boundary (center), existing regulatory zones, and infrastructure.

E.7 "Mardi Gras" Wreck

Bottom Depth: approximately 4,300 feet (1,311 meters)

The "Mardi Gras" shipwreck was first identified on sonar in 2002 during a pre-construction remote-sensing survey for a deep water pipeline route. A subsequent ROV investigation confirmed that it was a historic, early 19th century shipwreck, and in 2007 it was partially excavated by archaeologists from Texas A&M University and MMS (now BOEM; Ford et al. 2008). The site is located off the coast of Louisiana and is named after the Mardi Gras pipeline that was installed approximately 150 feet (48 meters) west of the site, since the actual identity of the wreck remains unknown.

The 2007 excavation concluded that the "Mardi Gras" shipwreck is likely a schooner, measuring approximately 50 feett (15.2 meters) long, which wrecked circa 1815. Over 1,000 artifacts were recovered, all of which dated between 1780 and 1820, with origins in Great Britain, France, Mexico, and possibly the United States. Recovered and observed artifacts included a cannon, small arms, bottles, ceramics, and navigation instruments. The function of the vessel is unknown, but the artifact assemblage indicates that it was likely either an armed merchant vessel or a privateer, and its location suggests that it was entering or leaving the port of New Orleans when it sank due to an unknown cause. The characteristics of the "Mardi Gras" shipwreck make it a NRHP eligible archaeological site that is associated with a highly volatile period in the Gulf of Mexico, when several nations were in conflict over the economic development and control of the Gulf of Mexico coast. Continued research at this site is likely to yield significant information on seafaring technology and maritime history during the early American Republic period.

Figure E.12. Cannon from "Mardi Gras" wreck before recovery and conservation. Photo: BOEM

Figure E.13. Cannon from “Mardi Gras” wreck after recovery and conservation. Photo: BOEM

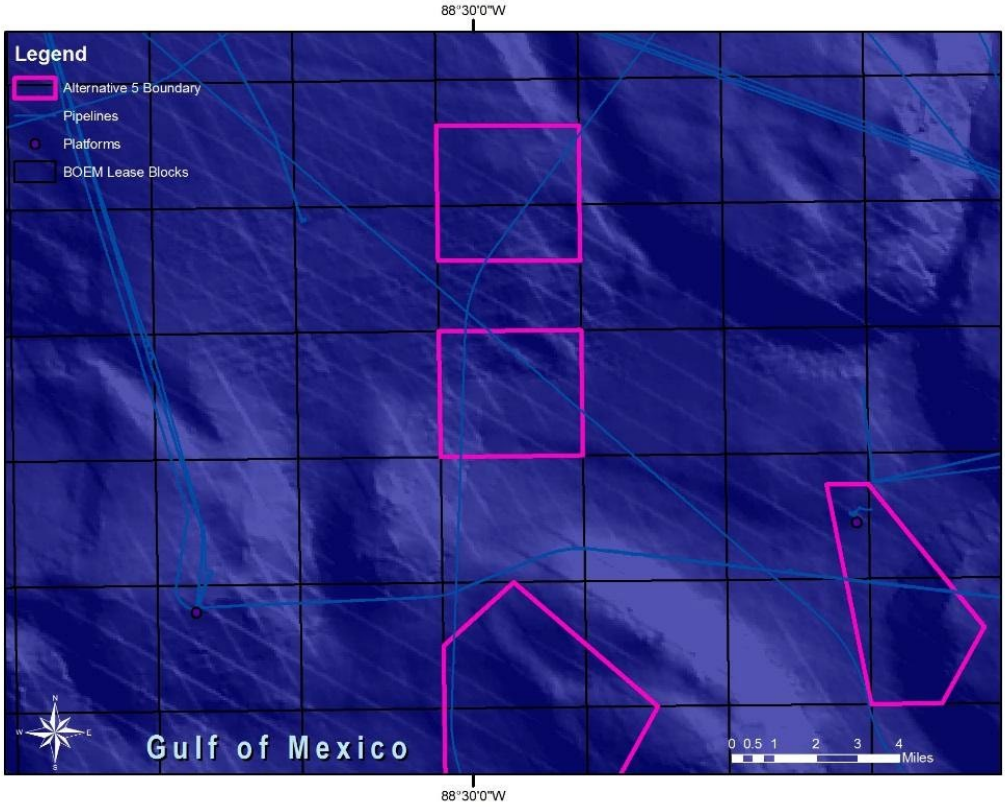


Figure E.14. “Mardi Gras” wreck Alternative 5 boundary (center), existing regulatory zones, and infrastructure. Image: NOAA

E.8 Deepwater Horizon

Bottom Depth: approximately 4,363 feet (1,330 meters)

Deepwater Horizon was an "ultra-deepwater" self-propelled, dynamically positioned, semi-submersible, column stabilized mobile offshore drilling unit, approximately 374 feet (114 meters) in length by 256 feet (78 meters) in breadth with a gross tonnage of 32,588 tons. Capable of operating in water depths up to 10,000 feet (3,048 meters) and drilling up to 35,000 feet (10,668 meters), it was owned by Transocean, commissioned by R&B Falcon, built in 2000 in South Korea by Hyundai Heavy Industries, and registered in the Marshall Islands under lease to British Petroleum (BP) until 2013. In 2009, the rig drilled the deepest oil well completed to that point, at a vertical depth of 35,050 feet (10,683 meters) and measured depth of 35,055 feet (10, 685 meters), in the Tiber Oil Field at Keathley Canyon lease block 102, approximately 250 miles (402 kilometers) southeast of Houston, in 4,132 feet (1,259 meters) of water.

On April 20, 2010, while drilling at the Macondo well in Mississippi Canyon lease block 252, an explosion on the rig caused by a blowout caused a fire that could not be extinguished, and eventually it sank into the Gulf of Mexico, resulting in a massive release of oil and other substances from BP's Macondo well. Tragically, 11 workers were killed and 17 injured by the explosion and fire. Initial efforts to cap the well following the explosion were unsuccessful, and for 87 days after the explosion, the well continuously and uncontrollably discharged oil and natural gas into the north central Gulf of Mexico. Approximately 3.19 million barrels (134 million gallons) of oil were released into the ocean (21 F. Supp. 3d 657 (E.D. La. 2014)), by far the largest offshore oil spill in the history of the United States. The volume of oil discharged during the Deepwater Horizon spill was equivalent to the *Exxon Valdez* oil spill re-occurring in the same location every week for 12 weeks (Deepwater Horizon NRDA Trustees 2016). The remains of the workers killed in the incident, the drilling unit, riser pipe, and other debris related to the wreck, and substantial volumes of oil and dispersant remain on the seafloor near the wellhead, making it important as a memorial to the tragic event and as a site for study related to oil spill impacts and recovery over time.

Figure E.15. Deepwater Horizon mobile offshore drilling unit. Photo: Transocean

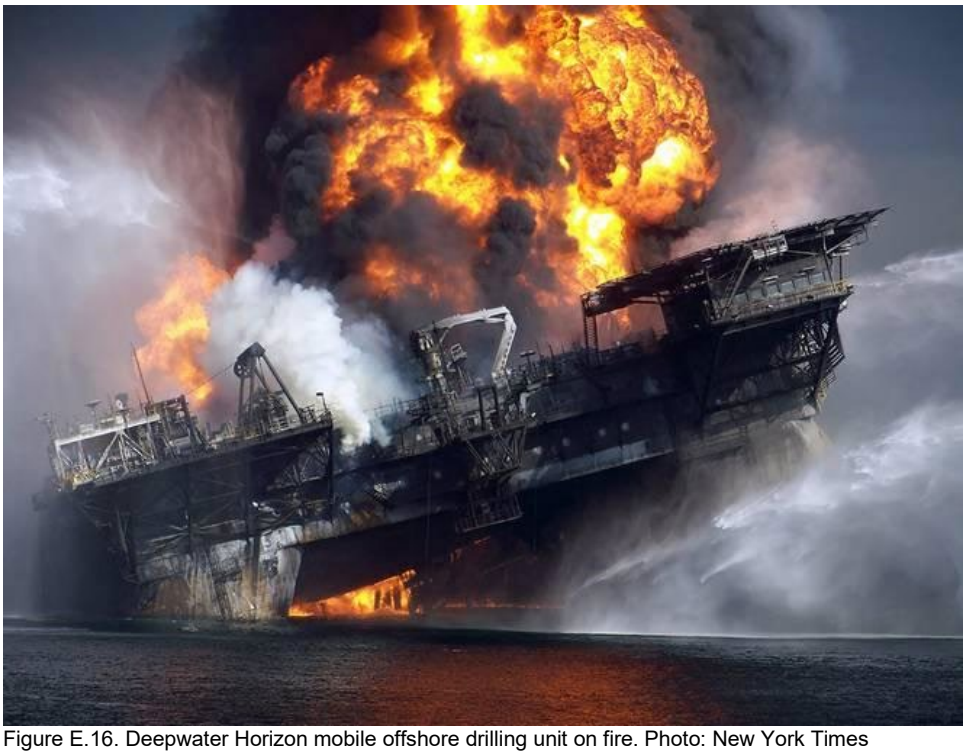


Figure E.16. Deepwater Horizon mobile offshore drilling unit on fire. Photo: New York Times

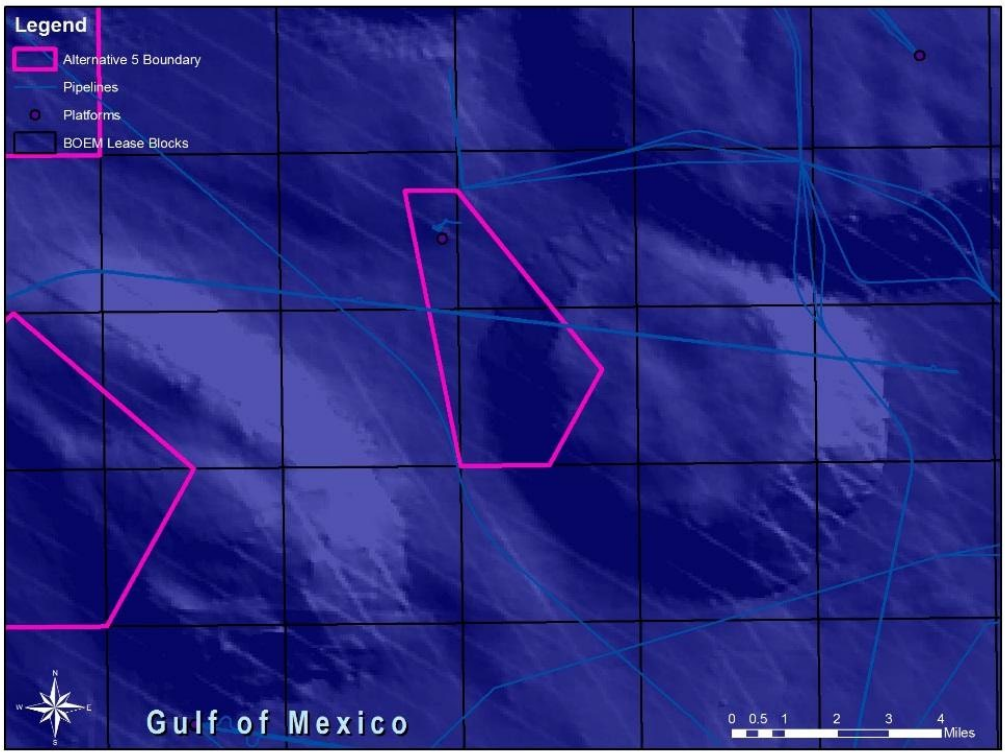


Figure E.17. Deepwater Horizon Alternative 5 boundary, existing regulatory zones, and infrastructure

E.9 Anona

Bottom Depth: approximately 4,363 feet (1,330 meters)

Anona was a 117 foot (35.6 meter) long, steel-hulled, propeller-driven steam yacht built in 1904 for use on the Great Lakes by wealthy Detroit industrialist Theodore DeLong Buhl. It was built at the George Lawley & Sons shipyard, Boston, Massachusetts, which was itself nationally renowned for producing two of America's Cup-winning racing yachts. The Buhl family sold *Anona* in 1924, beginning a 19 year period where the yacht was repeatedly sold to a succession of Canadian owners. In 1943, *Anona* ceased service as a recreational yacht and was converted to a freighter for the Pan-American Banana Producers Association, hauling cargo between the West Indies and North America. In June 1944, *Anona* was bound for the British West Indies with a load of potatoes when its lower steel hull plates buckled and it sank off the coast of Louisiana, all nine crew were rescued.

Anona was located lying on its keel in approximately 4,000 feet (1,129 meters) of water during an oil industry survey in 1995. The wreck's identity was determined during a subsequent archaeological survey in 2002 and further investigated by ROV during a BOEM-funded study in 2003 and 2004 (Church et al. 2007). *Anona* has been determined eligible for listing in the NRHP as an archaeological site, a rare example of a recreational steam yacht, and because of its association with the Lawley and Sons Shipyard, a master designer and shipbuilder. Recent investigations of the site during a BOEM funded study of potential oil spill impacts to shipwreck sites observed evidence that *Anona* has been subjected to illegal salvage of artifacts since 2004,

indicating that the site is vulnerable to additional salvage and loss of diagnostic archaeological data unless afforded further federal protection and oversight. These recent investigations also identified a colony of chemosynthetic tube worms living inside the vessel's hull and on its deck.

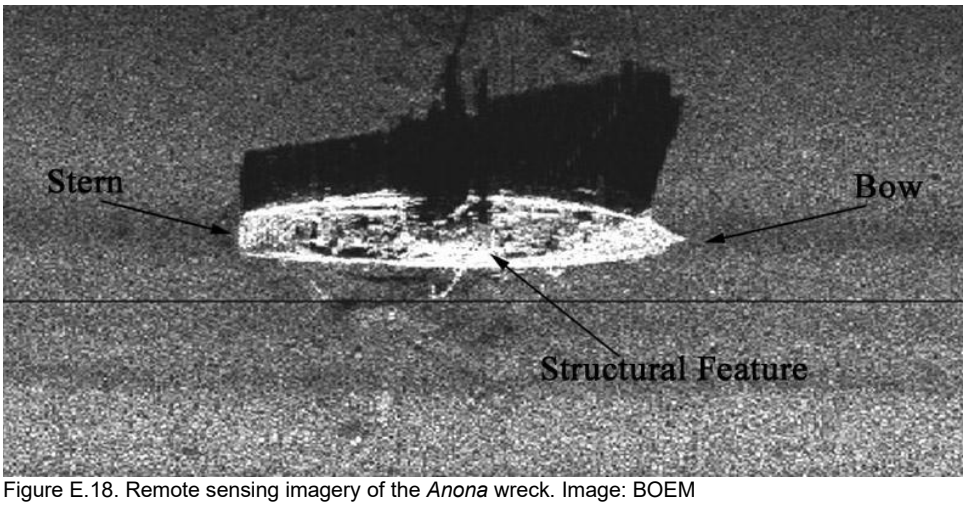


Figure E.18. Remote sensing imagery of the *Anona* wreck. Image: BOEM

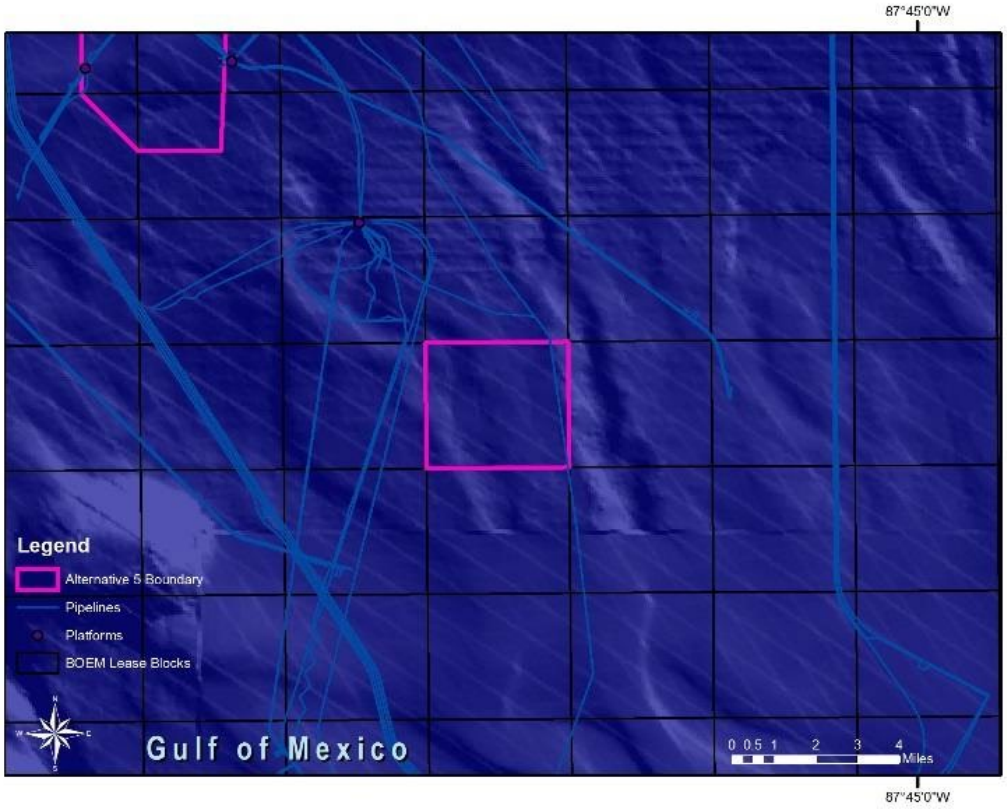


Figure E.19. *Anona* Alternative 5 boundary, existing regulatory zones, and infrastructure

Appendix F
Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPCs)

Species listed in the Fishery Management Plans (FMPs) of the Gulf of Mexico Fishery Management Council with EFH in the study area evaluated in this FEIS.

F.1 Coastal Migratory Pelagics FMP (Gulf and South Atlantic Councils joint plan)

Common and scientific names of finfishes are from the most recent list of names of fishes published by the American Fisheries Society (Lawrence et al. 2013).

F.1.1 Species in the Management Unit

King mackerel	*Scomberomorus cavalla*
Spanish mackerel	*Scomberomorus maculatus*
Cobia	*Rachycentron canadum*

F.1.2 Species in the Fishery but Not in the Management Unit

Cero	*Scomberomorus regalis*
Little tunny	*Euthynnus alletteratus*
Dolphin	*Coryphaena hippurus*
Bluefish	*Pomatomus saltatrix* (Gulf of Mexico only)

F.2 Red Drum FMP

Species in the Management Unit

Red drum	*Sciaenops ocellatus*

F.3 Reef Fish FMP

Species in the Management Unit

Snappers – Lutjanidae Family

Queen snapper	*Etelis oculatus*
Mutton snapper	*Lutjanus analis*
Blackfin snapper	*Lutjanus buccanella*
Red snapper	*Lutjanus campechanus*
Cubera snapper	*Lutjanus cyanopterus*
Gray (mangrove) snapper	*Lutjanus griseus*
Lane snapper	*Lutjanus synagris*
Silk snapper	*Lutjanus vivanus*
Yellowtail snapper	*Ocyurus chrysurus*
Wenchman	*Pristipomoides aquilonaris*
Vermilion snapper	*Rhomboplites aurorubens*

Groupers – Serranidae Family

Speckled hind	*Epinephelus drummondhayi*
Goliath grouper	*Epinephelus itajara*
Red grouper	*Epinephelus morio*
Yellowedge grouper	*Hyporthodus flavolimbatus*
Warsaw grouper	*Hyporthodus nigritus*
Snowy grouper	*Hyporthodus niveatus*
Black grouper	*Mycteroperca bonaci*
Yellowmouth grouper	*Mycteroperca interstitialis*
Gag	*Mycteroperca microlepis*
Scamp	*Mycteroperca phenax*
Yellowfin grouper	*Mycteroperca venenosa*

Tilefishes – Malacanthidae (Branchiostegidae) Family

Goldface tilefish	*Caulolatilus chrysops*
Blueline tilefish	*Caulolatilus microps*
Tilefish	*Lopholatilus chamaeleonticeps*

Jacks – Carangidae Family

Greater amberjack	*Seriola dumerili*
Lesser amberjack	*Seriola fasciata*
Almaco jack	*Seriola rivoliana*
Banded rudderfish	*Seriola zonata*

Triggerfishes – Balistidae Family

Gray triggerfish	*Balistes capriscus*

Wrasses – Labridae Family

Hogfish	*Lachnolaimus maximus*

F.4 Shrimp FMP

Common and scientific names of shrimps and lobsters are from the most recent list of names of crustaceans published by the American Fisheries Society (McLaughlin et al. 2005).

Species in the Management Unit

Brown shrimp	*Penaeus aztecus*
White shrimp	*Penaeus setiferus*
Pink shrimp	*Penaeus duorarum*
Royal red shrimp	*Pleoticus robustus*

F.5 Spiny Lobster FMP

Species in the Management Unit

Spiny lobster	*Panulirus argus*

F.6 Coral and Coral Reefs FMP

Common and scientific names of corals are from the most recent list of names of cnidaria and ctenophora published by the American Fisheries Society (Cairns et al. 2003) or from Felder and Camp (2009).

Species in the Management Unit

Corals of the class Hydrozoa (stinging and hydrocorals)
Corals of the class Anthozoa (stony corals, black corals)

Note: The FMP does not list individual species comprising the management unit. The following species are referred to in the FMP as being in the class Hydrozoa and Anthozoa occurring in Gulf of Mexico and/or South Atlantic waters:

Class Hydrozoa

Order Milleporina (fire, stinging corals)
Family Milleporidae

Branching fire coral	*Millepora alcicornis*
Blade fire coral	*Millepora complanata*
Box fire coral	*Millepora squarrosa*

Order Stylasterina (hydrocorals)

	Stylaster duchassaingi
	Stylaster punctata
	Distichopora foliacea
	Pliobothrus symmetricus

Subclass Zoantharia

Order Scleractinia (stony corals)
Family Astrocoeniidae

Blushing star coral	*Stephanocoenia intersepta*

Family Acroporidae

Staghorn coral	*Acropora cervicornis*
Elkhorn coral	*Acropora palmata*
Fused staghorn	*Acropora prolifera*

Family Agariciidae

Lettuce coral	*Agaricia agaricites*
Thin leaf lettuce coral	*Agaricia tenifolia*
Lamarck's sheet coral	*Agaricia lamarcki*
Fragile saucer coral	*Agaricia fragilis*
Saucer coral	*Helioseris cucullata*

Family Faviidae

Golfball coral	*Favia fragum*
Knob coral	*Favia gravida*
Grooved brain coral	*Diploria labyrinthiformis*
Knobby brain coral	*Pseudodiploria clivosa*
Symmetrical brain coral	*Pseudodiploria strigosa*
Rose coral	*Manicina aerolata aerolata*
	Colpophyllia amaranthus
Boulder brain coral	*Colpophyllia natans*
	Colpophyllia breviserialis
Tube coral	*Cladocora arbuscular*
Thin tube coral	*Cladocora debilis*
Great start coral	*Montastrea cavernosa*
Boulder star coral	*Orbicella annularis*
Mountainous star coral	*Orbicella faveolata*
Boulder star coral	*Orbicella franksi*
Knobby star coral	*Solenastrea hyades*
Smooth star coral	*Solenastrea bournoni*

Family Pocillopridae

Striate finger coral	*Madracis myriaster*
Ten-ray star coral	*Madracis decactis*
Eight-ray finger coral	*Madracis Formosa*
Yellow pencil coral	*Madracis auretenra*
Pointed pencil coral	*Madracis asperula*
	Madracis brueggemanni

Family Portidae

Blue crust coral	*Porites branneri*
Finger coral	*Porites porites*
Mustard hill coral	*Porites astreoides*
	(green and brown color morph)

Family Rhizangiidae

Northern star coral	*Astrangia poculata*
	Astrangia danae
Dwarf cup coral	*Astrangia solitaria*
Hidden cup coral	*Phyllangia americana*

Family Siderastreidae

Lesser starlet coral	*Siderastrea radians*
Massive starlet coral	*Siderastrea siderea*

Family Fungiidae

	Fungiacyathus pusillus
	Fungiacyathus symmetricus
	Fungiacyathus crispus

Family Oculinidae

Zigzag coral	*Madrepora oculata*
Pourtales fan coral	*Madrepora carolina*
Compact ivory bush coral	*Oculina arbuscular*
Fused ivory tree coral	*Oculina varicosa*
Delicate ivory bush coral	*Oculina tenella*
Diffuse ivory coral	*Oculina diffusa*
Robust ivory tree coral	*Oculina robusta*

Family Meandrinidae

Maze coral	*Meandrina meandrites*
Pancake star coral	*Dichocoenia stellaris*
Ellipitical star coral	*Dichocoenia stokesii*
Pillar coral	*Dendrogyra cylindrus*

Family Mussidae

Large flower coral	*Mussa angulosa*
Atlantic mushroom coral	*Scolymia lacera*
Artichoke coral	*Scolymia cubensis*
Lesser cactus coral	*Isophyllia multiflora*
Sinuous cactus coral	*Isophyllia sinuosa*
Rough star coral	*Isophyllastrea rigida*
Ridged cactus coral	*Mycetophyllia lamarkiana*
Lowridge cactus coral	*Mycetophyllia danaana*
Rough cactus coral	*Mycetophyllia ferox*
Knobby cactus coral	*Mycetophyllia aliciae*

Family Anthemiphylliidae

	Anthemiphllia patera patera

Family Caryophyllidae

	Caryophyllia berteriana
	Caryophyllia horologium
	Caryophyllia polygona
	Caryophyllia cornuformi
	Caryophyllia ambrosia caribbeana
	Caryophyllia parvula
	Concentrotheca laevigate
	Layrinthocyathus facetus

	Layrinthocyathus langi
	Cyathoceras squiresi
	Layrinthocyathus facetus
	Layrinthocyathus langi
	Oxysmilia rotundifolia
	Trochocyathus rawsonii
	Tethocyathus cylindraceus
	Tethocyathus variabilis
Papillose cup coral	*Paracyathus pulchullas*
	Deltocyathus moseley
	Deltocyathus calcar
	Deltocyathus italicus
	Deltocyathus eccentricus
	Deltocyathus pourtalesi
Smooth flower coral	*Eusmilia fastigiata*
	Pourtalosmilia conferta
Speckled cup coral	*Rhizosmilia maculata*
	Stephanocyathus diadema
	Stephanocyathus paliferus
	Stephanocyathus laevifundus
	Stephanocyathus coronatus
	Peponcyathus folliculus
	Peponcyathus stimpsonii
	Desmophyllum cristagalli
	Thalamophyllia gombergi
	Lophelia prolifera
	Anomocora fecunda
	Coenosmilia arbuscular
	Dasmosmilia variegata
	Solenosmilia variabilis
	Asterosmila prolifera
	Asterosmila marchadi
Two-tone cup coral	*Phacelocyathus flos*
Family Flabellidae	
	Flabellum moseleyi
	Flabellum fragile
	Javania cailleti
	Polymyces fragile
	Gardineria paradoxa
Family Guyniidae	
	Guynia annulata
	Schizocyathus fissile

	Stenocyathus vermiformis
	Pourtalocyathus hispidus
Family Dendrophylliidae	
Porous cup coral	*Balanophyllia floridana*
	Balanophyllia palifera
	Dendrophyllia cornucopia
	Dendrophyllia gaditana
	Dendrophyllia alternata
	Enallopsammia profunda
	Enallopsammia rostrata
	Thecopsammia socialis
	Bathypsammia tintinnabulum
	Bathypsammia fallosocialis
	Rhizopsammia manuelensis
	Trochopsammia infundibulum
Orange cup coral	*Tubastrea coccinea* (invasive species)

Order Antipatharia (black corals)

Whip coral	*Stichopathes desbonni*
Wire coral	*Stichopathes leutkeni*
Black coral	*Stichopathes sp.*
Feather black coral	*Plumapathes pennacea*
Hair net black coral	*Antipathes lenta*
Bushy black coral	*Antipathes sp.*

Appendix G
Regulatory Framework and Consultation Documents

A number of federal agencies provide regulatory oversight to the resources within or near FGBNMS and the proposed expansion areas. This appendix provides additional information on the laws and policies implemented by these other federal agencies that intersect with management of FGBNMS, as well as details of NOAA's consultations and compliance with applicable laws and policies.

Correspondence related to interagency coordination and consultation that NOAA completed as part of this analysis are available on the FGBNMS expansion website.[11]

G.1 Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) was enacted by Congress in 1976 and was updated in 1996 and 2006. Section 302 of the Act (§ 302) created eight regional fishery management councils, including the Gulf of Mexico Fishery Management Council (GMFMC), to develop Fishery Management Plans to regulate fisheries in an effort to prevent overfishing. Each council prepares Fishery Management Plans for each fishery under its jurisdiction and submits these plans to the Secretary of Commerce for final approval.

The MSA provides Councils and NMFS with authority to identify and designate in the Fishery Management Plan essential fish habitat (EFH) and Habitat Areas of Particular Concern (HAPCs) (§§ 303 and 305). The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA § 3(10)). The regulations implementing the EFH provisions of the MSA are codified at 50 C.F.R. part 600, subpart J. Section 600.815(a)(1)(iii)(4) further establishes that "'essential habitats' are those [habitats] necessary to maintain fish production consistent with a sustainable fishery and the managed species' contributions to a healthy ecosystem." HAPCs are subsets of EFHs that exhibit one or more of the following traits: (i) provide important ecological function; (ii) is sensitive to human-induced environmental degradation; (iii) is stressed by development; or (iv) is rare (50 C.F.R. § 600.815(a)(8)).

Section 305(b) of the MSA requires each Federal agency to consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect any EFH. The regulations implementing the EFH coordination and consultation provisions are codified at 50 C.F.R. part 600, subpart K. The regulations define "adverse effect" as "any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-

[11] https://flowergarden.noaa.gov/management/expansionnpr.html

specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions" (50 C.F.R. § 600.910).

In 2016, ONMS consulted with NMFS on the impacts on EFH from implementing routine field operations in national marine sanctuaries in the Southeast and Gulf of Mexico region, including FGBNMS. ONMS determined that implementing routine field operations in FGBNMS, and other ONMS sites, would have **no more than minimal adverse effects** on EFH. On September 28, 2016, NMFS provided a General Concurrence with this determination, with the following exceptions which would require consultations on a project-by-project basis:

- Activities requiring an individual permit or letter of permission, and an associated EFH consultation, from the USACE.
- Coral restoration activities proposed to harvest healthy (undamaged) or non-nursery corals.
- Seagrass restoration activities proposing the harvest and relocation of seagrass from non-nursery donor sites.
- Non-emergency removal of grounded vessels and large debris requiring motorized equipment that may alter the surrounding environment or may further adversely impact the substrate upon which the vessel or marine debris was originally found during the removal process. Emergency removal of grounded vessels and large debris, causing further damage, will be addressed on a case-by-case basis pursuant to 50 C.F.R. § 600.920.

In the DEIS and by letter dated July 7, 2016, ONMS determined that the proposed action to expand FGBNMS would protect EFH and would contribute to conservation and management of species managed by NMFS and the GMFMC. At that time, ONMS determined that consultation with NMFS under the EFH provisions of the MSA was not required because the proposed action would not adversely affect EFH.

In this FEIS, ONMS identified EFH and HAPCs present in the action areas (see section 4.3.3), and evaluated potential impacts to EFH from implementing the Final Preferred Alternative (see section 5.3.7). ONMS concluded that the proposed action would **not adversely affect** designated EFH. Any impacts to EFH from implementing field operations as part of the proposed sanctuary expansion would be within the bounds of the General Concurrence for field operations supporting research and management activities in national marine sanctuaries in the Southeast and Gulf of Mexico Region.

G.2 Endangered Species Act (16 U.S.C. §§ 1531 et seq.)

The Endangered Species Act (ESA) protects animals and plants threatened with extinction. Under the ESA, a species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future. NMFS works with USFWS to manage ESA listed species. Generally, NMFS manages marine species, while USFWS manages land and freshwater species.

Once a species is listed, the ESA prohibits the 'take' of that species by direct or indirect actions. Pursuant to section 3 of the ESA, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" is further defined as any act which actually kills or injures fish or wildlife, and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

Section 7 of the ESA requires all federal agencies, in consultation with USFWS or NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. In fulfilling these requirements, each agency must use the best scientific and commercial data available. The regulations promulgated at 50 C.F.R. part 402 govern the consultation process.

When a federal agency's action "may affect" a listed species, that agency is required to engage in formal consultation with NMFS or USFWS. Upon completion of the formal consultation process, NMFS or USFS issues a biological opinion that documents its determination of whether the proposed action will jeopardize the continued existence of the listed species or result in the destruction or adverse modification of critical habitat. If the consulted service determines that the proposed action will result in jeopardy, it must identify any reasonable and prudent alternatives that will avoid the likelihood of jeopardy.

If a federal agency determines that its action may affect, but is "not likely to adversely affect listed species or critical habitat," the agency may instead engage in informal consultation. This determination can be made only if *all* of the reasonably expected effects of the proposed action will be beneficial, insignificant, or discountable. If USFWS or NMFS provides written concurrence with the action agency's effect determination, formal consultation for the proposed action is not necessary.

For any action with a potential for impacts to federally protected species, NOAA ONMS evaluates the potential impacts and, if needed, prepares a biological evaluation to inform consultation with NMFS for any impacts on federally listed species and designated critical habitat.

In this FEIS, NOAA ONMS identified ESA-listed species or designated critical habitat under NMFS and USFWS jurisdiction potentially present in the action area (see section 4.3.4). NOAA ONMS then evaluated which of these species and habitat would likely be present in the action area and affected by the proposed action and described any potential impacts in section 5.3.8.

Based on this evaluation, NOAA ONMS determined that implementation of the Final Preferred Alternative **may affect, but is not likely to adversely affect** any species listed as threatened or endangered, or designated critical habitat under NMFS jurisdiction. On July 7, 2016 upon publication of the DEIS, ONMS initiated informal ESA Section 7 consultation for impacts to species and critical habitat under NMFS jurisdiction. NMFS provided concurrence with ONMS's **may affect, but not likely to adversely affect** determination on December 20, 2016 (Consultation Code: SER-2016-18086). Based on changes to the original preferred alternative and new species listings, NOAA ONMS re-initiated informal consultation with NMFS

on November 17, 2020. NMFS provided concurrence with ONMS's revised effect determination on December 3, 2020 (Consultation Code: SERO-2020-03175).

As described in Section 4.3.4, NOAA used USFWS's IPaC tool to identify ESA-listed species and designated critical habitat under USFWS jurisdiction that may occur in the expansion areas. NOAA evaluated the habitat requirements and habitat availability for these species listed in Table 4.2 within the action area and determined that none would be affected by the proposed action. NOAA made this **no effect** determination because:

- None of the species listed in Table 4.2 would occur in the proposed sanctuary expansion areas,
- The proposed action would not involve any on-shore activities that could interact with seabirds, shorebirds, sea turtle nesting, or critical habitat for the piping plover, and,
- While the Texas coastline is within the historical range of West Indian Manatees, individuals only occasionally range as far west as Texas, therefore it is highly unlikely that they would occur in the action area while NOAA vessel activities were occurring.[12]

G.3 Coastal Zone Management Act (16 U.S.C. §§ 1451 et seq.)

The goal of the Coastal Zone Management Act (CZMA) is to encourage and assist states to preserve, protect, develop and, where possible, restore and enhance valuable natural coastal resources. Participation by states is voluntary. Section 307 of the CZMA requires that any federal action inside or outside of the coastal zone that affects any land or water use or natural resource of a participating state's coastal zone shall be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program. The CZMA provides that no federal license or permit may be granted without giving the state the opportunity to concur that the project is consistent with the state's coastal policies. The regulations implementing the CZMA, 15 C.F.R. part 930, outline the consistency procedures.

On July 13, 2016, upon publication of the DEIS, NOAA sent letters to the coastal management program managers of Alabama, Florida, Louisiana, Mississippi, and Texas, requesting information on the reasonably foreseeable effects of the proposed action on the uses and resources of each state's coastal zone and the relevant enforceable policies of the coastal management program that may pertain to the proposed action. On July 27, 2016, NOAA received a response from the Mississippi Department of Marine Resources stating that the Department has no objections to the proposed sanctuary boundary changes or the Draft EIS, and that the state's marine fisheries resources are not likely to be adversely affected and the areas are outside of the Coastal Zone of Mississippi. On August 10, 2016, NOAA received a response from the Louisiana Department of Natural Resources Office of Coastal Management requesting that NOAA provide a consistency determination including a discussion about potential impacts to other coastal uses that may result from expanding the sanctuary boundary. On August 29, 2016, NOAA received a response from the Texas General Land Office stating that the proposed action had been reviewed for consistency with the Texas Coastal Management Program and that there are no significant unresolved consistency issues with respect to the project. Therefore, the State of Texas determined that that the proposed action is consistent with

[12] https://ecos.fws.gov/ecp/species/4469

the Texas Coastal Management Program goals and policies. NOAA did not receive responses from Alabama or Florida to the letters sent with the DEIS.

On November 16, 2020, NOAA sent letters to the coastal management program managers of Texas, Louisiana, Mississippi, Alabama, and Florida notifying them of NOAA's determination that implementing the Final Preferred Alternative would have no to negligible reasonably foreseeable effects on the uses and resources of the state's coastal zone.

G.4 Outer Continental Shelf Lands Act (43 U.S.C. §§ 1331 et seq.)

G.4.1 Authority for Establishing No Activity Zones

The Outer Continental Shelf Lands Act, as amended (OCS Lands Act), authorizes the Secretary of the Interior to prescribe rules and regulations to administer leasing of the OCS. Such rules and regulations will apply to all operations conducted under a lease. Operations on the OCS must preserve, protect and develop oil and natural gas resources in a manner that is consistent with the need to make such resources available to meet the nation's energy needs as rapidly as possible; to balance orderly energy resource development with protection of human, marine and coastal environments; to ensure the public a fair and equitable return on the resources of the OCS; and to preserve and maintain free enterprise competition. Sections 11 and 25 of the amended OCS Lands Act require the holders of OCS oil and gas or sulphur leases to submit exploration plans or development and production plans to the Secretary for approval prior to commencing these activities.

G.4.2 Notice to Lessees (NTL) No. 2009-G39 Biologically-Sensitive Underwater Features and Areas

The purpose of this NTL is to provide and consolidate guidance for the avoidance and protection of biologically sensitive features and areas (i.e., topographic features, pinnacles, live bottoms (low relief features) and other PSBFs) when conducting OCS operations in water depths shallower than 980 feet (300 meters) in the Gulf of Mexico. This NTL remains in effect pursuant to NTL No. 2015-N02.

G.4.2.1 Topographic Features

The Topographic Features stipulation is added to OCS leases in the Western Planning Area and Central Planning Area in the Gulf of Mexico for blocks that have a topographic feature, a No Activity Zone (NAZ) surrounding a topographic feature, or a shunting zone surrounding a topographic feature to protect biologically sensitive underwater features. An NAZ is defined by a bathymetric contour (isobath) ranging from 55-85 meters (180-279 feet) in depth. Within the NAZ, no operations, anchoring or structures are allowed. Additionally, no bottom-disturbing activities, including the use of anchors, chains, cables, and wire ropes from a semi-submersible drilling rig or from a pipeline construction vessel may occur within 152 meters (500 feet) of the designated NAZ of a topographic feature. Outside the NAZ, additional restrictive zones are established where oil and gas operations could occur, but where drilling discharges would be shunted to the seafloor. Shunting zones of 1,000 meters, 1-mile and 3-miles surround topographic features, with the more complex features having a larger shunting zone. The East and West Flower Garden Banks, as special cases, have a 4-mile shunt zone beyond the NAZ for

all drilling muds and cuttings. Also, if more than two wells that are not from development operations are to be drilled from the same surface location and that surface location is within the 3-mile Zone of an identified topographic feature, all drill cuttings and drilling fluids from the drilling operations are to be shunted to the sea bottom through a structurally sound downpipe that terminates an appropriate distance, but no more than 10 meters (33 feet), from the bottom.

G.4.2.2 Live Bottoms (Pinnacle Trend Features)

Live bottoms (pinnacle trend features) are defined as small, isolated, low to moderate relief carbonate reefal features or outcrops of unknown origin or hard substrates exposed by erosion that provide surface area for the growth of sessile invertebrates and attract large numbers of fish.

Provisions are made to identify and avoid these features. Stipulations are added to leases on 74 OCS lease blocks in the northeastern Central Planning Area of the Gulf of Mexico that prohibit bottom disturbing activity (including those caused by anchors, chains, cables or wire ropes from a semi-submersible drilling rig or from a pipeline construction vessel) from occurring within 30 meters (100 feet) of any hard bottom/pinnacle that has a vertical relief of 8 feet (2.4 meters) or more. BOEM also conducts case-by-case reviews of permit applications to ensure bottom disturbing activity is distanced from live bottom (pinnacle trend features).

G.4.2.3 Live Bottoms (Low Relief Features)

Live bottoms (low relief features) are defined as seagrass communities or those areas that contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians, sponges, bryozoans or corals living upon and attached to naturally occurring hard or rocky formations with rough, broken or smooth topography; or areas whose vertical relief favors the accumulation of turtles, fishes and other fauna.

No bottom-disturbing activities, including the use of anchors, chains, cables or wire ropes from a semi-submersible drilling rig or from a pipeline construction vessel, may cause impacts to live bottoms (low relief features). These features are protected through lease stipulations attached to OCS leases in waters less than 100 meters (328 feet) deep in the northeast corner of the Central Planning Area and in the Eastern Planning Area of the Gulf of Mexico. However, the areas in the Central and Eastern Planning Areas with these features are not currently leased due to a Congressional moratorium pursuant to the Gulf of Mexico Energy Security Act of 2006 (Pub. L. 109-432, § 104) and Presidential Memorandum dated September 8, 2020,[13] which bans oil and gas leasing within 125 miles (201 kilometers) of the Florida coastline in the Eastern Planning Area and in a portion of the Central Planning Area until June 30, 2022. As additional protection, BOEM also conducts case-by-case reviews of permit applications in blocks outside of the restricted areas to ensure bottom disturbing activity is distanced from live bottom (low relief features).

G.4.2.4 Potentially Sensitive Biological Features

[13] Presidential Memorandum on the Withdrawal of Certain Areas of the United States Outer Continental Shelf from Leasing Disposition, Daily Comp. Pres. Doc. 2020 DCPD No. 00659 (Sept. 8, 2020), available at https://www.govinfo.gov/content/pkg/DCPD-202000659/pdf/DCPD-202000659.pdf. The withdrawal was issued to the Secretary of the Interior and does not appear to have been published in the Federal Register.

Potentially Sensitive Biological Features (PSBFs) are those features not protected by a biological lease stipulation that are of moderate to high relief (about 8 feet/2.5 meters or higher), provide surface area for the growth of sessile invertebrates and attract large numbers of fish. These features are located outside the NAZ of any of the named topographic features (banks) or live bottom (pinnacle trend features) stipulated blocks.

No bottom-disturbing activities, including the use of anchors, chains, cables or wire ropes from a semi-submersible drilling rig or from a pipeline construction vessel, may cause impacts to PSBFs. There are no stipulations attached to OCS leases to distance bottom disturbing activities from PSBFs, but PSBFs are protected by BOEM through case-by-case reviews of permit applications to ensure bottom disturbing activity is distanced from PSBFs.

G.4.3 Notice to Lessees (NTL) No. 2009-G40 Deepwater Benthic Communities

The purpose of this NTL is to provide a consistent and comprehensive approach to protecting high-density deepwater benthic communities from damage caused by OCS oil and gas activities in water depths greater than 980 feet (300 meters). This NTL remains in effect pursuant to NTL No. 2015-N02.

High-density deepwater benthic communities are defined as:

1. Features or areas that could support high-density chemosynthetic communities; or
2. Features or areas that could support high-density deepwater corals and other associated high-density hard bottom communities.

Damage to high-density deepwater benthic communities could result from oil and gas activities that disturb the seafloor in the immediate vicinity of these communities. Such activities include (but are not limited to) drilling, anchoring, placing seafloor templates, discharging muds and cuttings and installing pipelines. Current setback requirements from high density deep coral sites are 2000 feet (610 meters) for proposed mud and cuttings discharge locations and 250 feet (76 meters) for location of all other seafloor disturbances (anchors, anchor chains, pipelines, etc.).

G.4.4 Presidential Directives Related to Outer Continental Shelf Leasing

In a 1990 presidential directive to the Department of the Interior, President George H.W. Bush placed a moratorium on the issuance of new leases for offshore oil and gas drilling in national marine sanctuaries and in areas off the coasts of California, Florida, New England, Washington, and Oregon for ten years.[14] In 1998, President Clinton extended the moratorium through 2012 and barred any new leasing in the twelve existing national marine sanctuaries.[15] In January 2007, President G.W. Bush modified the 1998 moratorium,[16] and subsequently rescinded the

[14] Statement on Outer Continental Shelf Oil and Gas Development, 26 Weekly Comp. Pres. Doc. 106 (Jul. 26, 1990).

[15] Memorandum on Withdrawal of Certain Areas of the United States Outer Continental Shelf from Leasing Disposition, 34 Weekly Comp. Pres. Doc. 1111 (Jun. 12, 1998).

[16] Memorandum on Modification of the June 12, 1998, Withdrawal of Certain Areas of the United States Outer Continental Shelf From Leasing Disposition, 43 Weekly Comp. Pres. Doc. 19 (Jan. 9, 2007).

moratorium on July 14, 2008.[17] However, the 2008 Presidential Memorandum did not rescind the moratorium as it applied to national marine sanctuaries. The Presidential directive to the Secretary of the Interior, which prohibits the issuing of new leases for oil and gas drilling activities in sanctuaries does not affect leases that were in effect as of July 14, 2008 and only applies to sanctuaries existing at that time. Additionally, as stated above in section G.4.2.3, the Central and Eastern Planning Areas are not currently leased due to a Congressional moratorium pursuant to the Gulf of Mexico Energy Security Act of 2006 and the most recent moratorium, dated September 8, 2020.

G.5 Executive Order 13795 – Implementing an America-First Offshore Energy Strategy

Executive Order 13795 directs the Secretary of Commerce to refrain from designating or expanding any national marine sanctuary unless the proposal includes a full accounting from the Department of the Interior (DOI) of any energy or mineral resource potential (including offshore energy from wind, oil, natural gas, methane hydrates, and any other sources that the Secretary of Commerce deems appropriate) within the expansion area, and the potential impact of the expansion on energy or mineral resource potential within the designated area. On February 25, 2019, BOEM provided NOAA with a review of offshore energy and mineral resource potential located within the revised expansion areas in accordance with Executive Order 13795. Please refer to Chapter 4, section 4.4.3 and chapter 5, section 5.3.9.5 for a full discussion of impacts of this action to offshore energy. For the purpose of updating FGBNMS regulations and the sanctuary's Terms of Designation through the Federal rulemaking process, BOEM's EO 13795 report also served as a substitute for the Regulatory Impact Review (RIR). NOAA inadvertently omitted this report at the proposed rule stage and subsequently published a Federal Register notice on November 23, 2020 (85 FR 74630), making the RIR available for public comments. BOEM's EO 13795 report is also included in this appendix.

G.6 Clean Water Act (33 U.S.C. §§ 1251 et seq.)

The Clean Water Act is the principal federal statute governing water quality. The Clean Water Act's objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The Clean Water Act regulates both the direct (point source) and indirect (non-point source) discharge of pollutants into the nation's waters. Section 402 of the Clean Water Act establishes the National Pollution Discharge Elimination System (NPDES) program. Section 301 prohibits the discharge into navigable waters of any pollutant by any person from a point source unless it is in compliance with a NPDES permit. Section 319 directs states to identify best management practices and measures to reduce non-point source pollution. Sections 311 and 312 regulate, among other things, the discharge of oil and other hazardous substances into navigable waters, adjoining shorelines and waters of the contiguous zone, and sewage discharges from vessels.

[17] Memorandum on Modification of the Withdrawal of Areas of the United States Outer Continental Shelf From Leasing Disposition, 44 Weekly Comp. Pres. Doc. 986 (Jul. 14, 2008).

The EPA has 10 regional offices around the country. EPA's regional offices 4 and 6 work closely with the Gulf of Mexico states to implement the NPDES program. The Clean Water Act allows EPA to authorize state governments to implement the NPDES program in state waters.

The current NPDES General Permits for oil and gas extraction in the Gulf of Mexico (permit # GMG290000 for Region 6 and permit # GMG460000 for Region 4) do not allow discharges from oil and gas activity within "areas of biological concern" or within national marine sanctuaries. Under the General Permit for Region 6 (https://www.epa.gov/sites/production/files/2017-09/documents/2017_final_gp_for_fr_091817.pdf), an exception to this prohibition indicates that facilities located within a national marine sanctuary boundary are authorized to discharge in accordance with these permits if all of the following conditions are met: (1) the platform was installed prior to the designation of the national marine sanctuary; (2) the platform is located outside of the NAZ defined by BOEM; (3) all materials are discharged through a shunt pipe that terminates within 10 meters (33 feet) of the sea floor; (4) sanitary waste is treated with an approved marine sanitation device that complies with pollution control standards and regulations under section 312 of the Clean Water Act; and (5) the materials discharged are associated with and incidental to oil and gas exploration, development or production and originate from wells located within the boundaries of the national marine sanctuary and outside the NAZ.

The Vessel Incidental Discharge Act of 2018 (VIDA), as codified in Section 312(p) of the Clean Water Act (33 U.S.C. § 1322(p)), requires EPA to establish national standards of performance to govern discharges incidental to the normal operation of a commercial (i.e., non-military, non-recreational) vessel. On October 26, 2020, the EPA published a proposed rule under VlDA that would establish national standards of performance for marine pollution control devices for discharges incidental to the normal operation of primarily non-military and non-recreational vessels 79 feet in length and above into the waters of the United States or the waters of the contiguous zone (85 FR 67818). When finalized, the new rule is expected to streamline current federal, state, and local requirements that apply to the commercial vessel community. Until EPA promulgates regulations to implement VIDA, these incidental discharges are governed by the Vessel General Permit, a NPDES general permit (33 U.S.C. § 1322(p)(3)(A)). Fishing vessels and vessels smaller than 79 feet in length are required to comply with ballast water discharge requirements, but are exempt from all other provisions established under VIDA (33 U.S.C. § 1322(p)(2)(B)).

The Clean Water Act allows the federal government to remove discharged substances and assess the removal costs against the responsible party. The Clean Water Act defines removal costs to include costs for the restoration or replacement of natural resources damaged or destroyed as a result of a discharge of oil or a hazardous substance. Section 404 authorizes the U.S. Army Corps of Engineers to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States. Section 401 provides that any applicant for a federal permit or license to conduct any activity that may result in any discharge into navigable waters must obtain certification of compliance with the applicable water quality standards. The regulations implementing section 404 of the Act list coral reefs (40 C.F.R. § 230.44) as one of the special aquatic sites for which impacts should be considered in

making factual determinations and the finding of compliance or non-compliance with the guidelines for section 404 permits.

Though some ongoing discharges will continue under current regulations and exemptions to sanctuary prohibitions, none of the alternatives propose to discharge any material into federal waters, and each alternative would reduce potential discharges into federal waters. As such, NOAA has determined that the proposed action furthers the objectives of the Clean Water Act and does not require permitting under the Clean Water Act.

G.7 National Historic Preservation Act (54 U.S.C. §§ 300101 et seq.)

Section 106 of the National Historic Preservation Act (NHPA), requires federal agencies to take into account the effects of their undertakings on historic properties in accordance with regulations promulgated by the Advisory Council on Historic Preservation at 36 C.F.R. part 800. Historic properties are properties that are included in the National Register of Historic Places or that are eligible for listing.

The regulations establish four basic steps in the section 106 process: (1) determine if the undertaking is the type of activity that could affect historic properties; (2) identify historic properties in the area of potential effects; (3) assess potential effects; and (4) avoid, mitigate, or minimize adverse effects.

As part of the NEPA process for this action, NOAA identified any historic properties in the area of potential effects for the alternatives. Appendix E details site profiles of nationally significant cultural and historic resources within the proposed boundaries of Alternative 5. NOAA identified one shipwreck listed in the National Register of Historic Places and six additional sites within the proposed boundary of Alternative 5 that are eligible for listing and therefore meet NHPA's definition of "historic properties." There are no known historic properties within the boundaries of the Final Preferred Alternative. NOAA determined that **no historic properties would be affected** by implementing the Final Preferred Alternative for the following reasons:

- no historic properties are found within the proposed boundary of Final Preferred Alternative, and,
- no activities to implement the Final Preferred Alternative would interact with the historic properties included identified within the boundaries of Alternative 5.

G.8 Marine Mammal Protection Act (16 U.S.C. §§ 1361 et seq.)

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. (16 U.S.C. § 1372). Take is defined under the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. § 1362(13)) and is further defined by regulation (50 C.F.R. § 216.3) as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal." The Secretary of Commerce is responsible for the conservation and

management of pinnipeds (other than walruses) and cetaceans (16 U.S.C. § 1362(12)(A)(i). The Secretary of Commerce delegated MMPA authority to NOAA's NMFS.[18]

Section 101(a)(5) of the MMPA provides a mechanism for allowing, upon request, the "incidental," but not intentional, taking, of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing or directed research on marine mammals) within a specified geographic region (16 U.S.C. § 1371(a)(5)). The NMFS Office of Protected Resources (OPR) processes applications for incidental takes of small numbers of marine mammals. Section 101(a)(5) of the MMPA and the implementing regulations at 50 C.F.R. part 216, subpart I provide the legal basis and procedures for issuing this authorization. Authorization for incidental takes may be granted if NMFS finds that the taking would be of small numbers, have no more than a negligible impact on those marine mammal species or stocks, and not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses (50 C.F.R. § 216.102). In order for NOAA's NMFS to consider authorizing an incidental take or make a finding that an incidental take is unlikely to occur, a written request must be submitted in accordance with 50 C.F.R. § 216.104.

NOAA has determined that implementing any of the action alternatives does not have the potential to result in the take, injury, or harassment of any species protected under the MMPA, and would result in minor **benefits** to marine mammals as described in section 5.3.6 and 5.3.8.1.

G.9 Migratory Bird Treaty Act (16 U.S.C. §§ 703 et seq.)

The Migratory Bird Treaty Act (MBTA) implements the United States' commitment to bilateral treaties, or conventions, with Great Britain, Canada, Japan, Russia, and Mexico for the protection of shared migratory bird resources. The MBTA establishes that it is unlawful to pursue, hunt, take, capture, kill or sell migratory birds, unless authorized by a permit issued by the Secretary of the Interior. The MBTA protects over 800 bird species, a list of which is maintained at 50 C.F.R. § 10.13. The statute does not discriminate between live or dead birds, and gives full protection to any bird parts including feathers, eggs and nests.

As discussed in section 5.3.8.3, NOAA has determined that the proposed sanctuary expansion will have **no impact** on migratory birds.

G.10 National Invasive Species Act (16 U.S.C. §§ 4701 et seq.)

The Nonindigenous Aquatic Nuisance Species Prevention and Control Act was enacted by Congress in 1990 and was amended by the National Invasive Species Act in 1996. This statute and implementing regulations at 33 C.F.R. part 151 provide the U.S. Coast Guard with authority to establish ballast water management for control of nonindigenous or invasive species in waters of the United States. Specifically, 33 C.F.R. § 151.2050(a) requires owners or operators of vessels equipped with ballast tanks to avoid the discharge or uptake of ballast water in areas within, or

[18] The Secretary of the Interior (through USFWS) is responsible for walruses, sea and marine otters, polar bears, manatees and dugongs (16 U.S.C. § 1362(12)(A)(ii)). The regulations governing incidental take authorizations issued by the USFWS is codified at 50 C.F.R. § 18,27, and do not apply to this proposed action due to the absence of such species in the sanctuary expansion area.

that may directly affect, marine sanctuaries. The regulation does not prohibit the uptake or discharge of ballast water in a marine sanctuary when necessary for safe operation.

The Act also established the Aquatic Nuisance Species Task Force, an intergovernmental organization dedicated to preventing and controlling aquatic invasive species and coordinating government efforts in this regard with those of the private sector and other North American interests (16 U.S.C.§§ 4721-22). The Under Secretary of Commerce for Oceans and Atmosphere and the Director of the USFWS are the chairpersons for the Aquatic Nuisance Species Task Force.

In addition, Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species, is an amendment to Executive Order 13112, directing federal agency actions to continue coordinated Federal prevention and control efforts related to invasive species. Executive Order 13751 directs federal agencies to ensure the faithful execution of the laws of the United States of America to prevent the introduction of invasive species and provide for their control, and to minimize the economic, plant, animal, ecological, and human health impacts that invasive species cause.

The proposed sanctuary expansion furthers the objectives of the National Invasive Species Act and of E.O. 13751 by allowing for sanctuary management activities such as the monitoring and removal of invasive lionfish and orange cup coral at and from proposed expansion areas.

G.11 Rivers and Harbors Act of 1899 (33 U.S.C. §§ 400 et seq.)

The Rivers and Harbors Act of 1899 grants the U.S. Army Corps of Engineers regulatory authority over the following: (1) construction of bridges, causeways, dams or dikes; (2) obstruction, excavation, and filling of navigable waters ; (3) and establishment of harbor lines and conditions related to grants for the extension of piers. No activities regulated under the Rivers and Harbors Act of 1899 are part of the proposed action or any of the alternatives, and the proposed expansion of the existing sanctuary regulatory regime into new areas complements the oversight of dredge and fill activities by the USACE.

G.12 Regulatory Flexibility Act (5 U.S.C. §§ 601 et seq.)

The Regulatory Flexibility Act (RFA) requires Federal agencies to prepare an analysis of an action's impact on small entities whenever the agency is required to publish a rule, unless the agency can certify, pursuant to 5 U.S.C. 605(b), that the action will not have a significant economic impact on a substantial number of small entities. Under section 605(b) of the RFA, if the head of an agency (or his or her designee) certifies that an action will not have a significant impact on a substantial number of small entities, then the agency is not required to prepare a regulatory flexibility analysis.

Pursuant to section 605(b), the Chief Counsel for Regulations for the Department of Commerce certified to the Office of Advocacy of the Small Business Administration that the proposed regulations would not have a significant economic impact on a substantial number of small entities. The rationale for that certification was set forth in the preamble of the proposed rule (85 FR 25367).

This action also does not establish any new reporting, recordkeeping, or other compliance requirements. No comments were received on this certification or conclusions. As a result, a final regulatory flexibility analysis was not required and none was prepared.

G.13 Paperwork Reduction Act (44 U.S.C. §§ 3501 et seq.)

The existing FGBNMS regulations contain a collection-of-information requirement subject to the Paperwork Reduction Act (PRA), approved by The Office of Management and Budget (OMB), under control number 0648-0141, for collection-of-information for reporting and recordkeeping requirements under 15 C.F.R. part 922. This action would not increase or otherwise revise the existing paperwork burdens.

The public reporting burden for national marine sanctuary general permit applications is estimated to average 1 hour 30 minutes per application, including the time for reviewing the application instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. For special use permits, a collection-of information requirement is necessary to determine whether the activities are consistent with the terms and conditions of special use permits prescribed by the NMSA. The public reporting burden for this collection of information is estimated to average twenty four (24) hours per response (application, annual report, and financial report), including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This estimate does not include additional time that may be required should the applicant be required to provide information to NOAA for the preparation of documentation that may be required under NEPA (16 U.S.C. § 1431 et seq.).

NOAA determined that this action would not appreciably change the average annual number of respondents or the reporting burden for the information requirements supporting special use or research permits because few activities requiring new permits are expected for the new areas. Much of the research is expected to be conducted by the sanctuary, and other uses that require permits are anticipated with very low intensity in the proposed expansion areas. NOAA also determined that these regulations do not necessitate a modification to its information collection approval by the Office of Management and Budget under the Paperwork Reduction Act. Comments on this determination were solicited in the proposed rule, and no public comments were received. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB control number.

G.14 Federal Policy on Artificial Reefs

A National Artificial Reef Plan, developed under the Secretary of Commerce by direction of the National Fishing Enhancement Act of 1984, 33 U.S.C. §§ 2101 et seq., and the EPA based upon Federal and international law, provides guidance for development of artificial reefs.[19] Guidance is also provided by the Coastal Artificial Reef Planning Guide adopted by the Gulf, Atlantic and

[19] https://www.bsee.gov/sites/bsee.gov/files/research-other/narpwcover3.pdf.

Pacific States Marine Fisheries Commissions,[20] and Guidelines for Marine Artificial Reef Materials produced by the Gulf States Marine Fisheries Commission.[21] The term "artificial reef" is defined under Section 206 of the National Fishing Enhancement Act as ". . . a structure which is constructed or placed in waters covered under this title for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities." (33 U.S.C. § 2105(1)).

The Gulf States, Atlantic States and Pacific States Marine Fisheries Commissions asked NMFS to allow the states to develop revisions to the National Artificial Reef Plan. The revised plan places stronger emphasis on the habitat implications of artificial reefs than on other functions or outcomes. The revised plan does not list approved material for artificial reef construction, but specifies criteria for materials. The revised plan recommends conducting baseline and follow-up evaluations and monitoring to determine if reefs meet objectives set for them. Under the revised plan, artificial reefs may be used to restore and enhance habitat, as national marine sanctuaries, as reef management areas for effort control, or to resolve spatial and use-conflict.

G.15 Executive Order 12866, Regulatory Planning and Review

This action has been determined to be "other significant" within the meaning of Executive Order 12866. This action is not subject to, and therefore not significant, under Executive Order 13771. Additionally, BOEM's E.O. 13795 report, which is available on regulations.gov at docket NOAA-NOS-2019-033, serves as a substitute for the Regulatory Impact Review (RIR). NOAA inadvertently omitted this report in the public docket for this action when the NPRM was published. NOAA subsequently published a Federal Register notice on November 23, 2020 (85 FR 74630), making the RIR available for public comments. Refer to section G.5 of this appendix for comments received on the RIR. Moreover, NOAA anticipates the associated costs to small business entities with this action will be *de minimis* as explained more fully in the Regulatory Flexibility Act certification.

G.16 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 directs that the programs of federal agencies identify and avoid disproportionately high and adverse effects on human health and the environment of minority or low-income populations. The designation of national marine sanctuaries by NOAA helps to ensure the enhancement of environmental quality for all populations in the United States. The proposed action and alternatives described in this document would not result in any disproportionate negative impacts on any minority or low-income population, and would result in long-term or permanent beneficial impacts by protecting marine habitats, which provides employment opportunities and results in improved ecosystem services to coastal inhabitants. Minority and low-income populations may benefit from place-based planning efforts that seek to integrate communities into sanctuary management planning.

[20] https://rucore.libraries.rutgers.edu/rutgers-lib/16677/PDF/1/play/.
[21] https://www.gsmfc.org/publications/GSMFC%20Number%20121.pdf/.

G.17 Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks

In April 1997, President Clinton signed Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. The E.O. requires federal agencies to identify, assess and address disproportionate environmental health and safety risks to children from federal actions. The proposed action and alternatives would not result in disproportionate negative impacts on children. Children may benefit from increased education opportunities offered by the sanctuary and from the passive economic use value (bequeath value) to future generations through the protections provided by sanctuary designation.

G.18 Executive Order 13089, Coral Reef Protection

Executive Order 13089 requires that all federal agencies whose actions may affect U.S. coral reef ecosystems in federal, state, territorial or commonwealth waters shall: subject to the availability of appropriations, provide for implementation of measures needed to research, monitor, manage and restore affected ecosystems, including, but not limited to, measures reducing impacts from pollution, sedimentation and fishing. To the extent not inconsistent with statutory responsibilities and procedures, these measures shall be developed in cooperation with the U.S. Coral Reef Task Force and fishery management councils and in consultation with affected states, territorial, commonwealth, tribal and local government agencies, nongovernmental organizations, the scientific community and commercial interests. The proposed sanctuary expansion furthers the goals of this order.

G.19 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 reaffirms the Federal government's commitment to tribal sovereignty, self-determination, and self-government. Its purpose is to ensure that all Executive departments and agencies consult with Indian tribes and respect tribal sovereignty as they develop policies on issues that impact Indian communities. NOAA identified no federally-recognized Indian Tribes in the study area pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. § 5131, and did not identify any substantial direct effects that the sanctuary expansion would have on Indian tribes. Therefore, NOAA determined that implementing the Final Preferred Alternative is not anticipated to have substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibility between the federal government and Indian tribes.

Appendix H
Draft Final Regulatory Text and Revised Terms of Designation

Title 15: Commerce and Foreign Trade

PART 922—NATIONAL MARINE SANCTUARY PROGRAM REGULATIONS[22]

Subpart L—Flower Garden Banks National Marine Sanctuary

§922.120 Boundary.

The Flower Garden Banks National Marine Sanctuary (sanctuary) boundary encompasses a total area of approximately 121 square nautical miles (160.35 square miles) of offshore ocean waters, and submerged lands thereunder, along the continental shelf and shelf edge in the northwestern Gulf of Mexico. The entire sanctuary boundary is comprised of 19 unique polygons. The precise boundary coordinates for each polygon are listed in Appendix A to this subpart.

§922.121 Definitions.

As used in this subpart:

Attract or attracting means the conduct of any activity that lures or may lure any animal in the Sanctuary by using food, bait, chum, dyes, decoys (e.g., surfboards or body boards used as decoys), acoustics or any other means, except the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers, surfers).

Clean means not containing detectable levels of harmful matter.

Disturb or disturbing a ray or whale shark means to, or attempt to touch, handle, ride, pursue, chase away, hunt, restrain, detain (no matter how temporarily), capture, collect, or conduct any other activity that disrupts or has the potential to disrupt any ray or whale shark in the Sanctuary by any means. Notwithstanding the above, the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers) is exempted from this definition.

Harmful matter means any substance, or combination of substances, that because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a present or potential threat to Sanctuary resources or qualities, including but not limited to: Fishing nets, fishing line, hooks, fuel, oil, and those contaminants (regardless of quantity) listed at 40 CFR 302.4 pursuant to 42 U.S.C. 9601(14) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended.

No Activity Zone (applicable only to oil and gas industry activities) means the geographic areas delineated by the Department of the Interior in Topographic Features Stipulations for Outer Continental Shelf (OCS) lease sales as defined by a bathymetric contour (isobath) ranging from 55-85m in depth, with the exception of Stetson Bank (52m) and East and West Flower Garden Banks (100m). The Notice to Lessees (NTL) No. 2009-G39 provides and consolidates guidance for the avoidance and protection of biologically sensitive features and areas (i.e. topographic features, pinnacles, live bottoms (low relief

[22] NOAA is reprinting the 922, Subpart L in its entirety as it would read if adopted as proposed. However, the only sections that have been amended pursuant to this action are 922.120, the definition of "No Activity Zone" in 922.121, 922.122(e)(1), and Appendix A and B.

features)) and other potentially sensitive biological features (PSBFs) when conducting operations in water depths shallower than 980 feet (300 meters) in the Gulf of Mexico. NTL 2009-G39 remains in effect pursuant to NTL No. 2015-N02. The no-activity zones are based on depth contours as noted for the following Banks: Stetson Bank (52 meters), MacNeil Bank (82 meters), Rankin Banks (including 28 Fathom Bank) (85 meters), Bright Bank (85 meters), Geyer Bank (85 meters), Elvers Bank (85 meters), McGrail Bank (85 meters), Bouma Bank (85 meters), Rezak Bank (85 meters), Sidner Bank (85 meters), Sonnier Bank (55 meters), Alderdice Bank (80 meters), and Parker Bank (85 meters). For East and West Flower Garden Banks, the no-activity zones are based on the "¼ ¼ ¼" aliquot system formerly used by the Department of the Interior, a method that delineates a specific portion of a block rather than the actual underlying isobath. The precise aliquot part description of these areas around East and West Flower Garden Banks are provided in Appendix A of this subpart.

§922.122 Prohibited or otherwise regulated activities.

(a) Except as specified in paragraphs (c) through (h) of this section, the following activities are prohibited and thus are unlawful for any person to conduct or to cause to be conducted:

(1) Exploring for, developing, or producing oil, gas, or minerals except outside of all no-activity zones and provided all drilling cuttings and drilling fluids are shunted to the seabed through a downpipe that terminates an appropriate distance, but no more than ten meters, from the seabed.

(2)(i) Anchoring any vessel within the Sanctuary.

(ii) Mooring any vessel within the Sanctuary, except that vessels 100 feet (30.48 meters) or less in registered length may moor to a Sanctuary mooring buoy.

(iii) Mooring a vessel in the Sanctuary without clearly displaying the blue and white International Code flag "A" ("alpha" dive flag) or the red and white "sports diver" flag whenever a SCUBA diver from that vessel is in the water and removing the "alpha" dive flag or "sports diver" flag after all SCUBA divers exit the water and return back on board the vessel, consistent with U.S. Coast Guard guidelines relating to sports diving as contained within "Special Notice to Mariners" (00-208) for the Gulf of Mexico.

(3)(i) Discharging or depositing from within or into the Sanctuary any material or other matter except:

(A) Fish, fish parts, chumming materials, or bait used in or resulting from fishing with conventional hook and line gear in the Sanctuary, provided that such discharge or deposit occurs during the conduct of such fishing within the Sanctuary;

(B) Clean effluent generated incidental to vessel use by an operable Type I or Type II marine sanitation device (U.S. Coast Guard classification) approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended (FWPCA), 33 U.S.C. 1322. Vessel operators must lock marine sanitation devices in a manner that prevents discharge or deposit of untreated sewage;

(C) Clean vessel deck wash down, clean vessel engine cooling water, clean vessel generator cooling water, clean bilge water, or anchor wash;

(D) Engine exhaust;

(E) In areas of the Sanctuary outside the no-activity zones, drilling cuttings and drilling fluids necessarily discharged incidental to the exploration for, development of, or production of oil or gas in those areas and in accordance with the shunting requirements of paragraph (a)(1) of this section unless such discharge injures a Sanctuary resource or quality.

(ii) Discharging or depositing, from beyond the boundaries of the Sanctuary, any material or other matter, except those listed in paragraphs (a)(3)(i)(A) through (D) of this section, that subsequently enters the Sanctuary and injures a Sanctuary resource or quality.

(4) Drilling into, dredging, or otherwise altering the seabed of the Sanctuary (except as allowed under paragraph (c) of this section); or constructing, placing, or abandoning any structure, material, or other matter on the seabed of the Sanctuary.

(5) Injuring or removing, or attempting to injure or remove, any coral or other bottom formation, coralline algae or other plant, marine invertebrate, brine-seep biota, or carbonate rock within the Sanctuary.

(6) Taking any marine mammal or turtle within the Sanctuary, except as permitted by regulations, as amended, promulgated under the Marine Mammal Protection Act, as amended, 16 U.S.C. 1361 *et seq.,* and the Endangered Species Act, as amended, 16 U.S.C. 1531 *et seq.*

(7) Killing, injuring, attracting, touching, or disturbing a ray or whale shark in the Sanctuary. Notwithstanding the above, the incidental and unintentional injury to a ray or whale shark as a result of fishing with conventional hook and line gear is exempted from this prohibition.

(8) Injuring, catching, harvesting, collecting, or feeding, or attempting to injure, catch, harvest, collect, or feed, any fish within the Sanctuary by use of bottom longlines, traps, nets, bottom trawls, or any other gear, device, equipment, or means except by use of conventional hook and line gear.

(9) Possessing within the Sanctuary (regardless of where collected, caught, harvested or removed), except for valid law enforcement purposes, any carbonate rock, coral or other bottom formation, coralline algae or other plant, marine invertebrate, brine-seep biota, or fish (except for fish caught by use of conventional hook and line gear).

(10) Possessing or using within the Sanctuary, except possessing while passing without interruption through it or for valid law enforcement purposes, any fishing gear, device, equipment or means except conventional hook and line gear.

(11) Possessing, except for valid law enforcement purposes, or using explosives or releasing electrical charges within the Sanctuary.

(b) If any valid regulation issued by any Federal authority of competent jurisdiction, regardless of when issued, conflicts with a Sanctuary regulation, the regulation deemed by the Director as more protective of Sanctuary resources and qualities shall govern.

(c) The prohibitions in paragraphs (a)(2)(i), (a)(4), and (a)(11) of this section do not apply to necessary activities conducted in areas of the Sanctuary outside the no-activity zones and incidental to exploration for, development of, or production of oil or gas in those areas.

(d) The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to activities necessary to respond to emergencies threatening life, property, or the environment.

(e)(1) The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to activities being carried out by the Department of Defense as of the effective date of the revised terms of sanctuary designation (EFFECTIVE DATE OF REGULATIONS). Such activities shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources or qualities. The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to any new activities carried out by the Department of Defense that do not have the potential for any significant adverse impact on Sanctuary resources or qualities. Such activities shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources or qualities. New activities with the potential for significant adverse impact on Sanctuary resources or qualities may be exempted from the prohibitions in paragraphs (a)(2) through (11) of this section by the Director after consultation between the Director and the Department of Defense. If it is determined that an activity may be carried out, such activity shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources or qualities.

(2) In the event of threatened or actual destruction of, loss of, or injury to a Sanctuary resource or quality resulting from an untoward incident, including but not limited to spills and groundings, caused by a component of the Department of Defense, the cognizant component shall promptly coordinate with the Director for the purpose of taking appropriate actions to respond to and mitigate the harm and, if possible, restore or replace the Sanctuary resource or quality.

(f) The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to any activity executed in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to §922.48 and §922.123 or a Special Use permit issued pursuant to section 310 of the Act.

(g) The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to any activity authorized by any lease, permit, license, approval or other authorization issued after January 18, 1994, provided that the applicant complies with §922.49, the Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization, and the applicant complies with any terms and conditions the Director deems necessary to protect Sanctuary resources and qualities.

(h) Notwithstanding paragraphs (f) and (g) of this section, in no event may the Director issue a National Marine Sanctuary permit under §922.48 and §922.123 or a Special Use permit under section 10 of the Act authorizing, or otherwise approve, the exploration for, development of, or production of oil, gas, or minerals in a no-activity zone. Any leases, permits, approvals, or other authorizations authorizing the exploration for, development of, or production of oil, gas, or minerals in a no-activity zone and issued after the January 18, 1994 shall be invalid.

[77 FR 25069, Apr. 27, 2012]

§922.123 Permit procedures and criteria.

(a) A person may conduct an activity prohibited by §922.122(a)(2) through (11) if conducted in accordance with the scope, purpose, terms, and conditions of a permit issued under this section and §922.48.

(b) Applications for such permits should be addressed to the Director, Office of National Marine Sanctuaries; Attn: Superintendent, Flower Garden Banks National Marine Sanctuary, 4700 Avenue U, Building 216, Galveston, TX 77551.

(c) The Director, at his or her discretion, may issue a permit, subject to such terms and conditions as he or she deems appropriate, to conduct an activity prohibited by §922.122(a)(2) through (11), if the Director finds that the activity will: Further research related to Sanctuary resources; further the educational, natural or historical resource value of the Sanctuary; further salvage or recovery operations in or near the Sanctuary in connection with a recent air or marine casualty; or assist in managing the Sanctuary. In deciding whether to issue a permit, the Director shall consider such factors as: The professional qualifications and financial ability of the applicant as related to the proposed activity; the duration of the activity and the duration of its effects; the appropriateness of the methods and procedures proposed by the applicant for the conduct of the activity; the extent to which the conduct of the activity may diminish or enhance Sanctuary resources and qualities; the cumulative effects of the activity; and the end value of the activity. In addition, the Director may consider such other factors as he or she deems appropriate.

(d) It shall be a condition of any permit issued that the permit or a copy thereof be displayed on board all vessels or aircraft used in the conduct of the activity.

(e) The Director may, *inter alia,* make it a condition of any permit issued that any information obtained under the permit be made available to the public.

(f) The Director may, *inter alia,* make it a condition of any permit issued that a NOAA official be allowed to observe any activity conducted under the permit and/or that the permit holder submit one or more reports on the status, progress, or results of any activity authorized by the permit.

[60 FR 66877, Dec. 27, 1995, as amended at 65 FR 81178, Dec. 22, 2000; 77 FR 25070, Apr. 27, 2012]

Appendix A to Subpart L of Part 922-Flower Garden Banks National Marine Sanctuary Boundary Coordinates

Flower Garden Banks National Marine Sanctuary

Coordinates listed in this appendix are unprojected (Geographic Coordinate System) and based on the North American Datum of 1983 (NAD83).

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	1	Stetson Bank	28.15673	-94.29673
2	1	Stetson Bank	28.15661	-94.30312
3	1	Stetson Bank	28.15862	-94.30888
4	1	Stetson Bank	28.16950	-94.30839
5	1	Stetson Bank	28.17386	-94.30257
6	1	Stetson Bank	28.17583	-94.29445

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
7	1	Stetson Bank	28.17543	-94.29327
8	1	Stetson Bank	28.17284	-94.28952
9	1	Stetson Bank	28.16924	-94.28677
10	1	Stetson Bank	28.16428	-94.28681
11	1	Stetson Bank	28.16274	-94.28756
12	1	Stetson Bank	28.15796	-94.29047
13	1	Stetson Bank	28.15673	-94.29673

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	2	West Flower Garden Bank	27.84363	-93.78549
2	2	West Flower Garden Bank	27.81750	-93.81056
3	2	West Flower Garden Bank	27.81752	-93.84752
4	2	West Flower Garden Bank	27.83069	-93.86271
5	2	West Flower Garden Bank	27.81735	-93.87490
6	2	West Flower Garden Bank	27.83220	-93.89185
7	2	West Flower Garden Bank	27.85854	-93.89369
8	2	West Flower Garden Bank	27.87925	-93.87853
9	2	West Flower Garden Bank	27.92626	-93.82011
10	2	West Flower Garden Bank	27.92620	-93.81759
11	2	West Flower Garden Bank	27.91801	-93.80801
12	2	West Flower Garden Bank	27.90969	-93.77939
13	2	West Flower Garden Bank	27.88644	-93.77939
14	2	West Flower Garden Bank	27.84363	-93.78549

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	3	Horseshoe Bank	27.82317	-93.62789
2	3	Horseshoe Bank	27.80927	-93.63578
3	3	Horseshoe Bank	27.80568	-93.65541
4	3	Horseshoe Bank	27.79429	-93.66555
5	3	Horseshoe Bank	27.78357	-93.68846

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
6	3	Horseshoe Bank	27.79640	-93.70534
7	3	Horseshoe Bank	27.81855	-93.75198
8	3	Horseshoe Bank	27.82742	-93.74743
9	3	Horseshoe Bank	27.81868	-93.68868
10	3	Horseshoe Bank	27.83143	-93.68941
11	3	Horseshoe Bank	27.84699	-93.70079
12	3	Horseshoe Bank	27.87165	-93.73947
13	3	Horseshoe Bank	27.88602	-93.73294
14	3	Horseshoe Bank	27.87252	-93.64648
15	3	Horseshoe Bank	27.85861	-93.63908
16	3	Horseshoe Bank	27.82317	-93.62789

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	4	East Flower Garden Bank	27.89455	-93.57040
2	4	East Flower Garden Bank	27.87999	-93.61309
3	4	East Flower Garden Bank	27.88003	-93.62961
4	4	East Flower Garden Bank	27.89330	-93.64172
5	4	East Flower Garden Bank	27.92101	-93.64747
6	4	East Flower Garden Bank	27.95899	-93.64490
7	4	East Flower Garden Bank	27.97485	-93.63086
8	4	East Flower Garden Bank	27.98177	-93.60996
9	4	East Flower Garden Bank	27.98554	-93.58188
10	4	East Flower Garden Bank	27.95206	-93.57810
11	4	East Flower Garden Bank	27.92151	-93.56880
12	4	East Flower Garden Bank	27.89455	-93.57040

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	5	MacNeil Bank	28.00226	-93.51550
2	5	MacNeil Bank	27.99707	-93.52669
3	5	MacNeil Bank	28.00136	-93.52423

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
4	5	MacNeil Bank	28.00518	-93.52425
5	5	MacNeil Bank	28.01694	-93.52233
6	5	MacNeil Bank	28.01883	-93.51264
7	5	MacNeil Bank	28.03670	-93.50300
8	5	MacNeil Bank	28.03724	-93.49844
9	5	MacNeil Bank	28.03113	-93.49199
10	5	MacNeil Bank	28.01300	-93.49624
11	5	MacNeil Bank	28.00331	-93.50725
12	5	MacNeil Bank	28.00226	-93.51550

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	6	Rankin Bank & 28-Fathom Bank	27.92554	-93.40593
2	6	Rankin Bank & 28-Fathom Bank	27.92039	-93.41021
3	6	Rankin Bank & 28-Fathom Bank	27.92035	-93.42474
4	6	Rankin Bank & 28-Fathom Bank	27.91387	-93.43165
5	6	Rankin Bank & 28-Fathom Bank	27.90829	-93.42234
6	6	Rankin Bank & 28-Fathom Bank	27.90641	-93.42535
7	6	Rankin Bank & 28-Fathom Bank	27.90489	-93.44219
8	6	Rankin Bank & 28-Fathom Bank	27.89549	-93.44396
9	6	Rankin Bank & 28-Fathom Bank	27.88892	-93.43403
10	6	Rankin Bank & 28-Fathom Bank	27.88072	-93.42805
11	6	Rankin Bank & 28-Fathom Bank	27.87676	-93.42787
12	6	Rankin Bank & 28-Fathom Bank	27.88449	-93.44458

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
13	6	Rankin Bank & 28-Fathom Bank	27.88803	-93.45159
14	6	Rankin Bank & 28-Fathom Bank	27.88794	-93.45905
15	6	Rankin Bank & 28-Fathom Bank	27.89234	-93.46410
16	6	Rankin Bank & 28-Fathom Bank	27.89971	-93.45571
17	6	Rankin Bank & 28-Fathom Bank	27.90910	-93.45343
18	6	Rankin Bank & 28-Fathom Bank	27.92847	-93.45335
19	6	Rankin Bank & 28-Fathom Bank	27.93407	-93.44743
20	6	Rankin Bank & 28-Fathom Bank	27.93599	-93.44215
21	6	Rankin Bank & 28-Fathom Bank	27.92554	-93.40593

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	7	Bright Bank	27.87310	-93.27056
2	7	Bright Bank	27.86549	-93.29462
3	7	Bright Bank	27.87300	-93.31055
4	7	Bright Bank	27.89058	-93.32193
5	7	Bright Bank	27.89839	-93.31987
6	7	Bright Bank	27.90336	-93.30953
7	7	Bright Bank	27.91010	-93.30562
8	7	Bright Bank	27.91634	-93.29292
9	7	Bright Bank	27.91263	-93.28816
10	7	Bright Bank	27.90354	-93.28386
11	7	Bright Bank	27.90253	-93.27238
12	7	Bright Bank	27.89927	-93.26729
13	7	Bright Bank	27.87310	-93.27056

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	8	Geyer Bank	27.78848	-93.07794
2	8	Geyer Bank	27.79458	-93.08448
3	8	Geyer Bank	27.83313	-93.07913
4	8	Geyer Bank	27.85306	-93.08279
5	8	Geyer Bank	27.86328	-93.07885
6	8	Geyer Bank	27.86908	-93.06974
7	8	Geyer Bank	27.86556	-93.05944
8	8	Geyer Bank	27.85211	-93.05391
9	8	Geyer Bank	27.83713	-93.05725
10	8	Geyer Bank	27.82540	-93.04312
11	8	Geyer Bank	27.82490	-93.04276
12	8	Geyer Bank	27.80846	-93.03412
13	8	Geyer Bank	27.78997	-93.04096
14	8	Geyer Bank	27.78602	-93.05384
15	8	Geyer Bank	27.78848	-93.07794

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	9A	Elvers Bank -A	27.82285	-92.88605
2	9A	Elvers Bank -A	27.82087	-92.88600
3	9A	Elvers Bank -A	27.82009	-92.88670
4	9A	Elvers Bank -A	27.81869	-92.89235
5	9A	Elvers Bank -A	27.81690	-92.89404
6	9A	Elvers Bank -A	27.81615	-92.89653
7	9A	Elvers Bank -A	27.80645	-92.90884
8	9A	Elvers Bank -A	27.81221	-92.92082
9	9A	Elvers Bank -A	27.81599	-92.93908
10	9A	Elvers Bank -A	27.81934	-92.93940
11	9A	Elvers Bank -A	27.82250	-92.92465
12	9A	Elvers Bank -A	27.82809	-92.91359

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
13	9A	Elvers Bank -A	27.83973	-92.89876
14	9A	Elvers Bank -A	27.83972	-92.88038
15	9A	Elvers Bank -A	27.83003	-92.86983
16	9A	Elvers Bank -A	27.82285	-92.88605

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	9B	Elvers Bank -B	27.85645	-92.92310
2	9B	Elvers Bank -B	27.85662	-92.91922
3	9B	Elvers Bank -B	27.85334	-92.91631
4	9B	Elvers Bank -B	27.85076	-92.91727
5	9B	Elvers Bank -B	27.84903	-92.92097
6	9B	Elvers Bank -B	27.85145	-92.92524
7	9B	Elvers Bank -B	27.85645	-92.92310

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	10A	McGrail Bank -A	27.97684	-92.58489
2	10A	McGrail Bank -A	27.97749	-92.57716
3	10A	McGrail Bank -A	27.97475	-92.56753
4	10A	McGrail Bank -A	27.97304	-92.56191
5	10A	McGrail Bank -A	27.95173	-92.53902
6	10A	McGrail Bank -A	27.94849	-92.54254
7	10A	McGrail Bank -A	27.96632	-92.56116
8	10A	McGrail Bank -A	27.96792	-92.58152
9	10A	McGrail Bank -A	27.95989	-92.58187
10	10A	McGrail Bank -A	27.95409	-92.57057
11	10A	McGrail Bank -A	27.94951	-92.57135
12	10A	McGrail Bank -A	27.94920	-92.57994
13	10A	McGrail Bank -A	27.95846	-92.60274
14	10A	McGrail Bank -A	27.97286	-92.61901
15	10A	McGrail Bank -A	27.98096	-92.60158

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
16	10A	McGrail Bank -A	27.97684	-92.58489

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	10B	McGrail Bank -B	27.94116	-92.54750
2	10B	McGrail Bank -B	27.94180	-92.54543
3	10B	McGrail Bank -B	27.94010	-92.54202
4	10B	McGrail Bank -B	27.93616	-92.54151
5	10B	McGrail Bank -B	27.93481	-92.54398
6	10B	McGrail Bank -B	27.93529	-92.54803
7	10B	McGrail Bank -B	27.93859	-92.54901
8	10B	McGrail Bank -B	27.94116	-92.54750

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	11	Bouma Bank	28.07909	-92.47305
2	11	Bouma Bank	28.07370	-92.44900
3	11	Bouma Bank	28.07370	-92.44891
4	11	Bouma Bank	28.06544	-92.43518
5	11	Bouma Bank	28.05162	-92.43380
6	11	Bouma Bank	28.03846	-92.44065
7	11	Bouma Bank	28.03463	-92.45289
8	11	Bouma Bank	28.03114	-92.45537
9	11	Bouma Bank	28.02915	-92.46338
10	11	Bouma Bank	28.03154	-92.47259
11	11	Bouma Bank	28.04166	-92.47229
12	11	Bouma Bank	28.04525	-92.46717
13	11	Bouma Bank	28.04751	-92.47310
14	11	Bouma Bank	28.04676	-92.48308
15	11	Bouma Bank	28.04866	-92.48462
16	11	Bouma Bank	28.05687	-92.48145
17	11	Bouma Bank	28.06388	-92.49262

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
18	11	Bouma Bank	28.07018	-92.49141
19	11	Bouma Bank	28.06974	-92.48613
20	11	Bouma Bank	28.06594	-92.48098
21	11	Bouma Bank	28.07109	-92.47708
22	11	Bouma Bank	28.07683	-92.48071
23	11	Bouma Bank	28.07909	-92.47305

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	12	Sonnier Bank	28.32652	-92.45356
2	12	Sonnier Bank	28.32495	-92.45647
3	12	Sonnier Bank	28.32501	-92.45965
4	12	Sonnier Bank	28.32796	-92.46626
5	12	Sonnier Bank	28.33523	-92.47536
6	12	Sonnier Bank	28.34453	-92.47511
7	12	Sonnier Bank	28.34840	-92.47439
8	12	Sonnier Bank	28.35256	-92.47181
9	12	Sonnier Bank	28.35416	-92.46784
10	12	Sonnier Bank	28.35456	-92.46135
11	12	Sonnier Bank	28.35351	-92.45729
12	12	Sonnier Bank	28.35174	-92.45107
13	12	Sonnier Bank	28.34852	-92.44564
14	12	Sonnier Bank	28.34303	-92.44045
15	12	Sonnier Bank	28.34048	-92.44024
16	12	Sonnier Bank	28.33584	-92.44669
17	12	Sonnier Bank	28.33068	-92.44985
18	12	Sonnier Bank	28.32652	-92.45356

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	13	Rezak Bank	27.95420	-92.36641
2	13	Rezak Bank	27.95847	-92.37739

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
3	13	Rezak Bank	27.95629	-92.38599
4	13	Rezak Bank	27.97297	-92.39248
5	13	Rezak Bank	27.97892	-92.39845
6	13	Rezak Bank	27.98869	-92.39964
7	13	Rezak Bank	27.99372	-92.38244
8	13	Rezak Bank	27.98603	-92.36697
9	13	Rezak Bank	27.98022	-92.36429
10	13	Rezak Bank	27.97442	-92.36996
11	13	Rezak Bank	27.96006	-92.36854
12	13	Rezak Bank	27.95420	-92.36641

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	14	Sidner Bank	27.93046	-92.36762
2	14	Sidner Bank	27.91368	-92.37398
3	14	Sidner Bank	27.91462	-92.38530
4	14	Sidner Bank	27.91976	-92.39427
5	14	Sidner Bank	27.92306	-92.38792
6	14	Sidner Bank	27.94525	-92.38305
7	14	Sidner Bank	27.94166	-92.37565
8	14	Sidner Bank	27.94231	-92.37189
9	14	Sidner Bank	27.93046	-92.36762

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	15A	Parker Bank -A	27.95067	-92.00294
2	15A	Parker Bank -A	27.94177	-91.99762
3	15A	Parker Bank -A	27.93547	-91.99568
4	15A	Parker Bank -A	27.92937	-91.99981
5	15A	Parker Bank -A	27.93224	-92.02999
6	15A	Parker Bank -A	27.93401	-92.03946
7	15A	Parker Bank -A	27.93958	-92.05015

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
8	15A	Parker Bank -A	27.95012	-92.05050
9	15A	Parker Bank -A	27.96214	-92.05407
10	15A	Parker Bank -A	27.96630	-92.04745
11	15A	Parker Bank -A	27.96869	-92.04120
12	15A	Parker Bank -A	27.96925	-92.02758
13	15A	Parker Bank -A	27.96678	-92.02175
14	15A	Parker Bank -A	27.95067	-92.00294

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	15B	Parker Bank -B	27.96082	-91.99450
2	15B	Parker Bank -B	27.96432	-91.99285
3	15B	Parker Bank -B	27.96566	-91.99014
4	15B	Parker Bank -B	27.96385	-91.98600
5	15B	Parker Bank -B	27.96149	-91.98639
6	15B	Parker Bank -B	27.95931	-91.98760
7	15B	Parker Bank -B	27.95824	-91.99183
8	15B	Parker Bank -B	27.96082	-91.99450

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
1	16	Alderdice Bank	28.09726	-91.99328
2	16	Alderdice Bank	28.09474	-91.98619
3	16	Alderdice Bank	28.09569	-91.97526
4	16	Alderdice Bank	28.09184	-91.97361
5	16	Alderdice Bank	28.08410	-91.97273
6	16	Alderdice Bank	28.07506	-91.97457
7	16	Alderdice Bank	28.07053	-91.98465
8	16	Alderdice Bank	28.06959	-91.99347
9	16	Alderdice Bank	28.06819	-92.00512
10	16	Alderdice Bank	28.07026	-92.01321
11	16	Alderdice Bank	28.07562	-92.02032

Point ID No.	Polygon ID No.	Bank(s)	Latitude	Longitude
12	16	Alderdice Bank	28.08058	-92.02436
13	16	Alderdice Bank	28.08463	-92.02577
14	16	Alderdice Bank	28.09024	-92.02296
15	16	Alderdice Bank	28.09487	-92.01231
16	16	Alderdice Bank	28.09627	-92.00735
17	16	Alderdice Bank	28.09507	-92.00008
18	16	Alderdice Bank	28.09726	-91.99328

Appendix B to subpart L Flower Garden Banks National Marine Sanctuary – Terms of Designation

Preamble

Under the authority of title III of the Marine Protection, Research, and Sanctuaries Act, as amended ("the Act"), 16 U.S.C. 1431 *et seq*., 19 separate unique polygon areas of ocean waters and the submerged lands thereunder, along the continental shelf and shelf edge in the northwestern Gulf of Mexico, as described in Article II, are hereby designated as Flower Garden Banks National Marine Sanctuary for the purposes of protecting and managing the conservation, ecological, recreation, scientific, education, historic and aesthetic resources and qualities of these areas.

Article I – EFFECT OF DESIGNATION

The Act authorizes the Secretary of Commerce to issue such final regulations as are necessary and reasonable to implement the designation, including managing and protecting the conservation, recreational, ecological, historical, research, educational, and esthetic resources and qualities of a sanctuary. Section 1 of Article IV of this Designation Document lists those activities that may be regulated on the effective date of designation or at some later date in order to protect Sanctuary resources and qualities. Thus, the act of designation empowers the Secretary of Commerce to regulate the activities listed in Section 1. Listing does not necessarily mean that an activity will be regulated; however, if an activity is not listed it may not be regulated, except on an emergency basis, unless Section 1 of Article IV is amended by the same procedures by which the original designation was made.

Article II – DESCRIPTION OF THE AREA

The Flower Garden Banks National Marine Sanctuary (Sanctuary) boundary encompasses a total area of approximately 121 square nautical miles (160 square miles) of offshore ocean waters, and submerged lands thereunder, along the continental shelf and shelf edge in the northwestern Gulf of Mexico. The entire sanctuary boundary is composed of 19 unique polygons. The precise boundary coordinates for each polygon are listed in Appendix A to this subpart.

The sanctuary boundary for Polygon 1 begins at Point 1 and continues in numerical order to Point 13 and contains the submerged feature of Stetson Bank with an area of approximately 1.1 square nautical miles (1.5 square miles), located approximately 71 nautical miles (82 miles) south-southeast of Galveston, Texas. The sanctuary boundary for Polygon 2 begins at Point 1 and continues in numerical order to Point 14 and contains the submerged feature of West Flower Garden Bank with an area of approximately 28.0 square nautical miles (37.1 square miles), located approximately 97 nautical miles (111 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 3 begins at Point 1 and continues in numerical order to Point 16 and contains the submerged feature of Horseshoe Bank with an area of approximately 21.7 square nautical miles (28.7 square miles), located approximately 102 nautical miles (117 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 4 begins at Point 1 and continues in numerical order to Point 12 and contains the submerged feature of East Flower Garden Bank with an area of approximately 21.0 square nautical miles (27.8 square miles), located approximately 101 nautical miles (116 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 5 begins at Point 1 and continues in numerical order to Point 12 and contains the submerged feature of MacNeil Bank with an area of approximately 2.1 square nautical miles (2.7 square miles), located approximately 103 nautical miles (118 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 6 begins at Point 1 and continues in numerical order to Point 21 and contains the submerged features of Rankin Bank and 28 Fathom Bank with an area of approximately 4.2 square nautical miles (5.6 square miles), located approximately 109 nautical miles (126 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 7 begins at Point 1 and continues in numerical order to Point 13 and contains the submerged features of Bright Bank with an area of approximately 5.8 square nautical miles (7.6 square miles), located approximately 115 nautical miles (133 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 8 begins at Point 1 and continues in numerical order to Point 15 and contains the submerged feature of Geyer Bank within an area of approximately 8.7 square nautical miles (11.5 square miles), located approximately 126 nautical miles (145 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 9A begins at Point 1 and continues in numerical order to Point 16 and contains part of the submerged feature of Elvers Bank within an area of approximately 3.3 square nautical miles (4.4 square miles), located approximately 134 nautical miles (154 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 9B begins at Point 1 and continues in numerical order to Point 7 and also contains part of the submerged feature of Elvers Bank within an area of approximately 0.1 square nautical miles (0.2 square miles), located approximately 133 nautical miles (153 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 10A begins at Point 1 and continues in numerical order to Point 16 and contains part of the submerged feature of McGrail Bank with an area of approximately 3.4 square nautical miles (4.5 square miles), located approximately 142 nautical miles (163 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 10B begins at Point 1 and continues in numerical order to Point 8 and also contains part of the submerged feature of McGrail Bank with an area of approximately 0.1 square nautical miles (0.2 square miles), located approximately 146 nautical miles (168 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 11 begins at Point 1 and continues in numerical order to Point 23 and contains the submerged feature of Bouma Bank with an area of approximately 5.8 square nautical miles (7.7 square miles), located approximately 145 nautical miles (167 miles) southeast of Galveston, Texas. The sanctuary

boundary for Polygon 12 begins at Point 1 and continues in numerical order to Point 18 and contains the submerged feature of Sonnier Bank with an area of approximately 2.3 square nautical miles (3.1 square miles), located approximately 138 nautical miles (159 miles) east-southeast of Galveston, Texas. The sanctuary boundary for Polygon 13 begins at Point 1 and continues in numerical order to Point 12 and contains the submerged feature of Rezak Bank with an area of approximately 2.8 square nautical miles (3.7 square miles), located approximately 151 nautical miles (174 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 14 begins at Point 1 and continues in numerical order to Point 9 and contains the submerged feature of Sidner Bank with an area of approximately 1.5 square nautical miles (2.0 square miles), located approximately 153 nautical miles (177 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 15A begins at Point 1 and continues in numerical order to Point 14 and contains part of the submerged feature of Parker Bank within an area of approximately 5.2 square nautical miles (6.8 square miles), located approximately 168 nautical miles (194 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 15B begins at Point 1 and continues in numerical order to Point 8 and also contains part of the submerged feature of Parker Bank within an area of approximately 0.1 square nautical miles (0.2 square miles), located approximately 171 nautical miles (197 miles) southeast of Galveston, Texas. The sanctuary boundary for Polygon 16 begins at Point 1 and continues in numerical order to Point 18 and contains the submerged feature of Alderdice Bank within an area of approximately 3.8 square nautical miles (5.0 square miles), located approximately 166 nautical miles (191 miles) east-southeast of Galveston, Texas.

Article III – CHARACTERISTICS OF AREA THAT GIVE IT PARTICULAR VALUE

The Sanctuary contains a series of underwater features located along the edge of the continental shelf in the northwestern Gulf of Mexico. These features are of interest from both a geological and biological perspective. Formed as the result of the movement of underlying salt deposits (also called salt domes or salt diapirs), and bathed by waters of tropical origin, they contain important geological features, biological habitats and other marine resources of national significance. They contain highly productive marine ecosystems that support a variety of fish and invertebrate communities of biological and economic importance.

The reefs and banks of the northwestern Gulf of Mexico are structurally complex and contain a range of marine habitats, including coral reefs, coralline algal reefs, algal nodule beds, mesophotic and deepwater reefs, and soft bottom communities. The composition, diversity and vertical distribution of benthic communities on the banks are strongly influenced by the physical environment, including water temperature, turbidity and current regime. Geological features of interest include brine seeps, exposed basalt, methane seeps, and mud volcanoes. East and West Flower Garden Banks, the most well-known of the features, sustain the northernmost living coral reefs on the U.S. continental shelf, considered among the healthiest coral reefs in the Caribbean and Western Atlantic region. A deeper water coral reef also exists at McGrail Bank, consisting primarily of large colonies of blushing star coral (*Stephanocoenia intersepta*) at depths between 140 and 160 feet. These coral reefs are isolated from other reef systems by over 300 nautical miles (342 miles) and exist under hydrographic conditions generally near the northern limit for tropical reef formation. Several other banks, including Stetson, Sonnier,

Geyer, and Bright Banks, contain various combinations of non-reef building coral species known collectively as coral communities, comprised of sponges, stony corals, fire coral, leafy algae and coralline algae. The deeper portions of the banks host thriving mid-depth (or "mesophotic") coral habitats characterized by the presence of both light-dependent and deepwater corals, including black corals, Alcyonacea (formerly gorgonian) corals, and associated organisms. Biological communities are distributed among several interrelated biotic zones, including a coralline algae zone, deep reef rocky outcrops, and soft bottom communities. The complex and biologically productive ecological communities of the banks offer a combination of aesthetic appeal and recreational and research opportunity matched in few other ocean areas.

The following are qualitative descriptions of the individual reefs and banks within the Sanctuary; specific boundary coordinates can be found in Appendix A.

a. Stetson Bank, depth range 56ft – 194ft

Boundaries encompass a claystone/siltstone ring feature of mesophotic coral habitat revealed by high resolution multibeam bathymetric surveys, and subsequently ground-truthed by remotely operated vehicle surveys. These features are surface expressions of the salt dome associated with the feature, and provide habitat for sponges, Alcyonacea (formerly gorgonians), stony branching corals, black corals, and associated fish and mobile invertebrates.

b. West Flower Garden Bank, depth range 59ft – 545ft

Boundaries encompass mesophotic coral patch reefs to the north, southwest, and east of the existing sanctuary. These reefs provide coralline algae reef habitat for black corals, Alcyonacea (formerly gorgonians), stony branching corals, and associated fish and mobile invertebrates.

c. East Flower Garden Bank, depth range 52ft – 446ft

Boundaries to encompass mesophotic coral patch reefs to the north and southeast of the existing sanctuary. These reefs provide deep coral habitat for dense populations of black corals, Alcyonacea (formerly gorgonians), stony branching corals, and associated fish and mobile invertebrates.

d. Horseshoe Bank, depth range 243ft – 614ft

Extensive deepwater habitat and coralline algae reefs in the form of hundreds of patchy outcroppings covering an area of approximately 1.9miles (3kilometers) wide and having 16.4-49.2ft (5-15m) of relief above the seafloor, with dense assemblages of mesophotic black coral, Alcyonacea (formerly gorgonians), stony branching corals, sponges, algae invertebrates, and fish; several conical-shaped mud volcanoes clustered near the center of the feature, with one rising 328ft (100m) above the sea floor.

e. MacNeil Bank, depth range 210ft – 315ft

Deep reef bedrock outcrops and coralline algae patch reefs harboring populations of black corals and Alcyonacea (formerly gorgonian)s, sponges, fish, and mobile invertebrates.

f. Rankin/28 Fathom Banks, depth range 164ft – 571ft

Rankin Bank is just north of 28 Fathom Bank, and separated from it by a long trough, approximately 1,640-foot (500 m) wide, approximately 6,070-foot (1,850 m) which extends to a depth of approximately 570ft (174 m). The boundaries encompass the shallowest portions of Rankin and 28 Fathom Banks, which harbor coral algae reefs and deep coral reefs with populations of Alcyonacea (formerly gorgonians), black corals, sponges, and associated fish and mobile invertebrates.

g. Bright Bank, depth range 112ft – 384ft

Bright Bank previously harbored a coral reef on the very shallowest portions of the bank, which sustained extensive damage from salvage and mining activities employing dynamite for excavation activities. The cap is now considered a coral community, and in spite of these impacts, nine species of shallow water scleractinian corals survive, along with two deeper water species. The feature also harbors extensive coralline algae reefs, providing habitat for populations of Alcyonacea (formerly gorgonians), black corals, sponges, and associated fish and mobile invertebrates.

h. Geyer Bank, depth range 128ft – 722ft

Geyer Bank is a broad, relatively flat fault-bounded structure situated on an active salt diaper. This feature supports a coral community, as well as extensive coralline algae reefs and fields of algal nodules including dense fields of macro-algae, black corals, Alcyonacea (formerly gorgonians), sponges, and associated fish and mobile invertebrates. Seasonal spawning aggregations of fish are associated with this bank, including enormous numbers of reef butterflyfish.

i. Elvers Bank, depth range 213ft - 686ft

Two discreet polygons have been developed to protect portions of Elvers Bank: a larger polygon encompassing 4.43 square miles on the south side of the feature, and a small polygon, encompassing 0.19 square miles on the north side of the feature. The shallow areas of the bank feature coralline algae reefs and algal nodule fields, and the deeper areas in the southern polygon harbor large deep reef outcroppings, both providing habitat for black corals, Alcyonacea (formerly gorgonians), sponges, and associated fish and mobile invertebrates. The deep reefs also harbor glass sponge fields, a feature not documented in any other areas of the sanctuary, as well as a previously undescribed species of black coral.

j. McGrail Bank, depth range 144ft - 512ft

Two discreet polygons have been developed to protect portions of McGrail Bank: a larger claw shaped polygon reaching from northwest to southeast, encompassing 4.54 square miles, and a smaller polygon, encompassing 0.17 square miles, situated on the southeast of the feature that wraps around a conical shaped mound. This bank features unique areas of coral reefs dominated by large colonies of the blushing star coral, *Stephanocoenia intersepta*, with 28% live coral cover in discrete areas (no other known coral reef is dominated by this species). Pinnacles varying in diameter from approximately80 to 395 feet (24-120 m) and as tall as approximately25 feet (8 m) are found on the southwest rim of the

main feature, along east- and southeast-trending scarps leading away from the bank and in concentric fields to the south and southeast of the bank. A significant portion of the depth zone between 145 and 170 feet is dominated by coral colonies up to 5 feet tall, covering an area of approximately 37 acres. At least 14 species of stony corals have been recorded. Deeper portions of this site harbor mesophotic coral habitat for deep coral, coralline algae reefs, and fields of algal nodules. Dense populations of black corals, Alcyonacea (formerly gorgonians), macro-algae fields, and associated fish and mobile invertebrates are present.

k. Sonnier Bank, depth range 62ft – 210ft

Sonnier Bank consists of a series of isolated clusters of pinnacles comprised of uplifted siltstone and claystone, that rise mostly around the perimeter of a single, roughly circular ring 1.9miles (3.2kilometers) in diameter. Two peaks are accessible and popular with recreational scuba divers. The peaks are dominated by coral communities featuring fire coral, sponges, and algae. The deeper portions of the feature are fairly heavily silted, but provide habitat for black corals, Alcyonacea (formerly gorgonians), and associated fish and mobile invertebrates.

l. Bouma Bank, depth range 187ft – 322ft

Bouma Bank is dominated by coralline algae reefs and algal nodule fields, providing habitat for populations of black corals, Alcyonacea (formerly gorgonians), algae, branching stony coral, clusters of cup coral, and associated fish and mobile invertebrates.

m. Rezak Bank, depth range 197ft – 430ft

Rezak Bank is dominated by coralline algae reefs and extensive algal nodule fields, providing habitat for populations of black corals, Alcyonacea (formerly gorgonians), algae, and associated fish and mobile invertebrates.

n. Sidner Bank, depth range 190ft – 420ft

Dominated by coralline algae reefs and extensive algal nodule fields providing habitat for populations of black corals, Alcyonacea (formerly gorgonians), algae, sponges, and associated fish and mobile invertebrates.

o. Alderdice Bank , depth range 200ft – 322ft

This feature includes spectacular basalt outcrops of Late Cretaceous origin (approximately 77 million years old) representing the oldest rock exposed on the continental shelf offshore of Louisiana and Texas. The outcrops at Alderdice Bank bear diverse, extremely dense assemblages of Alcyonacea (formerly gorgonians) and black corals, sponges, and swarms of reef fish. Mesophotic coralline algae reef habitats below the spires, silted over in areas, provide habitat for dense populations of black corals, Alcyonacea (formerly gorgonians), sponges, branching stony corals, fields of macro-algae, and associated fish and mobile invertebrates.

p. Parker Bank, depth range 187ft – 387ft

Two discreet polygons have been developed to protect portions of Parker Bank. A larger polygon bounding the central portion of the features, encompassing 6.82 square miles, and a smaller polygon to the east, encompassing 0.14 square miles. These boundaries protect the shallowest portions of the bank, which harbor coralline algae reefs and algal nodule fields and support populations of plating stony corals, black corals, Alcyonacea (formerly gorgonians), sponges, macro-algae, and associated fish and mobile invertebrates.

Article IV – Scope of Regulations

Section 1. Activities Subject to Regulation

The following activities are subject to regulation, including prohibition, to the extent necessary and reasonable to ensure the protection and management of the conservation, recreational, ecological, historical, research, educational and esthetic resources and qualities of the area:

a. Anchoring or otherwise mooring within the Sanctuary;

b. Discharging or depositing, from within the boundaries of the Sanctuary, any material or other matter;

c. Discharging or depositing, from beyond the boundaries of the Sanctuary, any material or other matter;

d. Drilling into, dredging or otherwise altering the seabed of the Sanctuary; or constructing, placing or abandoning any structure, material or other matter on the seabed of the Sanctuary;

e. Exploring for, developing or producing oil, gas or minerals within the Sanctuary;

f. Taking, removing, catching, collecting, harvesting, feeding, injuring, destroying or causing the loss of, or attempting to take, remove, catch, collect, harvest, feed, injure, destroy or cause the loss of, a Sanctuary resource;

g. Possessing within the Sanctuary a Sanctuary resource or any other resource, regardless of where taken, removed, caught, collected or harvested, that, if it had been found within the Sanctuary, would be a Sanctuary resource.

h. Possessing or using within the Sanctuary any fishing gear, device, equipment or other apparatus.

i. Possessing or using airguns or explosives or releasing electrical charges within the Sanctuary.

j. Interfering with, obstructing, delaying or preventing an investigation, search, seizure or disposition of seized property in connection with enforcement of the Act or any regulation or permit issued under the Act.

Section 2. Consistency with International Law

Any regulation of activities listed in Section 1 of this Article will be applied and enforced as mandated by 16 USC 1435(a).[1]

Section 3. Emergency Regulations

Where necessary to prevent or minimize the destruction of, loss of, or injury to a Sanctuary resource or quality, or minimize the imminent risk of such destruction, loss or injury, any and all activities, including those not listed in section 1 of this Article, are subject to immediate temporary regulation, including prohibition.

Article V – Effect on Other Regulations, Leases, Permits, Licenses, and Rights

Section 1. Fishing Regulations, Licenses, and Permits

The regulation of fishing is authorized under Article IV. All regulatory programs pertaining to fishing, including fishery management plans promulgated under the Magnuson Fishery Conservation and Management Act, 16 U.S.C. 1801 *et seq.,* shall remain in effect. Where a valid regulation promulgated under these programs conflicts with a Sanctuary regulation, the regulation deemed by the Secretary of Commerce or designee as more protective of Sanctuary resources and qualities shall govern.

Section 2. Other Licenses, Regulations, and Permits

If any valid regulation issued by any Federal authority of competent jurisdiction, regardless of when issued, conflicts with a Sanctuary regulation, the regulation deemed by the Secretary of Commerce or designee as more protective of Sanctuary resources and qualities shall govern.

Pursuant to section 304(c)(1) of the Act, 16 U.S.C. 1434(c)(1), no valid lease, permit, license, approval, or other authorization issued by any Federal authority of competent jurisdiction, or any valid right of subsistence use or access, may be terminated by the Secretary of Commerce or designee as a result of this designation or as a result of any Sanctuary regulation if such authorization or right was in existence on the effective date of this designation. However, the Secretary of Commerce or designee may regulate the exercise of such authorization or right consistent with the purposes for which the Sanctuary is designated.

Accordingly, the prohibitions set forth in the Sanctuary regulations shall not apply to any activity authorized by any valid lease, permit, license, approval, or other authorization in existence on the effective date of Sanctuary designation and issued by any Federal authority of competent jurisdiction, or by any valid right of subsistence use or access in existence on the effective date of Sanctuary designation, provided that the holder of such authorization or right complies with Sanctuary regulations regarding the certification of such authorizations and rights (*e.g.,* notifies the Secretary or designee of the existence of, requests certification of, and provides requested information regarding such authorization or right) and complies with any terms and conditions on the exercise of such authorization or right imposed as a condition of certification by the Secretary or designee as he or she deems necessary to achieve the purposes for which the Sanctuary was designated.

Pending final agency action on the certification request, such holder may exercise such authorization or right without being in violation of any prohibitions set forth in the Sanctuary regulations, provided the holder is in compliance with Sanctuary regulations regarding certifications.

The prohibitions set forth in the Sanctuary regulations shall not apply to any activity conducted in accordance with the scope, purpose, terms, and conditions of the National Marine Sanctuary permit issued by the Secretary or designee in accordance with the Sanctuary regulations. Such permits may only be issued if the Secretary or designee finds that the activity for which the permit is applied will: Further research related to Sanctuary resources; further the educational, natural or historical resource value of the Sanctuary; further salvage or recovery operations in or near the Sanctuary in connection with a recent air or marine casualty; or assist in managing the Sanctuary.

The prohibitions set forth in the sanctuary regulations shall not apply to any activity conducted in accordance with the scope, purpose, terms, and conditions of a Special Use permit issued by the Secretary or designee in accordance with section 310 of the Act. However, in areas where sanctuary regulations prohibit oil, gas, or mineral exploration, development or production, the Secretary or designee may in no event, permit or otherwise, approve such activities in that area. Any leases, licenses, permits, approvals, or other authorizations issued after [EFFECTIVE DATE SANCTUARY DESIGNATION] authorizing the exploration or production of oil, gas, or minerals in that area shall be invalid.

Section 3. Department of Defense Activities

The prohibitions in § 922.122(a)(2) through (11) do not apply to activities being carried out by the Department of Defense as of the effective date of Sanctuary designation [insert effective date of Sanctuary expansion]. Such activities shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources and qualities. The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to any new activities carried out by the Department of Defense that do not have the potential for any significant adverse impact on Sanctuary resources and qualities. Such activities shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources and qualities. New activities with the potential for significant adverse impact on Sanctuary resources and qualities may be exempted from the prohibitions in paragraphs (a)(2) through (11) of this section by the Director after consultation between the Director and the Department of Defense. If it is determined that an activity may be carried out, such activity shall be carried out in a manner that minimizes any adverse impact on Sanctuary resources and qualities. In the event of threatened or actual destruction of, loss of, or injury to a Sanctuary resource or quality resulting from an untoward incident, including but not limited to spills and groundings, caused by a component of the Department of Defense, the cognizant component shall promptly coordinate with the Director for the purpose of taking appropriate actions to respond to and mitigate the harm and, if possible, restore or replace the Sanctuary resource or quality.

Article VI – ALTERATIONS TO THIS DESIGNATION

The terms of designation may be modified only by the same procedures by which the original designation is made, including public hearings, consultation with any appropriate Federal, State, regional and local agencies, review by the appropriate Congressional committees and approval by the Secretary of Commerce or designee.

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[1] Based on the legislative history of the NMSA, NOAA has long interpreted the text of 16 USC 1435(a) as encompassing international law, including customary international law.

Appendix I
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