Deepwater Horizon Oil Spill
Alabama Trustee Implementation Group

Final Restoration Plan II and Environmental Assessment:

Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters

Volume II - Appendices

SEPTEMBER 2018
Appendix A:

Public Comments Received on the Draft RP II/EA
Previously, it was stated that among the projects were connecting septic systems along Little Lagoon to city sewer and improving the hydrology of Little Lagoon at the pass. Have these projects been removed from the plan?

I am writing in support of the Alabama Trustee Implementation Group (Alabama TIG) draft Restoration Plan II/Environmental Assessment (RP II/EA). As a property owner in the Weeks Bay Watershed, a boater and angler I am specifically supportive of three land acquisition projects - Magnolia River (Holmes Tract), Weeks Bay East Gateway Tract, and Weeks Bay Harrod Tract. Acquisition of these properties will serve to fulfill the goals to restore and conserve habitat, to replenish and protect living coastal and marine resources and to restore water quality. I also served on the Stake Holders committee for the Weeks Bay Watershed Management Plan. The Plan identifies land acquisition in the watershed as an important priority.

I also write in support of the Weeks Bay Nutrient Reduction project. The Weeks Bay Watershed Management Plan identified agricultural runoff as an issue and a priority. This project will help farmers with some non point source pollution problems.

April 26, 2018
The Alabama Trustee Implementation Group
C/o U.S. Fish and Wildlife Service
PO Box 49567
Atlanta, GA 30345
Re: Alabama NRDA Draft Restoration Plan II and Environmental Assessment

Dear Trustees,

Thank you for the opportunity comment on the NRDA Draft Restoration Plan II and Environmental Assessment for the Alabama Restoration Area. These comments are being submitted on behalf of the Pelican Coast Conservancy (Conservancy). The Conservancy is a land conservation organization whose mission is to provide 21st century solutions and sound scientific applications for conservation of critical natural resources in the face of a changing climate focusing on environmental restoration, preservation, and conservation efforts throughout the Gulf Coast region with specific utilization of geographic information systems applications in land conservation, ecosystem services, carbon sequestration and conservation biology.

The Conservancy works to protect properties that contain important conservation values. Perpetual land acquisition projects can serve as an important vehicle to mitigate the natural resource damages in Alabama caused by the Deepwater Horizon oil spill.

We would like to commend the Trustees for identifying restoration projects utilizing Natural Resource Damage Assessment (NRDA) funds that include property located in the Weeks Bay National Estuarine Research Reserve's Coastal Land Acquisition Area. The acquisition of these wetland, coastal and nearshore habitat parcels will provide an important long term resource protection benefit to restore and protect habitat.

It appears that this round of NRDA funding did not include any land acquisition projects in Mobile County. Future land conservation activities could include the purchase of property in the City of Mobile, on the barrier island of Dauphin Island, Fowl River watershed, or within the vicinity of the City of Bayou La Batre. The Conservancy would encourage the Trustees to place perpetual conservation easements on future properties acquired for conservation that utilize NRDA funds.

The placement of a perpetual conservation easement would add an additional layer of permanent conservation to the conserved property. This mechanism of additional protection would ensure the ecological integrity of the completed project.

The Pelican Coast Conservancy looks forward to the approval and implementation of the preferred restoration projects that have been identified in the Alabama NRDA Draft Restoration Plan II and Environmental Assessment. Please, feel free to contact me if you have any questions or need additional information.

Working for perpetual land conservation,

Walter
Walter C. Ernest IV
Director of Operations
Pelican Coast Conservancy
wetland creation adjacent to Marsh Island may have buried live reef. Side scan can help establish other areas of recent buryi
familiar areas. There are also some issues associated with the area indicated for Portersville Bay o
The side scan surveying makes the most sense in some time as a mechanism for expanding shell planting areas, which have large
2.6.7.3 Side
2.6.7 Oysters
The loss of the Cat Island Heronry has dramatically diminished available habitat so this effort should provide valuable infor
2.6.6.4 Colonial Nesting Wading Bird Trac
Landscape studio effort some years ago, bird habitat was successfully restored on nearby Cat Island by Dauphin Island Sea Lab
My comments can be found above (2.6.1.7) but will enthusiastically supp
2.6.6.2 Southwestern Coffee Island Habitat Restoration Project
2.6.6 Birds
The habitat acquisition projects advanced appear to be appropriate but I would offer the comments below:
2.6.1.2 Perdido River Land Acquisition (Molpus Tract)
I would recommend that this request be maintained for future funding consideration. Perdido Bay is uniquely vulnerable to pollutant impacts because of poor flushing characteristics and shoreline topography that mitigates against aeolian re-suspension and subsequent oxygenation of sediment/benthic contaminants which occurs in Mobile Bay.
2.6.2.2 Little Lagoon Living Shoreline
All living shoreline projects should contain language and MAM plans that anticipate RSLR for the impacted region. (also typ o - Spartina)
2.6.1.7 Southwestern Coffee Island Habitat Restoration Project-Phase I (E&D)
The expansion of bird nesting habitat is a crucial objective given the near-total loss of nesting habitat on Cat Island so this is a great project with appropriate funding. But, if wetland habitat is to be included, the engineering methodology is a major consideration. ADCNR's planning and construction effort on Marsh Island has been apparently abysmal and must not be duplicated on Coffee Island! ADCNR attempted marsh creation in the name of wetland restoration and may have negatively impacted nearby riparian leases and oyster farms. Restoration implies that emergent marshes have disappeared for some reason, usually anthropogenic, and the process can be reversed. The attempt to expand Marsh Island was ill-conceived at best and disastrously executed.
2.6.3 Nutrient Reduction (Nonpoint Source)
2.6.3.3 Bayou La Batre Nutrient Reduction
Non-inclusion for this project was logical based on ALTIG criteria, but the relative impacts of the (admittedly diminishing) commercial fishing industry and seafood processing on the western side of Portersville Bay might be a fruitful direction to go. The BLB proposal for waste treatment should have been directed toward the bay rather than the stream. I realize the ALTIG goals were non-point sources and carbon is not a conventional "nutrient" but in my mind, it is THE nutrient of greatest concern. It is the building block of organic matter and its oxidation is the proximal cause of most hypoxic conditions. Consequently, the treatment outfall issues from Bayou La Batre should remain on the table.
2.6.3.4 Fowl River Nutrient Reduction
The nutrient reduction projects are well done, particularly Fowl River which may be one of the last minimally impacted tidal streams. The odd configuration of simultaneous discharge into both Mobile Bay and Portersville Bay creates opposing rising tides and complicates management.
2.6.3.5 Weeks Bay Nutrient Reduction
The Weeks Bay project is overdue considering its designation as an Outstanding National Resource Waterbody. Unfortunately, ONRW addresses only point sources There is heavy growth pressure all the way to the headwaters of the Fish River and development interests are all unconcerned about the implications.
2.6.4 Sea Turtles
The turtle projects are well done. I do have a question/comment concerning:
2.6.4.3 CAST Triage
Are there enough turtle strandings in our area to justify the size of this program? What are the geographic boundaries to be served - will MS and west FL NRDA participate financially? I must question the cost/benefit ratio.
2.6.5 Marine Mammals
No comment other than to applaud.
2.6.6 Birds
2.6.6.2 Southwestern Coffee Island Habitat Restoration Project-Phase I (E&D)
My comments can be found above (2.6.1.7) but will enthusiastically support bird habitat (shrub/tree) restoration. With the assistance of an Auburn Landscape studio effort some years ago, bird habitat was successfully restored on nearby Cat Island by Dauphin Island Sea Lab scientists.
2.6.6.4 Colonial Nesting Wading Bird Tracking and Habitat Use Assessment-Two Species
The loss of the Cat Island Heronry has dramatically diminished available habitat so this effort should provide valuable information.
2.6.7 Oysters
2.6.7.3 Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D)
The side scan surveying makes the most sense in some time for a mechanism for expanding shell planting areas, which have largely been limited to existing familiar areas. There are also some issues associated with the area indicated for Portersville Bay off West Fowl River where the poorly designed emergent wetland creation adjacent to Marsh Island may have buried live reef. Side scan can help establish other areas of recent burying as well as targets for shell
The earliest charts from the Coast and Geodetic Survey (19th century) indicated significant oyster reefs throughout Portersville Bay so it might be worth expanding the side scan work to include PB in the ALTIG scope. Years ago, the University of Alabama experimented with restoring appropriate substrates for cultch placement in Portersville Bay. The assumption at the time (1969-70) was that the native reefs had been buried by anthropogenic sediment deposition (channel dredging).

2.6.7.4 Oyster Hatchery at Claude Peteet Mariculture High Spat Production with Study
I am quite concerned about the apparent failure to incorporate the existing Auburn University facility into this objective. I suppose that we always need more larvae but the lack of involvement with this experienced resource is surprising.

2.6.7.6 Oyster Grow-Out and Restoration Reef Placement
Really good - builds on the double-edged sword of the "oyster gardening" initiative. This educates AND produces.

16.0 Draft Monitoring and Adaptive Management Plans
Many years ago, with the advent of the Coastal Area Management Program, “Adaptive Resource Management” was a guiding principle. There has been a recognition by ALTIG of monitoring as part of the MAM efforts/requirements which are indeed laudable. But I hope some of the other “buckets” will invest more significantly in the mundane arena of ecosystem monitoring. I know that we are better informed and prepared for the “next one” but will that be an episodic catastrophe like DWH or consequences of climate change. Will any of the RESTORE investment better prepare us for dealing with the inevitable?

Working for perpetual land conservation,

Walter C. Ernest IV
Director of Operations
Pelican Coast Conservancy

On behalf of our more than six million members and supporters across the United States, the National Wildlife Federation's (NWF) Gulf of Mexico Restoration Program appreciates the opportunity to comment on the Alabama Trustee Implementation Group's (TIG) Draft Restoration Plan II and Environmental Assessment (RP2), covering 22 projects to restore wetlands, coastal, and nearshore habitats; improve water quality by reducing non-point source pollution; and help restore sea turtles, marine mammals, birds and oysters. With staff on the ground across the Gulf. As part of the assessment process, the Programmatic Damage Assessment and Restoration Plan (PDARP) showed us that the injuries caused by the oil spill "affected such a wide array of linked resources over such an enormous area that the effects must be described as constituting an ecosystem-level injury.” In Alabama, the $296 million dollars’ worth of NRDA allocations are incredibly important to not only remedy damage from the spill, but to also identify and address chronic underlying stressors on the Alabama coastal and estuarine environments. It is with that scale in mind that NWF offers comments on this draft RP2, and the projects proposed within.

NWF believes that a significant portion of the Deepwater Horizon restoration dollars should focus on efforts to address project-types that target known stressors: habitat protection, oyster reefs and living shorelines, coastal wetlands, and hydrologic restoration. Within the Draft RP2, NWF supports the inclusion of projects in RP2 that use science to address data gaps and also plan for and implement restoration for several of the above-mentioned project-types.

Science
NWF is pleased to see science remain at the forefront of Alabama's restoration investments. Through the inclusion of Monitoring and Adaptive Management (MAM) activities in this plan (and projects), the Trustees are ensuring future success in planning and implementation of restoration activities.
In particular, NWF supports MAM investments early in this process in order to fill data gaps necessary for future science-based decision making, especially for critical species populations such as sea turtles and marine mammals.

We are encouraged to see the Trustees focus on the “mitigation of key stressors” to support resilient habitats and wildlife populations. By addressing chronic underlying stressors within estuarine systems, you are helping to ensure future success in restoring these natural resources by meaningfully address the restoration needs.

We are very pleased to see strong alignment with existing Trustee MAM guidance, such as the Strategic Frameworks and MAM Manual. Commitment to this guidance will help to ensure projects are implemented and monitored in a way that supports coordination not only across Trust TIGs, but also across other state planning processes such as RESTORE.

While we support filling necessary data gaps, we encourage the Trustees to utilize existing body of peer-reviewed research to the maximum extent possible, including that from both within and outside of the Gulf region. Not only will this maximize the efficiency of the Alabama TIG’s investments, but also reduce redundancy in research related to planning efforts. For example, much research related to oyster reef siting, placement, and design has been done around the country, and additional investments are being made in neighboring Mississippi to help guide oyster restoration activities (see notes below).

Oyster Reefs and Shorelines
Numerous oyster restoration and research efforts are underway within and beyond the Gulf Region. We encourage the Implementing Trustees to coordinate and consult with other states to better guide Alabama’s oyster work and avoid “reinventing the wheel”. For instance, consider similar projects being conducted by FWC (Florida Fish and Wildlife Conservation Commission), University of Florida IFAS Sea-Grant, FDACS (Florida Department of Agriculture and Consumer Services), and MS DMR (Department of Marine Resources).

For the Oyster Hatchery Project, we support the development of a Comprehensive Oyster Restoration Plan to guide the remaining investments in the Oyster Restoration category, including living shoreline projects that include oysters. We recommend that the NGO Community and other stakeholders be added to the "oyster restoration experts" in the development of the plan.

Information from the comprehensive oyster restoration plan should be used to guide not only future investments, but also project components proposed to be included in this draft plan. For instance, a better understanding of the existing structure, spat availability, and environmental conditions might shape the future direction of projects (in particular, the hatchery), and whether those investments are necessary to successfully restore the resource. For example, the PDARP specifically points out the need to “identify suitable salinity zones” for oysters, which is not included in the monitoring work proposed in this draft plan.

We are also pleased to see investments in living shorelines, such as the Little Lagoon Living Shoreline. Such projects not only address oysters and restore and improve habitat, but also increase coastal resilience. We look forward to seeing additional living shorelines in future restoration plans.

Coastal Wetlands and Habitat Protection
NWF supports the inclusion of projects under NRDA's Wetlands, Coastal, and Nearshore Habitats category that acquire and protect important wetland and coastal properties that address a continuum of habitats, and also projects that restore coastal shorelines and tidal wetlands.

Living Coastal & Marine Resources
We support the sea turtle, bird, and dolphin projects proposed in the draft plan. As mentioned above, filling data gaps is an important step to guide future investments.

When designing and implementing research and other projects, it is important to consider that wildlife do not recognize state boundaries. Several of the proposed projects could be maximized by coordinating with neighboring states and other TIGs (including Region-wide and Open Ocean). For example, the CAST Habitat and Population Dynamics project mentions oceanic and neritic turtles, presenting a great opportunity to coordinate with Open Ocean and Region-wide TIGs. We also support including inshore sea turtles, if they are also using the estuaries.

When selecting bird species for tracking and habitat use studies, consider species that are known to span the Gulf Coast, and coordinate with the other TIGs, especially those of neighboring states. This coordinated approach to filling data gaps will maximize the TIGs’ ability to address chronic and acute threats as identified in the PDARP.

Likewise, we are pleased to see the TIG recognize the need to identify key stressors (and mitigate those stressors for more resilient populations) in projects such as Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health.

Projects contained within the TIG’s RP2 have the ability to make meaningful strides towards addressing chronic underlying stressors in Mobile Bay. However, in order to ensure future success in restoring the state’s critical resources, continued coordination of projects across other spill and non-spill funding streams is crucial. NRDA’s science-lead approach to selecting, implementing, and evaluating projects should serve as a model for comprehensive restoration, and act as a driver for other efforts to follow similarly.

Thank you very much for all of your hard work to put forward this draft restoration plan for Alabama and for considering our comments. Please do not hesitate to contact me to discuss further.

Sincerely,

Jessica Bibza
Alabama/Florida Policy Specialist
Correspondence: Partnership for Gulf Coast Land Conservation
P.O. Box 564
Biloxi, MS 39533

Alabama Trustee Implementation Group
C/o U.S. Fish & Wildlife Service
PO Box 49567
Atlanta, GA 30345

May 7, 2018

Submitted electronically at
https://parkplanning.nps.gov/restorealabamaP2

Dear Trustees,

Thank you for the opportunity to comment on the Draft Restoration Plan II and Environmental Assessment for the Alabama Restoration Area. These comments are being submitted on behalf of the Partnership for Gulf Coast Land Conservation (Gulf Partnership), a coalition of non-profit land conservation organizations operating in the Gulf of Mexico region. Our mission is to work together across the Gulf of Mexico coastal region to increase the pace, quality, and permanence of voluntary land and water conservation.

We appreciate the hard work of the Trustee Implementation Group (TIG) members and staff and are pleased to see that this plan builds upon earlier restoration efforts and reflects the priorities of Alabama residents and conservation groups. In particular, the Gulf Partnership is pleased that the TIG members identified the Restoration of Wetlands, Coastal, and Nearshore Habitats as one of the priorities for this suite of proposed projects.

The Gulf Partnership commends the Trustees for investing in the land acquisition projects described in the plan:

- Magnolia River Land Acquisition (Holmes Tract) - Preferred $4,144,162
- Weeks Bay Land Acquisition East Gateway Tract - Preferred $4,247,000
- Weeks Bay Land Acquisition Harrod Tract - Preferred $3,606,900

These conservation projects will help the Trustees meet their goals for the protection and restoration of wetlands, coastal, and nearshore habitats. Land acquisition and long-term stewardship will also help meet other restoration goals, including water quality, water quantity, and the restoration of birds, oysters, and fisheries.

The Strengths of Land Trusts

The Gulf Partnership is pleased to see that permanent land protection will be a priority in Alabama’s restoration process and that the Trustees are working with nonprofit land conservation organizations to implement this strategy. Nonprofit land conservation organizations like land trusts have a unique set of skills to support the Trustees’ restoration efforts, including:

- Strong, long standing relationships with private property owners and local community leaders in the Gulf Coast region, including those with ranching and agricultural lands;
- Ability to acquire land within a short time-frame;
- Experience in developing, negotiating, and managing conservation easements;
- Landscape level planning and implementation capabilities; and
- Knowledge of local communities and their conservation and community priorities.

Thank you for the opportunity to comment on this plan and for your leadership. The Gulf Partnership and our individual partner organizations look forward to collaborating with the Alabama TIG and its federal, state and local partners to successfully implement the projects described in the plan.

If you have any questions or need more information, please don't hesitate to contact our coordinators Julia Weaver at julia.weaver@gulfpartnership.org or Liz Barber at liz.barber@gulfpartnership.org.

Sincerely,

Ray Herndon
Director, Central Gulf & Lower Mississippi River Region, Conservation Acquisition
The Conservation Fund
Chair, Gulf Partnership Executive Committee

Partner Organizations

- Alachua Conservation Trust (FL)
- Alabama Coastal Heritage Trust (AL)
- Alabama Forest Resources Center (AL)
- The Artist Boat (TX)
- Coastal Land Trust (AL)
- Colorado River Land Trust (TX)
- Conservation Foundation of the Gulf Coast (FL)
- Conservation Trust for Florida (FL)
- Dauphin Island Bird Sanctuaries (AL)
- Galveston Bay Foundation (TX)
- Guadalupe-Blanco River Trust (GBRT)
- Land Trust for Louisiana (LA)
Dear Alabama Trustee Implementation Group Members:

Thank you for the opportunity to submit comments on the Alabama Trustee Implementation Group's (TIG) Draft Restoration Plan II and Environmental Assessment.

Our coalition, the Alabama Renewal Group (ARG), has been working together since the 2010 Deepwater Horizon oil disaster to ensure that recovery monies are used for restoration projects that support a triple bottom line benefit for coastal Alabama: a healthy environment, a strong economy, and safe, resilient communities. ARG commends the TIG members for proposing a draft plan that includes a large suite of projects that would restore a wide variety of wildlife and habitats in coastal Alabama.

We appreciate the TIG's efforts to align projects with the Region-wide TIG's Strategic Frameworks, as well as to meet the overall standards of the Deepwater Horizon NRDA Trustee Council's Monitoring and Adaptive Management (MAM) manual. Commitment to this guidance will help to ensure projects are implemented and monitored in a way that supports coordination not only across the TIGs, but potentially also across other restoration planning processes such as those funded through the RESTORE Act. The project MAM plans included helpful details, like specific monitoring parameters and how uncertainty will be addressed. We look forward to future iterations of monitoring and adaptive management plans for each of the projects.

It is encouraging to see the Trustees focus on the mitigation of key stressors to support resilient habitats and wildlife populations. By addressing chronic underlying stressors within estuarine systems, you are helping to ensure future success in restoring these natural resources by meaningfully addressing the most pressing restoration needs. Additionally, we applaud the TIG for recognizing the need to fill certain data gaps to inform and enhance future restoration activities.

As the TIG moves forward to finalize these important restoration and conservation initiatives, we offer a few things for consideration. Several of the proposed projects could be maximized by expanding them to neighboring states and/or scaling them up with the Open Ocean and Region-wide TIGs. For example, the CAST Habitat and Population Dynamics project proposes to sample sea turtles in the nearshore to fill data gaps, presenting a great opportunity to expand this project across the Gulf. Also the Colonial Nesting Wading Bird Tracking and Habitat Use Assessment could be easily replicated by other state TIGs or even the Region-wide TIG to have a better understanding of wading birds across the northern Gulf of Mexico.

For the outreach and education aspects of projects, please consider opportunities to cross-promote restoration types, as you are able, to allow people who are interested in one type of wildlife to learn about other projects to protect other wildlife in the same area. For example, the CAST Protection: Enhancement and Education project could educate citizens about sea turtles and beach nesting birds simultaneously. These species utilize the same habitats and are often impacted by human interaction in similar ways.

For projects that utilize outside knowledge from experts, we would encourage the TIG to utilize local knowledge bases for natural resources including NGOs as well as other stakeholder groups in those conversations and meetings. Targeted stakeholder engagement can increase buy-in among communities, leverage existing resources and lead to a more successful project in the end.

Thank you for the opportunity to comment. We appreciate the TIG's hard work and dedication to restoring coastal Alabama's ecosystem, and we look forward to seeing these projects move forward. Please feel free to contact us with questions or if we can provide more detail.

Signed,
We appreciate this opportunity to provide comments, and hope they are helpful as the Dauphin Island Sea Lab and enforcement agents, conduct surveys, and develop outreach materials, in coordination with NOAA. Close coordination between AC agencies and the harassment of wild dolphins (e.g., Duda et al. 2013). The draft RPII/EA highlights that early and effective measures that can effectively minimize or mitigate those interactions. The Commission agrees that such surveys would be useful in determining the need for corrective actions, addressing key uncertainties, developing data and other information to inform and enhance future restoration, and ensuring compliance with regulations. The Commission believes the activities identified under this project are appropriate for funding under the MAM allocation.

Enhancement of enforcement efforts and the development of public education programs would be instrumental in addressing harm caused by feeding and harassment of bottlenose dolphins. Harmful interactions between people and dolphins have been documented throughout the Gulf of Mexico, including in Alabama coastal waters (Vail et al. 2016). Such interactions can be damaging to the dolphins by altering their natural behavior, and can put both humans and dolphins at risk of illness, injury, and death. The AL TIG has indicated that the Alabama Department of Conservation and Natural Resources (ACDNR) would lead proposed efforts to develop enhancement and education programs, including contracting with external consultants to design and carry out surveys of fishermen and other ocean user groups to understand the factors associated with human-dolphin interactions in the Gulf and to identify measures that can effectively minimize or mitigate those interactions. The Commission agrees that such surveys would be useful in the development of effective and targeted public education programs if they are well-designed and built on results obtained from previous studies of human attitudes toward the harassment of wild dolphins (e.g., Duda et al. 2013). The draft RPII/EA states that the ACDNR would lead efforts to develop training programs for enforcement agents, conduct surveys, and develop outreach materials, in coordination with NOAA. Close coordination between ACDNR and the biologists at the Dauphin Island Sea Lab and the ALMMSN would ensure that such programs are targeted appropriately to address human activities in Alabama waters that present the greatest risk to bottlenose dolphins.

We appreciate this opportunity to provide comments, and hope they are helpful as the AL TIG moves forward with implementation of DWH restoration efforts.

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Ansel Payne, Birmingham Audubon, anselpayne@birminghamaudubon.org
Mitchell Reid, The Nature Conservancy, mitchell.reid@tnc.org
Andrew Whitehurst, Gulf Restoration Network, andrew@healthygulf.org

Correspondence ID: 10  Project: 65924  Document: 86431
Outside Organization: Marine Mammal Commission Federal Government
Affiliation: OfficialRep
Received: May, 2018
Correspondence Type: Other

Correspondence: The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Alabama Trustee Implementation Group’s (AL TIG) Draft Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction; Sea Turtles; Marine Mammals; Birds; and Oysters (draft RPII/EA; 83 Fed. Reg. 14623). The draft RPII/EA summarizes the AL TIG’s evaluation of a suite of restoration alternatives for restoring natural resource injuries resulting from the Deepwater Horizon (DWH) oil spill.

The AL TIG evaluated a number of alternatives for restoring injured marine mammals and has proposed to advance three projects: i; Enhancing capacity for the Alabama Marine Mammal Stranding Network (ALMMSN); i; Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health; i; Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education.

The proposed projects were selected based on a screening process that evaluated marine mammal projects submitted via the Trustee portal and other sources against the restoration goals identified for marine mammals in the Deepwater Horizon’s Natural Resource Damage Assessment Trustees’ Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (DWH NRDA Trustees 2016). The selected projects reflect the priority projects submitted by the Commission in April 2013 and May 2017 to the Trustees via the NRDA portal for consideration for marine mammal restoration. As such, the Commission fully supports the restoration projects identified for marine mammals.

Enhancing capacity within the Dauphin Island Sea Lab to expand the ALMMSN would support response and recovery of bottlenose dolphins and other marine mammals that may have been affected by the DWH oil spill. It would provide for the ongoing collection of biological information and samples to determine demographics, diet, disease, contaminant load, and causes of stranding, including documentation of cases of human interactions. Enhanced capacity for the ALMMSN would ensure that data collected from stranded animals is entered in a timely manner into GulfMAP, a regional marine mammal health database hosted by the National Oceanic and Atmospheric Administration (NOAA). This would ensure consistency in reporting of stranding data across the Gulf of Mexico and help identify and minimize impacts of natural and human-caused threats. Timeliness of data integration will also allow real time assessment of potential impacts of restoration activities, thus facilitating adaptive management. Increased capacity within the ALMMSN for response to live strandings, made possible through restoration funding, would facilitate rehabilitation, recovery, and release, of dolphins and other marine mammals back into the wild, with follow-up monitoring, in coordination with NOAA and local rehabilitation facilities. The Commission supports the AL TIG’s proposal to enhance the capacity of the ALMMSN as a priority for restoring bottlenose dolphins and other marine mammals injured by the DWH oil spill.

Assessing bottlenose dolphin populations and their health through mark-recapture, photoidentification, observations, and remote biopsy sampling would provide information on distribution, seasonal movements, habitat use, behavior, body condition, and health of individuals. Tracking this information over the proposed time frame of the current restoration plan (four years) and into the next planning period would provide metrics to assess recovery from oil spill-related injuries and also enable the Trustees to evaluate the effectiveness of restoration efforts. Integrating genetics and photo-identification data with similar studies of other Gulf of Mexico bottlenose dolphin populations (e.g., through the Gulf of Mexico Dolphin Identification System, or GoMDIS) would provide a basis for tracking movements of individual animals beyond project study sites and for detecting range shifts in response to environmental changes. The AL TIG has proposed to fund population and health assessment studies out of the state’s Monitoring and Adaptive Management (MAM) allocation. The goal of MAM, as stated in the RPII/EA, is to support restoration activities by tracking and evaluating progress toward restoration goals, determining the need for corrective actions, addressing key uncertainties, developing data and other information to inform and enhance future restoration, and ensuring compliance with regulations. The Commission believes the activities identified under this project are appropriate for funding under the MAM allocation.

Enhancement of enforcement efforts and the development of public education programs would be instrumental in addressing harm caused by feeding and harassment of bottlenose dolphins. Harmful interactions between people and dolphins have been documented throughout the Gulf of Mexico, including in Alabama coastal waters (Vail et al. 2016). Such interactions can be damaging to the dolphins by altering their natural behavior, and can put both humans and dolphins at risk of illness, injury, and death. The AL TIG has indicated that the Alabama Department of Conservation and Natural Resources (ACDNR) would lead proposed efforts to develop enhancement and education programs, including contracting with external consultants to design and carry out surveys of fishermen and other ocean user groups to understand the factors associated with human-dolphin interactions in the Gulf and to identify measures that can effectively minimize or mitigate those interactions. The Commission agrees that such surveys would be useful in the development of effective and targeted public education programs if they are well-designed and built on results obtained from previous studies of human attitudes toward the harassment of wild dolphins (e.g., Duda et al. 2013). The draft RPII/EA states that the ACDNR would lead efforts to develop training programs for enforcement agents, conduct surveys, and develop outreach materials, in coordination with NOAA. Close coordination between ACDNR and the biologists at the Dauphin Island Sea Lab and the ALMMSN would ensure that such programs are targeted appropriately to address human activities in Alabama waters that present the greatest risk to bottlenose dolphins.

We appreciate this opportunity to provide comments, and hope they are helpful as the AL TIG moves forward with implementation of DWH restoration efforts.

Correspondence ID: 11  Project: 65924  Document: 86431
Outside Organization: Mobile Bay National Estuary Program Unaffiliated Individual
Within the Wetlands, Coastal, and Nearshore Habitats restoration types, the three acquisition projects - acquisition of the Holmes Tract (Magnolia River Land Acquisition) and East Gateway and Harrod tracts (Weeks Bay Land Acquisition) support Goal ERP-3 - Restore/Expand human connections - and Objective ERP-3.2 - Protect/conserve priority habitats for public benefit and access through acquisition and conservation easement. Both the Lower Perdido Islands Restoration Phase 1 and the Southwestern Coffee Island Habitat Restoration Project - Phase 1 support Goal ERP-2 - Improve ecosystem function and resilience through protection, restoration, and conservation of habitats including beaches, bays, backwaters, and rivers - and Objective ERP-2.5 - Restore 2,500 acres of nearshore habitat and intertidal marshes and flats.

Within the Habitat Projects on Federally-Managed Lands restoration type, two project support CCMP Goals and Objectives. The Little Lagoon Living Shoreline project, will stabilize 2,200 feet of eroded shoreline, create biologically-productive edge habitat using native emergent plants. It supports also supports Goal ERP-2 along with Objective ERP-2.1 - Install living shorelines along publically-owned bay, backwater, and intertidal waterways, where appropriate. Restoring the Night Sky, Sky Training, and Outreach supports Education and Public Involvement strategies. Assessing artificial lighting on Alabama's coast, developing a strategy to mitigate impacts of "light pollution," and improving local government capacity to address lighting concerns supports Goal ERP-3 - Increase citizen actions to mitigate impacts of human on the environment - as well as Goal TAC - Establish long-term capability of local governments to manage and maintain coastal environmental resources.

All three projects preferred in the Nutrient Reduction restoration type, will support Goal ERP-1 - Improve trends in water quality in priority watersheds discharging into priority nursery areas. The Toulmin Spring Branch Engineering and Design project involves developing plans for stormwater treatment recommended in the Three Mile Creek Watershed Management Plan. Both the Fowl River and Weeks Bay Nutrient Reduction projects involve implementation of land management practices to reduce nutrient loading in the Fish River and Weeks Bay systems, recommended in the Weeks Bay Watershed Management Plan.

Projects recommended in the Sea Turtle restoration type - Coastal Alabama Sea Turtle (CAST) Conservation Program, CAST Triage, CAST Habitat Usage and Population Dynamics, and CAST Protection: Enhancement and Education, support EPI-3, providing place-based grassroots groups opportunities to increase community stewardship in protection of sea turtle egg laying activities and habitat.

Similarly, projects recommended under the Marine Mammal restoration types support EPI-1 - Increase awareness of coastal resources supporting what people value about living in coastal Alabama - including Enhancing Capacity for the Alabama Marine Mammal Stranding Network. Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education. Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health supports Goal EST-1 - Increase data related to how the estuarine ecosystem responds to anthropogenic stressors.

In the Birds restoration type, Southwestern Coffee Island Habitat Restoration Project - Phase 1 (already evaluated in the Wetlands, Coastal, and Nearshore Habitats type) supports Goal ERP-2, and Colonial Nesting Wading Bird Tracking and Habitat Use Assessment supports Goal EST-1.

Three projects falling under the Oysters restoration type support goal ERP-2: Oyster Cultch Relief and Reef Configuration, Oyster Hatchery at Claude Peetck Mariculture Center-High Spat Production with Study, and Oyster Grow-out and Restoration Reef Placement. A fourth project, Side-scan Mapping of Mobile Bay Relic Oyster Reefs, an engineering and design project, informs status and supports Goal EST-1 and Objective EST-1.1 by improving existing level of coastal monitoring.

The MBNEP supports these projects, each of which contribute to implementation of our CCMP and our charge of building wise stewardship of the water quality and living resources of Alabama's estuarine waters. I am available for further discussion at 251-380-7940 or at rswann@mobilebaynep.com.

8
establishment of TIGs with proposed project lacking sufficient detail for substantive public comment(s).

Recommended revisions:
AL TIG should develop and implement an Adaptive Management process that actively and directly engage impacted communities and provide timelines for meaningful public input to enhance this draft RPII. The revised draft RPIIa should then be vetted by the impacted communities and prioritized based on compliance with NEPA.

Restoration planning efforts:
This AL TIG draft RPII/EA reference being consistent with DWH NRDA, Final PDARP/PEIS restoration planning efforts. However, we continue to be concerned that AL TIG has not, to date, conducted comprehensive assessment and/or planning specifically for the geographic region of coastal Alabama closest to the nexus of the injured resources and services. We understand that a comprehensive Programmatic Environmental Impact Statement (PEIS) for the entire suite of ENRDA/NRDA restoration projects is ongoing, but this does not obviate AL TIG responsibility to comply with NEPA for this and future RP.

Recommended revisions:
AL TIG should include coastal Alabama specific information, prioritizing areas closest to the nexus of injury; conduct additional assessment and planning to allow a better assessment of the ability to achieve restoration goals, assess potential impacts and ensure the nexus to injured resources or services is clearly articulated, in accordance with the Oil Pollution Act, NRDA regulations and NEPA. We urge AL TIG to initiate activities utilizing public input to clearly articulate in writing the rationale for individual projects. This information should document a clear nexus between project intent and injury; potential benefit (short/long term) to the environment, coastal communities and public access and public enjoyment of each proposed project.

Public information efforts:
This AL TIG draft RPII/EA reference the provision of information and analyses for meaningful review and comments. However, we continue to be concerned, (as previously commented) with the lack of transparency, direct meaningful engagement of impacted citizens, community based organizations and other known stakeholders groups.

Recommended revisions:
AL TIG should defer this proposal to proceed with selection and implementation of the identified 20 preferred alternatives to be fully funded. This deferment does not put the funding at risk, but provide time for AL TIG to responsibly enable meaningful public input, engagement and additional analysis of alternatives for proposed plan.

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Recommended revisions:
AL TIG should develop and implement an Adaptive Management process that actively and directly engage impacted communities and provide timelines for meaningful public input to enhance this draft RPII. The revised draft RPIIa should then be vetted by the impacted communities and prioritized based on compliance with NEPA.

First, thank you for hosting the open house and conducting the public meeting on April 18th in addition to releasing the Draft Restoration Plan II in advance of that meeting. It was a great presentation of a very comprehensive, well-designed plan. As with many other NGOs, we applaud the use of standards from the Trustee Council’s Monitoring and Adaptive Management manual.

ACF supports all 22 projects and restoration types addressed in this Plan and appreciated your including funds for land acquisition. Having launched the Alabama Oyster Shell Recycling Program in 2016 and being a partner with Birmingham Audubon to help recruit volunteers for their coastal bird stewardship program in 2017, ACF is especially supportive of the oyster and bird projects being proposed.

In particular, ACF is the most supportive of the sea turtle projects in this Plan. We are willing and able to assist with bringing those project ideas into reality.

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Climate change used repeatedly by activists to convince the public that a climate catastrophe is looming and humanity is the cause. Neither of these fears is justified. Global climate changes occur all the time due to natural causes. Since 1895, the media has alternated between scares during four separate and sometimes overlapping time periods. From 1895 until the 1930's the media peddled a coming ICE AGE. From the late 1920's until the 1960's they warned of global WARMING. From the 1950's until the 1970's they warned us of a coming ICE AGE. This makes modern global warming the fourth estate's fourth attempt to promote opposing climate change fears during the last 100 years. The most media-HYPED environmental issue of all time, global warming. HOT AND COLD MEDIA SPIN Cycle: This seems a real Challenge to Journalists Who Cover Global Warming who cannot seem to get the story the same. American people have been served up an unprecedented parade of environmental alarmism by the media and entertainment industry, which link every possible weather event to global warming.

Global Warming - - evokes the media, Hollywood elites pop culture to nod their heads and fret about an impending climate disaster. Hollywood's involvement like Al Gore's movie "An Inconvenient Truth." Junk science. A London Society sent a chilling letter to the media encouraging them to stifle the voices of scientists skeptical of climate alarmism. Many major organs of the media dismiss any pretense of balance and objectivity on climate change coverage and instead crossed squarely into global warming advocacy. Developments in the controversy over whether or not humans have created a climate catastrophe. One of the key aspects that the United Nations, environmental groups and the media have promoted as the "smoking gun" of proof of catastrophic global warming is the so-called 'hockey stick' temperature graph by climate scientist Michael Mann and his colleagues, fueling the global warming propaganda but The 'hockey stick' was completely and thoroughly broken once and for all when two Canadian researchers tore apart the statistical foundation for the hockey stick. National Academy of Sciences and an independent researcher further refuted the foundation of the 'hockey stick'. The media have missed the big pieces of the puzzle when it comes to the Earth's temperatures and mankind's carbon dioxide (CO2) emissions. It is very simplistic to feign horror and say the one degree Fahrenheit temperature increase during the 20th century means we are all doomed. First of all, the one degree Fahrenheit rise coincided with the greatest advancement of living standards, life expectancy, food production and human health in the history of our planet. So it is hard to argue that the global warming we experienced in the 20th century was somehow negative or part of a catastrophic trend.

Public needs to see: is there really a problem. without the media or billionaire hype. before we spend billions of dollars on nonsense regulations. According to many air apps and WHO org. America has Great Water and Air Quality. so is this a waste of money.

Correspondence ID: 15 Project: 65924 Document: 86431
Outside Organization: Unaffiliated Individual
Affiliation: 
Received: May,08 2018
Correspondence Type: regulations.gov
Correspondence: EPA Inspector Generals highly critical report investigating EPAs review of external data for the GHGs endangerment finding. On December 15, 2009, EPA published its Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. As the primary scientific basis for EPAs finding, the Agency relied upon assessments conducted, by other organizations. Agencies reliance on the IPCC is a VIOLATION of the Data Quality Act. (The DQA directs the Office of Management and Budget (OMB) to issue guidelines that provide procedures for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies. See Data Quality Act 515, 42 U.S.C. 502-504. IPCC is an international body outside the jurisdiction and oversight of the United States Congress. Moreover, EPA is the entity of the United States government that is seeking sweeping regulations on the basis that GHGs are increasing global temperatures.


Note History : IPCC Established in 1988, IPCC stated working group I, stated a Special Committee, Dr John Houghton prepared Scientific Assessments, First working group rely on the Carnegie Institution SCOPE 29 report of 1986 The Greenhouse Effect, Climatic Change and Ecosystems ; Scientific Assessment, Working Group I has built on this. First draft of Policy Makers in Edinburgh 1990. Meteorological office in Bracknell, England, was responsible for organizing , Members of the team included CHINA , Professor Cac Hong Xing.,AND , Financial support for the Bracknell, England core team was provided by the Departments of the Environment and Energy in the UK. The Staff of University of East Anglia CRU , England had been heavily involved in the IPCC assessments, and CRUs work has been used by IPCC in construction of future climate projections.

EPAs Technical support document Peer Review Methodology DID NOT Meet OMB Requirements for Highly Influential Scientific Assessments. EPA had the TSD Technical support document reviewed by a panel of 12 federal climate change scientists. EPAs disposition of the findings were NOT made available to the public as would be required for reviews of highly influential scientific assessments. EPA panel of scientists DID NOT fully meet the independence requirements for reviews of highly influential scientific assessments because one of the panelists was an EPA employee. DID NOT Include language in its proposed action, final action, or internal memoranda that identified whether the Agency used influential scientific information or highly influential scientific assessments to support the action. EPA Office of Air and Radiation also DID NOT certify that the supporting technical information was peer reviewed in accordance with EPAs peer review policy. EPA DID NOT contemporaneously document how it applied and considered the assessment factors in determining whether the IPCC and other assessment reports were of sufficient quality, objectivity, utility, and integrity EPA DID NOT maintain a record of its response and disposition of comments for the two Technical support document that accompanied the proposed and final rules.

EPA DID NOT discuss whether IPCC procedures required a description of the credentials and relevant experiences of each peer reviewer. In November 2009, subsequent to publication of EPAs proposed finding, approximately 1,000 e-mails were hacked from the servers of the University of East Anglia CRU , in England, and made public. CRU is recognized for its climate change research and, since 1978, has developed and maintained a land-based temperature record widely used by climate change researchers. According to CRU, its staff have been heavily involved in the IPCC assessments, and CRUs work has been used by IPCC in construction of future climate projections. The content of the e-mails caused some to challenge the work of CRU and the conclusions of the IPCC. Since EPA relied heavily upon IPCCs AR4 in developing the TSD for its endangerment finding, concerns have been raised about EPAs acceptance and use of this information in light of federal and Agency information quality guidelines. April 2010 study, chaired by Professor Ron Oxburgh, examined; noted that there were unresolved questions relating to the availability of environmental datasets. Further, the Russell report found that both CRU scientists and the University of East Anglia failed to display the proper degree of openness regarding their research.
Agency should step in, this is outrages to Tax payers, Farmers, Ranchers, ships, Boat owners, fisherman, wildlife, Forest timber owners, flood control, must stop the waste of water.

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NOTE: Few realize that the IPCC does not produce its own strict scientific research on global warming so EPA Relied on reports that originated form a college staff in England.

Sound national and international environmental policies must be based on a solid foundation of transparent scientific, technical, and economic understanding of the relevant facts.

Regulation with back up reports using words such as if, might, could, probably, perhaps, expected, projected or modeled - and many involve such deep dreaming, or ignorance of scientific facts and principles, that they are akin to nonsense and a manufactured consensus and engineered science.

2011 July report by Government Accountability Office (GAO) is a government agency that provides auditing, evaluation, and investigative services Fostering Quality Science at EPA: Needs Reform; and found:

EPAs laboratory activities remain fragmented and largely uncoordinated.

EPA has not undertaken an agency wide, coordinated approach to managing its scientific efforts and related facilities as part of an interrelated portfolio of facilities.

EPA had failed to implement the recommendations of five independent evaluations of EPAs scientific and laboratory management since 1992.

GAO found that Testimony from a recent participant in CASACs particulate matter National Ambient Air Quality Standard panel stated that the CASAC process is flawed, narrow, and possibly ethically questionable.

2012 Annual Plan of the EPAs Office of Inspector General OIG raises significant concerns about science and technology activities at the Agency, stating that questions exist as to whether EPA is collecting the right data, of sufficient quality, and is making that data available.

In terms of EPAs regulatory process, the Inspector General (IG) further states that many policies are out of date or are based on outdated science and technology.

GAO found As part of the update on its High-Risk Program, highlighting concerns about EPA politicization of science, saying that in recent years, concerns have been raised regarding the perceived politicization of science in agency decisions.

In 2009, GAO added EPAs handling of toxic chemicals through the Integrated Risk Information System (IRIS) to its list of areas at high risk for waste, fraud, abuse, and mismanagement.

EPA needs to better emphasize the development and use of environmental indicators and information as a mechanism for prioritizing its allocation of limited resources, and that the lack of complete and comprehensive environmental information on air or water quality, for example, makes it difficult for EPA to evaluate the success of its policies and programs.

Several concerns have been raised about the make-up, transparency, and rigor provided by EPA advisory panels like the SAB and the Clean Air Scientific Advisory Committee CASA.

GAO has found that many advisory committee members are not appropriately screened for potential conflicts of interest or points of view.
How ‘GREEN’ is the FOOTPRINT of a WIND TURBINE? Less clean than Gas or hydroelectric plants energy and bad for environment, bad for wildlife, bad for Humans. Uses more earth minerals than any other energy. Only works 17 to 35% of time. NOT SAFE. Wind turbine requires an astounding amount of toxic rare earth minerals, primarily neodymium and dysprosium, which are key components of the magnets used in modern wind turbines. most common uses is in the generators . Environmental damages, consider that mining one ton of rare earth minerals produces about one ton of radioactive waste, according to the Institute for the Analysis of Global Security. 13,131 MW of wind generating capacity means that between 4.9 million pounds (using MTIs estimate) and 6.1 million pounds (using the Bulletin of Atomic Sciences estimate) of rare earths were used in wind turbines installed in 2012. 2 megawatt (MW) wind turbine contains about 800 pounds of toxic rare earths called neodymium and 130 pounds of dysprosium. mined by children in Africa and Chile.

NOT SAFE. Between 4.9 million and 6.1 million pounds of radioactive waste were created to make these wind turbines. That means the U.S. wind industry may create more radioactive waste in year than our entire nuclear industry produced in spent fuel. few are paying attention to the wind industries less efficient and less transparent use of radioactive material via rare earth mineral excavation in China.

NOT SAFE. Not only do rare earths create radioactive waste residue, but according to the Chinese Society for Rare Earths, one ton of calcined rare earth ore generates 9,600 to 12,000 cubic meters (339,021 to 423,776 cubic feet) of waste gas containing dust concentrate, hydrofluoric acid, sulfur dioxide, and sulfuric acid, [and] approximately 75 cubic meters (2,649 cubic feet) of acidic wastewater . The wind industry is dependent on rare earth minerals imported from China, the procurement of which results in staggering environmental damages. not one step of the rare earth mining process that is not disastrous for the environment. That the destruction is mostly unseen and far-flung does not make it any less damaging. Wind energy poses serious environmental risks availability of REEs appears to be at risk based on a number of factors. Of particular significance, one country (China) controls 98% of current supply (production). Historically, much lower levels of market concentration have harmed manufacturing firms. in 1978 Zaire controlled 48% of the cobalt supply and yet political unrest in Zaire resulted in a disruption to global supply that became known as the Cobalt Crisis REEs have come under global scrutiny due to environmental and social conditions under which they are mined, further increasing their supply risk.

Each Turbine needs 45 tons of steel rebar and 630 cubic yards of concrete, cast iron, turbine contains more than 8,000 different components . 116-ft blades atop a 212-ft tower for a total height of 328 feet. The blades sweep a vertical airspace of just under an acre. Vestas V90 from Denmark has 148-ft blades (sweeping more than 1.5 acres) on a 262-ft tower, totaling 410 feet. The tallest wind turbines in the U.S. have been installed in Texas the Vestas V90 turbines are 345 feet high, Gamesa G87 from Spain, with 143-ft blades (just under 1.5 acres) on a 256-ft tower, totaling 399 feet. steel tower is anchored in a platform of more than a thousand tons of concrete and steel rebar, 30 to 50 feet across and anywhere from 6 to 30 feet deep. Shafts are sometimes driven down farther to help anchor it. Mountain tops must be blasted to create a level area of at least 3 acres. model, the nacelle alone weighs more than 56 tons, the blade assembly weighs more than 36 tons, and the tower itself weighs about 71 tons a total weight of 164 tons. The corresponding weights for the Vestas V90 are 75, 40, and 152, total 267 tons; and for the Gamesa G87 72, 42, and 220, total 334 tons. Health Hazards of Noise and vibrations are generated by these huge monster machines and topped with flashing lights.

Wind turbines are not safe, high-voltage electrical devices with large moving parts, estimated that for every 100 turbines, one blade will break off (see Larwood, 2005). In winter, heavy sheets of ice can build up and then fall or be thrown off. Access to the land around wind turbines is usually restricted, even to the landowner.

The 5,700 turbines installed in the United States in 2009 required approximately 36,000 miles of steel rebar and 1.7 million cubic yards of concrete (enough to pave a four-foot-wide, 7,630-mile-long sidewalk).

Wind require heavy government subsidies to be competitive with normal electricity generators so a Dutch word for Greenie power seems graphic : "subsidieslurpers" (subsidy gobblers).

One concern that I have involves wetland restoration and salt marshes. According to researchers who published a study in the journal Scientific Reports, salt marshes most severely eroded and degraded may never grow back, despite restoration attempts. This study is cited in a Washington Post article titled "The Deepwater Horizon spill may have caused irreversible damage to Gulf Coast marshes" by Chelsea Harvey. Severely impacted marshes were defined as having more than 90 percent of plant stems covered in oil. This may require further research, but with chances of restoring these marshes being slim to none, I would think it would be wise to start restoration efforts on marshes and wetlands that are more easily recovered, then move onto the more damaged areas. I am by no means condemning these areas completely, just I think time and funding would be best spent working on projects that are most likely to succeed first.
I would like to stress the importance of wetlands and marshes. I think restoration of these habitats should be made a top priority. Marshes provide many services that are vital to human health and ecosystem function. They not only reduce erosion, filter out harmful pollutants, absorb nutrient runoff and sequester carbon, they also provide habitat for animals including fish that support the seafood economy. If marshes are restored successfully the benefits are expensive and will include an increase in biodiversity, local tourism and nutrient reduction.

This leads to a concern I have about nutrient reduction from nonpoint sources. Since nonpoint sources are a national issue and classically difficult to regulate, I am left wondering what these projects will involve and how they will be successful. Nutrient runoff is a large scale issue that is becoming more prevalent and serious each year. I would recommend expanding nutrient reduction as much as possible, however, if marsh restoration is highly successful as addressed in the previous paragraph, this will help address nonpoint source runoff in addition to other environmental concerns.

I just wanted to thank you guys and Director Powell and Commissioner Blankenship, Town of Magnolia Springs and the Weeks Bay Foundation for the acquisition projects. I think it's a great list. I'm a 50-year resident of Magnolia Springs.

Magnolia River is very important to me and my family. We've been there for three generations. And I think particularly the Holmes tract will do a great job in protecting water quality in Magnolia River.

Thank you.

We're very pleased to see science remain at the forefront of Alabama's restoration investments. The inclusion of monitoring and adaptive management activities in this living coastal marine resources plan and its projects very early into this process will help fill critical gaps and influence future planning and implementation.

So, as an example, much work has been done in oyster reefs, as we've seen, and it's gonna be great. We're encouraged to see trustees focus on the mitigation of key stressors to support resilient habitats and wildlife populations. By addressing these underlying stressors, the trustees are helping to ensure future success of restoring these natural resources.

Additionally, we support the continued efforts to fill those science gaps, as I mentioned, especially for critical species populations in order to guide future restoration investments. And, as you know, that's particularly important for sea turtles and marine mammals.

We're also very pleased to see a strong alignment with existing trustee monitoring, adaptive management guidance, including the four strategic frameworks, as well as the recently released monitoring adaptive manual. This guidance will help ensure projects are implemented and monitored in a way that supports coordination across the TIGs as well as other state planning processes.

And, then, just lastly, while we do support filling data gaps, we do just want to encourage the trustees to utilize the existing body of research from both inside and outside the gulf region to the maximum extent possible in order to reduce potential for redundancy in planning effort. So, with that, thank you for giving me the chance to speak.

As a member of the Weeks Bay Foundation, there are times when I've worked on land acquisition that we've been able to conserve properties, and I've questioned myself afterwards and said, "Did we really get the most bang for our buck?" A lot of this was wetland that probably would have never been developed. The Holmes property is a totally different piece of property. It is very developable. With over a mile of waterfront and a very high center of gravity - - center elevation in the property, it has availability of water and sewer. It has no zoning. It is a developer's dream.

And, so, I think my point is that I think this is a real opportunity to really protect some of the river and its - - its beauty by not developing it. Not only will we be protecting nearly a mile of waterfront but we also - - it seems like whenever those properties are developed, that they also entail a new house, a boat house with a 23-foot Grady White with twin outboard motors that run up and down Magnolia River, which is a very narrow river. And we have a lot of undeveloped wetlands along that river, and, believe me, we like to go out on the river. And on Friday afternoon you can go out, and the river will be crystal clear. On Sunday evening you can go back out after the traffic for the weekend and you see all the sediment floating in the river and it looks like
we've had a very hard rain.

So, as I say, Tuesday night the Town of - - because that's when our council meeting is - - will adopt that resolution, and I will send it to you, along with a letter further explaining why we think it's very important that you protect the Holmes property.

Ryan speaks to the science, and I kind of speak more to the general policy and the specific projects. Really want to applaud you and the entire crew for an apparent really thorough review of potential projects. I'm gonna speak to a couple of them in a little bit more detail, though we're going to be providing written comments as well.

Since Miss Hunter started - - did the oysters last, I'm going to do them first. With regard to all of the oyster projects, really encourage you to coordinate and consult with your neighboring states. Numerous oyster restoration and research projects are underway throughout the region. In Florida, you know, the FWC and FDACS4 and University of Florida are doing a lot of work. In Mississippi, your neighbor on the other side, DMR is putting together some science pieces. As Ryan Fikes mentioned, really encourage you to look both within the region as well as outside of the region for lessons learned and to avoid reinventing the wheel.

With regard to some of the specific projects, really encouraged to see the development of a comprehensive oyster restoration plan, including living shoreline projects with oysters. In the document, you recommend that oyster restoration experts are going to be working on that. Really encourage you to consider including the NGO community, as well as a partner in that effort, as stakeholder input can certainly be valuable.

Just a little sidebar note on the oyster grow-out and replacement project. It didn't look like the numbers and the costs added up, so just might want to double-check that. Sorry. That's a weedy comment.

As far as the comprehensive oyster restoration plan, you know, we'd like to see that guide not just future investments but even steer some of these projects that are being proposed right now. For instance, information on the existing structure, spat availability, environmental conditions, it might be great to have a better understanding of that before moving forward with projects; for example, the oyster hatchery.

As far as the other living coastal marine resources, we support the dolphin, turtle, and bird projects proposed. As Ryan mentioned, filling data gaps is a really important step to guiding future investments. When designing and implementing the research and the other projects, keep in mind that these critters, they don't know state boundaries. They don't know where the open ocean takes over and what might apply to Region-Wide. So really - - For example, the CAST habitat and population dynamics mentions Oceanic and neritic turtles. Makes this project seem like it's a great opportunity to partner with the Open-Ocean TIG or Region-Wide TIG. Maybe they could help fund some additional elements of it.

I see that I'm out of time. There was a couple other things about the birds, maybe looking at bird species that also would use the entire Gulf Coast and the living lagoon - - Little3 Lagoon living shoreline project. Really glad to see you invest not just in hotshot projects but ones that will increase the resiliency of the community and the coastline.

And when I found out this was a mile of waterfront, I was like, this is a home run for that group. That's all I've got. Thanks.
As far as a funding source, if we can't - if Citizens Climate Lobby can't pass a carbon fee and dividend on a national level, perhaps we can do it on a state level for everything that comes upriver and downstream, and with that money, or even a bottle tax and also maybe making the Five Rivers Delta National Park, there's many ways to continue the money stream.

And as far as the money stream itself, I saw that there was only $5 million for - I think it was ocean restoration. Maybe we could take some more money from the recreational side of it and put it on the saving our habitat. Because without oceans, all - that really will affect our whole standard of living and our lifestyle.

And I know we all love this place, our planet, and I just thank you for the work you're doing and thank you for this opportunity.

We also appreciate the TIG's efforts to comply with the new monitoring and adaptive management manual that the Trustee Council recently put out earlier this year. The MAM plans that are included in this draft plan have a good amount of detail from monitoring parameters to how to deal with uncertainty. As you know, monitoring and adaptive management are so important to make sure that these projects are successful. And, so, we look forward to, like Amy said, future iterations of these monitoring and adaptive management plans.

So it's clear with this plan that Alabama really values its marine species, so thank you, again, for your leadership.

We're especially glad to see nutrient reduction projects for several watersheds and strategic land acquisition as priorities on this list. As Governor Ivey, Mr. Blankenship, and several others have noted, waterways are the lifeblood of coastal Alabama. Recreation, industry, and our wildlife biodiversity depend on the waters, inlets and bays that weave through our coast. With a seafood industry that brought in over $500 million in the 2018 listing, over 75 percent of the population visiting saltwater fishing and swimming sites, we need to preserve these clean places for our families to play.

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With the Alabama SCORP, the State Comprehensive Outdoor Recreational Plan, for 2018 listing, over 75 percent of the population frequenting freshwater sites for either fishing or swimming and nearly 50 percent of the population visiting saltwater fishing and swimming sites, we need these clean places for our families to play.

With the most species diversity in the entire United States for turtles, freshwater fish, snails, mussels and crawfish, we must ensure that our waterways can sustain these unique creatures. The nutrient reduction plans for Weeks Bay, Fowl River and Toulmin Creek will help address some of the root causes of water quality issues and give us a better understanding of how to tackle these problems. I applaud the USDA and NRCS for continuing to work with farmers to address the challenge of stream impairment due to agricultural runoff. The protection of undeveloped lands adjacent to our waterways is critical to the economic, recreational, and biological functions and ecosystem services we described earlier. In addition, we believe that the preservation of intact habitat is always a better option than the creation of new artificial habitat. No matter how skilled the engineers and the biologists, nature just does it better.

The three tracts selected are already home to numerous terrestrial and aquatic species, including documented cases of endangered species. They already shelter the shores of Weeks Bay, Fish River and Magnolia River from flooding and storm surge. There are already beautiful views for kayakers, anglers, and river recreationists. The Magnolia River land acquisition, Holmes Tract, the Weeks Bay land acquisition, East Gateway Tract, and the Weeks Bay land acquisition, Harrod Tract, will protect nearly 500 acres of land and over three miles of water frontage. These are some of the last large privately-owned undeveloped waterfront properties in the watershed.

In a county that is projected to grow by 65 percent between 2010 and 2040, conserving large swaths of bay and riverfront habitat is a wise investment in
I'll begin my feedback for this Plan II by just saying how very impressed Alabama Coastal Foundation was with the concept of the Plan and the scope of the projects.

I also served on the Weeks Bay Management Plan on the stakeholders group, and I'm just here to say how much I support the land acquisition parts of the plan for the Weeks Bay watershed on the properties that y'all just mentioned, Magnolia River land acquisition, the East Gateway Tract and the Harrod Tract. These are really important pieces of land, and this is really wise use of the NRDA money as far as protecting our resources.

I will say that in the management plan, land acquisition was important, and so this supports that 500-page one-year management plan. Of course, another aspect of the plan was water quality. And, so, the project Weeks Bay Nutrient Reduction is an important project also that will help our farmers in the watershed reduce runoff and I think will be a great, great positive step forward.

Lastly, I just want to thank the group for considering land acquisition to the degree that it has. Land acquisition wasn't necessarily a high priority at the beginning of these processes, and we've fought for that to be included and we're very happy, and we hope you'll continue to consider land acquisition. This is really one of the best ways to use this money. Thank you for your time.

I want to start by saying that because I do have a little - - few things we want to see next time, I guess is a better way to put it, we are absolutely - - Mobile Baykeeper, our 4500-plus members and our reach throughout the community strongly supports land acquisition projects. We strongly support the nutrient reduction projects. The species projects all fit the world that we need, and especially a big focus on the oyster restoration projects. I think the thing I also want to say that I think you went above and beyond on, especially with the nutrient reduction projects that are agricultural based, you've gone and chosen those projects because they have match opportunities with USFDA funding or other funding that exists. I love what you've done with selecting the mammal projects and using local Dauphin Island Sea Lab, Ruth Carmichael and her team. They've led the charge for Alabama. They've done a phenomenal job for us. So all of those pieces - - and that's where I think we really need to stick is use the resources that we have here in our community. So that's one thing I do want to comment on.

The projects all seem to have a good component of education, but it's hard to tell where that education is gonna come from. You again, to repeat what was said here earlier, you have great resources in the nonprofit organizations here, in the community organizations here, and in the people here. You also do have great resources across the state lines. So when it comes to some of these, consider whether or not ADCNR, who is wonderful, is the best organization to do an education project or if it would be better to outsource that. So I think that, again, staying local, stay within this community. We were the ones who were impacted and we're the ones who have lived with it now for - - April 20th will be eight solid years. So we're - - so we know what we need in this community.

The other thing I will say, too, is - - and this was repeated earlier, and I think Amy said it really well, is we have data gaps. And I think all of us know that we do not want to show up to the next disaster, natural or manmade, not - - knowing the same amount of information we knew on April 19th, 2010. We applaud you for putting in the monitoring, for making sure that component is healthy and hearty, science-based and comprehensive, again, keeping and making sure that you're using the existing organizations who are collecting this data. We've got to figure out how to put it all in one pile. The National Shrimp program does a phenomenal job of pulling it together. There are more of us who are collecting data, and we need to keep making sure that all of those tools and resources are connected well.

There is one - - on your map on the turtle lighting projects, you had - - sorry - - you had the - - you've done the western end of Dauphin Island, and that's not federally owned. So I want to make sure that's either something you're gonna do in the future or see how that works out. Sorry.

I'll begin my feedback for this Plan II by just saying how very impressed Alabama Coastal Foundation was with this very comprehensive plan. We, too, echo the, you know, science-based nature of this development of this plan, and I know many
Thank you for your consideration and support,

We must ban oil drilling along our coastlines to enjoy wildlife and natural resources are never again devastated.

I care deeply about the marine wildlife and natural areas in coastal Alabama. The 2.010 oil spill in the Gulf of Mexico was a horrible tragedy, and it is imperative that we use the restoration funds resulting from the spill to improve restore wildlife and their habitats in Alabama, so we can repair the Gulf Coast as a whole.

Some of the highest priorities for our community are clean water, abundant fish and wildlife, and improving natural habitats. That is why I support projects that will help sea turtles, dolphins, oysters, and wading birds; protect natural areas; restore shoreline habitat; and make our coasts more resilient. Restoration should be based on land science and I support projects that will help guide current and future restoration efforts.

Thank you for your consideration and support,
I care deeply about the marine wildlife and natural areas in coastal Alabama. The 2010 oil spill in the Gulf of Mexico was a horrible tragedy, and it is imperative that we use the restoration funds resulting from the spill to improve restore wildlife and their habitats in Alabama, so we can repair the Gulf Coast as a whole. Some of the highest priorities for our community are clean water, abundant fish and wildlife, and improving natural habitats. That is why I support projects that will help sea turtles, dolphins, oysters, and wading birds; protect natural areas; restore shoreline habitat; and make our coasts more resilient. Restoration should be based on sound science and I support projects that will help guide current and future restoration efforts.

Please see that this money is directed to the environmental restoration in the gulf and not diverted to other locations which have nothing to do with the BP destruction.

Thank you for your consideration and support,

The Town of Magnolia Springs located in South Baldwin County, Alabama would like to go on record supporting the inclusion of the Magnolia River Land Acquisition (Holmes Tract) in the plan.

The Holmes Tract is located partly in our town limits and wholly in our planning jurisdiction. With nearly a mile of frontage on Magnolia River and Weeks Creek it is one of the largest undeveloped properties in our area. Magnolia River is a small river designated as an Alabama outstanding water. It is also home to the only full time water mail route in the United States. This particular property is home to a diverse assortment of wildlife, birds and fish. I have personally seen white tail deer, raccoons, foxes, herons, eagles, osprey, manatee, turtles and many other species in this area. It's shoreline is a great fishing area for both fresh fish and brackish water fish.

The protection of this tract will go along way in preserving the water quality of the Magnolia River, and protecting wetland and near shore habitat along the river and Weeks Creek.

We thank you for your time and efforts.
Appendix B:

Monitoring and Adaptive Management Plans
Appendix B

Monitoring and Adaptive Management Plans

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INTRODUCTION

Implementation of monitoring and Adaptive Management (MAM) was identified as one of the programmatic goals in the Deepwater Horizon (DWH) oil spill Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS). The DWH NRDA MAM Framework provides a flexible, science-based approach to effectively and efficiently implement restoration over several decades that provides long-term benefits to the resources and services injured by the DWH spill. The project MAM plans that follow in this appendix identify the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project. The plans identify key sources of uncertainty, incorporate monitoring data needs and decision points that address these uncertainties, and establish a decision-making process for making adjustments, if needed. MAM Plans are living documents and will be updated as needed to reflect changing conditions and/or new information. For example, a plan may need to be revised if the project design changes, if initial data analysis indicates that the sampling design is inadequate, or if any uncertainties are resolved or new uncertainties are identified during project implementation and monitoring. Any significant future revisions to MAM Plans will be made publicly available through the DIVER Restoration Portal.

Monitoring and adaptive management (MAM) are major responsibilities for the Alabama TIG. As described in the PDARP (section 7.5.1), TIGs are responsible for both resource- and project-level MAM activities. The AL TIG has developed and will implement MAM plans for all restoration projects consistent with guidance provided by the Trustee Council. Data generated through monitoring will provide the basis for annual project reporting which keeps the public fully informed about project progress and for adaptive management and corrective action decisions. Monitoring data will also be applied to improve the likelihood of success and benefits of future projects.

All of the projects in this Plan, with the exception of projects that are solely for engineering and design activities, have an associated MAM plan, which follow in this appendix. Many of the projects in this Plan will be implemented in partnership with entities that have deep expertise in their fields; this collaborative approach will leverage and expand existing efforts and increase confidence in outcomes and approaches for future restoration work.

The content of each MAM Plan depends on the type of project, the level of uncertainty associated with the implementation of the proposed activities

Some of the projects in this Plan propose to conduct activities associated with data gathering to fill critical information gaps that will reduce uncertainties and support the AL TIG in future work to develop and implement restoration projects successfully. Because the primary objective of these projects is to gain new knowledge, the associated MAM plans may or may not contain performance criteria or corrective actions. The AL TIG does not expect to conduct extensive project-level adaptive management for these projects, but they are an integral component to the AL TIG’s commitment to adaptive management at the program/resource level because the completion of these projects will provide important knowledge that will inform future restoration actions.
There are three primary purposes of the MAM Plans:

1. The first purpose is to identify how restoration managers will measure and track progress towards achieving restoration goals and objectives. This work is accomplished via monitoring specific parameters that, individually and collectively, help the AL TIG understand the extent to which a project is achieving its restoration objectives.

2. The second purpose is to increase the likelihood of successful implementation through identification, before a project begins, of potential corrective actions that could be undertaken if a project does not proceed as expected. This is accomplished by conceptually outlining the reasons why a project might fail to meet its objectives and responses by the AL TIG that might be undertaken to correct these problems. The focus is on restoration planning uncertainties for the project and how these uncertainties may be best addressed through project design and implementation decisions.

3. The third purpose is to capture in a systematic way lessons learned or new information acquired that can be incorporated into future project selection, design, and implementation. The evaluation section of each Plan contains basic questions that the AL TIG will answer to help understand whether a project achieved its objectives and unanticipated issues were encountered during implementation and how such issues were addressed. Such information will provide insights for future project development. This section will be updated with additional information as monitoring methods are determined for each project. In the future, the AL TIG will work to identify ways to evaluate the overall success of their DWH restoration work by incorporating feedback from project-level evaluations into a larger resource-level framework to understand how projects could be expected to contribute collectively to restoration of injured resources and improved ecosystem conditions and function along the Alabama coast.

The Monitoring and Adaptive Management Procedures and Guidelines Manual Version 1.0 provides detailed information regarding the importance and use of adaptive management.
MONITORING AND ADAPTIVE MANAGEMENT PLAN FOR
DEEPWATER HORIZON NRDA PROJECT:
MAGNOLIA RIVER LAND ACQUISITION—HOLMES TRACT

PROJECT OVERVIEW
The Holmes Tract is located in Baldwin County off Keith Lane along the Magnolia River (PIN 287940, 65806, and portion of 20643) and includes approximately 80 acres. The property is one of the largest undeveloped tracts on Magnolia River that has not been timbered. It contains more than 1 mile of frontage on Magnolia River and Weeks Creek, including a perimeter of small marsh and forested wetland fringe. The uplands interior of the property contains Gopher Tortoise (*Gopherus polyphemus*) habitat.

The purpose of this project is to acquire the property through a fee simple purchase by the Weeks Bay Foundation (WBF) and transfer it into the permanent ownership of the Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR). The acquisition of this property would include an appropriate land protection instrument (i.e., deed restriction or conservation easement) placed on the property to ensure that the purpose of restoration as described in this plan is maintained in perpetuity. In addition, WBF would work with Weeks Bay NERR to create a management plan and prioritize restoration needs, including re-creating longleaf pine savannas, pitcher plant bogs, and marsh and swamp habitat (where appropriate). Restoration actions prioritized in the plan will then be implemented.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES
- Programmatic goal: Restore and Conserve Habitat
- Restoration type: Wetlands, Coastal and Nearshore Habitat
- Restoration type goal: Restore a variety of interspersed and ecologically connected coastal habitats with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities
- Restoration approach: Protect and conserve marine, coastal, estuarine and riparian habitats
- Restoration technique: Acquire lands for conservation

Objective 1: Restore and conserve coastal habitat along Magnolia River, protecting habitats and increasing habitat connectivity within the corridor.

Objective 2: Develop a management plan and prioritize restoration needs.

Objective 3: Conduct stewardship and management activities as needed to enhance the quality of habitat.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES
As stated in the PDARP, coastal wetlands provide a wide range of ecological functions and services, including providing important habitat for fish and wildlife species, improving water quality, stabilizing shorelines, reducing storm-surge risk, and capturing and storing carbon in organic soils. The restoration approach utilized is to protect and conserve marine, coastal, estuarine, and riparian habitats. The specific technique under this restoration approach is to acquire lands for conservation. Conserving and protecting land parcels via acquisition or conservation easements can protect wetlands and other significant coastal, estuarine, and riparian habitats; create connections between protected areas;
remove direct threats of development; provide mechanisms for protected species management; provide nesting and foraging habitat for birds; protect critical freshwater inflows to estuaries; and improve coastal water quality.

The activities in this project include the acquisition of 80 acres of coastal habitat on the Magnolia River and subsequent placement of that acreage into conservation and active management, which will reduce stressors including urban development, habitat loss and alteration, fragmentation and erosion, leading to improved habitat conditions and quality as well as improved water quality. Long-term outcomes of the project include an increase in acres of lands managed for conservation purposes and increase in habitat connectivity and an overall enhancement of ecosystem services of Gulf Coast habitats and resources.

Sources of Uncertainty

The primary source of uncertainty for this project is related to the willingness of the seller for the purchase of the parcel. This uncertainty has been mitigated by working to find willing sellers as the project was developed. Additionally, restoration activities undertaken may be subject to environmental stressors or other conditions that could influence project outcomes. Other potential uncertainties that could influence project success include:

- Vegetation stress due to herbivory, disease and competition from invasive species;
- Land use changes; and
- Sustaining optimal hydrologic conditions.

These potential uncertainties will be addressed when specific restoration activities are identified in the management plan and the MAM plan will be updated accordingly.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(viii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Acquisition of Parcel

a. Purpose: To verify acquisition of high quality habitat.
b. Method: Submission of executed acquisition documents, such as a deed
c. Timing and Frequency: Once upon completion of acquisition
d. Sample Size: n=1
e. Sites: Holmes Tract
f. Performance Criteria: Executed acquisition document
g. Corrective Action(s): Identify another willing seller if parcel cannot be acquired

Parameter: Area Acquired, by Habitat Type
a. Purpose: To determine area of habitat restored/enhanced/protected by project
b. Method: Analysis of aerial imagery, ground survey or boundary survey that accompanies deed
c. Timing and Frequency: Once upon completion of acquisition
d. Sample Size: n=1
e. Sites: Holmes Tract
f. Performance Criteria: NA
g. Corrective Action(s): NA

Parameter: Completed Management Plan
a. Purpose: To prioritize and plan management actions for the parcel
b. Method: Provide copy of management plan that identifies and prioritizes restoration activities to ALTIG
c. Timing and Frequency: End of Year 1
d. Sample Size: NA
e. Sites: NA
f. Performance Criteria: Management plan should identify priority activities and habitats and rough cost estimates
g. Corrective Action(s): Revise and update as needed

Parameter: Vegetation Percent Cover and Composition
a. Purpose: To determine if vegetation is becoming established, increasing or being maintained
b. Method: Visual assessment of 1-4 m² plots for total percent cover of target and undesirable species. Percent cover of individual species by layer
c. Timing and Frequency: Baseline, as built (year zero) and annually for 3 years in mid-late summer
d. Sample Size: 1-4 m² plots
e. Sites: Throughout project footprint in areas where restoration activities are implemented
f. Performance Criteria: Performance criteria will be determined when specific management actions are identified.
g. Corrective Action(s): Adjust management techniques as necessary to reach performance criteria goals. This may include increasing or decreasing the prescribed fire frequency, increasing amount of mechanical removal of canopy species, or an increase in herbicidal treatment for invasive species.

Parameter: Area Enhanced and/or Restored, by Habitat Type
a. Purpose: To determine whether the goals of the management plan are being met
b. Method: Analysis of aerial imagery, ground survey and/or biological survey(s) completed during management plan development
c. Timing and Frequency: Annually in all areas where new work has been initiated
d. Sample Size: Total area
e. Sites: All sites
f. Performance Criteria: All activities implemented meet recommendations in management plan
g. Corrective Action(s): NA
The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

### Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-3)</th>
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<tbody>
<tr>
<td>Acquisition of parcel</td>
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<td></td>
<td>X</td>
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<tr>
<td>Completed management plan</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Area) Extent of habitat acquired</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vegetation Percent Cover and Composition</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Number of acres enhanced or restored</td>
<td>3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management on specific conservation practices being implemented is not needed for this project due to the nature of the activities, the scale of the site and the robust understanding of the habitat enhancement activities that will be conducted. Additionally, the development of a management plan that contains prioritized restoration needs will assist in addressing and reducing uncertainties by identifying those activities most likely to be successful and enhance resources and/or habitats. Corrective actions may be undertaken on an as needed basis. Data, analysis and information obtained
from this project would be used to help inform future Restoration Plan development, priorities and project selection.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did acquisition of property increase the acreage of conserved habitat in the Watershed?
- Did restoration activities undertaken produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan will be made if needed.

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy will be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used.
for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

**Data Storage and Accessibility**

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

**Data Sharing**

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

**REPORTING**

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the tract is acquired by the Weeks Bay Foundation.

WBF will purchase the property and transfer it into the permanent ownership of ADCNR, with management by the Weeks Bay NERR.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

**REFERENCES**

DWH NRDA Trustees. 2016a. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


**MAM PLAN REVISION HISTORY**

<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
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<td>AL TIG RP II/EA version</td>
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<td>Draft to final version; Added parameter for acres enhanced/restored; added detail to parameters</td>
<td>Draft to final</td>
<td>MAM Plan Magnolia_Holmes_6.1.18</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
WEEKS BAY LAND ACQUISITION—EAST GATEWAY TRACT

PROJECT OVERVIEW
The proposed Weeks Bay Land Acquisition (East Gateway Tract) project would fund the Weeks Bay Foundation (WBF) to acquire the 175-acre East Gateway Tract through a fee simple purchase and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR. The East Gateway Tract is located in Baldwin County at the mouth of Weeks Bay and contains approximately 175 undeveloped acres. The project would protect the eastern shore of the mouth of Weeks Bay where a large salt marsh with an unnamed stream provides protected habitat and shelter for wading birds, duck species, and various indigenous marine life. This property contains more than 100 acres of wetlands, including estuarine intertidal marsh and freshwater forested wetlands. The bay front edge of the property is a popular place for anglers to anchor and fish for speckled trout and redfish.

WBF would purchase the property from a willing seller at or below the Yellow Book appraised value. The acquisition of this property would include an appropriate land protection instrument (i.e., deed restriction or conservation easement) to ensure that the purpose of restoration as described in this plan is maintained in perpetuity. WBF would work with Weeks Bay NERR to create a management plan and prioritize restoration needs, including re-creating longleaf pine savannas, pitcher plant bogs, and marsh and swamp habitat (where appropriate). This project would also include E&D for the removal of a bulkhead on the waterfront point of the property that splits Weeks Bay and Mobile Bay. The bulkhead is contributing to shoreline scouring and erosion. A shoreline restoration plan would be developed as part of the bulkhead removal E&D.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic goal: Restore and Conserve Habitat
- Restoration type: Wetlands, Coastal and Nearshore Habitat
- Restoration Type goal: Restore a variety of interspersed and ecologically connected coastal habitats with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities.
- Restoration approach: Protect and conserve marine, coastal, estuarine and riparian habitats
- Restoration technique: Acquire lands for conservation

Objective 1: Restore and conserve coastal habitat in the Weeks Bay watershed, protecting habitats and increasing habitat connectivity within the corridor.

Objective 2: Develop a management plan to prioritize restoration needs.

Objective 3: Conduct engineering and design for removal of a bulkhead and develop associated shoreline restoration plan.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES
The activities in this project include the acquisition of 175 acres of coastal habitat on the Magnolia River and subsequent placement of that acreage into conservation and active management, which will
reduce stressors including urban development, habitat loss and alteration, fragmentation and erosion, ultimately leading to improved habitat conditions and quality as well as improved water quality. This project meets the Trustees’ wetlands, coastal, and nearshore habitats goals by permanently protecting, conserving, and restoring wetland and upland habitats that are directly connected ecologically to coastal and estuarine areas injured by the spill and that contribute to maximizing ecological functions in these areas. Long-term outcomes of the project increased an increase in management of connected habitats and an overall enhancement of ecosystem services of Gulf Coast habitats and resources.

As stated in the PDARP, coastal wetlands provide a wide range of ecological functions and services, including providing important habitat for fish and wildlife species, improving water quality, stabilizing shorelines, reducing storm-surge risk, and capturing and storing carbon in organic soils. The restoration approach utilized is to protect and conserve marine, coastal, estuarine, and riparian habitats. The specific technique under this restoration approach is to acquire lands for conservation. Conserving and protecting land parcels via acquisition or conservation easements can protect wetlands and other significant coastal, estuarine, and riparian habitats; create connections between protected areas; remove direct threats of development; provide mechanisms for protected species management; provide nesting and foraging habitat for birds; protect critical freshwater inflows to estuaries; and improve coastal water quality.

Sources of Uncertainty

The primary source of uncertainty for this project is related to the willingness of the seller and the purchase of the parcel. This uncertainty has been mitigated by working to find willing sellers as the project was developed. Additionally, future shoreline restoration activities undertaken as a result of recommendations in the shoreline restoration plan may be subject to environmental stressors or other conditions that could influence project outcomes. Other potential uncertainties that could influence project success include:

- Vegetation stress due to herbivory, disease and competition from invasive species;
- Land use changes; and
- Sustaining optimal hydrologic conditions.

These potential uncertainties will be addressed when specific restoration activities are identified and the MAM plan will be updated accordingly.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(viii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers
uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Parameter: Acquisition of Parcel**

- **a.** Purpose: To verify acquisition of high quality habitat
- **b.** Method: Submission of executed acquisition documents, such as a deed
- **c.** Timing and Frequency: Once upon completion of acquisition
- **d.** Sample Size: n=1
- **e.** Sites: East Gateway Tract
- **f.** Performance Criteria: Executed acquisition document
- **g.** Corrective Action(s): Identify another willing seller if parcel cannot be acquired

**Parameter: Area Acquired**

- **a.** Purpose: Determine area of habitat restored/enhanced/protected by habitat type
- **b.** Method: Analysis of aerial imagery, ground survey or boundary survey that accompanies deed
- **c.** Timing and Frequency: Once upon completion of acquisition
- **d.** Sample Size: n=1
- **e.** Sites: Project footprint
- **f.** Performance Criteria: Acres purchased matches RP acreage
- **g.** Corrective Action(s): NA

**Parameter: Completed Management Plan**

- **a.** Purpose: To prioritize and plan management actions for the parcel
- **b.** Method: Provide copy of management plan that identifies and prioritizes restoration activities to ALTIG
- **c.** Timing and Frequency: End of year one
- **d.** Sample Size: NA
- **e.** Sites: NA
- **f.** Performance Criteria: Management plan should identify priority activities and habitats and rough cost estimates
- **g.** Corrective Action(s): Revise and update as needed

**Parameter: Completion of Bulkhead Removal E&D**

- **a.** Purpose: To plan and design a project to improve shoreline conditions
- **b.** Method: Provide plans and specs to ALTIG in annual report
- **c.** Timing and Frequency: By end of Year 3
- **d.** Sample Size: NA
- **e.** Sites: TBD
- **f.** Performance Criteria: Completed and submitted to ALTIG
- **g.** Corrective Action(s): NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.
Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-4)</th>
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<td>Acquisition of parcel</td>
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<tr>
<td>Completed management plan</td>
<td>2</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>(Area) Extent of habitat acquired</td>
<td>1</td>
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<td>X</td>
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<tr>
<td>Completion of bulkhead removal E&amp;D</td>
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<td></td>
<td>X</td>
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</tbody>
</table>

ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees, 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action. Although adaptive management is a critical component of the restoration plan as a whole, the need for extensive adaptive management on specific conservation practices being implemented is not needed for this project due to the nature of the activities, the scale of the site and the robust understanding of the habitat enhancement activities that will be conducted. Additionally, the development of a management plan that contains prioritized restoration needs will assist in addressing and reducing uncertainties by identifying those activities most likely to be successful.

Corrective actions may be undertaken on an as needed basis. Data, analysis and information obtained from this project would be used to help inform future restoration plan development, priorities and project selection.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.
As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project objectives achieved? If not, is there a reason why they were not met?
- Did acquisition of property increase the acreage of conserved habitat in the Weeks Bay Watershed?
- Was engineering and design for the bulkhead removal completed and was related shoreline restoration plan developed?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan be made if needed.

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy will be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy.
Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the tract is acquired.

WBF will purchase the property and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016a. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


**MAM PLAN REVISION HISTORY**

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<tbody>
<tr>
<td>AL TIG RP II/E A version</td>
<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters</td>
<td>Draft to final</td>
<td>MAM_Plan_WB_EastGateway_6.1.18</td>
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</tbody>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN FOR DEEPWATER HORIZON NRDA PROJECT: WEEKS BAY LAND ACQUISITION—HARROD TRACT

PROJECT OVERVIEW
The Harrod Tract is located in Baldwin County, Alabama off Sherwood Highland Road (PIN 065600). It is located along the Fish River near where Fish River meets Weeks Bay. The Harrod property contains a total of 231 acres, including over 100 acres of intact wetlands (marsh) habitat. The property is one of the largest remaining undeveloped parcels of swamp, marsh and river shoreline in coastal Alabama and is the largest privately-owned tract in the lower part of Fish River. The property is adjacent to protected wetlands and includes 7,600 feet of Fish River shoreline, including frontage along Turkey Branch and Waterhole Branch, two of Fish River's primary tributaries.

The proposed Weeks Bay Land Acquisition (Harrod Tract) project would fund WBF or the State of Alabama to acquire the 231-acre Harrod Tract through a fee simple purchase, and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR. The Weeks Bay Land Acquisition (Harrod Tract) project would protect approximately 231 acres in perpetuity to maintain its conservation value. A restoration plan would be developed, and associated restoration activities would be conducted on the purchased property, which could include invasive species control (prescribed burning or other methods), native vegetation planting, and limited erosion control measures.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic goal: Restore and Conserve Habitat
- Restoration type: Wetlands, Coastal and Nearshore Habitat
- Restoration type goal: Restore a variety of interspersed and ecologically connected coastal habitats with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities. The project also meets Trustee goals for wetlands, coastal, and nearshore habitats restoration through the inclusion of funds for invasive species control, native species planting, and erosion control, as well as through the provision of funding for future restoration planning to determine the feasibility of reestablishing longleaf pine savannas and other historic landscapes.
- Restoration approach: Protect and conserve marine, coastal, estuarine and riparian habitats
- Restoration technique: Acquire lands for conservation

Objective 1: Restore and conserve coastal habitat in the Weeks Bay watershed.

Objective 2: Develop a management plan to prioritize restoration needs.

Objective 3: Conduct stewardship and management activities as needed to enhance the quality of habitat.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES
As stated in the PDARP, coastal wetlands provide a wide range of ecological functions and services, including providing important habitat for fish and wildlife species, improving water quality, stabilizing shorelines, reducing storm-surge risk, and capturing and storing carbon in organic soils. The restoration approach utilized is to protect and conserve marine, coastal, estuarine, and riparian habitats. The specific technique under this restoration approach is to acquire lands for conservation. Conserving and
protecting land parcels via acquisition or conservation easements can protect wetlands and other significant coastal, estuarine, and riparian habitats; create connections between protected areas; remove direct threats of development; provide mechanisms for protected species management; provide nesting and foraging habitat for birds; protect critical freshwater inflows to estuaries; and improve coastal water quality.

The activities in this project include the acquisition of 231 acres of coastal habitat and subsequent placement of that acreage into conservation and active management, which will reduce stressors including urban development, habitat loss and alteration, fragmentation and erosion, ultimately leading to improved habitat conditions and quality as well as improved water quality. Long-term outcomes of the project include an increase in acres of lands managed for conservation purposes, and increase in habitat connectivity and an overall enhancement of ecosystem services of Gulf Coast habitats and resources.

Sources of Uncertainty

The primary source of uncertainty for this project is related to the willingness of the seller for the purchase of the parcel, although the property owner has indicated they are willing to sell. If for any reason the State is unable to purchase the property, another parcel will be sought. Other potential uncertainties that could influence project success include:

- Vegetation stress due to herbivory, disease and competition from invasive species;
- Land use changes; and
- Sustaining optimal hydrologic conditions.

These potential uncertainties will be addressed when specific restoration activities are identified and the MAM plan will be updated accordingly.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(viii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Acquisition of Parcel

a. Purpose: To verify acquisition of high quality habitat
b. Method: Submission of executed acquisition documents, such as a deed
c. Timing and Frequency: Once upon completion of acquisition
Parameter: Area Acquired

a. Purpose: Determine area of habitat restored/enhanced/protected by habitat type
b. Method: Analysis of aerial imagery, ground survey or boundary survey that accompanies deed
c. Timing and Frequency: Once upon completion of acquisition
d. Sample Size: n=1
e. Sites: Project footprint
f. Performance Criteria: Acres acquire matches RP acreage
g. Corrective Action(s): NA

Parameter: Completed Management Plan

a. Purpose: To prioritize and plan management actions for the parcel
b. Method: Provide copy of management plan that identifies and prioritizes restoration activities to ALTIG
c. Timing and Frequency: End of year one
d. Sample Size: NA
e. Sites: NA
f. Performance Criteria: Management plan should identify priority activities and habitats and rough cost estimates
g. Corrective Action(s): Revise and update as needed

Parameter: Vegetation Percent Cover and Composition

a. Purpose: To determine if vegetation is becoming established, increasing or being maintained
b. Method: Visual assessment of 1-4 m² plots for total percent cover of target and undesirable species. Percent cover of individual species by layer.
c. Timing and Frequency: baseline, as built (year zero) and annually in mid-late summer
d. Sample Size: 1-4 m² plots
e. Sites: Throughout project footprint
f. Performance Criteria: Performance criteria will be determined when specific management actions are identified
g. Corrective Action(s): Adjust management techniques as necessary to reach performance criteria goals. This may include increasing or decreasing the prescribed fire frequency, increasing amount of mechanical removal of canopy species, or an increase in herbicidal treatment for invasive species.

Parameter: Area (acres) Enhanced / Restored, by Habitat Type

a. Purpose: To determine whether the goals of the management plan are being met
b. Method: Analysis of aerial imagery, ground survey and/or biological survey(s) completed during management plan development
c. Timing and Frequency: Annually in all areas where new work has been conducted
d. Sample Size: Total area
e. Sites: All sites where work has been conducted
f. Performance Criteria: All activities undertaken meet recommendation in management plan
g. Corrective Action(s): NA
The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

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<th>Monitoring Parameter</th>
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</thead>
<tbody>
<tr>
<td>Acquisition of parcel</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vegetation Percent Cover and Composition</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Number of acres enhanced/restored</td>
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<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Completed Management Plan</td>
<td>2</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**ADAPTIVE MANAGEMENT**

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management on specific conservation practices being implemented is not needed for this project due to the nature of the activities, the scale of the site and the robust understanding of the habitat enhancement activities that will be conducted. Additionally, the development of a management plan that contains prioritized restoration needs will assist in addressing and reducing uncertainties by identifying those activities most likely to be successful. Corrective actions may be undertaken on an as needed basis. Data, analysis and information obtained from this project would be used to help inform future Restoration Plan development, priorities and project selection.
EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did acquisition of property increase the acreage of conserved habitat in the Weeks Bay Watershed?
- Did the restoration activities undertaken produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan be made if needed.

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

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Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the tract is acquired by the WBF. WBF will purchase the property and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
LITTLE LAGOON LIVING SHORELINE

PROJECT OVERVIEW

This project is located in Little Lagoon, Gulf Shores, Alabama, and it aims to restore a minimum of 2,200 feet of shoreline on and adjacent to Bon Secour National Wildlife Refuge (BSNWR). The project would include evaluation, planning, implementation, and monitoring and adaptive management of a living shoreline project. Little Lagoon is a shallow body of water, 10 miles long and 0.5-mile-wide on the north side of the Gulf of Mexico on the Alabama coast. Its brackish water is a mix of overflow from the mostly fresh water Lake Shelby and salt water from the Gulf of Mexico that enters through the Little Lagoon Pass in Gulf Shores, Alabama.

Construction of a living shoreline would protect habitat on adjacent federal land by buffering the shoreline against erosion. The project would include planning, implementation, and monitoring of a living shoreline project that uses natural materials rather than hardened structures or barriers, strategically placed to provide protective erosion control management to restore natural habitat, functions, and processes. USDOI would be the implementing Trustee for this project.

One or two rows of biodegradable coconut fiber “coir” logs may be placed along the eroding shoreline to stabilize vegetation and attenuate wave action, and grass plantings (e.g., *Spartina alterniflora* or *Juncus roemerianus*) may be placed between the logs and the eroded shoreline to jump-start a vegetated buffer. Native mussels may also be seeded among the shoreline grasses. The specific restoration activities would be finalized during the evaluation and planning process.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

The project Restoration Type is Habitat Projects on Federally Managed Lands. The Restoration Type goals, approach and technique are:

- **Programmatic goal:** Restore and Conserve Habitat
- **Restoration type goal:** Restore federally managed habitats that were affected by the oil spill and response actions through an integrated portfolio of restoration approaches across a variety of habitats.
- **Restoration approach:** Protect and conserve marine, coastal, estuarine and riparian habitats
- **Restoration technique:** Construct breakwaters

**Goal:** Reduce rate of shoreline erosion.

**Objective 1:** Ensure proper installation and functionality of the living shoreline.

**Objective 2:** Project area has 80% native vegetative cover within 3 years of project completion.

**Objective 3:** Reduce rate of shoreline erosion.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

The conceptual model, described below, forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. Constructing a breakwater of biodegradable coconut fiber logs will help reduce stressors including erosion and habitat loss, ultimately improving ecosystem function, and/or biological
capacity. The construction of a living shoreline will result in reduction of erosion of shoreline protecting adjacent beach mouse habitat and will also increase the amount of biologically productive shoreline habitat. Planting vegetation will stabilize sediment and the shoreline, reduce erosion, encourage sediment deposition and contribute to ecosystem function.

![Conceptual model diagramming vegetated shoreline erosion processes vs. that of an enhanced living shoreline.](image)

**Sources of Uncertainty**

The primary source of uncertainty for this project is related to the construction of the living shoreline as designed, on schedule and on budget. Other uncertainties include impact from potential storms, as well as the longevity and effectiveness of the materials used to construct the living shoreline. The materials proposed to be utilized have proven effective in other areas, reducing the likelihood of project failure. Other uncertainties include:

- Stress on planted vegetation due to herbivory, disease or competition
- Maintenance of optimal hydrologic conditions for the sustainability of restored areas
- Natural variability in ecological and physical processes
- Rate of sediment accretion
- Lifespan of coir logs in project environment
- Frequency or severity of storms during the grow-in stage

**PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE**

The proposed monitoring for this project, outlined below, is organized by project objective, with one or more monitoring parameters for each objective. For each of the monitoring parameters, information is provided on method, timing and frequency, duration, sample size, and sites. Also included is the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), as
well as performance criteria for each parameter (if applicable) and example corrective actions that could be taken if the performance criteria are not met.

The adaptive management decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria would be used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. Information below does not include all possible options; rather, it includes a list of potential adaptive management actions for each individual parameter to be considered. The decision to implement a corrective action should holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Objective 1:** Ensure proper installation and functionality of the living shoreline.

**Parameter: Structural Integrity of Constructed Figures**

a. Method: Conduct visual observations and photograph the project site. Visual surveys may be used subjectively to record the overall conditions, integrity, and effectiveness of the structure, including observations of material movement, changes in profile, change in habitat, etc. Particular attention should be paid to the stakes and ropes securing the coir logs, as well as the integrity of the jute net holding the log together.

b. Timing and frequency: The project is expected to be completed within a 90-day time frame. Project footprint as-built surveys will occur immediately following construction activities and delineate project components (e.g., location of coir log placement, area planted, etc.). Surveys will be repeated twice, 1- and 2-years post construction. Additionally, surveys should be conducted after any major storm event, particularly if there was high water in Little Lagoon and/or a strong easterly wind.

c. Sample size: Length of project

d. Sites: Length of project footprint

e. Performance criteria: Constructed as designed

f. Corrective action: If issues are discovered within the warranty period (the first-year post-construction) they will be documented and immediately referred to the contractor (through the CO) for repair or replacement. If issues are discovered outside of the warranty period (or are otherwise not the result of defective work) will be repaired by Refuge personnel. Loose coir logs that have not yet shifted position will be re-staked/re-tied. Logs that have moved will be returned to their original position, or secured in their new position as determined by Refuge staff.

**Objective 2:** Project area has 80% native vegetative cover within 3 years of project completion.

**Parameter: Vegetation Percent Cover and Composition**

a. Method: Establish plots within the project area and record plot locations with a GPS and/or mark the plots with corner poles to allow for revisiting over time. Determine species composition and estimate percent cover of each within a 1m² plot. See U.S. EPA (2011) for additional guidance on performing visual estimates of vegetation percent cover.

b. Timing and Frequency: Immediately prior to construction activities, immediately following construction, then annually at peak of growing season 1 and 2 years post-construction.

c. Sample Size: 7 study plots and 1 baseline plot
d. Sites: Randomly located sample sites within the project footprint

- Performance Criteria: 80% survival of planted species, 80% vegetative cover within 3 years

- Corrective Action: Install additional vegetation, employ anti-herbivory measures, Check elevation

Objective 3: Reduce erosion to project shoreline.

Parameter: Shoreline Position

- a. Method: Walk the shoreline (seaward edge of coir logs, and existing shoreline) while taking continuous measurements using an RTK GPS. Import the spatial information into ArcGIS and map the shoreline position. Import and analyze the data using spatial analysis software. Determine the shoreline loss/gain in meters per year. See Steyer and Llewellyn (2000) for more information on this method.

- b. Timing and Frequency: Immediately prior to construction activities, immediately following construction, 1 and 2 years post construction

- c. Sample Size: 1/year

- d. Sites: Length of project footprint

- e. Performance Criteria: Over monitoring period, no additional landward migration of shoreline

- f. Corrective Action: Replace damaged or missing coir logs, install additional wave attenuation structures

Parameter 2: Sediment Accretion

- a. Method: Bathymetric survey transects from the existing shoreline to the seaward-most line of coir logs

- b. Timing and Frequency: Immediately prior to construction activities, immediately following construction, 1 and 2 years post construction

- c. Sample Size: 1 Survey/year (12 transects)

- d. Sites: Within project footprint

- e. Performance Criteria: Over monitoring period, net increase in elevation landward of the coir logs

- f. Corrective Action: Place additional sediment landward of coir logs

The schedule for project monitoring is shown in Table 2, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.
Table 2. Project Monitoring Schedule

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Objective</th>
<th>Pre-Execution</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution (Years 1, 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial extent</td>
<td>1</td>
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<td>X</td>
</tr>
<tr>
<td>Vegetation Percent Cover and Composition</td>
<td>2</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Shoreline Position</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sediment Accretion</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer and Llewellyn 2000).

Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees, 2016a, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

The need for extensive adaptive management on specific components of this project is not expected due to the nature of activities, scale of the site, and robust understanding of activities that will be conducted. Periodic maintenance may be necessary following severe weather events or other situations that would increase erosion potential. Adaptive management activities could include installing an additional row of coir logs or bagged oyster shells in front of or on top of the initial row of coir logs if they were placed too low or degrade too quickly. Data, analysis and information obtained from this project would be used to help inform future Restoration Plan development, priorities and project selection.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.
As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis will be used to answer the following questions:

- Were project restoration objectives achieved? If not, is there a reason why they were not met?
- Was project constructed as designed?
- Did planted vegetation establish successfully?
- Has erosion been reduced?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- What broader insights might be gained from implementation/monitoring of this project?

These questions will be answered and compiled in annual monitoring reports for the project and revision to this MAM plan be made if needed.

**DATA MANAGEMENT**

To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. All data will undergo proper QA/QC protocols, be reviewed, and verified following the process outlined in Section 3 of the MAM Manual. In general, electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created, and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved. Relevant Project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into Excel spreadsheets (or similar digital format). After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data is entered or converted into agreed upon/commonly used digital format labeled with metadata.

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

**REPORTING**

Annual reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.
ROLES AND RESPONSIBILITIES

DOI is the lead Trustee agency for this project and will ensure that the project is implemented. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees, 2016a, Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


MAM PLAN REVISION HISTORY

<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
</tr>
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<tbody>
<tr>
<td>AL TIG RP II/EA version</td>
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<tr>
<td>MAM Plan Little Lagoon Living Shoreline 05252018-plt</td>
<td>6/1/2018</td>
<td>Service project specific MAM review</td>
<td>Service MAM consistency</td>
<td>MAM Plan Little Lagoon Living Shoreline 060118</td>
</tr>
</tbody>
</table>
MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
FOWL RIVER NUTRIENT REDUCTION PROJECT

PROJECT OVERVIEW

This project will restore resources injured by the DWH oil spill as outlined in the DWH PDARP/PEIS following the Natural Resource Damage Assessment process. The Fowl River Nutrient Reduction project would restore water quality through implementation of improved land management practices that reduce nutrient and sediment loadings to Mobile Bay. The implementation of land management practices using existing USDA-NRCS conservation practice standards and specifications would be the primary tool for reducing erosion and nutrient inputs in the watershed.

Excessive nutrient enrichment, or eutrophication, of Gulf Coast estuaries and their watersheds is a chronic threat that can lead to hypoxia (low oxygen levels), harmful algal blooms, habitat loss, and fish kills (DWH NRDA Trustees 2016a, section 5.5.4). This project would restore and enhance the ecological and hydrological integrity of water resources, including improving water quality and ensuring natural water quantity levels to coastal rivers and streams and coastal bays and estuaries. Toward this end, the objective of this project is to reduce rural nonpoint source pollution through the implementation of conservation practices on agricultural lands.

The primary goal for the nutrient reduction project is water quality improvement through nutrient and sediment reduction. The health of the Gulf of Mexico depends on the health of its estuaries, and the health of those coastal waters is influenced by land uses in the watersheds of its tributaries. In the five Gulf States, more than 80 percent of the acreage is in private ownership (USDA-NRCS 2014) and is used for forestry and agriculture.

Given the success of USDA NRCS Farm Bill programs and their strong acceptance by private landowners, there is a significant opportunity to implement conservation practices on private lands. The USDA-NRCS would provide outreach and technical assistance to voluntary participants (landowners), especially on the most vulnerable acres in the watersheds, to develop conservation plans and would use all available conservation practices typically planned and funded by USDA-NRCS programs. The project proposes to implement clusters of projects within the smallest watershed, to the extent practicable, with the goal of making a discernable difference in local water quality. While this targeted and concentrated approach is desired, the projects’ proponents understand the voluntary nature of conservation implementation and will strive to reach the critical sources within the watershed. The proposed conservation practices would reduce nutrient losses from the landscape; reduce nutrient loads to streams and downstream receiving waters; and reduce water quality degradation in watersheds that could provide benefits to marine resources and benefits to coastal watersheds.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic goal: Restore Water Quality
- Restoration type: Nutrient Reduction (Non-point source)
- Restoration approach: Reduce nutrient loads to coastal watersheds
- Restoration technique: Agricultural conservation practices
• Restoration Type Goal: Reduce nutrient loadings to Gulf Coast estuaries, habitats, and resources that are threatened by chronic eutrophication, hypoxia, or harmful algal blooms or that suffer habitat losses associated with water quality degradation

Objective 1: Reduce sediment, phosphorous and nitrogen loads during storm events leaving private lands in the watershed.

The monitoring or project parameters are dependent upon the voluntary participation by landowners to implement conservation practices on their land. Implemented conservation practices may or may not be located in the same subwatershed, therefore sampling efforts may vary in scale at different watershed levels. The proposed conservation practices will reduce nutrient losses from the landscape, reduce nutrient loads to streams and downstream receiving waters, and reduce water quality degradation in watershed that would provide benefits to marine resources and coastal watersheds.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the restoration project and the desired project outcomes. For this project, the specific stressors addressed include nutrient and sediment loading, agricultural activities and land cover conversion. This project will reduce those stressors by implementing conservation practices on private agricultural lands that will reduce sedimentation and nutrients that make their way into local waterbodies, resulting in improved water quality.

Table 1: Conceptual Model

<table>
<thead>
<tr>
<th>Activity</th>
<th>Output</th>
<th>Short-term Outcome</th>
<th>Long-term Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement conservation practices to reduce nutrient and sediment loading into receiving waters</td>
<td>Reduced nutrient and sediment loading into the system</td>
<td>Decrease in nutrient and sediment loadings in targeted watersheds</td>
<td>Enhancement of ecosystem services of Gulf coast habitats and living marine resources</td>
</tr>
</tbody>
</table>

Sources of Uncertainty

Critical uncertainties are defined as those that have the potential to impact or impede the decision-making process and the ability to achieve the restoration objective(s). Although many types of scientific and other uncertainties exist, the focus of uncertainty in this context is the uncertainty that affects the decisions being made for this project. Monitoring to resolve critical uncertainties affecting these decisions can allow for more effective expenditure of resources into the future as learning takes place.

The following uncertainties could potentially influence the success of the project. Efforts will be made in the planning and implementation phases to reduce and/or eliminate these uncertainties.

1. Willingness of landowners to participate. Strategy to resolve: identify other willing landowners.

2. Conservation practices may not result in measurable change in the receiving waters. Strategy to resolve: Conduct targeted in-stream monitoring at locations upstream and downstream of the implementation area. Monitoring data will be used to refine future management actions.
PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring for this project, outlined below, is organized by project objective, with one or more monitoring parameters for each objective. For each of the monitoring parameters information is provided on the monitoring methods, timing and frequency, sample size and sites. In addition, performance criteria for each parameter are identified (if applicable), including example corrective actions that could be taken if the performance criteria are not met. The parameters listed below may or may not be tied to performance criteria and/or corrective actions. These parameters will be monitored at the project site, in adjacent streams, and may also be monitored at appropriate reference and/or control sites to demonstrate how the project is trending toward the performance criteria.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria would be used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. Information below does not include all possible options; rather, it includes a list of potential adaptive management actions for each individual parameter to be considered. The decision to implement a corrective action should holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

This MAM Plan will be revised and updated as specific activities are identified.

Objective 1: Reduce sediment, phosphorous and nitrogen loads during storm events leaving private lands in the watershed.

- Were sediment, nitrogen and phosphorous loads to downstream waterbodies reduced?

Parameter: Number of Water Quality Improvement Practices Implemented

a. Method: Count number of projects implemented
b. Timing and Frequency: Annual
c. Sample size: All projects implemented
d. Sites: All sites
e. Performance criteria: Number of projects implemented by end of project period

Parameter: Area of Water Quality Improvement Activities Implemented (Acres)

a. Method: Number of acres where activities are implemented.
b. Timing and Frequency: Annual
c. Sample size: All projects implemented
d. Sites: All sites
e. Performance criteria: Number of acres impacted by end of project period

Parameter: Discharge (m³/s or cfs)

b. Timing and frequency: Ten measurements per year would be taken at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation practices are being implemented.
c. Sample size: The total number of sites is not yet determined and will be dependent on the amount and location of conservation practices in the watershed. It is anticipated that a total of
10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible. Sites: Will be determined when sites are identified.

d. Sites: N/A
e. Performance criteria: N/A

**Parameter: Total Suspended Solids (TSS) (mg/L or ppm) and Turbidity**

a. Method: In-stream. Fixed station parameter reading using a data sonde, under baseflow conditions when possible, using standard monitoring protocols would occur at appropriately located upstream and downstream stations that bracket portions of watersheds with conservation practices.

b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year would be collected at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation practices are being implemented.

c. Sample size: The total number of sites is not yet determined and will be dependent on the number and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.

d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.

e. Performance criteria: Change in the quantity of in-stream sediment over time.

f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance.

**Parameter: Total Phosphorous (TP) (mg/L)**

a. Method: In-stream. Sample collection consistent with Alabama standard monitoring protocols would occur at appropriately located upstream and downstream stations that bracket portions of the area with conservation practices.

b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year would be collected at one or more sets of one upstream and two downstream stations that bracket implementation areas.

c. Sample size: The total number of sites is not yet determined and will be dependent on the number and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.

d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.
e. Performance criteria: Change in the quantity of in-stream phosphorous over time.

f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance.

**Parameter: Total Nitrogen (TN) (mg/L)**

a. Method: Sample collection using standard monitoring protocols will occur at appropriately located upstream and downstream stations that bracket portions of areas where conservation activities are being implemented.

b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year will be collected at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation activities are being implemented.

c. Sample size: The total number of sites is not yet determined and will be dependent on the amount and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.

d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.

e. Performance criteria: Change in the quantity of in-stream nitrogen over time.

f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance.

Corrective actions that may be necessary include, but are not limited to, regrading/removing water control structures, planting/replanting desirable vegetation, and/or removing nuisance vegetation. Corrective actions will likely occur after implementation, but within the five-year time frame for this project. Corrective actions will be identified by USDA based on site evaluations and performance monitoring data and reports. Costs for addressing the corrective action will be evaluated by USDA to determine feasibility.

The schedule for project monitoring is shown in Table 2, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

**Table 2: Monitoring Schedule**

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of projects implemented</td>
<td>1</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Number of Acres impacted</td>
<td>1</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Monitoring Parameter</td>
<td>Objective</td>
<td>Pre-Execution Monitoring</td>
<td>As-Built (Year 0)</td>
<td>Post-Execution Monitoring (Years 1-4)</td>
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<tr>
<td>----------------------</td>
<td>-----------</td>
<td>--------------------------</td>
<td>------------------</td>
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</tr>
<tr>
<td>Discharge</td>
<td>1</td>
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<td>X</td>
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<td>TN</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**ADAPTIVE MANAGEMENT**

Implementation of the conservation practices, monitoring and adaptive management would utilize standardized actions using accepted tools and protocols at specific locations.

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action. The need for adaptive management on specific conservation practices being implemented is not needed for this project due to the nature of the sampling approaches, the objectives of the project and the scales of the sites in which the data will be collected, and an understanding of the conservation practices that will be applied. Data, analysis and information obtained from this project will be used to help inform future Restoration Plan development, priorities and project selection and implementation.

**EVALUATION**

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were sediment, nitrogen and phosphorous loads to downstream waterbodies reduced?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

The analysis methods would be applied to all monitoring parameters as follows:

**Water Quality Data**

Standard analytical techniques would be used to document water quality improvements between upstream and downstream stations that bracket areas with conservation systems, following guidance in Alabama’s Quality Assurance Project Plan (QAPP). The QAPP is developed in accordance with ADEM SOP #8302, “Preparation, Review, Approval, Distribution, and Archival of Quality Assurance Program/Project Plans (QAPPs) and EPA Requirements for Quality Assurance Project Plans” (EPA QA/R-5, 2001).

**PROJECT-LEVEL DECISIONS: PERFORMANCE CRITERIA AND POTENTIAL CORRECTIVE ACTIONS**

Conservation practices will be implemented according to well-established USDA standards, specifications, engineering design, and performance criteria. Regular construction monitoring is a standard element of cooperator contracts. Contracts also have standard provisions for operation and maintenance, including replacement of failed practice elements as corrective actions.

**DATA MANAGEMENT**

**Data Description**

All data collected will follow the data standards as per the MAM Manual 1.0 ([DWH NRDA Trustees 2017](#)). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

**Data Review and Clearance**

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate
monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

**Data Storage and Accessibility**

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

**Data Sharing**

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

**REPORTING**

Annual reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

USDA-NRCS is the implementing Trustee.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

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</tr>
</tbody>
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PROJECT OVERVIEW

This project will restore resources injured by the DWH oil spill as outlined in the DWH PDARP/PEIS following the Natural Resource Damage Assessment process. The Weeks Bay Nutrient Reduction project would restore water quality through implementation of improved land management practices that reduce nutrient and sediment loadings to Weeks and Mobile Bays. The implementation of land management practices using existing USDA-NRCS conservation practice standards and specifications would be the primary tool for reducing erosion and nutrient inputs in the watershed.

Excessive nutrient enrichment, or eutrophication, of Gulf Coast estuaries and their watersheds is a chronic threat that can lead to hypoxia (low oxygen levels), harmful algal blooms, habitat loss, and fish kills (DWH NRDA Trustees 2016a, section 5.5.4). This project would restore and enhance the ecological and hydrological integrity of water resources, including improving water quality and ensuring natural water quantity levels to coastal rivers and streams and coastal bays and estuaries. Toward this end, the objective of this project is to reduce rural nonpoint source pollution through the implementation of conservation practices on agricultural lands.

The primary goal for the nutrient reduction project is water quality improvement through nutrient and sediment reduction. The health of the Gulf of Mexico depends on the health of its estuaries, and the health of those coastal waters is influenced by land uses in the watersheds of its tributaries. In the five Gulf States, more than 80 percent of the acreage is in private ownership (USDA-NRCS 2014) and is used for forestry and agriculture.

Given the success of USDA NRCS Farm Bill programs and their strong acceptance by private landowners, there is a significant opportunity to implement conservation practices on private lands. The USDA-NRCS would provide outreach and technical assistance to voluntary participants (landowners), especially on the most vulnerable acres in the watersheds, to develop conservation plans and would use all available conservation practices typically planned and funded by USDA-NRCS programs. The project proposes to implement clusters of projects within the smallest watershed, to the extent practicable, with the goal of making a discernable difference in local water quality. While this targeted and concentrated approach is desired, the projects’ proponents understand the voluntary nature of conservation implementation and will strive to reach the critical sources within the watershed. The proposed conservation practices would reduce nutrient losses from the landscape; reduce nutrient loads to streams and downstream receiving waters; and reduce water quality degradation in watersheds that could provide benefits to marine resources and benefits to coastal watersheds.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic goal: Restore Water Quality
- Restoration type: Nutrient Reduction (Non-point source)
- Restoration approach: Reduce nutrient loads to coastal watersheds
- Restoration technique: Agricultural conservation practices
- Restoration Type Goal: Reduce nutrient loadings to Gulf Coast estuaries, habitats, and resources that are threatened by chronic eutrophication, hypoxia, or harmful algal blooms or that suffer habitat losses associated with water quality degradation
Objective 1: Reduce sediment, phosphorous and nitrogen loads during storm events leaving private lands in the watershed.

The monitoring or project parameters are dependent upon the voluntary participation by landowners to implement conservation practices on their land. Implemented conservation practices may or may not be located in the same subwatershed, therefore sampling efforts may vary in scale at different watershed levels. The proposed conservation practices will reduce nutrient losses from the landscape, reduce nutrient loads to streams and downstream receiving waters, and reduce water quality degradation in watershed that would provide benefits to marine resources and coastal watersheds.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the restoration project and the desired project outcomes. For this project, the specific stressors addressed include nutrient and sediment loading, agricultural activities and land cover conversion. This project will reduce those stressors by implementing conservation practices on private agricultural lands that will reduce sedimentation and nutrients that make their way into local waterbodies, resulting in improved water quality.

Table 1: Conceptual Model

<table>
<thead>
<tr>
<th>Activity</th>
<th>Output</th>
<th>Short-term Outcome</th>
<th>Long-term Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement conservation practices to reduce nutrient and sediment loading into receiving waters</td>
<td>Reduced nutrient and sediment loading into the system</td>
<td>Decrease in nutrient and sediment loadings in targeted watersheds</td>
<td>Enhancement of ecosystem services of Gulf coast habitats and living marine resources</td>
</tr>
</tbody>
</table>

Sources of Uncertainty

Critical uncertainties are defined as those that have the potential to impact or impede the decision-making process and the ability to achieve the restoration objective(s). Although many types of scientific and other uncertainties exist, the focus of uncertainty in this context is the uncertainty that affects the decisions being made for this project. Monitoring to resolve critical uncertainties affecting these decisions can allow for more effective expenditure of resources into the future as learning takes place.

The following uncertainties could potentially influence the success of the project. Efforts will be made in the planning and implementation phases to reduce and/or eliminate these uncertainties.

1. Willingness of landowners to participate. Strategy to resolve: identify other willing landowners.
2. Conservation practices may not result in measurable change in the receiving waters. Strategy to resolve: Conduct targeted in-stream monitoring at locations upstream and downstream of the implementation area. Monitoring data will be used to refine future management actions.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring for this project, outlined below, is organized by project objective, with one or more monitoring parameters for each objective. For each of the monitoring parameters information is
provided on the monitoring methods, timing and frequency, sample size and sites. In addition, performance criteria for each parameter are identified (if applicable), including example corrective actions that could be taken if the performance criteria are not met. The parameters listed below may or may not be tied to performance criteria and/or corrective actions. These parameters will be monitored at the project site, in adjacent streams, and may be monitored at appropriate reference and/or control sites to demonstrate how the project is trending toward the performance criteria.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria would be used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. Information below does not include all possible options; rather, it includes a list of potential adaptive management actions for each individual parameter to be considered. The decision to implement a corrective action should holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

This MAM Plan will be revised and updated as specific activities are identified.

**Objective 1:** Reduce sediment, phosphorous and nitrogen loads during storm events leaving private lands in the watershed.

- Were sediment, nitrogen and phosphorous loads reduced to downstream waterbodies?

**Parameter: Number of Water Quality Improvement Practices Implemented**

a. Method: Count number of projects implemented  
b. Timing and Frequency: Annual  
c. Sample size: All projects implemented  
d. Sites: All sites  
e. Performance criteria: Number of projects implemented by end of project period

**Parameter: Area of Water Quality Improvement Activities Implemented (Acres)**

a. Method: Number of acres where activities are implemented  
b. Timing and Frequency: Annual  
c. Sample size: All projects implemented  
d. Sites: All sites  
e. Performance criteria: Number of acres impacted by end of project period

**Parameter: Discharge (m³/s or cfs)**

b. Timing and frequency: Ten measurements per year would be taken at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation practices are being implemented.  
c. Sample size: The total number of sites is not yet determined and will be dependent on the amount and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.  
d. Sites: N/A  
e. Performance criteria: N/A
Parameter: Total Suspended Solids (TSS) (mg/L or ppm) and Turbidity

a. Method: In-stream. Fixed station parameter reading using a data sonde, under baseflow conditions when possible, using standard monitoring protocols would occur at appropriately located upstream and downstream stations that bracket portions of watersheds with conservation practices.
b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year would be collected at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation practices are being implemented.
c. Sample size: The total number of sites is not yet determined and will be dependent on the number and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.
d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.
e. Performance criteria: Change in the quantity of in-stream sediment over time.
f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance.

Parameter: Total Phosphorous (TP) (mg/L)

a. Method: In-stream. Sample collection using standard monitoring protocols would occur at appropriately located upstream and downstream stations that bracket portions of the area with conservation practices.
b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year would be collected at one or more sets of one upstream and two downstream stations that bracket implementation areas.
c. Sample size: The total number of sites is not yet determined and will be dependent on the number and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.
d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.
e. Performance criteria: Change in the quantity of in-stream phosphorous over time.
f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance.
Parameter: Total Nitrogen (TN) (mg/L)

a. Method: Sample collection using standard monitoring protocols will occur at appropriately located upstream and downstream stations that bracket portions of areas where conservation activities are being implemented.

b. Timing and frequency: Conduct pre-execution monitoring, then ten samples per year will be collected at one or more sets of one upstream and two downstream stations that bracket portions of the watershed where conservation activities are being implemented.

c. Sample size: The total number of sites is not yet determined and will be dependent on the amount and location of conservation practices in the watershed. It is anticipated that a total of 10 samples would be collected per year at each station. Samples would be taken at baseflow conditions when possible.

d. Sites: Conservation practice implementation will be dependent on the participation of landowners in the target watersheds described above. Locations will be updated in the monitoring plan when landowners sign participation agreements with the NRCS. The geographic scope of the in-stream monitoring design will depend on the location of lands enrolled in the conservation program. Where a large number of acres are co-located in a small watershed (e.g., HUC 12), the design will likely include one upstream station (could be optional depending on upstream conditions) and one or more downstream stations depending on the location of the cluster of conservation practices.

e. Performance criteria: Change in the quantity of in-stream nitrogen over time.

f. Corrective Action: Actions would vary depending on the type of conservation practice implemented. Some conservation practices may require inspection and maintenance. Corrective actions that may be necessary include, but are not limited to, regrading/removing water control structures, planting/replanting desirable vegetation, and/or removing nuisance vegetation. Corrective actions will likely occur after implementation, but within the five-year time frame for this project. Corrective actions will be identified by USDA based on site evaluations and performance monitoring data and reports. Costs for addressing the corrective action will be evaluated by USDA to determine feasibility.

The schedule for project monitoring is shown in Table 2, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 2: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of projects implemented</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Number of Acres impacted</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Discharge</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>TSS</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
ADAPTIVE MANAGEMENT

Implementation of the conservation practices, monitoring and adaptive management would utilize standardized actions using accepted tools and protocols at specific locations.

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action. The need for adaptive management on specific conservation practices being implemented is not needed for this project due to the nature of the sampling approaches, the objectives of the project and the scales of the sites in which the data will be collected, and an understanding of the conservation practices that will be applied. Data, analysis and information obtained from this project will be used to help inform future Restoration Plan development, priorities and project selection and implementation.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were sediment, nitrogen and phosphorous loads to downstream waterbodies reduced?
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Were any of the uncertainties identified prior to project implementation resolved?
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**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed. USDA-NRCS is the implementing Trustee. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
COASTAL ALABAMA SEA TURTLE (CAST) CONSERVATION PROGRAM

PROJECT OVERVIEW

The proposed Coastal Alabama Sea Turtle (CAST) Conservation Program project is designed to support existing sea turtle programs in Alabama in order to strengthen efforts to protect nesting sea turtles and enhance the survival of sea turtle hatchlings in Alabama. The proposed project would provide funding for the continued operation, expansion, and enhancement of the existing Share the Beach Sea Turtle Nest Monitoring Program ("Share the Beach"), which as of January 2018 is proposed to be managed by the Alabama Coastal Foundation (ACF). ACF is an organization dedicated to environmental stewardship, and has considerable experience in program management, fundraising, and volunteer recruitment, training, and management. ACF’s administration of the program would allow better overall project expenditures (e.g., to manage, analyze, and report data collected under the program). Previously this program has been managed by Friends of Bon Secour National Wildlife Refuge.

The CAST Conservation Program would expand and enhance ACF’s Share the Beach program by providing funds to expand the Share the Beach program and continue actions necessary to support sea turtle restoration in Alabama, such as conducting nest monitoring and reducing threats on nesting beaches. Under this project, additional staff experienced in sea turtle nest monitoring protocol would be hired to work with Share the Beach. This project would also help support a greater emphasis on public education, focused on minimizing anthropogenic threats to sea turtles, such as artificial lighting and nesting obstacles, and promoting the region’s potential for ecotourism while avoiding disturbance to or manipulation of sea turtle nests and hatchlings.

TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type: Sea Turtles
- Restoration Type Goal – Restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (e.g., cold water temperatures), loss or degradation of nesting beach habitat (e.g., coastal armoring and artificial lighting), and other anthropogenic threats.
- Restoration Approach - Enhance sea turtle hatchling productivity, and restore and conserve nesting beach habitat

Objective 1: Enhance hatchling productivity by expanding the Share the Beach program.

Objective 2: Minimize anthropogenic threats to sea turtles by conducting education and outreach activities.

Objective 3: Increase understanding of Alabama sea turtle populations via data collection related to anthropogenic threats (lighting disorientation, nesting obstacle interactions, depredation, vandalism).

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. Activities that will be conducted include volunteer training, sea turtle nest monitoring and protection, and outreach and education activities. These proposed activities will address a number of stressors that
impact hatchling success, including predation and anthropogenic impacts. Together, the activities will result in increased nesting and hatchling productivity as well as increased understanding by the public regarding the negative impacts of anthropogenic stressors on sea turtles.

Sources of Uncertainty

The program is already operating successfully by the Friends of the Bon Secour National Wildlife Refuge. However, operation, expansion, and enhancement of the existing Share the Beach program by ACF would help enhance the active volunteer recruitment and oversight and also ensure its continued operation of the program, which otherwise cannot be guaranteed. There is some uncertainty around the successful recruitment, training and retention of volunteers sufficient to patrol and monitor the extent of sea turtle nesting habitat in Alabama. However, the strategy to resolve this uncertainty has been addressed in the selection of the program operator: ACF staff have the expertise and experience to fully implement the activities proposed under the program since they actively run other volunteer efforts in the region (e.g., the Alabama oyster shell recycling program, the Mobile Bay Estuary Corps, and the “Eco-Team”), including training activities, oversight of public volunteers, and education and outreach. As part of this project, the ACF will hire a biologist that has experience with the collection and management of sea turtle nesting data. Long-term funding for the program is an uncertainty, though ACF has committed to funding the continuation of the program after this project period. Finally, some factors affecting hatchling productivity, such as inundation of nests by high tides and washover events, are beyond the project’s control.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Number of Volunteers and Volunteer Hours

a. Purpose: To understand if volunteer numbers are sufficient to cover shoreline during nesting season
b. Method: Count by accumulating and synthesizing volunteer time logs
c. Timing and Frequency: Synthesize volunteer time logs monthly/quarterly for 3 years and for the 2018 season when the program transitioned to ACF
d. Sample Size: All volunteer hours
e. Sites: All sites - Baldwin County & Dauphin Island / all patrol shifts
f. Performance Criteria: Steady or increased number of volunteers each year based on 2018 baseline

g. Corrective Action(s): Evaluate recruitment and training, make adjustments as needed

**Parameter: Number of Nests Identified and Protected**

a. Purpose: To understand how many nests are present on Alabama beaches, and track predator protection, nest relocation, etc.

b. Method: Count and report in accordance with the USFWS Alabama Sea Turtle Conservation Manual (Updated and revised January 2017b)

c. Timing and Frequency: Report total nests identified in daily trips during entirety of ST nesting season May - October each year for 3 years; raw data entered weekly; synthesized monthly; and reported annually.

d. Sample Size: All nests in AL

e. Sites: Identified nests in Baldwin County & on Dauphin Island

f. Performance Criteria: Protect 100% of the nests identified

g. Corrective Action(s): Evaluate training program annually and make adjustments as needed

**Parameter: Number of Patrols Conducted**

a. Purpose: To understand if the volunteer program is sufficient to cover nesting shoreline areas in Baldwin and Mobile Counties (approximately 46.7 miles)

b. Method: Count and report total number of patrols conducted

c. Timing and Frequency: Number of patrols will be counted monthly/quarterly and synthesized/summed each year for 3 years

d. Sample Size: All patrols

e. Sites: Provide map of patrol segments in Baldwin County & Dauphin Island in report

f. Performance Criteria: steady or increased number of patrols each year based on 2017 baseline

g. Corrective Action(s): Add additional patrol shifts or patrol areas to program

**Parameter: Miles of Shoreline Patrolled Daily**

a. Purpose: To understand the extent of nesting beach that is patrolled daily

b. Method: Count and report total miles patrolled during nesting season. Methods could include walking the shoreline taking continuous GPS points or taking a GPS point at start/finish of each day for each shift, or could be calculated based on patrol segments and volunteer shifts taken for each segment.

c. Timing and Frequency: Report total in Annual Report and provide a daily average and percentage of total miles in program (approx. 46.7 miles) covered on a daily basis

d. Sample Size: All miles patrolled by volunteers

e. Sites: Total number of miles patrolled

f. Performance Criteria: Steady or increased patrol miles based on baseline from 2018 season

g. Corrective Action(s): Recruit additional volunteers, assign volunteers to specific areas if needed. Add additional patrol shifts or patrol areas to program

**Parameter: Number of Hatchlings**

a. Purpose: To understand if number of hatchlings is increasing due to increased patrol and nest protection efforts

b. Method: Provide summary of hatchling and nest info per the protocols references in the Alabama Sea Turtle Conservation Manual
c. Timing and Frequency: Hatchlings are counted at the time of hatching for each nest and number of eggs is counted at time of excavation for each nest; data sheets are synthesized and analyzed monthly during nesting season May-Oct each year for 3 years plus one year of prior season data (2018).

d. Sample Size: All nests identified

e. Sites: All nests

f. Performance Criteria: Steady or increased mean number of hatchlings over project duration compared to previous 3 years seasonal data, taking into account storm/high tide activity that may impact hatchling survival

g. Corrective Action(s): Relocate nests per protocol as needed. Protect nests with predator control as appropriate

Parameter: Number of Outreach and Education Materials Developed

a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to sea turtles

b. Method: STB staff will review existing outreach materials, identify gaps and/or needed updates, work with stakeholders, develop targeted audience messaging, and produce a minimum number of outreach materials such as web content, social media content, PSA's, brochures / hand-outs, etc.

c. Timing and Frequency: Coordinate with stakeholders and complete development of education and outreach material by end of Year 2

d. Sample Size: All materials developed

e. Sites: NA

f. Performance Criteria: Year 1: Develop a minimum of one social media post per month and a minimum of 2 outreach materials in coordination with stakeholder, could include brochures, stickers, door hangs or other items. Years 2: Develop one social media post per week and a minimum of 2 additional outreach materials also in coordination with stakeholders.

Purpose/need and approach for development should be described in annual project progress reports and copies of outreach materials provided. Summarize these efforts annually and provide copies of materials as appropriate.

g. Corrective Action(s): Continue coordination with stakeholders and revise materials as needed

Parameter: Number of Outreach Materials Distributed

a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to sea turtles as outlined in the Northwest Atlantic Loggerhead Recovery Plan (NMFS, et al., 2008).

b. Method: Note total numbers distributed and note locations for distribution. Methods of distributing outreach materials could include a combination of email blasts, social media posts, web content updates, direct mail, PSAs; news articles, brochures, web videos, etc.

c. Timing and Frequency: Timing and frequency of each outreach method will be based upon and follow the timing and frequency of outreach materials developed

d. Sample Size: Total number of materials distributed

e. Sites: Distributed at a minimum of 15 locations/events annually in coastal AL including Gulf Shores, Dauphin Island, Orange Beach, Gulf State Park, and Bon Secour National Wildlife Refuge. Also, broadly via the internet / email blasts

f. Performance Criteria: Distribute all materials developed/updated at a minimum of 15 locations/events annually (locations can include public outreach events, web, media, etc.)

g. Corrective Action(s): Identify additional locations for distribution
Parameter: Enhanced Staff Capacity

a. Purpose: To provide consistent, science-based support to a volunteer program to increase understanding of sea turtle nesting in Alabama and improve efficacy of program

b. Method: Hire qualified staff
c. Timing and Frequency: Within Year 1
d. Sample Size: NA
e. Sites: NA
f. Performance Criteria: 8 positions hired in year 1
g. Corrective Action(s): Advertise position in additional locations if appropriate hire(s) cannot be found.

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Volunteers and Volunteer Hours</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of nests identified and protected</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of patrols conducted</td>
<td>3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Miles of shoreline patrolled daily</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of Hatchlings</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of outreach materials developed</td>
<td>2</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Number of outreach materials distributed</td>
<td>2</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Enhanced staff capacity</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed
outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees, 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action. This project is based on an existing project with a 15-year history. Although corrective actions will be undertaken as needed, extensive project-level adaptive management activities are not expected.

Under the administration of ACF, the Share the Beach program would be reviewed annually to evaluate its effectiveness, including: (1) lessons learned from the previous year; (2) consulting on new scientific information about sea turtles in order to update educational and training materials; and (3) collaboration with USFWS to review sea turtle data collection, monitoring, and handling protocols. Additional activities that would be continued and expanded include continual recruitment and engagement of volunteers, volunteer training, nest monitoring and related data collection, outreach and education to residents and tourists, and data management.

**EVALUATION**

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan be made if needed.

**DATA MANAGEMENT**

**Data Description**

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are
unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.
ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

ACF will administer the program and be responsible for the timely submission of reports to the TIG.

DOI will consult.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016a. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


MAM PLAN REVISION HISTORY

<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
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<td>Reason for Change</td>
<td>New File Name</td>
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<td></td>
<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
COASTAL ALABAMA SEA TURTLE (CAST) TRIAGE

PROJECT OVERVIEW

The CAST Triage project would provide a new, appropriately equipped facility and program for the initial triage, treatment, release, and/or transfer of injured or ill sea turtles. Currently, there are no facilities in Alabama equipped for handling sea turtle strandings. The project would construct a new facility on property owned by the City of Orange Beach and establish a program that would be supported by the City of Orange Beach in the future. Funding would not be provided for staff, which would be provided by the City of Orange Beach. This facility would complement and enhance the current Alabama Sea Turtle Stranding and Salvage Network (ALSTSSN).

This facility and associated program would allow sea turtles injured in AL and proximity in adjacent states to be treated and released faster and with less stress on the animal from handling and transport. The expectation is that faster intervention, along with shorter periods of captivity and minimized handling, would improve the outcomes for injured or ill turtles by decreasing the time to receive treatment and providing a local resource to contact for citizens to report injured or distressed turtles. The program would also work to educate the public about (1) anthropogenic threats to sea turtles treated at the facility, (2) current science on how best to address the threats, and (3) conservation for sea turtles in the wild. Educational materials would be coordinated with Alabama’s Share the Beach Sea Turtle Nest Monitoring Program to create a consistent and unified message. Project funding is expected to fully support the program for 5 years. The City of Orange Beach would incur operational costs into the future.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Project Type: Sea Turtles
- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (e.g., cold water temperatures), loss or degradation of nesting beach habitat (e.g., coastal armoring and artificial lighting), and other anthropogenic threats.
- Restoration Approach: Increase sea turtle survival through enhanced mortality investigation, and early detection of and response to anthropogenic threats and emergency events

Objective 1: Construct facility to provide for initial triage and treatment of injured or ill sea turtles.

Objective 2: Increase sea turtle survival through enhanced local triage, treatment, release and/or transfer of injured or ill sea turtles.

Objective 3: Conduct public education and outreach about conservation of sea turtles and how to reduce anthropogenic threats.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. This project will treat impacts to sea turtles from a number of stressors, which could include vessel strikes,
fishing activities and bycatch. This project will reduce mortality associated with those stressors by providing enhanced capability to triage, treat, release or transfer injured or ill sea turtles. Together, the activities will result in decreased mortality as well as increased understanding by the public regarding the negative impacts of anthropogenic stressors on sea turtles.

Sources of Uncertainty

The primary source of uncertainty for this project is related to the construction of the facility as designed, on schedule and on budget. Additionally, long-term funding sustainability for the project is a potential uncertainty. The City of Orange Beach would incur operational costs into the future. The facility will track illness, injury type, transfer and release information over time—this information can be utilized to understand the causes of injury, illness and mortality in order to take actions to reduce those threats over time, including informing future restoration projects.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Compare as-built construction to terms of contract and permit requirements

a. Purpose: On-site monitoring will be conducted during construction to ensure facility is constructed according to plans and to ensure that construction activities comply with the full set of environmental permit conditions.
b. Method: On-site monitoring
c. Timing and Frequency: Monitoring will occur during all construction activities from start to completion; the project is expected to be completed within a 90-day time frame.
d. Sample Size: Dependent on frequency and duration of construction activities
e. Sites: City of Orange Beach, AL property, adjacent to Cotton Bayou
f. Performance Criteria: Constructed as designed
g. Corrective Action(s): Resolution with contractor such that all contract terms and permit requirements are met
Parameter: Collect baseline data and synthesize existing data on injury/illness type rates and outcomes
   a. Purpose: To understand the causes and types of injury/illness and to understand impact of turtle triage facility
   b. Method: To the extent possible, synthesize previous 3 years' data from ALSTSSN
   c. Timing and Frequency: Provide summary and synthesis of baseline data within 1 year
   d. Sample Size: All turtles entering facility and all turtles from previous 3 years of ALSTSSN
   e. Sites: Triage Facility
   f. Performance Criteria: NA
   g. Corrective Action(s): NA

Parameter: Number of sea turtles entering facility
   a. Purpose: To track use of facility
   b. Method: Documented on data sheet as each animal enters the facility; transposed to larger data set, and data synthesized monthly
   c. Timing and Frequency: Synthesize monthly and report annually
   d. Sample Size: All turtles entering facility
   e. Sites: Triage Facility
   f. Performance Criteria: NA
   g. Corrective Action(s): NA

Parameter: Illness/injury type
   a. Purpose: To understand the causes and types of injury/illness
   b. Method: Per FWS standard permit conditions for care and maintenance of captive sea turtles
   c. Timing and Frequency: Report annually
   d. Sample Size: All turtles entering facility
   e. Sites: Triage Facility
   f. Performance Criteria: NA
   g. Corrective Action(s): NA

Parameter: Release, recovery and mortality rates
   a. Purpose: To understand the number of turtles that are treated and released and the number that are transported to another facility
   b. Method: Calculate rate on a monthly basis and average each year
   c. Timing and Frequency: Report annually
   d. Sample Size: All turtles entering facility
   e. Sites: Triage Facility
   f. Performance Criteria: NA
   g. Corrective Action(s): NA

Parameter: Number of outreach materials created
   a. Purpose: To educate the public about (1) anthropogenic threats to sea turtles treated at the facility, (2) current science on how best to address the threats, and (3) conservation for sea turtles in the wild
   b. Method: Coordinate with stakeholders including USFWS’s Alabama Ecological Services Field Office, the ALSTSSN coordinator, and the Alabama State Biologist to develop targeted audience
messaging, and produce a minimum number of outreach materials such as web content, social media content, PSA’s, brochures / hand-outs, etc.

c. Timing and Frequency: By end of Year 2

d. Sample Size: n=1

e. Sites: NA

f. Performance Criteria: TBD based on identified needs. A minimum of 2 outreach materials should be developed

g. Corrective Action(s): Revise and update materials as needed in consultation with stakeholders

Parameter: Number of outreach material distributed

a. Purpose: To educate the public about (1) anthropogenic threats to sea turtles treated at the facility, (2) current science on how best to address the threats, and (3) conservation for sea turtles in the wild

b. Method: Methods of distributing outreach materials include a combination of email blasts, social media posts, web content updates, direct mail, PSAs; news articles, brochures, web videos, etc.

c. Timing and Frequency: Timing and frequency of each outreach method will be based upon and follow the timing and frequency of outreach materials developed

d. Sample Size: n=1

e. Sites: Note locations of distributions

f. Performance Criteria: NA

g. Corrective Action(s): Identify additional locations for distribution

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of construction to terms of contract and permit requirements</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Baseline data on injury/illness type rates and outcomes</td>
<td>1</td>
<td>X</td>
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<td></td>
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<tr>
<td>Illness/Injury type</td>
<td>1</td>
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<td></td>
<td>X</td>
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<tr>
<td>Number of sea turtles entering facility</td>
<td>2</td>
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<td>X</td>
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<tr>
<td>Release/recovery/mortality rates</td>
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<td>X</td>
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<tr>
<td>Number of outreach materials created</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Monitoring Parameter</td>
<td>Objective</td>
<td>Pre-Execution Monitoring</td>
<td>As-Built (Year 0)</td>
<td>Post-Execution Monitoring (Years 1-5)</td>
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<tr>
<td>----------------------</td>
<td>-----------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Number of outreach materials distributed</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**ADAPTIVE MANAGEMENT**

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

In addition to allowing more animals to be treated and released more quickly and with less stress on the animal, this project will contribute important information regarding the most frequent types of injury and illness for sea turtles, which can be utilized to understand the most frequent causes of injury, illness and mortality in order to take actions to reduce those threats over time, and inform future restoration projects.

**EVALUATION**

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Have release/recovery rates improved compared to baseline?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
Were any new uncertainties identified?
Have data been summarized and characterized in a way that allows for a clear understanding of results?
Have any trends or patterns been identified, and if so, how can they be characterized?
What broader insights might be gained from implementation/monitoring of this project?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan be made if needed.

**DATA MANAGEMENT**

**Data Description**

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

**Data Review and Clearance**

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

**Data Storage and Accessibility**

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.
Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the project is implemented.

The City of Orange Beach will maintain the facility.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016a. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
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<td>Draft to final version; Added detail to parameters</td>
<td>Draft to final</td>
<td>MAM_Plan_CAST_Triage_6.1.18</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
COASTAL ALABAMA SEA TURTLE (CAST) HABITAT USAGE AND POPULATION
DYNAMICS

PROJECT OVERVIEW

Sea turtles spend the majority of their lives at sea, yet little is known about their oceanic life compared to what is known about the biology of females and hatchlings on coastal nesting beaches. Population modeling has shown that the sub-adult life-stage is the most critical to the stability and recovery of sea turtle populations (Crouse et al. 1987), with high elasticity (contribution to population growth) for this life stage. Recovery plans for the three most common species in the northern Gulf of Mexico (GoM) (loggerheads [Caretta caretta], Kemp’s ridleys [Lepidochelys kempii] and green turtles [Chelonia mydas]) all include monitoring of juveniles/immature turtles at in-water sites as a primary objective for recovery of the species (NMFS and USFWS 1991, NMFS and USFWS 2008, NMFS et al. 2011).

Very little is known about in-water turtle populations in the northern GoM. However, available data indicate that the northern GoM supports a large number of individuals (Foley et al. 2007, Turtle Expert Working Group 2009, NMFS et al. 2011, Avens et al. 2012). A fundamental issue in studies of sea turtle demography is the characterization of the functional demographic units (Chaloupka & Musick 1997, Rees et al. 2016), including the variability of demographic parameters (Bjorndal et al. 2014, Tucek et al. 2014). Along these lines, Bjorndal et al. (2011) identified seven priorities for sea turtle restoration plans following the Deepwater Horizon oil spill. One of these priorities is to elucidate genetic links among and within populations. Demographics and habitat use can be determined, in part, by collecting genetic and stable isotope data (Wallace et al. 2010). Such data will help natural resource practitioners ensure that management actions support sustainable populations. The PDARP/PEIS acknowledges these data gaps, concluding that “…[I]nformation on sea turtle spatiotemporal distribution, migration patterns, life history parameters, and habitat use is critical for interpreting population trends, improving sea turtle population models, and helping assess progress toward recovery goals. Furthermore, monitoring and scientific support will be important for evaluating the effects of restoration actions on sea turtle recovery from injuries associated with the spill” (DWA NRDA Trustees 2016, Section 5.5.10.4; pages 5-64 and 5-65). The need to collect these types of data is also discussed in the Strategic Framework for Sea Turtle Restoration Activities (DWH NRDA Trustees 2016, Module 4, pages 20-21). The CAST Habitat Usage and Population Dynamics project is designed to inform and enhance restoration of the Sea Turtles Restoration Type by providing information to the AL TIG regarding sea turtle demographics and habitat use in Alabama waters. These data will help the AL TIG identify human activities that may disrupt important connections within and among populations, and thus potential opportunities for restoration actions.

The CAST Habitat Usage and Population Dynamics project would study habitat use and distribution patterns of sea turtles along the Alabama Coast. The project objective is to initiate a long-term monitoring program designed to determine distribution and habitat use, vital rates (including survival rates), connectivity, and potential impacts of anthropogenic activities for sea turtles in coastal and nearshore waters of Alabama. Genetic information on sea turtles collected by the project will help determine the relationship between sea turtles using Alabama waters and those in other areas of the GoM. Stable isotope analyses will help identify diet, trophic level and foraging areas (Vander Zanden et al. 2015). These data will inform the AL TIG and other state and federal initiatives about the locations
and types of activities that would provide the most cost-effective means of reducing threats to sea
turtles and increasing their populations in coastal Alabama.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

The project Restoration Type is Sea Turtles. The goal of this project is to provide the AL TIG with data on
the demographics and habitat use of sea turtles using Alabama waters, as well as their connectivity to
the broader GoM population. This information will assist the AL TIG with prioritizing restoration
approaches which best help to restore Sea Turtles. In summary, the Restoration Type goals are:

- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Implement an integrated portfolio of restoration approaches to address
  all injured life states (hatchling, juvenile, and adult) and species of sea turtles
- Project Goal: Generate information to better target restoration projects that will provide the
  maximum benefits to Sea Turtles in coastal Alabama

The project objectives are to implement targeted resource level monitoring and scientific support
activities to fill substantial gaps in scientific understanding, which limits restoration planning,
implementation, evaluation, and/or understanding of sea turtle restoration (DHW NRDA Trustees 2016,
page 5-88). In summary, the project objectives are:

Objective 1: Provide baseline data on demographics and distribution of sea turtles using AL waters.

Objective 2: Provide baseline data on foraging ecology (including diet, trophic level and habitat use) of
sea turtles using AL waters.

Objective 3: Refine existing threats analyses (impacts of anthropogenic activities) for sea turtles in

CONCEPTUAL MODEL, ANTICIPATED OUTCOMES AND FUTURE ACTIVITIES

Although nest counts and limited stranding data exist for sea turtles in Alabama, little else is known
about in-water sea turtle activities compared to neighboring GoM states. Building on recent work (Hart
et al. 2013; Hart et al. 2014), a more complete understanding of current numbers of sea turtles by
species and their use of in-water and onshore habitats within Alabama would improve the geographic
and temporal focus of restoration activities and provide more concrete reference points against which
to measure their success.

Data collected, analyzed, and processed under this effort will result in the first description of
population structure for turtles using AL waters, including species composition, size classes, seasonal
availability, tropic levels, site fidelity and genetic connectivity to other sea turtle populations. It will also
identify potential anthropogenic threats for turtles using AL waters. Data collection methods are well
tested and accepted in the peer-reviewed scientific literature (e.g., see Shamblin et al. 2012, Lamont et
al. 2015a, Hart et al. 2016, Vander Zanden et al. 2015). This information will build on information used
in species Recovery Plans (e.g., Hart et al. (2013), Hart et al. (2014), and Lamont et al. (2015b)).

Sources of Uncertainty

The project implementation approaches are well tested in the field and accepted in the peer-reviewed
literature, and project implementers are experienced with the proposed activities. Some uncertainty
exists regarding the ability of researchers to capture and sample the desired number of sea turtles.
However, overall sample sizes are expected to be large enough to yield statistically meaningful results.
Some uncertainty also exists regarding recapturing enough marked turtles to conduct mark-recapture
analyses for determination of vital rates; however this information will help guide future work (i.e.,
documenting sea turtle use hot spots, or if turtles are not recaptured, satellite tracking should be
undertaken to help determine turtle movements) and data on population structure such as genetics,
stable isotopes, size classes, species composition and seasonal densities will still be provided and will
serve as baseline data for Alabama.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS
AND MONITORING SCHEDULE

This MAM plan was developed to evaluate project performance, key uncertainties, and the need for
potential corrective actions, if needed. The methods proposed for collecting these data include mark-
recapture monitoring, genetic analyses, stable isotope analyses, and habitat modeling (including
anthropogenic threats). Sea turtles will be captured by hand, dip nets, tangle (set) nets and/or trawling
at several sites along the Alabama coast, including inshore waters (i.e., Perdido Bay, Bon Secour Bay,
Mobile Bay, and the Mississippi Sound) and the nearshore waters of the GoM. Data from the Gulf of
Mexico Marine Assessment Program for Protected Species (GoMMAPPS) will help identify prime
capture locations and capture methods in Alabama waters. Captures will begin the first year of project
implementation and continue through the third year.

Included below are potential corrective actions for each performance criteria (as defined in NRDA
regulations (15 CFR 990.55(b) (1) (vii)). This list may not include all possible options; rather, it includes a
list of potential actions for each individual parameter to be considered if the project is not performing
as expected. Other corrective actions may be identified and implemented, as appropriate. The decision
of whether or not a corrective action should be implemented for a project should holistically consider
the overall outcomes of the project (i.e., looking at the combined evaluation of multiple performance
criteria) in order to understand why project performance deviates from the predicted or anticipated
outcome. The decision to implement a corrective action and the knowledge gained from the process
could also inform the larger decision-making framework, such as whether prioritization of objectives
should change or how to implement the project to improve the likelihood of achieving favorable project
outcomes in future applications.

Objective 1: Provide baseline data on demographics and distribution of sea turtles using AL waters

Parameter 1: Population and Distribution Mark-recapture

a. Purpose: Analyses of these data would be used to characterize where sea turtles forage,
migration patterns, habitat use, and life history parameters for sea turtles using Alabama waters

b. Method: Mark-recapture. Captured sea turtles will be marked with flipper and Passive
Integrated Transponder (PIT) tags and assigned a unique ID number. All data on captured
turtles, including GPS coordinates of capture location, will be recorded and transferred to a
digital file

c. Timing and frequency: All sea turtles captured will be marked; data will be recorded on all
previously marked turtles

d. Sample size: Target of at least 100 turtles per year

e. Sites: all capture locations

f. Performance criteria: Target of 100 turtles captured and recaptured each year, and a minimum
of 40 turtles per species over the 3-year lifespan of the project

g. Corrective action: If needed, utilize information from concurrent (non-NRDAR) GoMMAPPS work
to identify additional, potential capture areas or to confirm the chance there are not a lot of
Objective 1: Refine existing threats analyses (impacts of anthropogenic activities) for sea turtles in Alabama waters.

Parameter 1: Overlay of Turtle Activity and Anthropogenic Threats

- **Purpose:** Assist with threats analysis/guide potential restoration actions
- **Method(s):** Turtle capture locations will be compared to available information on anthropogenic threats such as locations of oil platforms and shrimping and commercial fishing intensity (see Hart et al. 2013 and 2014). In addition, all injuries to captured turtles will be noted
- **Timing, frequency, and duration:** A location will be collected from every captured turtle. Threat layers will be gathered in year 3 for comparison to capture locations
- **Sample size:** Target of 60 turtles per year, including 40 greens, 15 Kemp’s and 5 loggerheads
- **Sites:** all capture locations
- **Performance criteria:** NA
- **Corrective Action:** NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Execution monitoring occurs when project has been fully executed as planned. Investigators’ current 5-year,
renewable National Marine Fisheries Service (NMFS) permit (#17304-03) allows these activities and is undergoing modification/renewal to extend 5 additional years at this time; therefore, capture, marking, and sampling for this project could be initiated immediately upon receipt of funds.

Table 1. Project Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Baseline</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<td>Genetic analysis</td>
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<td>Stable isotope analysis</td>
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<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Threats analyses report</td>
<td>3</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Report (Annual and Final)</td>
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<td>X</td>
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<td>X</td>
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**ADAPTIVE MANAGEMENT**

Because this project entails the collection of data using established methods, project-level adaptive management is not expected to be extensive. If target sample numbers are not being met, Trustees will evaluate capture methods and timing of trips to recommend modifications to the sampling plan as needed. This project supports a larger commitment to adaptive management at the program level: data generated as a result of this project will help reduce future uncertainties regarding the siting and success of sea turtle restoration projects.

**EVALUATION**

Evaluation of monitoring data is needed to assess the performance of the project in meeting its objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed to meet project goals. In this section, we describe how updated knowledge gained from the evaluation of monitoring data would be used at the project scale to determine whether the project is considered successful or whether it requires corrective actions. This evaluation lends itself to an adaptive approach to decision making for future actions regarding Sea Turtles, including the collection of additional data informing restoration and/or implementation and monitoring of restoration actions.

As part of the larger decision-making context beyond the project scale, monitoring data from this project would be compiled and evaluated in annual reports. The results of the analysis would be used to answer the following questions:

- Were the project objectives achieved? If not, is there a reason why they were not met?
- Was data collected and synthesized to better understand population distribution, habitat usage, demographics, connectivity and potential impacts of anthropogenic impacts?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the project that potentially affected the results?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
Have data been summarized and characterized in a way that allows for a clear understanding of results?
Have any trends or patterns been identified, and if so, how can they be characterized?
What broader insights might be gained from implementation/monitoring of this project?

DATA MANAGEMENT

To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created, and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved. Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into Excel spreadsheets (or similar digital format). After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data is entered or converted into agreed upon/commonly used digital format labeled with metadata.

All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual. Data will be made publicly available, in accordance with the Open Data Policy, through the DIVER Explorer Interface within a year of when the data collection occurred. Direct data sharing with other efforts (e.g., GOMMAPP) would follow standard NRDA, BOEM, and USGS protocols.

REPORTING

Once all data have been reviewed for accuracy and completeness, they will be submitted to and be made publicly available through the Restoration Project Database through the DIVER Explorer Interface. Annual reports and a final report will include data summaries, evaluation and/or interpretation of results.

Data summaries and interim analyses and interpretation will be compiled in annual monitoring reports. At a minimum, annual reports will be made available through the DIVER Explorer Interface within a year of report development. In addition, a Final Report will be provided at the end of the project within the period-of-performance. It is anticipated that at least 1 scientific peer-reviewed publication will result from this project. It is fully anticipated and expected that the following deliverables will be provided:

- all QA/QC data, datasets, databases, geospatial data associated with habitat-related analyses, home range estimation and habitat use analyses, etc. as appropriate
- all statistical output, models, and code associated with producing the Final Report
- all final PowerPoint presentations given at professional meetings (travel-related to professional meetings are not funded by the project)
- all final abstracts for professional meetings
- Annual Reports beginning the 1st year post-award
- Final Report towards the end of the period-of-performance
- at least 1 scientific peer-reviewed publication and copies of any/all publications related to this project (page charges for publications are not funded by the project)
Explicit identification of funding for this project in Acknowledgments sections of all published papers

**ROLES AND RESPONSIBILITIES**

USDOI is the lead Trustee agency for this project and will ensure that the project is completed, in collaboration with Alabama Department of Conservation and Natural Resources. Field work will primarily be conducted by USGS. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

**REFERENCES**


### MAM PLAN REVISION HISTORY

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<th>Old Version #</th>
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<td>3/18</td>
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<td>6/12</td>
<td>Updated information added, including monitoring objectives and parameters.</td>
<td>Development of MAM plan following receipt of public comment on draft RP II/EA and in preparation for final RP II/EA.</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN FOR DEEPWATER HORIZON NRDA PROJECT:
COASTAL ALABAMA SEA TURTLE (CAST) PROTECTION: ENHANCEMENT AND EDUCATION

PROJECT OVERVIEW
Conducting education and outreach; using voluntary actions; and enforcing existing federal, state, and local regulations and ordinances are crucial tools for reducing activities and behaviors that harm sea turtles in state waters. The CAST Protection: Enhancement and Education project would enhance state enforcement of federal regulations and increase turtle protections in Alabama state waters by: (1) increasing awareness and understanding of the ESA and applicable regulations through education of state enforcement officers; (2) increasing resources for state enforcement agencies to more proactively dedicate efforts toward ESA-related activities (i.e., patrols, public education, enforcement hours); (3) taking steps to reduce fisheries bycatch (i.e., conduct social science surveys, which would likely involve focus groups, and through purchasing and distributing turtle excluder devices for the skimmer trawl fishery); and (4) taking steps to reduce impacts on nesting turtles, such as reducing nest vandalism and lighting harassment.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- **Project Type**: Sea Turtles
- **Programmatic Goal**: Replenish and Protect Living Coastal and Marine Resources
- **Restoration Type Goal**: Restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (For example: cold water temperatures), loss or degradation of nesting beach habitat (For example: coastal armoring and artificial lighting), and other anthropogenic threats. Restoration Approach: Reduce sea turtle bycatch in commercial fisheries through identification (ID) and implementation of conservation measures.
- **Restoration Approach - Reduce sea turtle bycatch in commercial fisheries through enhanced training and outreach to the fishing communities**
- **Approach - Reduce sea turtle bycatch in Recreational Fisheries through Development and Implementation of Conservation Measures**
- **Approach - Reduce sea turtle bycatch in commercial fisheries through enhanced state enforcement efforts to improve compliance with existing sea turtle conservation requirements**

**Objective 1**: Reduce interactions with sea turtles in Alabama state waters by (1) increasing awareness and understanding of the ESA and applicable regulations through education to assist state enforcement efforts, and (2) increasing resources for voluntary gear modifications and for state enforcement agencies to more proactively dedicate efforts towards ESA-related activities.

**Objective 2**: Conduct social science study to characterize attitudes and perceptions of vessel-based eco-tourism and their patrons regarding harmful interactions with sea turtles.

**Objective 3**: Develop a public education and outreach campaign tailored to public needs after a social science study is complete.
CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. Vessel strikes, fishing activities and bycatch are critical stressors for sea turtles. The prosed activities for this project include increased enforcement capacity and increased targeted outreach and education, which will work to reduce the occurrence of these stressors in coastal Alabama by enhancing state enforcement of the ESA and sustaining activities in hot-spot areas, which will result in a decreased number of interactions between vessels and sea turtles.

Sources of Uncertainty

Uncertainties related to this project include: ability of enforcement officers to document and prevent interactions, and whether a reduction in interactions will contribute to a subsequent reduction in bycatch. Additional uncertainties exist as to whether outreach and education will result in changed behaviors. Strategy to resolve: by conducting a social science study prior to the development of outreach and education activities, targeted outreach materials can be developed that are directly responsive to current attitudes, perceptions and likely causes of interactions.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Number of Fishermen Voluntarily Adopting Recommended Gear Modifications and Best Practices

- a. Purpose: To reduce bycatch of sea turtles.
- b. Method: Report number and type of modifications made.
- c. Timing and Frequency: Years 3 and 4
- d. Sample Size: Total number
- e. Sites: NA
- f. Performance Criteria: Number of modifications made target goal: 10
- g. Corrective Action(s): Increase outreach efforts to promote program and target relevant stakeholders to participate in the program
Parameter: Number of Participants in Surveys/Focus Groups

a. Purpose: To reduce interactions by increasing targeted outreach and education efforts.
b. Method: Count total number of participants
c. Timing and Frequency: Baseline; and year 2
d. Sample Size: All participants
e. Sites: Note locations of activities and provide education materials used
f. Performance Criteria: Target Number: 150 participants
g. Corrective Action(s): Hold additional focus groups, refine outreach to solicit participation.

Parameter: Number of Individuals Trained Per Year

a. Purpose: To ensure officers have the education needed to reduce interactions
b. Method: Report number of individuals trained and provide copies of training materials
c. Timing and Frequency: Annually in years 2, 3, and 4
d. Sample Size: All individuals
e. Sites: Note site where training occurred
f. Performance Criteria: Provide copy of training materials and results of any quizzes
g. Corrective Action(s): Refine and update materials as needed

Parameter: Number of Individuals Receiving Continuing Enforcement Education

a. Purpose: To ensure officers have the education needed to reduce interactions
b. Method: Report number of individuals receiving continuing education and provide copies of training materials
c. Timing and Frequency: Conduct annually in years 3 and 4
d. Sample Size: All individuals
e. Sites: Note sites where training occurred
f. Performance Criteria: 18 individuals per year
g. Corrective Action(s): Refine and update materials as needed

Parameter: Number of Days ESA Dedicated Patrol

a. Purpose: To track the number of hours of patrol dedicated to ESA patrols
b. Method: Report number of patrol days and general locations
c. Timing and Frequency: Report total number of days annually
d. Sample Size: All days
e. Sites: Identify locations
f. Performance Criteria: 12 per year
g. Corrective Action(s): Adjust frequency depending on amount of activity witnessed

Parameter: Number of Outreach Materials Created

a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to sea turtles.
b. Method: Staff will review existing outreach materials, identify gaps and/or needed updates, work with stakeholders, develop targeted audience messaging, and produce a minimum number of outreach materials such as web content, social media content, PSA's, brochures / hand-outs, etc.
c. Timing and Frequency: Annually in years 2 and 3
d. Sample Size: All materials developed
e. Sites: Report and provide copies of all materials developed
f. Performance Criteria: Develop a minimum of 1 educational document to be distributed through
   a variety of outlets including print, social media, etc.
g. Corrective Action(s): Revise and update materials as needed

Parameter: Number of Outreach Materials Distributed

a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to sea
turtles
b. Method: Count total distributed and note locations for distribution. Methods of distributing
   outreach materials include a combination of email blasts, social media posts, web content
   updates, direct mail, PSAs; news articles, brochures, web videos, etc.
c. Timing and Frequency: Years 3 and 4
d. Sample Size: Total number of materials distributed
e. Sites: Report number of materials distributed and primary locations for distribution
f. Performance Criteria: Distribute all materials developed/updated at a minimum of 15
   locations/events annually (locations can include public outreach events, web, media, etc.)
g. Corrective Action(s): Identify additional locations for distribution

Parameter: Number of Interactions Encountered and Stopped by MRD Law Enforcement
Officers

a. Purpose: To understand if increased enforcement actions are reducing the number of
   interactions
b. Method: Count number and identify nature and location of interactions
c. Timing and Frequency: Report all interactions annually
d. Sample Size: All interactions
e. Sites: Note all sites and identify which interactions occurred in hot spot areas
f. Performance Criteria: 6 per year
g. Corrective Action(s): Citations / Case Packets where needed

Parameter: Number and Location of Hot Spot Areas

a. Purpose: To understand where negative actions are most likely to occur and where enforcement
   enhancements should be focused.
b. Method: NOAA NMFS protected resources staff, USFWS, and AMRD biologists would work
   together to identify and prioritize hot spot areas for potential ESA violations and those areas
   that need increased and consistent enforcement efforts.
c. Timing and Frequency: Year 1
d. Sample Size: TBD
e. Sites: TBD
f. Performance Criteria: Develop patrol frequency guidelines for determined hot spot areas
g. Corrective Action(s): Adjust hot spot areas and patrol frequencies as needed to maximize
   compliance

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-
execution monitoring will occur before project execution. Execution monitoring occurs when project
has been fully executed as planned. Performance monitoring will occur in the year following initial
project execution.
### Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-4)</th>
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</thead>
<tbody>
<tr>
<td>Number of gear modifications</td>
<td>1, 3</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Number and location of hot spot areas</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of participants in surveys/focus groups</td>
<td>2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of individuals trained per year</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of individuals receiving continuing enforcement education</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of days ESA dedicated patrol</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of outreach materials created</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of outreach materials distributed</td>
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<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of interactions encountered and stopped by MRD law enforcement officers</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the
benefit of a particular resource (DWH NRDA Trustees 2016a, Appendix 5.E.1). Under OPA NRDA
regulations, restoration projects clearly identify performance criteria that would be used to determine
project success or the need for corrective action.

NMFS, USFWS, and ADCNR would work collaboratively with ADCNR Marine Resources Division (AMRD)
law enforcement and federal offices of law enforcement to determine law enforcement training needs,
how best to conduct consistent training, and to identify specific training and educational
needs/products. A communication pathway between the state and federal agencies and law
enforcement would also be established to continuously reevaluate needs to ensure consistency in
enforcement enhancement efforts.

This project would fund the completion of a social science study to characterize attitudes and
perceptions of vessel-based ecotourism and sea turtle interactions. The results of this study will inform
the creation of targeted outreach materials. Additionally, project managers will seek to identify
targeted hot spot areas in order to maximize the benefits of patrol hours in places where negative
interactions are most likely to occur. These project elements will increase the likelihood of success of
the project by targeting activities based on local data.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its
restoration objectives, resolving uncertainties to increase understanding, and determine whether
corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring
data from the individual projects would be compiled and assessed at the Restoration Type and TIG
level, and the results would be used to update the knowledge base to inform decisions such as future
TIG project prioritization and selection, implementation techniques, and the identification of critical
uncertainties. The results of the analysis would be used to answer the following questions:

- Were interactions between sea turtles and the public characterized and methods to reduce
  interactions identified?
- Are causes of harmful interactions addressed in education and outreach materials?
- Were hotspots identified and were any common attributes among hotspots identified?
- Was enforcement enhanced?
- Were the project objectives achieved? If not, is there a reason why they were not met?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the project that potentially affected the
  monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of
  results?
- Have any trends or patterns been identified, and if so, how can they be characterized?

These questions will be answered and compiled in annual monitoring reports for the project and
revision to the MAM plan be made if needed.
DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.
REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

NOAA will collaborate.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016a. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


## MAM PLAN REVISION HISTORY

<table>
<thead>
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<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
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</thead>
<tbody>
<tr>
<td>AL TIG RP II/EA version</td>
<td>6/1/2018</td>
<td>Draft to final version; Added info on parameters</td>
<td>Draft to final</td>
<td>MAM_PlanCAST_Educ_Enhance_6.1.18</td>
</tr>
</tbody>
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**PROJECT OVERVIEW**

The Enhancing Capacity for the Alabama Marine Mammal Stranding Network (ALMMSN) project would enhance the capacity of the ALMMSN by providing funding for staff time, equipment and supplies, and sample analyses and would address the ending of the current funding source through NFWF-GEBF. ALMMSN is operated out of the Dauphin Island Sea Lab (DISL) on Dauphin Island, Alabama. This project would allow ALMMSN to use and expand on its existing infrastructure for cetacean stranding response, and communications and data management in order to enhance the ALMMSN’s operations. The project would allow ALMMSN to better respond to live or dead stranded cetaceans, to necropsy animals, and to analyze samples collected from cetaceans stranded in Alabama waters in order to better understand the causes of marine mammal illness and death. It would also support increased data consistency for information collected from stranded marine mammals by supporting ALMMSN to enter its data into a regional marine mammal health database (known as GulfMAP, hosted by NOAA). The project is expected to increase survival of rescued animals and recovery of populations affected by the DWH oil spill by improving marine mammal stranding response, data collection, data analyses, and reporting for Alabama waters, through better understanding of the causes of illness/mortality and through the early detection and intervention of anthropogenic and natural threats.

**RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES**

- **Project Type:** Marine Mammals
- **Programmatic Goal:** Replenish and Protect Living Coastal and Marine Resources
- **Restoration Type Goal:** Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions
- **Restoration Approach:** Increase marine mammal survival through better understanding of the causes of illness and death, as well as early detection and intervention for anthropogenic and natural threats

**Objective 1:** Increase trained staff capacity of ALMMSN.

**Objective 2:** Maintain and/or decrease average reporting time and/or response time.

**Objective 3:** Collect additional data to increase understanding of marine mammal population.

**CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES**

Funding the ALMMSN will better fill gaps in stranding coverage, reduce stranding response time, improve quantity, quality and consistency of reporting Level A, B, and C data for marine mammals, increase the number of personnel trained for stranding response in the region, increase the number of biological samples analyzed to determine causes of death and population status, expand community awareness, and provide long-term data sharing, storage and retrieval capacity. These efforts will reduce marine mammal mortality in Alabama waters, better define the specific causes of serious injury and
death among stranded marine mammals, and establish baseline conditions or shifts from previous conditions for comparison to immediate and longer-term threats to marine mammals. This project will meet the immediate need to provide data to assess the DWHOS as well as build capacity for collecting scientifically rigorous data for other sources of serious injury and mortality to marine mammals in the future.

In the longer term, these efforts will increase the abundance and stability of marine mammal populations in the region, identify larger patterns in stranding data that will inform managers and policy makers to define and focus management and conservation efforts, provide reliable stranding datasets that can be compared to environmental data to identify and define boundaries for essential habitat, improve knowledge of and response to future environmental emergencies like the DWHOS or longer term effects such as climate change and habitat loss, and potentially reduce the likelihood of future unusual or mass mortality events. These benefits are possible because the ability to predict, prepare for, respond to, and prevent strandings depends on quality data. These outcomes will necessarily feedback to further support the health and stability of marine mammal populations and achieve optimum sustainable populations within the carrying capacity of the system. The enhanced collaborations with network responders and local researchers will, in turn, foster development of future collaborative work, and provide opportunities for synergistic research, training, and educational activities.

**Sources of Uncertainty**

The sources of uncertainty that could influence the success of this project include the number of strandings and their state of decomposition (limiting samples collected), emerging threats and diseases, the ability to hire qualified personnel, and the incorporation of data collected into marine mammal management activities. This project has a high likelihood of successfully strengthening and growing Alabama’s marine mammal populations. The program is already operating successfully and funding of this effort would ensure its continued operation, which otherwise cannot be guaranteed, and its enhancement and expansion. The proposed expansion and enhancement of the program under its existing manager, DISL, is expected to be a success. DISL staff have the expertise and experience to implement the activities proposed under the program—including sample collection, necropsies, sample analysis, and data management.

**PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE**

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(viii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision
to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Parameter: Increase Staff Capacity**

a. **Purpose**: Increase capacity of network to respond to strandings  
b. **Method**: Hire qualified staff  
c. **Timing and Frequency**: Year 1  
d. **Sample Size**: NA  
e. **Sites**: NA  
f. **Performance Criteria**: number of staff hired  
g. **Corrective Action(s)**: Advertise position more broadly if qualified staff cannot be found

**Parameter: Average Response Time**

a. **Purpose**: Understand if increased staff capacity reduces stranding response time  
b. **Method**: Provide summary of response actions and average response time  
c. **Timing and Frequency**: Report annually  
d. **Sample Size**: All responses during a given year  
e. **Sites**: NA  
f. **Performance Criteria**: Average response time is maintained or reduced  
g. **Corrective Action(s)**: Update response protocols as needed

**Parameter: Percent of Successful Responses to Reported Strandings**

a. **Purpose**: To understand the number of reported strandings annually as well as increasing understanding of the potential causes of strandings and hot spot areas  
b. **Method**: Count and provide summary of response action  
c. **Timing and Frequency**: Report annually  
d. **Sample Size**: All responses  
e. **Sites**: Note location of stranding  
f. **Performance Criteria**: 100% of calls received are responded to  
g. **Corrective Action(s)**: Update response protocols as needed

**Parameter: Collection of Stranding Data to Increase Understanding of Population**

a. **Purpose**: Increase survival of rescued animals and recovery of population by improving understanding of marine mammal population and threats.  
b. **Method**: Summarize stranding information collected and provide report on new insights that could help managers identify and mitigate impacts on marine mammals from natural and anthropogenic threats.  
c. **Timing and Frequency**: Data will be collected during each response event, analyzed, and uploaded consistent with the Data Management and Reporting sections, below.  
d. **Sample Size**: NA  
e. **Sites**: NA  
f. **Performance Criteria**: Summary report provided to ALTIG should provide detail on potential causes of strandings, and identify potential actions to reduce threats as well as identification of any hot spot areas for strandings. Data will also be uploaded consistent with the Data Management and Reporting sections, below.  
g. **Corrective Action(s)**: Revise if needed
Parameter: Percent of Biological Samples Collected that are Analyzed

a. Purpose: Understand if funding is resulting in increased analysis and subsequent increased understanding of marine mammal populations
b. Method: Count and provide data in GulfMAP and summary of sample results in annual report per protocols
c. Timing and Frequency: Data will be collected during each response event, analyzed, and uploaded consistent with the Data Management and Reporting sections, below
d. Sample Size: All samples collected within a given year
e. Sites: NA
f. Performance Criteria: 100%
g. Corrective Action(s): NA

Parameter: Percent of Stranded Animals Reported that are Necropsied

a. Purpose: Understand if funding is resulting in increased analysis and subsequent increased understanding of marine mammal populations
b. Method: Count, upload necropsy reports to GulfMap, and provide summary in annual report
c. Timing and Frequency: Report annually
d. Sample Size: All necropsies performed
e. Sites: NA
f. Performance Criteria: 100% of Code 2 animals for which a necropsy is feasible
g. Corrective Action(s): NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase staff capacity</td>
<td>1, 2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Percent of stranded animals that are necropsied</td>
<td>3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Collection of stranding data to increase understanding of population</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Average Response Time</td>
<td>2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Percent of biological samples collected that are analyzed</td>
<td>3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

The activities proposed in this project are well-established and known to be effective and the program activities have been underway at DISL for several years. The information collected by ALMMSN from stranded cetaceans should enable managers to mitigate impacts to marine mammals from natural and anthropogenic threats and to monitor population recovery post-DWH. Although extensive adaptive management activities are not expected to be necessary for this project, information gained will be useful in planning future restoration efforts for marine mammals.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project objectives achieved? If not, is there a reason why they were not met?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
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<th>Project Monitoring (Years 1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of successful responses to reported strandings</td>
<td>2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation/monitoring of this project?

These questions will be answered and compiled in annual monitoring reports for the project and revisions to the MAM plan be made if needed.

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

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Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.
Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

All stranding data is submitted to GulfMAP as well as GoMDIS to ensure data sharing and collaboration among neighboring GOM networks. Additionally, with any strandings showing evidence of human interaction, the data is forwarded to the NMFS Office of Protected Resources Bottlenose Dolphin Conservation Coordinator. All data sharing will be consistent with the protocols set forth in the “Marine Mammal Conservation and Recovery in the Gulf of Mexico through support of the Alabama Marine Mammal Stranding Network, AL” project through the NFWF Gulf Environmental Benefit Fund.

REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface and in accordance with the MAM Manual MAM Report Template.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

ALMMSN would maintain ADCNR reporting, metadata publications, MMHSRP reporting, and necropsy reports, but also increase the number of metadata records relative to the samples processed for cetaceans (~10; estimated at 1-2 additional metadata records per year), increase necropsy reporting consistent with a greater number of animals sampled, and increase the number of publications (~3 total due to increased research capacity), plus share up to 2 newsletter articles per year (~10 total).

ROLES AND RESPONSIBILITIES

ADCNR is the implementing Trustee for this project, and will ensure that the project is completed.

The DISL ALMMSN is the project partner.

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


**MAM PLAN REVISION HISTORY**

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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
ASSESSMENT OF ALABAMA ESTUARINE BOTTLENOSE DOLPHIN POPULATIONS
AND HEALTH

PROJECT OVERVIEW
This project is aimed at examining common bottlenose dolphin distribution, abundance, and population structure within Alabama state waters to assess the status of bottlenose dolphins using Alabama waters by collecting data on dolphin abundance, stock structure, distribution, habitat use, mortality rates, contaminant loads, biotoxin exposures, and feeding habits. The project is a data collection and analysis effort to: (1) investigate stock structure and demography across Mobile Bay, Perdido Bay, and nearshore AL waters based on biopsy sampling and genetic analysis for stock structure and estimate the seasonal (summer/winter) abundance, distribution, and habitat use of common bottlenose dolphins in Alabama waters through photo-ID surveys and capture-mark-recapture analysis; (2) assess dolphin condition following the DWH Oil Spill utilizing assessment of external body condition through images from surveys and assessment of contaminant loads and biotoxin exposures through analyses of tissues collected during remote biopsy sampling, which would inform future restoration planning, and 3) assessment of diet through prey sampling and stable isotope and fatty analysis of remote biopsy samples. This data collection effort would provide valuable resource-level monitoring for bottlenose dolphin stocks in Alabama waters, a largely unstudied top predator in Alabama waters, informing pre-restoration baselines and providing more effective restoration planning and implementation. ADCNR would be the implementing trustee.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Project Type: Marine Mammals
- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Identify and implement restoration activities that mitigate key stressors to support resilient populations. Collect and use monitoring information, such as population and health assessments and spatiotemporal distribution information.

Objective 1: To estimate seasonal abundance, distribution, and habitat use of bottlenose dolphin populations of Perdido Bay, Mobile Bay and adjacent coastal waters by conducting photo-ID surveys and capture-mark-recapture analysis.

Objective 2: To investigate stock structure, body condition and toxicology assessments, and dietary analysis by conducting 4 remote biopsy surveys in the same areas (two per site).

ANTICIPATED OUTCOMES AND FUTURE ACTIVITIES
For this project, the specific stressors addressed include toxic chemical loading as well as gaps in knowledge about Alabama’s bottlenose dolphin population. This project will contribute to a greater understanding of Alabama’s bottlenose dolphin populations, and will ultimately be utilized to improve management activities associated with the protection of this marine mammal species. The completion of this project will result in the availability of data that will support the development of future marine mammal restoration projects. This project plays an important role in filling major scientific information or data gaps for marine mammal abundance, distribution and population structure, which in the longer term will feed directly into the AL TIG’s efforts to address marine mammal impacts. Data will be
comparable and transferable to inform Gulf-wide research and conservation efforts. Most importantly, research will provide valuable post-spill data for bottlenose dolphins, a largely unstudied top predator in Alabama waters.

**Sources of Uncertainty**

This project utilizes existing standards and protocols that have proven effective. The likelihood of success is high. Some uncertainty exists regarding the ability of researchers to meet target tissue sample numbers to meet the analytical requirements for the interpretation. Weather and other physical delays may cause delays in sampling trips. The ability to accommodate the multiple analyses proposed and selected to represent each sampling location and time relative to sex and age class of the sampled population depend on the quantity, type (age, sex classes) and quality of the samples obtained. For persistent organic pollutant analyses, samples will be randomly selected from the male individuals (determined by genetics) in a statistically robust manner. This project will reduce uncertainty in future marine mammal restoration projects by filling knowledge gaps.

**PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE**

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Parameter: Submission of Annual Project Progress Report**

a. **Purpose:** Annual project progress report should detail the surveys conducted and information collected, locations, number and type of samples taken and analyzed and an update/summary on any results and lessons learned
b. **Method:** Progress report should accumulate, analyze, and synthesize data collected and any insights gained
c. **Timing and Frequency:** 30 days following end of calendar year
d. **Sample Size:** Annually
e. **Sites:** NA
f. **Performance Criteria:** NA
g. **Corrective Action(s):** Revise and update as needed
Parameter: Number of Remote Biopsy Samples

a. Purpose: Determine whether appropriate sample volumes and numbers per site, sex class and season for the project are obtained

b. Method: A total of 4 remote biopsy surveys will be conducted and each seasonal remote biopsy survey will be conducted during a 42-day window using 1 boat staffed with 4 scientists. Biopsy samples will include skin and blubber collected from below the dorsal fin by standard techniques (Krutzen et al. 2006) using biopsy darts fired from a crossbow or rifle (.22 caliber). Animals will be photographed before biopsy attempts to ensure the integrity of photo-ID records for each animal.

c. Timing and Frequency: A total of 4 survey periods will be used to to obtain adequate seasonal sample for genetic stock structure analysis, toxicology assessments, and dietary analyses, and to inform body condition. Winter 2019/20 and summer 2020 remote biopsy surveys will be conducted across Perdido Bay and adjacent coastal waters (>2 km from the shoreline) Remote biopsy sampling in Mobile Bay and adjacent coastal waters will be conducted during the winter 2020/21 and summer 2021 sampling season.

d. Sample Size: 4 survey periods; 2 locations per survey period

e. Sites: 3 sites—Mobile Bay, Perdido Bay, and Alabama Coastal Waters (> 2 km from the shoreline)

f. Performance Criteria: Obtained appropriate sample volumes and numbers per site, sex class and season

g. Corrective Action(s): NA

Parameter: Number of Samples Analyzed and Analyses Performed

a. Purpose: Obtain an appropriate sample size (volume and numbers) for the project

b. Method: Two hundred (200) samples will be analyzed for stable isotope and fatty acid analyses for the purpose of diet assessment. 260 samples will be analyzed for genetics analyses for stock structure, sex determination, species confirmation, and morphotype determination.

c. Timing and Frequency: Tissue Analysis will begin immediately following each biopsy survey and will commence from late 2019 to late 2021

d. Sample Size: All 260 samples

e. Sites: 3 sites—Mobile Bay, Perdido Bay, and Alabama Coastal Waters (> 2km from the shoreline)

f. Performance Criteria: Number of samples collected is sufficient to inform stock structure analyses.

g. Corrective Action(s): NA

Parameter: Number of Photo-ID Surveys

a. Purpose: Obtain an appropriate sample size for the project.

b. Method: Methods described in: (Rosel et al. 2011) such that a single mark-recapture session will consist of one primary mark (~2 days) and two secondary recapture periods (~3 days each), separated by 1 day each for a total of 14 days per session including weather days, repeated during summer and winter seasons for each embayment. All track lines for a given survey will be completed in the shortest time possible and under optimal sighting conditions (< Beaufort Sea State 3) to maximize detection probabilities and reduce violating capture probability assumptions. Each seasonal photo-ID mark-recapture survey in Perdido Bay will be conducted by one boat staffed with three scientists. Mobile Bay surveys will require two boats staffed with three scientists each. Photos will be collected using high-resolution digital photography of dorsal fin and flanks of each animal. Observers will note environmental conditions, animals’ location (GPS), group sizes, numbers of adults and juveniles (by relative size and ontogenetic
morphology), movement patterns, behavioral states (e.g., travel, feed, social) and evidence of foraging (and prey species, when visible).

c. Timing and Frequency: A total of 12 seasonal photo-ID surveys will be conducted in Perdido Bay and Mobile Bay during 6 time periods: Summer 2019, 2020, 2021 and Winter 2019/20, 2020/21, 2022/23)

d. Sample Size: 12 surveys

e. Sites: Mobile Bay, Perdido Bay, Adjacent Coastal Waters (> 2 km from the shoreline)

f. Performance Criteria: 12 (2 per year) in Perdido and Mobile Bays

g. Corrective Action(s): NA

Parameter: Number of Dolphins Observed or Sampled Per Trip

a. Purpose: To track number of dolphins sampled per trip to determine whether project targets are being met

b. Method: Synthesize daily / weekly data sheets

c. Timing and Frequency: Report all trips conducted on an annual basis

d. Sample Size: Note all trips conducted in report

e. Sites: All

f. Performance Criteria: Note all trips conducted in report.

g. Corrective Action(s): Adjust locations if requisite number of dolphins are not being sampled

Parameter: Completion of Analysis

a. Purpose: A final analysis of data collected will provide Trustees insight as to the locations and types of activities most likely to reduce threats to marine mammal populations

b. Method: Submission of final report that details information gained from completing study. Report should identify potential locations for restoration activities and types of activities that provide the most cost-effective means of reducing threats to dolphins and increasing their populations in coastal Alabama.

c. Timing and Frequency: Upon project completion

d. Sample Size: All

e. Sites: NA

f. Performance Criteria: Analysis should provide insight that assists ALTIG in future decision-making regarding those actions most likely to address known threats to marine mammals

g. Corrective Action(s): Revise if needed

Parameter: Abundance Estimates

a. Purpose: estimate population size

b. Method: follow established methods for photo-ID mark-recapture surveys per Rosel et.al 2011

c. Timing and Frequency: twice per year (summer and winter) for 3 years

d. Sample Size: 1 sample per season (2 seasons) per year (3 years) per location (2 bays) for a total of 12 estimates of abundance

e. Sites: Mobile Bay, Perdido Bay, and Adjacent coastal waters

f. Performance Criteria: Submission of abundance estimate to ALTIG in final report

g. Corrective Action(s): NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.
Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-4)</th>
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</thead>
<tbody>
<tr>
<td>Annual Project Progress Report</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of remote biopsy samples</td>
<td>2</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of samples analyzed and analyses performed</td>
<td>2</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of photo-id surveys</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Number of dolphins observed or sampled per trip</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Completion of analyses</td>
<td>1, 2</td>
<td></td>
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<td>X</td>
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<tr>
<td>Abundance Estimates</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**PROJECT IMPLEMENTATION**

Trustees propose to measure seasonal (summer/winter) dolphin abundance, distribution and habitat use, investigate stock structure and assess condition (based on observation and biopsy sampling) of bottlenose dolphin stocks within Alabama state waters after the DWHOS. DISL will conduct the proposed surveys, biopsy sampling, sample analyses, and data analyses, and write reports and publications with assistance and guidance from NOAA NMFS Mississippi Laboratories. A benefit of this proposal is that it will build capacity for research in the region because staff from NOAA NMFS Mississippi Laboratories will provide new training for DISL personnel in biopsy sampling techniques and enhance existing knowledge in photo-id image collection and analyses techniques. With support from NOAA NMFS Mississippi Laboratories, DISL has in place the infrastructure and staff necessary to manage the project, including coordinating fieldwork with collaborators, performing sample processing and analyses, and submitting annual reports to ADCNR. Analyses of data will be consistent with data analyses for other BSE populations.

This project has a 4-year timeline. As proposed, identifying survey routes selection and staff training would occur during spring 2019. Photo-ID surveys would begin during summer 2019 and repeated during summers 2020 and 2021, as well as winters 2019-2020 and 2021-2022. Remote biopsy surveys would be performed during winter 2019/20 and summer 2020 and 2021. Tissue and data analysis would begin after the first surveys are completed and continue through the duration of the study. Final reporting is expected by winter 2022. Data would be stored in compliance with Trustee’s Standard Operating Procedures.
**ADAPTIVE MANAGEMENT**

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Trustees 2016, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

Because there are current gaps in scientific understanding regarding these species, this project supports an adaptive management approach to marine mammal restoration by conducting this work to reduce key uncertainties and conduct analyses that will inform the selection, design and optimization of future project portfolios. The effective use of project funds to support addressing uncertainties will inform restoration planning, implementation and evaluation of marine mammal restoration projects in Alabama. This approach may evolve over time as Trustees gain new insight and knowledge from restoration activities.

Because this project entails the collection of data utilizing established methods, project-level adaptive management will be minimal. However, this project supports a larger commitment to adaptive management at the program level as the data generated as a result of this project will reduce future uncertainties regarding the siting and success of future marine mammal restoration projects.

**EVALUATION**

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation/monitoring of this project?

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a) and standard data management used for cetacean work. Images will be archived in finbase and FinFindR will be used for analyses and matching. To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information
collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc. and therefore will not be publicly distributed.

REPORTING

Data will be provided in the Marine Mammal Monitoring and Analyses Platform, GulfMAP, and GoMDis.

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A FINAL MAM REPORT FOR THE PROJECT WILL BE DEVELOPED PRIOR TO PROJECT CLOSEOUT AND SUBMITTED TO THE DIVER RESTORATION PORTAL. ROLES AND RESPONSIBILITIES

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

The project would be implemented by the DISL in collaboration with NOAA NMFS Mississippi Laboratories Southeast Fisheries Science Center (genetics, fieldwork) and NOAA’s Marine Mammal Health and Stranding Program (contaminants and health assessments).

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


**MAM PLAN REVISION HISTORY**

<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
</tr>
</thead>
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<tr>
<td>AL TIG RP II/EA version</td>
<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters</td>
<td>Draft to final</td>
<td>MAM_Plan_Assessment_AL_Estuarine_Bottlenose_Dolphin_Populations_Health_6.1.18</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
ALABAMA ESTUARINE BOTTLENOSE DOLPHIN PROTECTION: ENHANCEMENT AND EDUCATION

PROJECT OVERVIEW
This project would reduce injury and mortality in Alabama estuarine bottlenose dolphins. This would be accomplished by (1) increasing resources for ADCNR AMRD to dedicate toward MMPA-related activities and increasing patrol hours; (2) increasing awareness and understanding of the MMPA through education to assist state enforcement efforts; (3) conducting social science studies (e.g., interviews, focus groups) to help (a) characterize the nature and extent of the illegal feeding of dolphins, vessel-based harassment, and interactions of dolphins with hook and line fishing gear in Alabama, and (b) understand attitudes and perceptions of these user groups; (4) conducting systematic fishery surveys to help characterize the nature and extent of dolphin interactions with commercial fishing vessels and hook-and-line gear in Alabama; and (5) developing and implementing a comprehensive and targeted outreach plan based on the results of these social science studies and systematic fishery surveys.

Resources and equipment necessary to increase and sustain state enforcement activities in hotspot areas would be identified, and state enforcement would be increased/enhanced in areas of need to reduce harm from illegal activities. A communication pathway between the state and federal agencies and law enforcement would be established to reevaluate needs on an ongoing basis to ensure consistency in enforcement enhancement efforts.

This project would also enhance public knowledge of marine mammal protection and the MMPA by contracting with a company who would conduct a social science survey, which would inform the creation of a well-informed, targeted education and outreach program for the Alabama coast.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES
- Project Type: Marine Mammals
- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions.
- Restoration Approaches:
  - Reduce commercial fishery bycatch through collaborative partnerships
  - Reduce injury and mortality to bottlenose dolphins from hook-and-line fishing gear
  - Reduce injury, harm, and mortality to bottlenose dolphins by reducing illegal feeding and harassment activities
  - Reduce marine mammal takes through enhanced state enforcement related to the MMPA

Objective 1: Characterize dolphin interactions with commercial and recreational vessels operating in Alabama state waters.

Objective 2: Reduce lethal impacts to dolphins from illegal feeding and harassment activities and fishing interactions known to occur within Alabama state waters by effectively changing human behaviors through a targeted outreach and education strategy in a phased approach.
Objective 3: Reduce activities known to cause harm to marine mammals by enhancing state enforcement of the Marine Mammal Protection Act in Alabama state waters.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

For this project, the specific stressors addressed include impacts from fishing activities, boating interactions, harassment and other anthropogenic stressors to marine mammals. This project will reduce those stressors by reducing related impacts through development of information needed to conduct targeted outreach and education strategy, and by enhancing state law enforcement to reduce activities known to cause harm to marine mammals.

Sources of Uncertainty

There is uncertainty around whether people who receive education subsequently change their behavior, and whether those behavioral changes result in decreased interactions and/or mortality. However, the activities described in the project narrative are generally known to be effective and have been implemented successfully in other coastal locations. Hot spot locations for potential MMPA violations and areas that need increased and consistent enforcement efforts will be prioritized in order to reduce uncertainty regarding the ability of officers to witness and halt interactions.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(viii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Number of Patrons, Fisherman and Business Owners Reached and Educated Regarding Safe Viewing and Interaction Practices

a. Purpose: Used to estimate the proportion of the population exposed to outreach material
b. Method: Count and report on number of people educated, by type (e.g., patrons, fishermen, business owners)
c. Timing and Frequency: Throughout project
d. Sample Size: All people reached
e. Sites: Note interactions and primary locations
f. Performance Criteria: Target Number 800
g. Corrective Action(s): Concentrate efforts in areas with high probability of wildlife interactions
Parameter: Number of Participants in Surveys/Focus Groups

  a. Purpose: To develop an informed, comprehensive outreach plan to educate target audiences
  b. Method: Report total number of participants
  c. Timing and Frequency: Year 1
  d. Sample Size: targeted number of respondents and number of focus groups per audience type
  e. Sites: TBD
  f. Performance Criteria: Target Number 200
  g. Corrective Action(s): Identify best locations to maximize participation

Parameter: Number of Outreach Documents Developed

  a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to marine mammals
  b. Method: Staff will develop outreach materials based on results of social science studies, work with stakeholders, develop targeted audience messaging, and produce a minimum number of outreach materials such as web content, social media content, PSA's, brochures / hand-outs, etc.
  c. Timing and Frequency: after completion of the social science studies and development of the comprehensive educational strategy
  d. Sample Size: All materials developed
  e. Sites: Report and provide copies of all materials developed
  f. Performance Criteria: Develop a minimum of 1 educational document to be distributed through a variety of outlets based on results of social science studies
  g. Corrective Action(s): Revise and update materials as needed

Parameter: Number of Outreach Documents Distributed

  a. Purpose: To increase understanding of the importance of reducing anthropogenic threats to marine mammals
  b. Method: Count total distributed and note locations for distribution. Methods of distributing outreach materials include a combination of email blasts, social media posts, web content updates, direct mail, PSAs; news articles, brochures, web videos, etc. and will be informed by results of social science studies.
  c. Timing and Frequency: Years 3,4 after completion of the social science studies and development of the comprehensive educational strategy
  d. Sample Size: Total number of materials distributed
  e. Sites: Report number of materials distributed and primary locations for distribution
  f. Performance Criteria: Distribute all materials developed/updated at a minimum of 15 locations/events annually (locations can include public outreach events, web, media, etc.)
  g. Corrective Action(s): Identify additional locations for distribution

Parameter: Number of Interactions Encountered and Stopped by DMR Law Enforcement Officers

  a. Purpose: To reduce threats to marine mammal populations
  b. Method: Count number and identify nature and location of interactions
  c. Timing and Frequency: Throughout project
  d. Sample Size: All interactions encountered and stopped
  e. Sites: Note location and nature of interaction
  f. Performance Criteria: 6 per year
g. Corrective Action(s): Citations / Case Packets where needed

**Parameter: Number Hours Dedicated MMPA Patrol**

a. Purpose: To understand if increased enforcement actions are halting and, over time, reducing the number of negative interactions
b. Method: Report number of patrol days and general locations
c. Timing and Frequency: Report total number of days annually
d. Sample Size: All days
e. Sites: Identify locations
f. Performance Criteria: 96 per year
g. Corrective Action(s): Adjust frequency depending on amount of activity

**Parameter: Completion of Social Science Study**

a. Purpose: To focus efforts on activities most likely to enhance understanding of how to reduce threats to marine mammals.
b. Method: Was study completed?
c. Timing and Frequency: Year 1, prior to development of comprehensive outreach strategy
d. Sample Size: TBD
e. Sites: NA
f. Performance Criteria: Provide summary report upon completion that identifies outreach and education needs that were identified.
g. Corrective Action(s): Implement necessary changes, if needed, in order to meet criteria

**Parameter: Completion of Fisheries Science Survey**

a. Purpose: To determine the scope, scale and frequency of dolphin and hook and line gear interactions and characterize the nature of these interactions
b. Method: Was study completed?
c. Timing and Frequency: Year 1
d. Sample Size: TBD
e. Sites: NA
f. Performance Criteria: Provide summary report upon completion that identifies key issues and strategies to address
g. Corrective Action(s): Implement necessary changes, if needed, in order to meet criteria

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

**Table 1: Monitoring Schedule**

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants in surveys/focus groups</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
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</table>
### Monitoring Parameter

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Project Monitoring (Years 1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of interactions encountered and stopped by MRD law enforcement officers</td>
<td>3</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Number of patrons and business owners reached and educated regarding safe viewing and interaction practices</td>
<td>2</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Number of fishermen voluntarily adopting recommended gear modifications and best practices</td>
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<td>Number of outreach documents developed</td>
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<td>Number of outreach documents distributed</td>
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<tr>
<td>Number of hours dedicated MMPA patrol</td>
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<td>Completion of social science study</td>
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<tr>
<td>Completion of fisheries science survey</td>
<td>1, 2</td>
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<td>x</td>
</tr>
</tbody>
</table>

### ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not...
have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Trustees, 2016, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

Training of AMRD enforcement officers, in collaboration with NMFS, would be conducted and outreach products to aid enforcement’s efforts produced and distributed by partnering with local, state, and federal stakeholders. NMFS, NOAA OLE, and AMRD biologists would also work together to identify and prioritize hotspot areas for potential MMPA violations and areas that need increased and consistent enforcement efforts, maximizing available resources.

Enhancing capacity for enforcement may result in an initial increase in the documentation of interactions, but this number should decline over time as education and outreach activities contribute to better public understanding and reduced negative interactions. If the numbers of interactions or survey responses indicate that education and outreach is not as effective as planned, then revisions and reassessment may be required.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were interactions between dolphins and the public characterized and methods to reduce interactions identified?
- Are causes of harmful interactions addressed in education and outreach materials?
- Was enforcement enhanced?
- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

These questions will be answered and compiled in annual monitoring reports for the project and revision to the MAM plan be made if needed.

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a). To the extent practicable, all environmental and biological data generated during monitoring
activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. Some data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

REPORTING

Once all data have been reviewed for accuracy and completeness, they will be made publicly available through the DIVER Explorer Interface.

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.
A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

NMFS and ADCNR would work collaboratively with AMRD law enforcement and NOAA Office of Law Enforcement to determine law enforcement training needs and how best to conduct consistent training and to identify specific training and educational needs/products. AMRD would hire a biologist to implement training of enforcement officers on the MMPA and public outreach topics related to marine mammals. The biologist would coordinate with the NMFS Southeast Regional Office to receive and stay up-to-date on issues and information related to marine mammal protection. ADCNR would be the implementing Trustee. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

**REFERENCES**

DWH NRDA Trustees. 2016. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


## MAM PLAN REVISION HISTORY

<table>
<thead>
<tr>
<th>Old File Name</th>
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<th>Changes Made</th>
<th>Reason for Change</th>
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<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters</td>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
COLONIAL NESTING WADING BIRD TRACKING AND HABITAT USE ASSESSMENT

PROJECT OVERVIEW

Additional information is needed to address information gaps for the metapopulation of several species of colonial wading birds breeding along the Alabama coast in the northern Gulf of Mexico to inform restoration planning. Specifically, there is interest in better understanding the contributions of individual nesting colonies to the metapopulation of Ardeids (herons, egrets, and bitterns), daily and seasonal movements, and habitat use (i.e., foraging sites v. roosting/loafing sites v. nesting sites) to guide restoration of these DWH-injured resources within the coastal areas of Alabama. The study area falls within the Mobile Bay Initiative Area of the Gulf Coast Joint Venture (Manlove et al. 2002). The species (see Objectives below) of colonial nesting wading birds targeted in this study are identified in the Southwestern Coffee Island Habitat Restoration Project-Phase I proposal, were injured by the DWH oil spill, and are targets for restoration efforts via the Natural Resource Damage Assessment.

Several environmental factors may affect wading bird productivity in the northern Gulf of Mexico (GOMAMN 2018). Several key ecosystem-level processes that were identified across 7 species of colonial wading birds (reddish egret, tricolored heron, little blue heron, great egret, white ibis, roseate spoonbill, wood stork) were: production and availability of prey during nesting created by aquaculture (e.g., crawfish farms in LA), production of freshwater prey affected by hydroperiod (e.g., natural and anthropogenic factors influencing inundation frequency, intensity, and periodicity), production of coastal prey affected by salinity, sea-level rise narrows salinity range(s) in foraging habitat, and nesting and productivity affected by mammalian predator composition, distribution, and abundance (Frederick et al. In Prep., see also Burger 2017). Currently, the AL TIG is unable to effectively weigh the relative merits of potential bird restoration approaches given the uncertainty about alternatives (e.g., greater emphasis on predator controls v. increasing availability of nesting habitat v. actions to increase the availability of forage resources) for the target wading bird species herein (tricolored heron, and either the little blue heron or white ibis) (NAS 2017). This project would initiate monitoring studies expected to inform and enhance future restoration planning for key colonial nesting wading bird species along the Alabama coast that were injured by the DWH oil spill (PDARP/PEIS; DWH NRDA Trustees 2016:table 4.7-3). The goals of this proposed project are to better understand the extent to which declines in colonial nesting wading bird populations result from habitat limitation versus other potential population-limiting factors (Newton 1998), and in turn, which restoration approaches and techniques (DWH NRDA Trustees 2017) are most appropriate to effectively target and restore injuries to the Birds Restoration Type in Alabama (NAS 2017).

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

The project Restoration Type is Birds. The goal of this project is to provide data on the dynamics of prominent wading bird nesting colonies along the Alabama coast, as well as the use of local habitats by these species that support nesting and reproduction. This information will assist the Alabama TIG with prioritizing restoration approaches that best help to restore Birds. In summary, the Restoration Type goals are:

- **Programmatic Goal:** Replenish and Protect Living Coastal and Marine Resources
- **Restoration Type Goal:** Restore injured birds by species where actions would provide the greatest benefits within the geographic ranges that include the Gulf of Mexico
- **Project Goal**: Generate information to better target restoration projects that will provide the maximum benefits to wading birds in coastal Alabama
- **TIG**: Alabama

The project objectives are to track the movements and habitat use of breeding wading birds along the Alabama coast to help reduce uncertainty about restoration approaches to more effectively meet the Restoration Type goals. In summary, the project objectives\(^1\) are:

**Objective 1**: Determine daily and seasonal movements, fidelity and dispersal of two wading bird species (i.e., tricolored heron and little blue heron; cattle egret and white ibis as potential alternatives\(^2\)) among nesting colonies at three important breeding areas--Mississippi Sound, Gaillard Island, and Perdido Bay.

**Objective 2**: Identify important foraging and other habitat areas within the study area.

The implementing Trustee for this project is the U.S. Fish and Wildlife Service working collaboratively with AL TIG and state agency representatives and other conservation partners, e.g., Gulf Coast Joint Venture (Manlove et al. 2002).

**CONCEPTUAL MODELS, ANTICIPATED OUTCOMES, AND FUTURE ACTIVITIES**

A number of potentially competing hypotheses have been posed for apparent declines of coastal wading birds, beach-nesting shorebirds and seabirds in the Gulf of Mexico, both pre- and post DWH oil spill (see Burger 2017, 2018). Results from this monitoring effort of wading birds should allow simultaneous evaluation of multiple competing hypotheses (e.g., nesting habitat limitation hypothesis, predator limitation hypothesis, foraging habitat limitation hypothesis) (Lebreton et al. 1992, Newton 1998). The data collected from this project are expected to provide useful insights into these questions and will assist the AL TIG in planning more effective restoration (NAS 2017:chapt. 7) of bird species injured by the DWH oil spill. In general, and at the scale of the Gulf of Mexico, ecological processes affecting populations of tricolored (Fig. 1) and little blue herons (Fig. 2) may be fairly similar (GoMAMN 2017, Frederick et al. In Prep.). In addition, specific factors limiting tricolored and little blue heron and/or white ibis populations may differ and certainly could vary spatially and temporally across the northern Gulf of Mexico and within Alabama. A better understanding of factors influencing foraging habitat quantity and quality, identification of important foraging sites, foraging distances from nesting colonies and how these affect foraging success and ultimately, productivity for the target species will greatly assist in understanding population-limiting factors in Alabama.

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\(^1\) Refer to Section 2 Project Monitoring for additional level of detail per the above identified objectives, i.e., how these broad project-level objectives will be explicitly addressed.

\(^2\) Identified here as potential alternative target species for monitoring, not additional species to be monitored, per se. Potential uncertainties associated with this project are identified below in Sect. 1.4.
Figure 1. Influence diagram of factors, processes, and ecological relationships thought to influence tricolored heron population size in the northern Gulf of Mexico. The flow of the diagram is from left to right beginning with management or restoration actions (green boxes) via ecological processes (tan boxes) and associated relationships (tan boxes and arrows) that ultimately affect population parameters (i.e., reproductive success and adult and juvenile survival) and population size (blue hexagon). Refer to the GoMAMN objectives hierarchy and other relevant information: https://gomamn.org/. (NOTE: this is a draft product of the GoMAMN Strategic Monitoring Planning effort via the Wading Bird Working Group with Dr. Peter Frederick (University of Florida) as the Working Group lead.)
Figure 2. Influence diagram of factors, processes, and ecological relationships thought to influence little blue heron population size in the northern Gulf of Mexico. The flow of the diagram is from left to right beginning with management or restoration actions (green boxes) via ecological processes (tan boxes) and associated relationships (tan boxes and arrows) that ultimately affect population parameters (i.e., reproductive success and adult and juvenile survival) and population size (blue hexagon). Refer to the GoMAMN objectives hierarchy and other relevant information: https://gomamn.org/. (NOTE: this is a draft product of the GoMAMN Strategic Monitoring Planning effort via the Wading Bird Working Group with Dr. Peter Frederick (University of Florida) as the Working Group lead.)

Anticipated outcomes are identified above and are more fully described in the sections below. Future activities post-project will likely include on-the-ground restoration projects specifically to restore injured wading birds (PDARP/PEIS; DWH NRDA Trustees 2016: table 4.7-3). In addition, there will likely be either project-level or resource-level monitoring of known wading bird colonies in Alabama (e.g., colony overflights; Ford et al. 2010, Ford 2011) to evaluate local population status and trends in response to restoration or creation of nesting and/or foraging habitats. For example, one could use aerial photographic survey design and protocols developed by Ford et al. (2010) to re-survey the same islands sampled in 2010/2011 as a comparison to results from contemporary aerial surveys, and sample any/all newly created or restored islands to establish a baseline by species.

Sources of Uncertainty

The intent of the project is to reduce uncertainty to allow the Trustees to better focus restoration by addressing the primary drivers of wading bird productivity. For additional details regarding uncertainty, types of uncertainty, and its potential effects on management of natural resources, please refer to Williams et al. (2009) and Williams (2011).

The TIG aims to propose and select projects that are feasible and have a high probability of success. In some instances, projects may have restoration techniques or project components that are more innovative which may result in a higher degree of uncertainty. Sources of uncertainty, the degree of uncertainty, and the level of uncertainty associated with projects will vary. Potential uncertainties are
defined as those that may affect the ability to achieve project restoration objective(s). Monitoring can be used to inform these uncertainties and inform the selection of appropriate corrective actions in the event a project is not meeting its performance criteria. The potential uncertainties identified for this project vary from larger spatial-scale factors beyond project implementers control to project-level with which implementers have a reasonable ability to control associated specifically with wading bird monitoring at specific breeding sites once identified. Potential key uncertainties, mitigation measure(s) and probability of events as related to project success are provided in hierarchical order (big scale with no control to site-scale with control) below.

1. Major weather events or storm events (i.e., Hurricanes or Tropical Storms) that may result in complete colony abandonment and potential loss of marked individuals or loss of complete cohorts in a given year
   - Mitigation(s) = though nest initiation and peak nesting is likely to vary annually, in general, nesting activities should occur prior to peak timing of major weather events like hurricanes and tropical storms, thereby reducing potential for complete colony abandonment or loss of an entire cohort. Marking efforts will occur during late incubation or soon after hatch thereby reducing potential for temporal overlap with said activities and major weather events. Though most of the wading bird colonies in Alabama occur over a relatively small spatial scale, the probability of such an event decimating all colonies is seemingly low. Marking will occur at ≥3 sites and therefore, the spatial separation should somewhat mitigate potential impacts of major weather event.
   - Probability of Event = considered low to moderate

2. Disease outbreaks (i.e., botulism, cholera, avian influenza, West Nile Virus) that may result in complete colony abandonment and potential loss of marked individuals or loss of complete cohorts in a given year
   - Mitigation(s) = to our knowledge, there have been no recent major disease outbreaks affecting nesting populations of wading birds in the northern Gulf of Mexico
   - Probability of Event = considered low

3. Contamination/pollution (i.e., Pb, Mg, Se, OCs, PCBs, etc.) events that may result in complete colony abandonment and potential loss of marked individuals or loss of complete cohorts in a given year
   - Mitigation(s) = likely would not result in direct mortality of complete breeding cohorts or colonies, and if present, it would likely manifest itself through reduced reproductive performance (i.e., low nesting probability, smaller clutch sizes, reduced eggshell thickness, reduced egg viability and hatchability, smaller body size at hatch and fledging, or reduced fledging success and survival) by affected individuals
   - Probability of Event = considered low to moderate

4. Human disturbance, boat-related disturbance, military aircraft overflights, or related events that may result in complete colony abandonment and potential loss of marked individuals or loss of complete cohorts in a given year
   - Mitigation(s) = likely would not result in complete abandonment across all known breeding colonies or loss of complete cohorts, and therefore, the project would still be able to move forward, albeit with a year-gap or spatial-gap at the impacted colony
   - Probability of Event = considered moderate to high; for individual colonies, particularly, the small colony at Perdido Bay, but lesser so at colonies in Mississippi Sound, on Galliard Island, or in the Mobile-Tensas Delta

5. Mammalian predation events that may result in complete colony abandonment and potential loss of marked individuals or loss of complete cohorts in a given year
- Mitigation(s) = likely would not result in complete abandonment across all known breeding colonies or loss of complete cohorts, and therefore, the project would still be able to move forward, albeit with a year-gap or spatial-gap at the impacted colony.
- Probability of Event = considered moderate to high; for individual colonies, particularly, the small colony at Perdido Bay, but lesser so at colonies in Mississippi Sound, on Galliard Island, or in the Mobile-Tensas Delta.

6. Inability to achieve the benchmark target sample size for deployment of transmitters for both species at each colony every year (assuming there is a sufficient # of breeding pairs of the target species at each of the breeding colonies every year) due to capture difficulties.
- Mitigation(s) = likely would not affect overall results per species or on an individually-marked bird basis, per se, but the larger sample size of transmittered bird’s x species x colony increases both power and ability to make inferences to the target population.
- Probability of Event = considered low; any challenges or limitations with capturing birds should be resolved by the 2nd field season.
- Inability to achieve the benchmark target sample size for deployment of transmitters for both species at each colony every year (assuming there is a sufficient # of breeding pairs of the target species at each of the breeding colonies every year) due to weather, access-related issues, transmitters not arriving in time for fieldwork, boat-related problems, etc.
- Mitigation(s) = likely would not affect overall results per species or on an individually-marked bird basis, per se, but the larger sample size of transmittered bird’s x species x colony increases both power and ability to make inferences to the target population.
- Probability of Event = considered low; contingencies will be in place to ensure all of these potential issues are covered. Any transmitters not deployed in the year expected, will be deployed the following year.

7. Inability to achieve the benchmark target sample size for deployment of transmitters for both species at each colony every year (assuming there is a sufficient # of breeding pairs of the target species at each of the breeding colonies every year) due to transmitter failure, mortality, loss of transmitter, loss of signal, etc.
- Mitigation(s) = likely would not affect overall results per species or on an individually-marked bird basis, per se, but the larger sample size of transmittered birds x species x colony increases both power and ability to make inferences to the target population.
- Probability of Event = considered moderate; it should be clearly understood that transmitter-related issues for some fraction (1-2 out of 10) or proportion (<20%) of transmitters is “normal.”

The approaches herein are well-tested in the field and are accepted in the peer-reviewed literature, and project implementers are experienced with the proposed activities. Some uncertainty exists regarding the ability of the researches to achieve the target number of transmittered birds per species per colony per year. However, sample sizes are expected to be large enough to yield statistically valid and biologically meaningful results. The project implementers should have the flexibility to utilize existing budget resources to maximize the number of transmitters and requisite personnel to capture and deploy all transmitters on an annual basis. In addition, it may very well be that additional satellite transmitters may be more useful for addressing the objectives (see Sect. 2 below) than deploying both satellite and VHF transmitters, largely owing to the much larger effort (and associated costs) required to collect VHF transmitter data every 24 hours. This project will reduce uncertainty (i.e., structural or process uncertainty; Williams et al. 2009:sect. 5.2) in future bird restoration projects by filling knowledge gaps and increasing our understanding of ecological relationships for the target species (Figs. 1-2).
PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring for this project, outlined below, is organized by project objective, with one or more monitoring parameters for each objective. For each of the monitoring parameters, information is provided on method, timing and frequency, duration, sample size, and sites. Also included is the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), as well as performance criteria for each parameter (if applicable) and example corrective actions that could be taken if the performance criteria are not met. The adaptive management decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, the performance criteria below would be used to determine project success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. Information below does not include all possible options; rather, it includes a list of potential adaptive management actions for each individual parameter to be considered. The decision to implement a corrective action should holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

The project study area focuses on coastal Alabama. Target bird capture areas include those of prominent and persistent wading bird nesting colonies along the coast: Mississippi Sound, Gaillard Island, and Perdido Bay (Fig. 3).

Figure 3. Colonial nesting wading bird tracking and habitat use assessment target bird capture areas.
Objective 1: Determine daily and seasonal movements, fidelity and dispersal of two wading bird species (tri-colored heron and either the little blue heron or the white ibis) among nesting colonies at three important breeding areas--Mississippi Sound, Gaillard Island, and Perdido Bay.

Parameter 1: Capture and Tracking of Birds

a. Methods: Because locations of colonies and numbers of birds by species within a colony often fluctuates from year to year, we will use a combination of local knowledge (e.g., Alabama Department of Conservation and Natural Resources staff) and preliminary reconnaissance surveys at sites to determine locations of suitable colonies to use as capture sites. Care will be taken to minimize disturbance to colonies and reduce the risk of colony abandonment. Juvenile birds will be captured at the nest by hand or dip net (Semones 2003, Bates et al. 2015, Geary et al. 2015) at the age (for the species) just before leaving the nest at fledging. In some cases, if juveniles have left the nest, they will be captured with a dip net (Bates et al. 2015, Geary et al. 2015). We will use a variety of methods to capture adult birds, depending on the species and habitats. Methods may include a modified foot-hold trap (Brzorad and Maccarone 2014), mist-nets, modified net gun, or noose carpets (Fidorra et al. 2016, Welch 2016, Koczur et al, 2017). We will collect standard morphometric measurements (body mass, tarsus length, culmen length; Dzubin and Cooch 1992) from all birds captured to evaluate their potential effects on important parameters of interest (Cooch and White 2014:chapt. 11). We will also collect a blood sample from each bird to determine sex for juveniles and those adults that cannot be sexed through morphometrics and plumage characteristics. Blood will be collected from the brachial vein using a 27-gauge needle and capillary tubes.

Each bird captured will be fitted with a USGS metal band and a unique combination of plastic alphanumeric color bands. For birds that weigh enough to support a satellite transmitter and harness (target weight for each species will be determined so that the harness and transmitter are ≤ 3% of their body weight; Phillips et al. 2003, but see Barron et al. 2010, Vandenabeele et al. 2011), transmitters will be fitted on the back using a backpack-style harness made of tubular Teflon ribbon (Semones 2003, Herring and Gawlik 2010, Brzorad et al. 2015, Fidorra et al. 2016, Lamb et al. 2017). For example, tricolored (Frederick 2013) and little blue herons (Rogers and Smith 2012) would need to weigh ≥300 g for a 9.5 g transmitter.

b. Timing and frequency: Timing of funding will dictate the previously mentioned tasks and those identified in Table 1. Initial captures will only occur after on-the-ground assessments of nesting colonies to determine species composition, abundance, nest timing, and further clarifying how best to access colonies while minimizing disturbance. Some flexibility and deference will be provided to the project proponents and potential PI in the first calendar year to (at a minimum): (1) secure required federal and state permits, (2) hire a graduate student, (3) hire technicians, (4) secure necessary vehicles, boats, and other logistical considerations, (5) secure requisite make and model of transmitters, (6) properly train all personnel on protocols and methodologies regarding capture and attachment of transmitters, as well as banding, and (7) scout potential colony sites. Assuming funding is awarded early enough in FY19 to address all of the previously identified uncertainties and project-related expectations and deliverables, there is the potential that capture and marking of target species would occur during the 2019 nesting season.

c. Sample size: We will target a minimum of 15 adults and 15 juveniles of each species ($n = 60$ total) to receive transmitters. If the budget allows, we will increase the sample size of transmitters deployed for the two-target species. To maximize the temporal component of satellite tracking (i.e., number of years tracked), we will attempt to capture our target sample size the first year of capture.
effort. Target sample sizes may be adjusted upward if only satellite tags are used given potential flexibility in the budget. Ideally, one would capture and mark individuals of both species at all colony sites identified herein assuming (1) there is a sufficient breeding population of all target species are all breeding colonies and (2) representatives of target species are accessible at all breeding colonies and capture and marking could be achieved with minimal disturbance to the entire colony. It should be noted here and is relevant throughout, that individual fixes or locations may not be considered independent and we assume that marked individuals are representative of the target population and that the process of capturing, handling, and marking individuals and that the presence of the mark (in this case, a transmitter) does not affect outcomes of the marked individual, e.g., behavior and survival (Brownie et al. 1985).

d. **Corrective action:** If we do not capture our target sample sizes in the first field season, we will trap again the following breeding season until we achieve our target sample size. If for some reason there are not enough birds available to be captured and marked to achieve our target sample size, we can adjust by choosing an alternative species of interest (e.g., white ibis). Alternatively, we will simply mark more individuals of the target species in one of the other breeding colonies. If there appear to be mortalities or transmitter failures in the first year after deployment, we will attempt to make up for these losses through additional capture and marking in the second field season. Target samples sizes for transmitters identified in text above could be increased depending on the budget and if the decision is made to only use 1 type of transmitter versus the other. Ideally, we would have reasonably similar number of transmitters allocated across species, sites, and years. See above for additional information regarding key uncertainties.

**Parameter 2: Daily and Seasonal Movements**

a. **Methods and performance criteria:** We will determine the duty cycles for satellite transmitters to meet our objectives of tracking daily and seasonal movements within the constraints of the transmitters, which will likely be 6-8 locations per day. Data will be received through Service ARGOS (CLS America) and downloaded on a daily basis. For analyses, we will eliminate low-accuracy location classes using the Douglas Argos-filter (Douglas et al. 2012, Geary et al. 2015). We will determine mortality by combining diagnostic information from the devices and locations (e.g., no movements from a location for several days). A combination of analytical techniques will be used to determine daily and seasonal (breeding, post-breeding, and winter) movements by species, sex, and age class. If we have a sufficient sample of marked birds for each of the colonies per species, we will attempt to get colony-level data. Filtered locations will be imported into ArcGIS to for visualization and some spatial analyses. We will use state-space models (Jonsen et al. 2005, Patterson et al. 2008) to analyze movements at multiple temporal and spatial scales.

b. **Corrective action:** There is no reason to believe that the target sample sizes for each species identified herein will not be achieved. To reiterate, the level of detail that can be achieved regarding both daily and seasonal movements is dependent on (1) the number of transmitters deployed per species, (2) potential mortalities or transmitter failures, and (3) transmitter longevity or how long an individual transmitter on a marked bird is actually transmitting or ‘on the air’. If there appear to be mortalities or transmitter failures in the first year after deploying transmitters, we will attempt to make up for these losses through additional capture and marking in the second field season. See above for additional information regarding key uncertainties.

**Parameter 3: Fidelity and Dispersal**

a. **Methods:** An attempt will be made to estimate both fidelity and dispersal from colonies in which birds are marked. Estimating these parameters are dependent on the number of transmitters
deployed per species per colony, the number of either transmitter failures and mortalities, and transmitter longevity, the latter two of which reduce realized sample size. In addition, given flexibility in the budget and sufficient personnel and time, both parameters may also be (jointly) estimated using Capture-Mark-Recapture (C-M-R) methods (Kendall and Nichols 2004, Kendall et al. 2006) for resighting color-banded birds using Program MARK (White and Burnham 1999, White et al. 2001). We will use great-circle distances from natal colonies to determine dispersal from natal/breeding colonies (Geary et al. 2015).

b. **Timing and frequency:** At this time, it is difficult to predict a specific number of estimates that will be generated for either fidelity or dispersal. However, at a minimum, it should be possible to provide estimates for each of these parameters by species by cohort, i.e., age, and ideally by colony. These may represent single point estimates at the end of the study or possibly annual estimates for both fidelity and dispersal. Second- and third-year location data will determine whether birds (adults or juveniles) show inter-annual fidelity to breeding/natal colonies. Mean and maximum distances from breeding/natal colonies will be determined annually to compare locations of capture sites to locations during subsequent breeding seasons.

c. **Sites:** Ideally, we would like to be able to generate estimates of fidelity to breeding/natal colonies, as well as dispersal (both mean and maximum distances). As per above, it should be realistic to be able to generate mean and maximum dispersal distances for each marked bird at each colony. The exact number for each of these parameters is difficult to predict at this time, but should represent a minimum of six mean values (assuming there is a sufficient number of birds by species at each colony), one for each colony (3 colonies) by species (two species). Total dispersal distances that could be estimated for this project is entirely dependent on the number of birds captured and marked with transmitters, then mortality and transmitter failure-rate, and transmitter longevity. Thus, it is extremely difficult to predict. Assuming no mortalities and no transmitter failures and sufficient transmitter longevity, this final value is equal to the total number of transmitters deployed. A reasonable range of total dispersal distance estimates by individual birds could be ≥40.

d. **Performance criteria:** If we are able to generate both estimates of fidelity and dispersal for two species at three separate breeding colonies one should consider this a success. Estimating these parameters, in addition to other competing parameters, for more than one species in a single project is a major feat. Also, estimating these parameters are important in understanding population dynamics in the larger metapopulation context (Erwin et al. 1995, Esler 2000) within the broader context of evaluating restoration projects (Block et al. 2001).

e. **Corrective action:** We will remain adaptive, flexible, and nimble during project implementation to ensure that this parameter remains as important as the various other competing parameters identified herein. If the target sample sizes are met regarding the number of transmittered birds and transmitter duration is sufficient to capture the temporal aspects of this parameter. If mortality or transmitter failure occurs early-on in the first year, we will capture and mark additional birds in the second year. In addition, there will be a sample of color-banded birds, i.e., a marked population, with which one could use to derive survival estimates either independently from or jointly with transmittered birds. See above for additional information regarding key uncertainties.

**Parameter 4: Post-fledging and Adult Seasonal and Annual Survival**

a. **Methods:** We will estimate seasonal and annual survival of juveniles and adults of each species using Kaplan-Meier estimates in the known-fate-model of MARK (Oppel and Powell 2010, Koczur et al. 2017). We will model survival monthly, seasonally, and annually rates by sex and age class (Oppel and Powell 2010, Koczur et al. 2017). It should be noted here that survival can be defined as either apparent or true survival depending on marking techniques and associated assumptions in estimating survival (Gilroy et al. 2012, Cooch and White 2014). In any case, survival estimates will be
generated for two age classes (fledging/juvenile and adult) and two-time periods (post-fledging and annual). Certainly, it would be most useful to generate colony-level survival estimates for both species and both age classes, but this may or may not be feasible. As well, assuming flexibility in the budget and sufficient personnel and time, survival may also be (jointly) estimated using C-M-R methods (Kendall and Nichols 2004, Kendall et al. 2006) for resighting color-banded birds using Program MARK (White and Burnham 1999, White et al. 2001).

b. **Timing and frequency:** At this time, it is difficult to predict a specific number of survival estimates that will be generated for either post-fledging survival or adult annual survival. However, at a minimum, it is realistic to expect to generate estimates for each of these parameters by species by age-class. For example, it is anticipated that for the two species, we will generate post-fledging survival estimates by year (colonies pooled), as well as adult annual survival estimates by species by year (colonies pooled) for say, three years. Annual survival analyses will take place in year three to maximize the temporal component of the study. However, we will conduct preliminary analyses after each year to determine monthly and seasonal survival if sample sizes permit. Though this parameter was not explicitly identified in the AL RP II (2018), it may be achievable if a sufficient sample of transmittered birds are captured and marked and battery-life for each transmitter is for a sufficient duration of time to generate period-specific and annual survival estimates. In addition, it is possible to generate survival estimates using C-M-R methods if there is sufficient effort dedicated towards resighting color-banded individuals in the population.

c. **Sample size:** To increase power, individuals within a given cohort, e.g., sex, age, colony will be pooled by species. The target sample size is difficult to predict at this time. However, it is anticipated that there will be a sufficient sample of marked birds to generate survival estimates for two species and two age-classes, likely pooled across colonies.

d. **Performance criteria:** If we are able to generate survival estimates for both species by age-class one should consider this a success. Estimating these particular parameters, in addition to other competing parameters, for more than one species within a single project is a major under-taking. Survival estimation, in particular, has been identified as critical information need identified elsewhere for evaluating success of restoration projects (Block et al. 2001, Smallwood 2001, NAS 2017).

e. **Corrective action:** We will remain adaptive, flexible, and nimble during project implementation to ensure that this parameter remains as important as the various other competing parameters identified herein. If the target sample sizes are met regarding the number of transmittered birds and transmitter duration is sufficient to capture the temporal aspects of this parameter. If mortality or transmitter failure occurs early-on in the first year, we will capture and mark additional birds in the second year. In addition, there will be a sample of color-banded birds, i.e., a marked population, with which one could use to derive survival estimates either independently from or jointly with transmittered birds. See above for additional information regarding key uncertainties.

**Objective 2:** Identify important foraging and other habitat areas within the study area

**Parameter 1: Habitat Use Analyses**

a. **Methods:** Spatial distributions for each species during winter and breeding will be described using core use areas with fixed kernel home range analyses using location data imported into GIS and Hawth’s tools for GIS (Oppel and Powell 2010). Depending on whether location data are sufficient to determine foraging (many short distance movements within a day), breeding (minimal movements within a day during breeding season), or roosting (minimal movements during nonbreeding season), we will first bin location data into these use categories. Then location data for each use category will
be overlaid onto habitat maps using ArcGIS. We will use modeling approaches to determine which habitat variables explain spatial use by each species in each season (Aarts et al. 2005, Lamb 2016).

b. **Timing and frequency:** Habitat use analyses will likely take place in year three or the final year of this project to maximize both the spatial and temporal aspects of bird movement data. However, we will conduct preliminary analyses for the marked sample available for each species after each year, assuming sample sizes permit.

c. **Sample size:** To increase power, individuals within a given cohort, e.g., sex, age, colony will likely be pooled by species. The target sample size for habitat use analyses is difficult to predict at this time. However, it is anticipated that there will be a sufficient sample of marked birds to generate habitat use estimates for two species and possibly, the juvenile and adult age-classes. We are unsure at this time if there will be sufficient marked sample at each breeding colony to provide colony-level habitat use estimates. Therefore, habitat use may be pooled across colonies. The initial sample size represents the number of transmitters actually deployed. However, it is anticipated that there may be some mortalities, some transmitters may fail, some transmitters may not be operable for the requisite period of time, and some location fixes may not be of sufficient quality to be included in habitat use estimates.

d. **Sites:** Preferably, we would like to be able to generate habitat use estimates by species and cohort for each of the respective breeding/natal colonies in which birds are marked. However, this may or may not be realistic and achievable. As per above, it should be realistic to generate habitat use by species and season, pooled across colonies. The exact number of habitat use estimates would simply be two species by two seasons or four. Accounting for potential colony-level effect is entirely dependent on the budget and the number of transmitters deployed per colony per species. Then, it becomes an issue of attrition of transmitters versus those transmitters still operational and on the air. Thus, it is extremely difficult to predict.

e. **Performance criteria:** If we are able to generate survival estimates for both species by age-class one should consider this a success. Estimating these particular parameters, in addition to other competing parameters, for more than one species within a single project is a major under-taking. Survival estimation, in particular, has been identified as critical information need identified elsewhere for evaluating success of restoration projects (Block et al. 2001, Smallwood 2001, NAS 2017).

f. **Corrective action:** Corrective actions associated with this parameter are nearly identical to the corrective actions identified in the daily and seasonal movement parameters identified above. Therefore, they are not repeated here. We have no reason to believe there will not be the appropriate existing geospatial data sources available at the appropriate spatial resolution to evaluate habitat use by marked birds in this study. We will work with staff from the Gulf Coast Joint Venture and the Gulf Coastal Plains and Ozarks LCC, as well as staff within the USFWS and USGS to determine the most appropriate datasets given our objectives. See above for additional information regarding key uncertainties.

The schedule for project monitoring is shown in Table 1, separated by monitoring activity.

**Table 1. Project Monitoring Schedule for the Colonial Nesting Wading Bird Tracking and Habitat Use Assessment Project Identified in AL RP II (March 2018)**

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
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<tbody>
<tr>
<td>Capture of birds¹</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring Parameter</td>
<td>Objective</td>
<td>Pre-Execution</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
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<td>---------------</td>
<td>--------</td>
<td>--------</td>
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<td>--------</td>
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<tr>
<td>Daily and seasonal movement tracking&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Fidelity and dispersal tracking&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habitat use analyses&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td>1, 2</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When birds are captured largely depends on which of the 2 transmitter types, i.e., satellite v. VHF are used and deployed. If VHF transmitters are used then capture and deployment would occur annually in years 1-3 or 2-4, whereas if satellite transmitters are used then capture and deployment would likely occur in years 2 and 3. VHF requires active accumulation of data on a 24hr to weekly basis by personnel with equipment to determine locations of individually marked birds. Conversely, satellite transmitters acquire the data passively and location data are downloaded and inspected remotely. With satellite transmitters one can adjust the settings when the transmitter is “on” v. “off” with potential trade-offs between battery life and time spent “on”. The current information in the Table is based on the assumption of satellite-transmitters only. The PI should have the flexibility to make decisions as to which of the technologies is best suited to address the objectives given the budget.

2 Refer to superscript 1 above- depends on type of transmitter deployed.

3 Refer to superscript 1 above- depends on type of transmitter deployed.

4 Refer to superscript 1 above- depends on type of transmitter deployed.

5 Reporting requirements are not entirely clear and/or expectations of what level of detail is expected in annual reports, but assume annual reports are required/mandatory and that a final report would be provided within the period-of-performance, but after all data have been collected and analyzed.

**ADAPTIVE MANAGEMENT**

As discussed in the PDARP, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997, Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer and Llewellyn 2000).

Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (PDARP/PEIS; DWH NRDA Trustees 2016:app. 5.E.1). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action. The project implementation team has the expertise and experience to successfully implement this project. There is flexibility within the budget, within the study design, and this MAM Plan to adaptively manage this project given the key uncertainties identified herein. We will remain nimble and flexible during the implementation of this project to ensure project success. Additional information regarding key uncertainties and associated mitigation measures and potential corrective actions for this project are discussed above.
EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties.

The results of the analysis would be used to answer the following questions:

- Were the project objectives achieved? If not, is there a reason why they were not met?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation of this project?

This project supports planning and evaluation of future restoration approaches for the Birds Restoration Type by providing baseline data on wading bird movements and habitat use. Questions such as the above will be used to evaluate the efficacy of methodologies employed by this project in providing the AL TIG with information to inform restoration planning. Answers will 1) improve the effectiveness of restoration planning and implementation, 2) help identify any additional data gaps causing uncertainty in the same, and/or 3) inform the need to adjust monitoring methods to increase the usefulness of results. The sampling design plan will be periodically evaluated during implementation to ensure the project is on track towards collecting desired information. Adaptive management within the project may be necessary to address any issues that may arise. Decisions regarding adaptive management and adjustments will be discussed and decided by the project implementers. If adjustments will result in project budget changes or major scope changes, these changes will be evaluated and decided by the AL TIG.

It is anticipated and expected that this project will not only fully and successfully acquire all the data identified above, but also this project will deliver associated statistical analyses, modeling, and interpretation of the data as part of project reporting.

DATA MANAGEMENT

To the extent practicable, all data generated during monitoring activities will be documented using standardized field datasheets. Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created, and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved. Relevant Project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into Excel spreadsheets (or similar digital format). After transcription of the data, a second person not associated with data transcription will perform a verification of the data.
in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data is entered or converted into agreed upon/commonly used digital format labeled with metadata.

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record Project-specific data, then Project-specific datasheets will be drafted prior to conducting any Project monitoring activities. Original hardcopy datasheets and notebooks will be retained by the Implementing Trustee. Relevant Project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files. Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred. All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents).

Once all data has been QA/QC'ed it will be submitted to the Restoration Portal. Any databases created as part of the proposed project will be stored according to USFWS and HAPET office policies. Any such databases will be mapped/linked/integrated into the DIVER platform (DIVER 2017). Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data will be made publicly available, in accordance with the Federal Open Data Policy, through the DIVER Explorer Interface within one year of when the data collection occurred. Some of the data collected is protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

**REPORTING**

Data summaries and interim analyses and interpretation will be compiled in annual monitoring reports. At a minimum, annual reports will be made available through the DIVER Explorer Interface within a year of report development. In addition, a Final Report will be provided at the end of the project within the period-of-performance. It is anticipated that at least 1 scientific peer-reviewed publication will result from this project. It is fully anticipated and expected that the following deliverables will be provided:

- all QA/QC data, datasets, databases
- all geospatial data associated with all habitat-related analyses, home range estimation and habitat use analyses
- all final Figures and Tables associated with Annual and Final Reports

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- all statistical output, models, and code associated with producing the Final Report
- all final PowerPoint presentations given at professional meetings (travel-related to professional meetings are not funded by the project)
- all final abstracts for professional meetings
- Annual Reports beginning the 1st year post-award
- Final Report towards the end of the period-of-performance
- at least 1 scientific peer-reviewed publication and copies of any/all publications related to this project (page charges for publications are not funded by the project)
- Explicit identification of funding for this project in Acknowledgments sections of all published papers

Additional details and associated timelines regarding reporting and deliverables will be provided at the time of award.

**ROLES AND RESPONSIBILITIES**

USDOI is the lead Trustee agency for this project, and will ensure that the project is completed. Work will be conducted by contractor or cooperative agreement with university or other entity. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

**REFERENCES**


Burger, J. 2018. Birdlife of the Gulf of Mexico. Texas A&M University Press, College Station, TX, USA.


Frederick, P. C. 2013. Tricolored heron (Egretta tricolor). In The Birds of North America Online (Rodewald, P. G., editor), Number 306. Cornell Lab of Ornithology, Ithaca, NY, USA. Available at: https://doi.org/10.2173/bna.306


**MAM PLAN REVISION HISTORY**

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<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
OYSTER CULTCH RELIEF AND REEF CONFIGURATION

PROJECT OVERVIEW

The Oyster Cultch Relief and Reef Configuration project would deploy different types of cultch material in various configurations to facilitate positive settlement and growth of oysters on selected reef areas in Mobile Bay, Alabama. Since 2005, the oyster density on publicly harvested reefs has been in decline, due to damage and silting associated with hurricanes Ivan and Katrina and drought conditions. This has caused the proliferation of the predatory oyster drill on historically productive reefs. AMRD is proposing to investigate the merit of deploying different types of cultch material in various configurations to enhance settlement and growth of oysters on selected reef areas in Mobile Bay. In addition to the direct goal of restoring the reefs selected for project implementation, the project has three additional study objectives: (1) determine if there are differences in oyster settlement, growth, and survival on reefs of differing levels of relief and/or orientation relative to currents; (2) determine optimum reef material relief needed to restore oyster density on specific reefs within historical reef areas in which hydrology parameters such as oxygen and salinity and oyster recruitment and survival are highly variable; and (3) estimate the cost/benefits of deploying cultch in configurations differing from traditional cultch broadcast methods. The broader goal is to inform and increase the success of future oyster reef restoration activities. For project implementation, two sites have been tentatively selected for pre-monitoring surveys—a 36-acre reef approximately 1 mile north-northeast of the mouth of East Fowl River and Denton Reef (70 acres) located approximately 3 miles southeast of the mouth of East Fowl River.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Project Type: Oysters
- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Restore a diversity of oyster reef habitats that provide ecological functions for estuarine-dependent fish species, vegetated shoreline and marsh habitats, and nearshore benthic communities
- Restoration Approach: Restore or create oyster reefs through placement of cultch in nearshore and subtidal habitats

Objective 1: Restore subtidal reef habitats in various configurations along a salinity gradient.

Objective 2: Determine if there are differences in oyster settlement, growth, and survival on reefs of differing levels of relief and/or orientation relative to currents.

Objective 3: Determine optimum reef material relief needed to restore oyster density on specific reefs within historical reef areas in which hydrology parameters such as oxygen and salinity and oyster recruitment and survival are highly variable.

Objective 4: Estimate the cost/benefits of deploying cultch in certain configurations as opposed to traditional cultch broadcast methods.

Sources of Uncertainty

Weather-related events may necessitate the maintenance of the cultch mounds and furrows including the deployment of additional cultch. This project is a study, designed to increase certainty around
which restoration methods are most likely to lead to meet restoration performance objectives for oysters. AMRD experts expect this alternative would provide useful insights into improved methods for locating cultch sites in coastal Alabama similar to other studies that have been conducted, selecting appropriate cultch materials, and constructing reefs with the most effective degree of relief. The project design takes into account the key factors that are known to affect the success of settlement and growth of oysters. Through systematic variation of these factors, it is expected that improved cultch materials and placement methods can be identified.

CONCEPTUAL MODEL, ANTICIPATED OUTCOMES AND FUTURE ACTIVITIES

The completion of this project will result in a better understanding of what reef configurations and deployment techniques are best suited for successful restoration of oysters in Alabama.

Stressors negatively impact habitat condition and habitat relationships, resulting in loss of habitat, function or capacity. For this project, the specific stressors addressed include habitat loss as well as changes in local conditions that historically supported oysters. Predation and changes in water quality also impact oyster resources. The purpose of this project is to identify techniques and configurations for reef restoration activities, which will result in reduced uncertainties for future restoration projects. Where these methods prove successful, the project would also result in productive restored oyster reef. This project plays an important role in filling information gaps for oyster restoration through the identification of what reef configurations, salinity gradients, deployment configurations and other factors are best suited to support oysters, which in the longer term would feed directly into the AL TIG’s efforts to mitigate oyster survivorship in Alabama coastal waters. This project will increase oyster survival and reproduction by identifying effective methods and conditions for oyster reef restoration.

ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Trustees 2016, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

The project design takes into account the key factors that are known to affect the success of settlement and growth of oysters. Through systematic variation of these factors, it is expected that improved cultch materials and placement methods can be identified. Final project site selection, cultch height, and reef area would be determined by the results of pre-monitoring surveys. Physical conditions would determine which type of plot would be used in each project site.
This project supports a larger commitment to adaptive management at the program level as the data generated as a result of this project will reduce future uncertainties regarding the siting and success of future oyster reef restoration projects.

In future planning efforts, the ALTIG will review the data generated from this project in developing restoration options for oysters in addition to utilizing other information including scientific literature, other restoration projects and consultation with experts.

PROJECT IMPLEMENTATION

Site selection and pre-monitoring may include the use of side-scan sonar imaging, hand dredging, cane-pole sounding, and/or SCUBA quadrat sampling. Baseline data would be collected at each study site prior to project deployment, including an estimate of juvenile and adult oysters as well as an evaluation of existing cultch at each site (oyster shell, limestone rock, and fossilized shell). Although not included in this project budget, side-scan sonar imaging of each test area would be performed after cultch deployment. For construction, a contractor would be hired to transport and deploy cultch material by push boat or barge. The cultch would be deployed off the deck using skid steers and excavator shovels. High-pressure water hoses would be used to distribute the cultch into three experimental configurations including mounding, elongated furrows, and control plots utilizing typical cultch broadcasting methods. Within the designated area(s) a total of nine mounds, six furrows, and six control plots would be created. The size and each mound’s area and height would depend on the depth of the bottom in which it is placed and would comply with the United States Army Corps of Engineers (USACE)-authorized minimum clearance requirement depth. Length, height, and orientation of each furrow would also depend on the depth and direction of currents at the study site. It is anticipated that the width of each furrow would be approximately 2 feet wide, although the actual width would depend on the material deployed. Maintenance of the cultch mounds and furrows, including the deployment of additional cultch, may be needed in the event of a disaster such as a hurricane or tropical storm.

Deployment of oyster cultch is an approved activity by USACE under a Nationwide Permit. Post-construction monitoring of sites may include the use of hand dredging, cane pole sounding, and/or SCUBA quadrat sampling.

Planning, pre-monitoring, and site selection are anticipated to take 3 months (January–March of project year). The invitation to bid and contractor bid process is anticipated to take 1 month (March of project year). Construction is anticipated to take 1 month and conclude by May of the first year.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However,
unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Parameter: Reef Dimensions**

- **Purpose:** Determination of reef dimension is critical to estimating the survival and density of oysters in relation to water depth
- **Method:** Measure: Reef height (Measure using graduated rod and transit, or survey equipment; subtidal, use sonar or depth finder; Reef area (Measure area of each patch reef dGPS, surveyor’s measuring wheel or transect tape, or aerial imagery; subtidal, use sonar or depth finder with ground truthing. Sum all patches/sites to get total reef area)
- **Timing and Frequency:** Immediately after construction and annually throughout project period
- **Sample Size:** Poling (side scan) all reef sites and data sondes at one site/treatment
- **Sites:** All sites constructed—9 mound and 3 control sites at Denton Reef, 3 furrow and 3 control sites at east of Fowl River
- **Performance Criteria:** Constructed as designed
- **Corrective Action(s):** Consider additional monitoring after an event that could alter reef footprint. Additional cultch material may be added if needed

**Parameter: Oyster Mortality Associated with Water Quality**

- **Purpose:** To understand how environmental conditions drive oyster mortality
- **Method:** Oysters of known quantity and size will be placed in cage with data sonde and observed monthly for mortality
- **Timing and Frequency:** Measured monthly (June-September)
- **Sample Size:** 50 oysters cage
- **Sites:** One reef site/treatment with the exception that no broadcast sites at Denton Reef will be monitored
- **Performance Criteria:** This project is a study. Successful configurations that will be considered for future restoration efforts would experience less mortality
- **Corrective Action(s):** This project is a study. Successful configurations that will be considered for future restoration efforts would likely experience less mortality

**Parameter: Oyster Density and Size Distribution**

- **Purpose:** The size and number of oysters on a reef provide information on population age structure
- **Method:** Quadrat (0.5 m²)
- **Timing and Frequency:** Annually at the end of growing season for 3 years
- **Sample Size:** Four quadrats/mound reef, three quadrats/furrow reef, and three quadrats/broadcast reef
- **Sites:** Nine mounds sites, three furrow sites and six broadcast sites
- **Performance Criteria:** This project is a study. Successful configurations that will be considered for future restoration efforts would experience less mortality
- **Corrective Action(s):** This project is a study. Successful configurations that will be considered for future restoration efforts would experience less mortality

**Parameter: Settlement**

- **Purpose:** To determine qualitative estimates of oyster recruitment throughout study period
b. Method: Use of settlement tiles and caged oyster shell  
c. Timing and Frequency: Placed prior to anticipated spawning and maintained through spawning season. Ties and cages will be sampled every 3 weeks  
d. Sample Size: Two cages with three settlement tile each per site  
e. Sites: Denton and east of E. Fowl River  
f. Performance Criteria: This project is a study. Successful configurations that will be considered for future restoration efforts would experience less mortality  
g. Corrective Action(s): NA

**Parameter: Water Temperature**

a. Purpose: Temperature may influence oyster distribution and their physiological rate processes such as feeding and growth rates  
b. Method: temperature probe  
c. Timing and Frequency: Continuous  
d. Sample Size: NA  
e. Sites: 2 sondes at each reef location, centrally located  
f. Performance Criteria: NA  
g. Corrective Action(s): NA

**Parameter: Salinity**

a. Purpose: Oyster reefs can be found along a salinity gradient. Changes in salinity may influence oyster spawning activities.  
b. Method: Collection via data sonde  
c. Timing and Frequency: Continuous  
d. Sample Size: NA  
e. Sites: 2 sondes at each reef location, centrally located  
f. Performance Criteria: NA  
g. Corrective Action(s): NA

**Parameter: Dissolved Oxygen**

a. Purpose: DO plays a role in oyster survival and growth  
b. Method: Collection via data sonde  
c. Timing and Frequency: Continuous  
d. Sample Size: NA  
e. Sites: 2 sondes at each reef location, centrally located at appropriate depths  
f. Performance Criteria: NA  
g. Corrective Action(s): More cultch may be added in areas where DO is measured at less than 4 mg/l for an extended period of time

**Parameter: Submission of Project Progress Report**

a. Purpose: Project progress report should provide details regarding insights gained as a result of the project including optimum reef materials needed to restore oyster density as well as the cost-benefits of deploying cultch in certain configurations as opposed to traditional cultch broadcast methods.  
b. Method: Progress report should accumulate, analyze, and synthesize data collected and any insights gained  
c. Timing and Frequency: 90 days following completion of monitoring activities in final year of project
The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oyster Density and size class distribution</td>
<td>1, 2, 3, 4</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Reef Dimensions</td>
<td>1, 2, 3, 4</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Settlement</td>
<td>1, 2, 3, 4</td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>Oyster Mortality</td>
<td>1, 2, 3, 4</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Water Temp</td>
<td>1, 2, 3, 4</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Salinity</td>
<td>1, 2, 3, 4</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DO</td>
<td>1, 2, 3, 4</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Project Progress Report</td>
<td>3, 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were effective techniques and methods identified? If so, how can they be utilized in future projects?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation/monitoring of this project?
- Were any new uncertainties identified?

**DATA MANAGEMENT**

**Data Description**

All data collected will follow the data standards as per the MAM Manual 1.0 ([DWH NRDA Trustees 2017a](#)). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

**Data Review and Clearance**

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and would ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

**Data Storage and Accessibility**

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

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state law (e.g., personally identifiable information under the Privacy Act or observer information collected under Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA), etc.) and therefore will not be publicly distributed.

**REPORTING**

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed. The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

**REFERENCES**

DWH NRDA Trustees. 2016. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


## MAM PLAN REVISION HISTORY

<table>
<thead>
<tr>
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<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL TIG RP II/EA version</td>
<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters</td>
<td>Draft to final</td>
<td>MAM_Plan__Oyster_Cultch_Relief_Reef_Configuration_6.1.18</td>
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</tbody>
</table>
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MONITORING AND ADAPTIVE MANAGEMENT PLAN
FOR DEEPWATER HORIZON NRDA PROJECT:
OYSTER HATCHERY AT CLAUDE PETEET MARICULTURE CENTER

PROJECT OVERVIEW
The Alabama Marine Resources Division (AMRD) is proposing to construct an oyster hatchery at AMRD’s Claude Peteet Mariculture Center (CPMC) in Gulf Shores and operate the facility within a four-year project period. The oyster spat produced as a result of this project will be used to encourage oyster recruitment in portions of Mobile Bay that has experienced reduced oyster production compared to the early 20th century. The objectives of this project are to produce spat to be used for oyster restoration projects in Alabama and to develop a comprehensive oyster restoration plan for coastal Alabama. Project components would also include remote setting and deployment from the MRD facility at Dauphin Island. Additionally, the project would result in the deployment of culch material, including spat on shell, to areas identified as suitable for oyster growth. Together, these activities aim to restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Project Type: Oysters
- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type Goal: Restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.
- Restoration Approach: Enhancement of regional hatchery capacity and remote setting facilities

Objective 1: Construct an oyster hatchery to produce spat that will be used to encourage oyster recruitment in portions of Mobile Bay that have experienced reduced oyster populations.

Objective 2: Deploy spat in portions of Mobile Bay that have experienced reduced oyster production compared to the early 20th century.

Objective 3: Develop a comprehensive oyster restoration plan for coastal Alabama.

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES
A conceptual model forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. Project activities include the construction of a hatchery facility and the subsequent deployment of spat to restore the larval pool in coastal Alabama. This project addresses losses in oyster production, and will result in increased oyster survival and reproduction in Alabama. In addition, the development of an oyster restoration plan will result in an increased understanding of local oyster populations, including larval transport and recruitment trends, as well as environmental factors that affect them. This information will be utilized in future restoration activities.

Sources of Uncertainty
Natural variability in ecological or physical processes have the potential to impact oyster survival. Whether the project is constructed as designed, on-time and on-budget is one source of uncertainty. Long-term funding for maintenance and operation of the facility is another source of uncertainty. The deployment of spat and subsequent attachment depends on the placement of spat in areas that are
conducive to oyster survival. The proposed approach is well documented and has been successfully implemented previously. In conjunction with the other potential initiatives under consideration by the TIG that would identify optimal locations and methods for ensuring recruitment, the project has a strong likelihood of contributing towards the AL TIG’s broad goal of increasing survivorship of oysters in Mobile Bay and Mississippi Sound. ADCNR’s commitment to fund continuing operation and maintenance at the facility after the funding for this project ends will further enhance the long-term benefits of the project.

PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

Parameter: Level of construction of facility to terms of contract and permit requirements

a. Purpose: On-site monitoring will be conducted during construction to ensure facility is constructed according to plans and to ensure that construction activities comply with the full set of environmental permit conditions
b. Method: On-site monitoring
c. Timing and Frequency: Monitoring will occur during all construction activities from start to completion; the project is expected to be completed within a 90-day time frame after notice to proceed
d. Sample Size: Dependent on frequency and duration of construction activities
e. Sites: Claude Peteet Mariculture Center, and Dauphin Island
f. Performance Criteria: Constructed as designed
g. Corrective Action(s): Resolution with contractor such that all contract terms and permit requirements are met

Parameter: Update of Oyster Restoration Plan

a. Purpose: The purpose of the comprehensive oyster restoration plan is to develop a long-term strategy to develop and sustain stable and resilient oyster populations in coastal Alabama.
b. Method:

1 See http://www.aces.edu/dept/fisheries/aumerc/AuburnUniversityShellfishLaboratory_000.php
c. Timing and Frequency: End of Year 1  
  d. Sample Size: NA  
  e. Sites: NA  
  f. Performance Criteria: Completed report by end of Year 1  
  g. Corrective Action(s): Revise and update as needed

Parameter: Hatchery Production  
  a. Purpose: Produce oyster spat on shell to enhance natural population  
  b. Method: Maintain and spawn oyster collected from Alabama waters in a hatchery  
  c. Timing and Frequency: Seven month spawning season beginning in the Spring  
  d. Sample Size: NA  
  e. Sites: Claude Peteet Mariculture Center and Dauphin Island  
  f. Performance Criteria: 65 million 10 day old spat/yr  
  g. Corrective Action(s): Acquire additional brood stock if production is lower than anticipated  
  and/or switch to a live algae production system for larval feeding

Parameter: Oyster Density and Size Class Distribution  
  a. Purpose: The size and number of oysters provide information on the efficacy of using hatcheries  
  to enhance oyster populations  
  b. Method: Patent tongs  
  c. Timing and Frequency: Annually at the end of growing season  
  d. Sample Size: Three Patent tong grabs/site  
  e. Sites: Deployment locations are TBD. Monitoring will not take place at hatchery facility  
  f. Performance Criteria: NA  
  g. Corrective Action(s): Consider alternate deployment locations as needed

Parameter: Oyster Mortality  
  a. Purpose: To understand how environmental conditions drive oyster mortality  
  b. Method: Calculated based on the number of dead and live oysters collected for Oyster Density  
  and size distribution parameter and documentation of potential cause of mortality (e.g. oyster  
  drill, low DO, etc.)  
  c. Timing and Frequency: Baseline at placement sites, then annually thereafter  
  d. Sample Size: Three Patent tong grabs/site  
  e. Sites: Deployment locations are TBD  
  f. Performance Criteria: Less than 50% per year  
  g. Corrective Action(s): Consider alternate deployment locations as needed

Parameter: Water Temperature  
  a. Purpose: Temperature may influence oyster distribution and their physiological rate processes  
  such as feeding and growth rates  
  b. Method: Discrete samples  
  c. Timing and Frequency: Conducted in association with deployment and annual sampling  
  d. Sample Size: NA  
  e. Sites: Deployment locations are TBD  
  f. Performance Criteria: NA  
  g. Corrective Action(s): NA
Parameter: Salinity

a. Purpose: Oyster reefs can be found along a salinity gradient. Changes in salinity may influence oyster spawning activities as well as disease and predation
b. Method: Discrete samples using a hand-held salinity/conductivity probe or refractometer
c. Timing and Frequency: Conducted in association with deployment and annual sampling
d. Sample Size: NA
e. Sites: Deployment locations are TBD
f. Performance Criteria: NA
g. Corrective Action(s): NA

Parameter: Dissolved Oxygen

a. Purpose: DO plays a role in oyster survival and growth
b. Method: A dissolved oxygen meter, water quality sonde or data logging system will be used to record measurement data taken with a DO sensor
c. Timing and Frequency: Conducted in association with deployment and annual sampling
d. Sample Size: NA
e. Sites: Deployment locations are TBD
f. Performance Criteria: NA
g. Corrective Action(s): NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Pre-execution monitoring will occur before project execution. Execution monitoring occurs when project has been fully executed as planned. Performance monitoring will occur in the year following initial project execution.

Table 1: Monitoring Schedule

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<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-Execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Post-Execution Monitoring (Years 1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of facility as designed</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hatchery Production</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oyster Density and Size Class Distribution</td>
<td>2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oyster Mortality</td>
<td>2</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Water Temp</td>
<td>2</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Salinity</td>
<td>2</td>
<td>X</td>
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<td>2</td>
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<tr>
<td>Update of Oyster Restoration Plan</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Trustees 2016, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

To increase the likelihood of successful deployment, this project would use information gained from mapping relic oyster reefs identified in the late 1960s as described in the Side-scan Mapping of Mobile Bay Relic Oyster Reefs Project. Information from areas mapped with side-scan technology in previous efforts and as part of another proposed project in this Restoration Plan would be assessed to determine suitability (i.e., hardness of bottom, sediment burden) for spat deployment. Side-scan images would be used to identify water bottoms suitable for cultch and spat placement in areas recognized as conditionally approved for oyster harvest, while other areas would be identified in conditionally restricted or restricted waters. Spat produced in the proposed hatchery would be deployed to both areas as conditions allow. Cultch material could also be deployed as needed.

If hatchery is not producing sufficient numbers of spat, methods will be evaluated and amended as needed. As stated above, the proposed approach is well documented and has been successfully implemented previously.

Additionally, this project would fund the development of comprehensive oyster restoration plan for Coastal Alabama. The plan would analyze existing literature, pull together data from previous and ongoing projects (including side-scan sonar, larval transport studies, and habitat suitability index), develop overall restoration goals and priorities, and provide specific recommendations to meet overall restoration goals and objectives.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation/monitoring of this project?

**DATA MANAGEMENT**

**Data Description**

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**Data Storage and Accessibility**

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**Data Sharing**

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**REPORTING**

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A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

**ROLES AND RESPONSIBILITIES**

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed. The Trustee Council facilitates consistency in monitoring and data management procedures and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

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<td>MAM_Oyster_Hatchery_Claude_Peteet_6.1.18</td>
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</tbody>
</table>
PROJECT OVERVIEW

This project would establish up to three protected oyster gardening program grow-out areas located in Grand Bay, Portersville Bay, and Bon Secour Bay and use these adult sized oysters for restoration reef placement. The project, to be conducted and managed by the Alabama Cooperative Extension System (ACES) in coordination with its other oyster gardening activities, would grow out oysters to at least 1 year old, place these oysters on existing reef sites, including existing complementary living shoreline sites in Mobile Bay and Mississippi Sound as well as clutched sites, and identify and prioritize future restoration reef locations (including nearshore living shorelines and intertidal reefs). Additionally, the project would include including monitoring the success in terms of oyster survival and reproduction of both the grow-out areas and restoration sites to determine effective techniques to increase the sustainability of oyster populations in Alabama.

RESTORATION TYPE GOALS AND PROJECT RESTORATION OBJECTIVES

- Programmatic goal: Replenish and Protect Living Coastal and Marine Resources.
- Restoration type: Oysters. Restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.
- Restoration approach: Restore oyster reef habitat.
- Restoration technique: Enhance Oyster Reef Productivity through Spawning Stock Enhancement Projects Such as Planting Hatchery-Raised Oysters, Relocating Wild Oysters to Restoration Sites, Oyster Gardening Programs, and Other Similar Projects.
- Restoration type goal: Restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.

Objective 1: Create up to three protected oyster gardening program grow-out areas.

Objective 2: Grow out oysters to one year old and place on existing reef sites.

Objective 3: Identify and prioritize future restoration reef locations (including nearshore living shorelines and intertidal reefs).

CONCEPTUAL SETTING AND ANTICIPATED OUTCOMES

A conceptual model forms the basis of this monitoring plan, and includes a summary of the project activities, the expected product or output of those activities and the desired project outcomes. Stressors negatively impact habitat condition and habitat relationships, resulting in loss of habitat, function or capacity. For this project, the specific stressors addressed include predation, loss of habitat and water quality issues (e.g., low dissolved oxygen) that results in poor spat recruitment. Activities including the placement of spat in designated grow out areas and placement of grow out oysters on reefs will result in increased settlement in grow-out areas, and an increase in abundance or larger class size oysters, as well as anticipated reduced predation by the oyster drill.

Sources of Uncertainty

Stressors like storms and changes in water quality may negatively impact the success of this project by disturbing grow-out structures. Predation is also a concern. Previous efforts have demonstrated that
oysters can be successfully grown “off-bottom,” although not using the specific techniques proposed by this project. The proposed initiative would further test the salinity and other environmental conditions under which grow-out can take place. The project would also provide a better understanding of the economics of these grow-out approaches. Additionally, the project would monitor the success of the grow-out areas at increasing the oyster larval pool nearby. Since this technique has not been used previously, the likelihood of success is unknown; however, in areas that currently have low densities of oyster larvae, such as Bon Secour Bay, it is likely that a dense aggregation of living, spawning age oysters will enhance the larval pool.

**PROJECT MONITORING, PERFORMANCE CRITERIA, POTENTIAL CORRECTIVE ACTIONS AND MONITORING SCHEDULE**

The proposed monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and identify potential corrective actions, if needed. For each of the monitoring parameters identified below, information is provided on the intended purpose of each monitoring parameter (e.g., monitor progress toward meeting one or more of the restoration objectives, regulatory compliance, support adaptive management of the project), monitoring methods, timing and frequency, duration, sample size, and sites. This section also describes applicable performance criteria and potential corrective actions for project parameters associated with project objectives.

The decision-making process requires a structured approach for incorporating new information gained from monitoring and evaluation. As specified in the NRDA regulations, performance criteria are used to determine restoration success or the need for corrective action (15 CFR 990.55(b)(1)(vii)). However, unanticipated consequences, previously unknown conditions or unanticipated environmental drivers uncovered during the evaluation step may also determine the need for corrective actions. The decision to implement a corrective action will holistically consider the overall outcomes of the restoration project by assessing the results of all monitoring parameters compiled in the evaluation step.

**Parameter: Number of oysters at grow-out site**

- **Purpose:** To understand if project is producing anticipated number of oysters
- **Method:** Estimate count
- **Timing and Frequency:** Annually at the end of growing season
- **Sample Size:** up to 3 grow out sites (300 square feet / site)
- **Sites:** Up to 3 grow-out sites
- **Performance Criteria:** 40,000 oysters / grow out site per year
- **Corrective Action(s):** Supplement with additional hatchery grown oysters

**Parameter: Oyster mortality (grow-out and placement sites)**

- **Purpose:** To understand how environmental conditions drive oyster mortality
- **Method:** Calculated based on the number of dead and live oysters collected for Oyster Density and size distribution parameter and documentation of potential cause of mortality (e.g oyster drill, low DO, etc.)
- **Timing and Frequency:** Baseline at placement sites, annually for grow-out and placement sites for Years 2-5 at end of growing season
- **Sample Size:** 3 grow out sub-sites per area (75 square feet per site)

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1See [http://www.aces.edu/pubs/docs/A/ANR-1207/index2.tmpl](http://www.aces.edu/pubs/docs/A/ANR-1207/index2.tmpl)
e. Sites: Up to 3 grow-out sites  
f. Performance Criteria: Less than 50% per year  
g. Corrective Action(s): Structures will be retrofitted with effective predator controls as needed

**Parameter: Oyster density and size class distribution (placement sites)**

a. Purpose: The size and number of oysters on a reef provide information on population age structure  
b. Method: Quadrat  
c. Timing and Frequency: Baseline at placement sites, Annually at placement sites for Years 2-5 at end of growing season  
d. Sample Size: Placement areas are TBD and number and size of quadrats will be determined based on placement site  
e. Sites: Placement areas are TBD  
f. Performance Criteria: TBD  
g. Corrective Action(s): Choose different sites if there is high mortality

**Parameter: Spat settlement**

a. Purpose: To understand if project is resulting in increased settlement over time  
b. Method: Settlement tiles or French Tubes  
c. Timing and Frequency: Annually for grow-out sites for Years 2-5 at end of growing season  
d. Sample Size: At least three tiles or tubes per grow-out site  
e. Sites: Up to 3 grow-out sites  
f. Performance Criteria: Positive evidence of settlement  
g. Corrective Action(s): NA

**Parameter: Water temperature**

a. Purpose: Temperature may influence oyster distribution and their physiological rate processes such as feeding and growth rates  
b. Method: thermometer or temperature probe  
c. Timing and Frequency: Discrete sampling in conjunction with other monitoring activities  
d. Sample Size: NA  
e. Sites: Up to 3 grow-out areas  
f. Performance Criteria: NA  
g. Corrective Action(s): NA

**Parameter: Salinity**

a. Purpose: Oyster reefs can be found along a salinity gradient. Changes in salinity may influence oyster spawning activities  
b. Method: Discrete samples with hand-held probe  
c. Timing and Frequency: Discrete sampling in conjunction with other monitoring activities  
d. Sample Size: NA  
e. Sites: Up to 3 grow-out areas  
f. Performance Criteria: NA  
g. Corrective Action(s): NA

**Parameter: Dissolved Oxygen**

a. Purpose: DO plays a role in oyster survival and growth  
b. Method: dissolved oxygen meter, water quality sonde or data logging system
c. Timing and Frequency: Discrete sampling in conjunction with other monitoring activities
d. Sample Size: NA
e. Sites: Up to 3 grow-out areas
f. Performance Criteria: NA
g. Corrective Action(s): NA

The schedule for project monitoring is shown in Table 1, separated by monitoring activity. Performance monitoring will begin with baseline monitoring (as-built, Year 0) and continue through Year 5. This schedule may be revised as needed depending on changing site conditions over time.

Table 1: Monitoring Schedule

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Objective</th>
<th>Pre-execution Monitoring</th>
<th>As-Built (Year 0)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of oysters at grow-out site</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Oyster density and size class distribution</td>
<td>2, 3</td>
<td>X (placement sites only)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Oyster mortality</td>
<td>2, 3</td>
<td>X (placement sites only)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Spat Settlement</td>
<td>1, 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water temperature</td>
<td>1, 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Salinity</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>1, 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
ADAPTIVE MANAGEMENT

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer & Llewellyn 2000). Although adaptive management is a critical component of the restoration plan as a whole, the need for adaptive management may vary on a project-by-project basis. Some projects may be well understood and not have uncertainties which warrant adaptive management. The monitoring and adaptive management framework may be more robust for elements of the restoration plan with high degrees of uncertainty or where numerous restoration projects are planned within a given geographic area and/or for the benefit of a particular resource (Trustees 2016, Appendix 5.E.1, PDARP/PEIS). Under OPA NRDA regulations, restoration projects clearly identify performance criteria that would be used to determine project success or the need for corrective action.

Periodic maintenance may be necessary following severe weather events or other situations that would disturb the grow-out sites. If the structures were disturbed, they would need to be repaired and/or reinstalled. Further, the grow-out sites would be adaptively managed over time to retrofit the structures with the most effective predator controls. ACES would work with the AL TIG, AMRD, and other restoration practitioners to determine the need for additional locations for other oyster gardening program grow-out sites if needed.

This project consists of a feasibility assessment of an alternative approach to restoring oyster resources. This project would fill an important data gap by determining how best to reduce predation on oyster populations in Alabama, which would provide information that is easily transferrable to other northern Gulf States and decrease uncertainties for future implementation activities. If the alternative is successful, it could lead to the development of new restoration methods.

EVALUATION

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were effective techniques to increase the sustainability of oyster populations in Alabama identified?
- Did the restoration project produce unanticipated effects?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized? What broader insights might be gained from implementation/monitoring of this project?

DATA MANAGEMENT

Data Description

All data collected will follow the data standards as per the MAM Manual 1.0 (DWH NRDA Trustees 2017a). To the extent practicable, all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, then Project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs will be retained by the Implementing Trustee. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All field datasheets and notebook entries will be scanned to PDF files.

All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

Data Review and Clearance

After transcription of the data, a second person not associated with data transcription will perform a verification of the data in the electronic data sheets against the original hardcopy datasheets and/or notebooks, and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees will verify and validate monitoring data and information and ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata. All data will undergo proper QA/QC protocols, be reviewed and verified following the process outlined in Section 3 of the MAM Manual Version 1.0. Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.

Data Storage and Accessibility

Once all data have been verified by quality assurance/quality control procedures, they will be submitted to the DIVER Restoration Portal. Trustees will provide DWH NRDA MAM data and information to the Restoration Portal as soon as possible and no more than one year from when data are collected.

Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface within a year of when the data collection occurred.
REPORTING

Annual MAM reports describing results of project monitoring and evaluation will be made publicly available, in accordance with the Federal Open Data Policy (Section 10.6.6 of SOP; DWH NRDA Trustees 2016b), through the DIVER Explorer Interface.

A final MAM report for the project will be developed prior to project closeout and submitted to the DIVER Restoration Portal.

Roles and Responsibilities

ADCNR is the lead Trustee agency for this project, and will ensure that the project is completed.

The project would be conducted and managed by the Alabama Cooperative Extension System (ACES).

The Trustee Council facilitates consistency in monitoring and data management procedures to evaluate and report on progress towards meeting restoration goals articulated in the PDARP/PEIS.

REFERENCES

DWH NRDA Trustees. 2016. Deepwater Horizon oil spill: final programmatic damage assessment and restoration plan (PDARP) and final programmatic environmental impact statement (PEIS).


## MAM PLAN REVISION HISTORY

<table>
<thead>
<tr>
<th>Old File Name</th>
<th>Revision Date</th>
<th>Changes Made</th>
<th>Reason for Change</th>
<th>New File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL TIG RP II/EA version</td>
<td>6/1/2018</td>
<td>Draft to final version; Added detail to parameters; removed parameter for oyster density</td>
<td>Draft to final</td>
<td>MAM_Establishment_of_oyster_grow_out_6.1.18</td>
</tr>
</tbody>
</table>
Appendix C:

Master Database
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Objective</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat enhancement, restoration, and preservation of beach and dune systems of coastal Alabama</td>
<td>Hendrik Snow/Alabama Coastal Heritage Trust</td>
<td>Fort Morgan</td>
<td>429,800</td>
<td>Objective 1: Fee simple purchase or perpetual conservation easement of critical beach and dune habitat. Activity: Critical habitat will be targeted for preservation within Bon Secour NWR and other parcels with habitat connectivity for the Alabama Beach Mouse (ABM), sea turtles, and migratory birds. Many of these parcels have been previously identified and landholder willingness is known. Lands will be held and managed by ACHT and partners pending potential conveyance to Bon Secour NWR or ADOCNR. Outcome: 40 acres protected into perpetuity.</td>
<td>Fort Morgan, Gulf Shores, and Lee County where suitable dune systems exist. Each parcel identified for acquisition has an appropriately sized buffer of dune systems in order to speed dune recovery and promote resiliency.</td>
</tr>
<tr>
<td>Objective 2: Enhancement and restoration of beach and dune habitat activity. • Enhance current successful Dune Plant Restoration Program run by the Baldwin County Soil and Water Conservation District, to further provide native dune plants and sand-trapping fencing to private residents on a cost-share basis following hurricane/storm impacts or other damage to dune systems. • Restore ABM habitat on public lands (e.g., Bon Secour NWR and/or Gulf State Park) through plantings, sand-trapping fencing and through control of invasive plant species. • Monitor success of restoration on private lands for ABM populations.</td>
<td>This would complement Phase 1, NRDA Early Restoration Projects – Alabama Dune Restoration Cooperative Project that focused on primary dunes by extending restoration efforts to secondary and tertiary dune restoration within the range of the ABM and elsewhere including Gulf State Park. Outcome: 75 acres of habitat restored through invasive plant species removal. 100+ private landholders utilizing Dune Plant Program.</td>
<td>Objective 3: Improve quality of sea turtle nesting beach habitat. Activity: On a cost sharing basis, retrofit outdoor lighting and window tinting on private homes to increase sea turtle nesting success. This will expand on the Phase 2 NRDA Early Restoration Project, Restoring the Night Sky, which aimed to reduce artificial lighting impacts to sea turtles on State-owned beaches by including private parcel participation. • Increase the Share the Beach Sea Turtle Volunteer Program to better identify and protect active sea turtle nests, as well as post signage and public information services soliciting the cooperation of the public in protecting such nests. Outcome: 10 miles of private beach-front property retrofitted for lighting and/or window tinting and increase in volunteers for data collection and nest protection.</td>
<td>429,800</td>
<td></td>
<td></td>
</tr>
</tbody>
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Objective 2: Enhancement and restoration of beach and dune habitat activity. • Enhance current successful Dune Plant Restoration Program run by the Baldwin County Soil and Water Conservation District, to further provide native dune plants and sand-trapping fencing to private residents on a cost-share basis following hurricane/storm impacts or other damage to dune systems in order to speed dune recovery and promote resiliency. • Restore ABM habitat on public lands (e.g., Bon Secour NWR and/or Gulf State Park) through plantings, sand-trapping fencing and through control of invasive plant species. • Monitor success of restoration on private lands for ABM populations. | This would complement Phase 1, NRDA Early Restoration Projects – Alabama Dune Restoration Cooperative Project that focused on primary dunes by extending restoration efforts to secondary and tertiary dune restoration within the range of the ABM and elsewhere including Gulf State Park. Outcome: 75 acres of habitat restored through invasive plant species removal. 100+ private landholders utilizing Dune Plant Program. | Objective 3: Improve quality of sea turtle nesting beach habitat. Activity: On a cost sharing basis, retrofit outdoor lighting and window tinting on private homes to increase sea turtle nesting success. This will expand on the Phase 2 NRDA Early Restoration Project, Restoring the Night Sky, which aimed to reduce artificial lighting impacts to sea turtles on State-owned beaches by including private parcel participation. • Increase the Share the Beach Sea Turtle Volunteer Program to better identify and protect active sea turtle nests, as well as post signage and public information services soliciting the cooperation of the public in protecting such nests. Outcome: 10 miles of private beach-front property retrofitted for lighting and/or window tinting and increase in volunteers for data collection and nest protection. | 429,800 |

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<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Cost</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLM Fort Morgan &quot;Our Road&quot; Acquisition 205 Bruce Dawson Fort Morgan 7498000</td>
<td>The Department of the Interior’s Bureau of Land Management (BLM) is proposing to acquire approximately 5.89 acres of property on Our Road, Fort Morgan, AL. The project aims to acquire a 0.33-acre tract that currently has an abandoned house on the property, and 5.56 acres that are part of a road. The acquisition of this property would result in the purchase of one of the few remaining &quot;large&quot; tracts on the Fort Morgan Peninsula.</td>
<td>24,000</td>
<td><em>Objective:</em> To increase the size of property on Our Road, Fort Morgan, AL. Activity: Acquisition of property, removal of abandoned home and monitoring the Alabama beach mouse. Outcome: Protect 5.89 acres of beach/dune habitat for endangered species (Alabama beach mouse, three species of nesting sea turtles, and migratory birds and shorebirds) and to connect 26.32 acres of BLM-administered land and Bon Secour NWR. There are few properties left on the Fort Morgan Peninsula that are available for purchase that provide connectivity to other protected lands on Fort Morgan. The three Our Road Tracts are an opportunity to acquire approximately 5.89 acres of designated critical habitat for the endangered Alabama beach mouse that connect to 26.32 acres of Bureau of Land Management (BLM) property along the Fort Morgan Peninsula. One property owner owns the three tracts. The first tract contains about 0.33 acres and currently has an abandoned house on the property. This is Gulf beachfront habitat that would usually consist of primary and secondary dunes. The second tract of land, adjacent to the first, is 1.26 acres of primary and secondary dunes that has never been developed. Some restoration activities can easily bring back these dunes systems on these tracts. The third tract has never developed and contains well-developed secondary dunes and scrub dunes. All three tracts are connected by a 66-ft right-of-way held by Baldwin County (0.62 acres), however, the county has no plans to install a road. The acquisition of 5.89 acres would consolidate 32.21 acres of beach, coastal dunes and scrub into public ownership, benefiting federally listed species, increasing connectivity across these habitats, providing essential access for the beach visitors in a manner that protects coastal dunes, and offering opportunities for public education on the value of coastal scrub and dune habitats.</td>
<td><em>Project is consistent with programmatic recreation goals (Y/N):</em> Yes</td>
<td><em>Project is consistent with criteria related to public access (Y/N):</em> Yes</td>
<td>Project delivers benefits cost-effective (+ / 0 / -)</td>
<td>Project is consistent with criteria related to public access (Y/N): Yes</td>
</tr>
</tbody>
</table>
Sea turtles play a vital role in Alabama’s coastal dune and marine ecosystems. They are also a major source of ecotourism for the region. Many marine turtle species that frequent the Alabama coastline are highly endangered due to human impacts on the environment. Following the Deepwater Horizon (DWH) oil spill in 2010, widespread sea turtle mortality was reported on beaches and in the open water.

Since 2010, the Sea Turtle Stranding Network (STSSN), coordinated by NOAA, has documented a large number of oiled and stranded turtles on the northern Gulf coast, including in Alabama. During the recent 2016 Southeastern Sea Turtle Annual Meeting (SESTER 2016) in Mobile, the many participating scientists and regional stakeholders all voiced the same two concerns: (1) that there was insufficient data prior to the spill to determine the magnitude of sea turtle injury; (2) that there is insufficient data to determine the long-term effects of the spill on sea turtle populations. We will address these issues by conducting a multi-year monitoring program on the health and disease status of sea turtles on beaches and in coastal waters of Alabama and nearby states, including beach nest monitoring and sea turtle stranding, and training program will coordinate closely with other sea turtle programs in the region. We will address these issues by conducting a multi-year monitoring program on the health and disease status of sea turtles on beaches and in coastal waters of Alabama and nearby states, including beach nest monitoring and sea turtle stranding.

We will partner with a range of conservation organizations, government, and universities. Our surveillance and training program will coordinate closely with other sea turtle programs in Alabama and other states, including beach nest monitoring and sea turtle stranding to maximize the outcomes for sea turtle health and conservation.
As we stated in Project ID 208, there is a significant need for a permanent, full time wildlife rehabilitation program and facility in the Baldwin County area. While Orange Beach, Gulf Shores, Foley and Fort Morgan all still have the desire to proceed with the larger project requested in Project ID 103, Orange Beach has taken steps to develop a wildlife program and construct a federally permitted rehabilitation facility (permit pending in Atlanta office as of this date) suitable for the intake of all species. While the facility is small, it is well equipped and positioned well. Regionally speaking Orange Beach and the new facility are located in the heart of the Mississippi flyway and still catch a fair portion of the Atlantic Flyway migration routes. The annual migration coupled with our coastline’s significance to shorebirds, seabirds and waterfront alike make Orange Beach an ideal location for a rehabilitation and education program. We have been very successful in our partnerships with “Share The Beach” and Dauphin Island Sea Lab (IMMS) as it relates to Sea Turtle and Marine Mammal rescue and conservation efforts. The program is off to an excellent start and receiving a great deal of support so we expect that it will result in a similar success.

The proposed project will allow for the expansion of the program facilities. The current facility allows for short to intermediate term rehab of all species but, lacks the current flight/aquatic enclosures necessary to fully rehabilitate certain species. The agreements and relationships with other permitted facilities such as the Southeastern Raptor Center, Environmental Studies Center, Big Bend Wildlife Sanctuary we utilize their infrastructure. This places a need on both our program and the partnering facilities. If funding were awarded it would be utilized to construct the necessary large flight/aquatic enclosures for pre-release conditioning. This would allow our program to fully rehabilitate without the time, funding, manpower and resources dedicated to the transportation and transfer of these animals while also freeing up resources at our partnering facilities. In addition to these rehabilitation facilities we would like to expand the educational component of the program. Education and outreach are the key to reducing many of the injuries and entanglements that we see. We also plan to construct appropriate sized enclosures for permitted educational animals to be utilized in our educational program.

This project will improve sea turtle nesting habitat along the Alabama Gulf Coast by establishing a program to replace beach equipment currently utilized by existing licensed beach service businesses with removable, turtle-friendly beach chair sets. The 45 miles of sandy beaches along the Alabama coast are known nesting habitat for three species of sea turtle: the Loggerhead (Caretta caretta), the Green (Chelonia mydas), and the Kemp’s Ridley (Lepidochelys kempii). All three species are federally protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1533 et seq.). Sea Turtle populations in the Gulf of Mexico were significantly impacted by the Deepwater Horizon Oil Spill in 2010. Over 600 sea turtles were found dead during the oil spill response effort. Alabama’s Gulf Coast is a major U.S. tourist destination, attracting some 5.7 million visitors annually. Historically, licensed beach service providers have been allowed...
In-place solid construction type, double wooden lounger sets at specific locations for the duration of the tourist season. In 2015, there were five licensed beach services in operation in Baldwin County, with a total of 3365 loungers. The average width of a wooden lounger set is approximately 6 feet, and placed side by side the total linear beach front impacted by loungers is approximately 3.8 miles, or 11.8 percent of the total linear beach frontage of Baldwin County. There were 36 reported incidents of obstruction to nesting turtles along the Alabama Gulf coast from 2012-2015, for an average of 9 per year. Obstructions included wooden loungers, tents and poles, surf boards, smaller chairs, umbrellas, and floats/toys. In 2015, as part of an effort to improve nesting habitat and promote cleaner beaches, the Cities of Gulf Shores and Orange Beach enacted regulations that require the removal of all personal property from the beach daily from sunset to sunrise. This new proposal will further improve nesting habitat by requiring the removal of commercial beach equipment from the beaches daily, while minimizing the economic effects for established businesses.

Wooden beach lounger sets will be replaced with collapsible chair sets that can be folded up and removed daily. The program will require the replacement of 3365 double lounger sets with 6,730 collapsible beach chairs, at an estimated cost of $1,480,000, and will be administered by the two Cities.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and monitoring of sea turtles in Alabama waters</td>
<td>As stated in the Comprehensive Restoration Plan: &quot;Information on sea turtle spatiotemporal distribution, migration patterns, life history parameters, and habitat use is critical for interpreting population trends, improving sea turtle population models, and helping assess progress toward recovery goals. Furthermore, monitoring and scientific support will be important for evaluating the effects of restoration actions on sea turtle recovery from injuries associated with the spill&quot;. Little is known about juvenile turtles in the northern Gulf of Mexico although the limited research that has been conducted suggests this area supports a large number of individuals (see Turtle Expert Working Group 2009, NMFS et al. 2011). Marine turtles spend the majority of their lives at sea, yet little is known about their oceanic life compared to the biology of females and hatchlings on coastal nesting beaches. In addition, population modeling has shown that the juvenile life stage is the most critical to the stability and recovery of sea turtle populations (Crouse et al. 1987). Recovery plans for the three most common species in the northern Gulf of Mexico, loggerheads, Kemp’s ridleys and greens, all include monitoring of juveniles to nesting females.</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Notice (Y/N)</td>
<td>Project benefits cost-effective (Y/N)</td>
<td>Project readiness (+/0/-)</td>
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<tr>
<td>South Alabama (SA)</td>
<td>Margaret Lamont</td>
<td>Gulf of Mexico</td>
<td>230000</td>
<td>To initiate a long-term monitoring program for sea turtles in coastal and nearshore waters of Alabama that will describe the 1. distribution 2. movements and habitat use 3. vital rates 4. health 5. connectivity, and 6. potential impact of anthropogenic activities on turtles using Al waters All activities are currently permitted under NMFS permit 17604. We propose to capture turtles at several sites along the Al coast using several techniques. Samples such as blood, skin and scute will be gathered and all individuals will receive an acoustic transmitter. In addition, acoustic receivers will be deployed along the coast. These receivers will complement those being deployed as part of the NPS project.</td>
<td>AL Portal N N N N Y Y Y</td>
</tr>
</tbody>
</table>
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By Project Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dauphin Island</td>
<td>348</td>
<td>Callaway Cawiway</td>
<td>Dauphin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hart et al. (2013)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Project Description

Together, they will form a regional array that will allow documentation of turtle movements across the northern Gulf.

### Restoration Types Addressed

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
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<td>Project meets Trustees' goals (+/-)</td>
<td>Project is time critical (+/-)</td>
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<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<td>Project prevents future and collateral injury to natural resources and services (+/-)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/-)</td>
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<td>Project is consistent with overall mission and mission-related goals (Y/N)</td>
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<td>Project is not already required by existing regulations (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
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<td>Project is technically feasible (+/-)</td>
<td></td>
<td>Project readiness (+/-)</td>
<td>Project is technically feasible (+/-)</td>
</tr>
<tr>
<td>Project sustainability/long-term benefit of project (+/-)</td>
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<td>Project offers opportunities for external funding &amp; collaboration (+/-)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/-)</td>
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<tr>
<td>Project is consistent with ongoing or planned regional or local programs (Y/N)</td>
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<td>Project readiness (+/-)</td>
<td>Project readiness (+/-)</td>
</tr>
<tr>
<td>Project contributes to the core mission of the Trustees (Y/N)</td>
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<tr>
<td>Project has reasonable probability of success (+/-)</td>
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<td>Project readiness (+/-)</td>
<td>Project readiness (+/-)</td>
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<tr>
<td>Project delivers benefits cost-effectively (+/-)</td>
<td></td>
<td>Project is not already fully funded (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
</tr>
</tbody>
</table>

### Acquire approximately 799 acres of vitally important beach/dune habitat at the West End of Dauphin Island. Dauphin Island is among the very last undeveloped beachfront property and the only true barrier island remaining in Alabama. The willing seller is providing an unprecedented opportunity to protect approximately nine miles of Gulf front property on the south and Mississippi Sound to the north. The western end of Dauphin Island encompasses a diversity of marine habitats - sweeping dunes, salt marsh, and beach flats. It is utilized by three species of sea turtles (threatened Loggerhead sea turtle, threatened Green sea turtle, and the endangered Kemp’s ridley) for both sustenance and nesting grounds. The surf zone is a feeding habitat for the federally listed threatened Piping plover. The beach and dune area serve as nesting habitat for the endangered Least tern. As a barrier island, Dauphin Island is important not only for its ability to protect Mobile County from flooding and storm impacts, it protects the economically important Bayou La Batre Ship Channel, a containing a growing seafood industry and important oil and gas industry located in the Mississippi Sound and Mobile Bay. Preservation of barrier islands enhances community resilience or all of Coastal Alabama through mainland protection from flooding and reducing impacts from hurricanes, providing an even greater economic benefit to the state.

Even with challenges to developing this section of land, it is vitally important to pull it out of private hands and put it into public ownership. The state cannot force a private owner to managed lands in a way that would protect the birds and turtles or completely limit development. Public ownership, however, protects the land for future generations, allows for optimal habitat management and opens the land up to additional funding sources to pay for that management.

While the entire nine miles is not easily accessible by car, the area has unparalleled beauty that can provide public access and tourism opportunities for future generations to see Alabama’s beautiful beach and dune habitat by boat or foot. Overall, acquiring this parcel would provide several substantial benefits including: habitat protection for ESA-listed and endangered species, increase ecotourism and educational outreach opportunities, and ensure the protection of an important barrier island to valuable inland estuaries and vital economic resources.

### Sea turtle genetics: Refining population estimates and assessing stock structure for threatened loggerheads

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By Project Lead</th>
<th>Location</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Kristin Hart &amp; Margaret M. Lamont</td>
<td>31550</td>
<td>Callaway Coastal AL, FL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current estimates of subpopulation size for Northern Gulf of Mexico loggerheads were derived using general information on nest abundances, clutch frequency and breeding intervals often gathered from other subpopulations (Richards et al. 2011). Therefore, the accuracy of current estimates of abundance (N) for this subpopulation is in question. In addition to improved information on reproductive parameters for this nesting group (i.e. clutch size, remigration intervals; Lamont et al. 2012, Lamont et al. 2014)) for use in population models, we also have samples from individual nesting females gathered during recent studies (Lamont et al. 2012, Hart et al. 2013) available for immediate genetic analyses. Population modeling would allow for re-estimation of abundance and improvement of demographic parameters for the Northern Gulf of Mexico loggerhead.

### Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)

1. The effect of the project alternatives on public health and safety (+/-)  
2. Project is not already required by existing regulations (Y/N)  
3. Project readiness (+/-)  
4. Project is technically feasible (+/-)  
5. Project sustainability/long-term benefit of project (+/-)  
6. Project offers opportunities for external funding & collaboration (+/-)
Sea turtles using coastal AL, FL panhandle area supports a large number of individuals (see Turtle Expert Working Group 2009, see Turtle Expert Working Group 2012, 2014) may indicate an overall decline in the number of individuals in this already small subpopulation. Small population sizes can lead to the loss of genetic variation, low Ne inbreeding depression, and ultimately reduced population fitness and adaptive potential. Additionally, diversity is lost and inbreeding is increased during population size fluctuations. Diversity recovers at a much slower rate than the population’s census size-making estimates of both the number of living individuals and the genetic diversity within a subpopulation critical. Genetic samples from nesting loggerhead females have been collected and archived as part of USGS K. Hart and M. Lamont’s long-term mark-recapture projects in Alabama and Northwest Florida. Specifically, loggerhead tissue samples are available for 416 individuals from the Northern GoM (N + 73 from Alabama, N = 343 from Florida). All NOKA funds would be used towards analysis of all genetic samples collected to date, plus those to be collected in 2016 at both study sites. Objectives and specific proposed activities 1. Define effective population size (Ne) for northern GoM loggerheads using archived samples and samples collected during the 2016 nesting season. 2. Define genetic diversity and inbreeding levels in N GoM loggerheads using archived samples and samples collected during the 2016 nesting season. 3. Use updated reproductive parameters for the N GoM subpopulation to conduct population modeling and estimate population abundance (N). Specific proposed activities include extraction of DNA for all samples, with analysis of DNA for mitochondrial and microsatellite DNA variation, effective population size, and inbreeding levels. We will work with colleague Dr. Brian Shamblin at the University of Georgia, with whom USGS has a current CESU agreement. In addition, we will use published recapture/provenance data for AL and FL loggerheads (including 2016 data) for analysis of capture probability and apparent survival, as well as population abundance (M. Lamont to conduct analyses). We anticipate that 2 peer-reviewed manuscripts will result from this work.

Research and monitoring of sea turtles using Alabama waters

Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Submitted By Primary Lead</th>
<th>Location</th>
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<tr>
<td>Research and monitoring of sea turtles using Alabama waters</td>
<td>12882</td>
<td>Margaret M. Lamont &amp; Kristen Hart</td>
<td>coastal AL, FL panhandle</td>
<td>230000</td>
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</table>

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Submitted na</th>
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</thead>
<tbody>
<tr>
<td>coupled with genetic analyses would provide more accurate estimates of both population size (N) and effective population size (Ne) for this small subpopulation. Currently declining nest abundance in the Northern GoM subpopulation (Lamont et al. 2012, 2014) may indicate an overall decline in the number of individuals in this already small subpopulation. Small population sizes can lead to the loss of genetic variation, low Ne inbreeding depression, and ultimately reduced population fitness and adaptive potential. Additionally, diversity is lost and inbreeding is increased during population size fluctuations. Diversity recovers at a much slower rate than the population’s census size-making estimates of both the number of living individuals and the genetic diversity within a subpopulation critical. Genetic samples from nesting loggerhead females have been collected and archived as part of USGS K. Hart and M. Lamont’s long-term mark-recapture projects in Alabama and Northwest Florida. Specifically, loggerhead tissue samples are available for 416 individuals from the Northern GoM (N + 73 from Alabama, N = 343 from Florida). All NOKA funds would be used towards analysis of all genetic samples collected to date, plus those to be collected in 2016 at both study sites. Objectives and specific proposed activities 1. Define effective population size (Ne) for northern GoM loggerheads using archived samples and samples collected during the 2016 nesting season. 2. Define genetic diversity and inbreeding levels in N GoM loggerheads using archived samples and samples collected during the 2016 nesting season. 3. Use updated reproductive parameters for the N GoM subpopulation to conduct population modeling and estimate population abundance (N). Specific proposed activities include extraction of DNA for all samples, with analysis of DNA for mitochondrial and microsatellite DNA variation, effective population size, and inbreeding levels. We will work with colleague Dr. Brian Shamblin at the University of Georgia, with whom USGS has a current CESU agreement. In addition, we will use published recapture/provenance data for AL and FL loggerheads (including 2016 data) for analysis of capture probability and apparent survival, as well as population abundance (M. Lamont to conduct analyses). We anticipate that 2 peer-reviewed manuscripts will result from this work.</td>
<td>Submitted na</td>
</tr>
</tbody>
</table>
### Project Description

We propose to capture turtles at several sites along the AL coast including inshore and nearshore waters of the Gulf of Mexico using several techniques. Morphometric data including size and weight will be gathered from all captured turtles and a visual health assessment will be conducted. Biological samples including blood, skin and scale will be gathered from each individual. In addition, all captured individuals will receive an acoustic transmitter. In addition to turtle captures, acoustic receivers will be deployed along the AL coast. The exact location of receiver placement will be determined in year one. These receivers will complement the receivers being deployed as part of the NPS project in GULF waters. Together, these receivers will form a regional array that will allow documentation of turtle movements across the northern GoM. This array will also be beneficial to other species being tracked via acoustic tags, additional acoustic receivers and tags, and resources such as housing. Leveraging funds from these projects allows us to do more with the limited funds available. The objectives of this project are to initiate a long-term monitoring program for sea turtles in coastal and near shore waters of Alabama. The goals of this project are to determine: 1. distribution of movements and habitat use 2. vital rates, including survival rates 4. baseline health 5. connectivity 6. potential impact of anthropogenic activities on turtles using AL waters. Methods used to address these goals will include: 1. acoustic tracking 2. genetic analyses 3. stable isotopes analyses 4. mark-recapture 5. health assessments 6. habitat modeling 7. including anthropogenic activities. All turtle captures, sampling and tracking are currently permitted under NMFS permit 17304 issued to K. Hart. The project propose to capture turtles at several sites along the AL coast including inshore waters (such as Perdido Bay, Bon Secour Bay and Mississippi Sound) and the nearshore waters of the Gulf of Mexico using several techniques. Mammographic data including size and weight will be gathered from all captured turtles and a visual health assessment will be conducted. Biological samples including blood, skin and scale will be gathered from each individual. In addition, all captured individuals will receive an acoustic transmitter. In addition to turtle captures, acoustic receivers will be deployed along the AL coast. The exact location of receiver placement will be determined in year one. These receivers will complement the receivers being deployed as part of the NPS project in GULF waters. Together, these receivers will form a regional array that will allow documentation of turtle movements across the northern GoM. This array will also be beneficial to other species being tracked via acoustic tags such as sturgeon, sharks, and rays. Success of this project will be determined by the deployment of the acoustic array, capture of at least 10 turtles per year in Alabama waters, and detection of project turtles on acoustic receivers. We see this project as the start of a long-term monitoring program for turtles in Alabama waters.

### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Estimating vital rates of loggerheads in the northern Gulf of Mexico using traditional mark-recapture and genetics</td>
<td>12861</td>
<td>Margaret Lemat/ Kristen Hart</td>
<td>coastal AL, FL</td>
<td>N/C</td>
</tr>
</tbody>
</table>

**Project Description:**

| The Western Atlantic population of loggerhead turtles (Caretta caretta) is one of the world's largest, with nesting activity that ranges from Virginia south to the Gulf Coast of Texas (NMFS and USFWS 2008). Genetic studies have divided this population into 3 Recovery Units (RUs: TVNG 2007) and 10 distinct management units (Shamblin et al. 2012) with varying reproductive output by group (Hart et al. 2010; Tucker 2010; Lament et al. 2012). Current estimates of abundance for these loggerhead subpopulations (Richards et al. 2013) were derived using nest abundance, clutch frequency and breeding interval; however for nesting groups where these data were not available, such as the northern Gulf of Mexico, estimates from other subpopulations were used. However, recent studies have highlighted differences among these subpopulations (Lament et al. 2012, Hart et al. 2013, Hart et al. 2014). |
et al. 2014), which suggests that these estimates may not be accurate. Although critical for population modeling and management, vital rates are still lacking for many nesting groups. Recent studies have highlighted the challenges to population modeling for this nesting group (Lamont et al. 2014). Hart et al. (2013) used satellite tracking to show that individuals in this subpopulation exhibit relatively low nesting site fidelity and make frequent long-distance movements within the entire region. Because of the intensity of effort, high costs, and increasingly difficult logistics involved in saturation tagging and due to the low site fidelity expressed by this nesting group, we propose that saturation tagging alone is not the best method to assess vital rates for this subpopulation. Again, nightly tagging of individuals is still necessary; mark-recapture data provide more than vital rates and these projects allow access to biological samples that give us information on health, genetics, and foraging behavior of these individuals (Shamblin et al. 2012, Vander Zanden et al. 2015). However, we suggest that combining genetic sampling with a shortened tagging season will provide the most accurate estimates of vital rates for this nesting group of loggerheads. Eggs sampled within a day of oviposition yield maternal genomic DNA and permit genetic tagging of individual females through microsatellite genotyping (Shamblin et al. 2011). This method alleviates the need to physically intercept females and makes it possible to sample over large geographical areas that would be logistically impossible to cover with night patrols. Genetic tagging provides reproductive parameter data analogous to flipper tagging, permitting subpopulation wide estimates of nesting female population size, clutch frequency, and nest site fidelity in the short-term. Long-term genetic tagging can address nematogon and adult female annual survival with the added bonus of directly assessing recruitment through matching daughters to their mothers. The genetic tagging approach has identified nesting females for ~ 99% of clutches sampled on Northern Recovery Unit beaches since 2010, so it is a robust alternative to physical tagging over large nesting ranges. The objective of this study is to initiate a genetic mark-recapture project for the northern Gulf of Mexico loggerhead nesting group to determine demographics of the subpopulation. Proposed activities:

1. Hold a workshop to educate permit holders on sea turtle nesting beaches 2. Permit holders on all nesting beaches will collect one, freshly laid egg from all loggerhead nests deposited on beaches in Northwest Florida, Alabama and Mississippi beaches. 3. Each egg will be placed in a plastic baggie and frozen for storage. 4. Upon completion of the nesting season (September 30), all samples will be gathered by Dr. Shamblin and transported back to his laboratory at the University of Georgia. 5. Genetic analyses will be conducted; microsatellites will be sampled on Northern Recovery Unit beaches since 2010, so it is a robust alternative to physical tagging over large nesting ranges. The objective of this study is to initiate a genetic mark-recapture project for the northern Gulf of Mexico loggerhead nesting group to determine demographics of the subpopulation.

Coastal Alabama Sea Turtle Conservation Program Transfer and Expansion Project 12883 Mark Berte Coastal AL 777500 The central objective of the Coastal Alabama Sea Turtle Conservation Program Transfer and Expansion Project is to strengthen and grow Alabama’s sea turtle population. The existing program—Share The Beach—has established itself as a well-respected and effective steward of sea turtle nests, but it cannot thrive without both a shift in administrative leadership and an expansion of protocols, both of which this grant would enable. Currently, Share The Beach (STB) is a program under the Friends of Bon Secour National Wildlife Refuge (FSBNWR). Because FSBNWR is...
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tr>
<td>City of Orange Beach Waterways Enhancement Program (Marine Debris Removal Program)</td>
<td>112986</td>
<td>Phillip West</td>
<td>Pensacola Bay</td>
<td>$22,000.00</td>
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### Project Description

An all-volunteer organization with its own area of focus, the FBSNWR has indicated that they are unable to sustain STB at its current funding levels in 2018. The FBSNWR has asked the Alabama Coastal Foundation (ACF) to become the new STB parent organization for the 2018 season because of ACF’s scope of work and inclusive environmental stewardship approach. Once the transfer of the program is complete, the next objective of the project is to grow the STB program utilizing best practices and approved protocols. Specifically, STB program employees and volunteers would develop the expertise to review and adapt nest survey protocols in collaboration with the U.S. Fish and Wildlife Service. The intent is to improve the effectiveness and efficiency of collecting nesting data. This would make Alabama’s program operate on a similar level with others in the southeastern United States and improve its contribution, as a citizen-science effort, to overall efforts to support sea turtle restoration in the Gulf of Mexico. A second element of program expansion is promoting the program’s potential as an eco-tourist attraction and enhancing its outreach in that area. Working together and with the financial support of the Alabama Trustee Implementation Group, the Alabama Coastal Foundation, the Friends of Bon Secour National Wildlife Refuge, and everyone involved with Share the Beach program can successfully achieve these two objectives. Properly trained STB staff will organize and direct the expansion of Alabama’s important sea turtle conservation program using established policies and protocols.

### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

<table>
<thead>
<tr>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
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<tbody>
<tr>
<td>Project is consistent with the programmatic framework (PDARP) (Y/N)</td>
<td>Project meets OPA criteria for the marine wildlife resource (Y/N)</td>
<td>Project is technically feasible (+/0/-)</td>
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<tr>
<td>Project is consistent with coastal engineering guidelines (PDARP) (Y/N)</td>
<td>Project complies with applicable laws and regulations (R/VA)</td>
<td>Project is not already fully funded (Y/N)</td>
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<td>Project offers opportunities for external funding (Y/N)</td>
<td>Project is consistent with coastal engineering guidelines (PDARP) (Y/N)</td>
<td>Project is consistent with coastal engineering guidelines (PDARP) (Y/N)</td>
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### Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)

<table>
<thead>
<tr>
<th>Sea Turtles (Y/N)</th>
<th>Recreational Use (Y/N)</th>
<th>Marine Mammals (Y/N)</th>
<th>Wetland, Coastal, and Nearshore Habitat (Y/N)</th>
<th>Oyster Reef (Y/N)</th>
<th>Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)</th>
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<tbody>
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<td>N</td>
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</table>

### Restoration Types Addressed

- Sea Turtles
- Wetlands, Coastal, and Nearshore Habitats
- Oyster Reefs
- Water Quality/Nonpoint Source Nutrient Reduction

### Project Scope

The primary objective of the Orange Beach Waterways Enhancement Program (OBWEP) is to physically remove marine debris from area waterways (including seagrass meadows) and fringe marsh ecosystems. Additionally, OBWEP personnel will manage debris and trash operations on the NOAA-funded GEMS (Gulf Ecological Management Sites) Robinson Island, Walker (purchased with National Fish & Wildlife Foundation funds) and Bird Island (State of Alabama). All are renowned for nesting least terns (Sternula) and various species of wading birds (Ardea, et al). All three islands are publicly owned, and have significant environmental value, but are currently under intense pressure from public use and recreation. In order to accomplish the desired objectives, the OBWEP crew will mobilize via work vessel daily to systematically patrol area waterways, covering the majority of the project area weekly to recover marine debris. Trash and debris will be observed by the crew, and either recovered or recorded (for contractor removal, which is out of the scope of this proposal). All debris will be recorded by type, location, and measured, either by weight (e.g., marine construction debris) or length (e.g., rope, fishing line, etc.), with additional notations as appropriate (e.g., marine life in derelict crab traps, etc.). Additionally, the OBWEP crew will make contact with the public on a frequent basis—as opportunities occur—to inform them of the hazards of marine debris and trash as well as the importance of seagrass beds, tern nesting areas and other critical habitat. Occasionally, the OBWEP crew will respond to or report wildlife emergencies on the water, which are generally bird entanglements, until Orange Beach Wildlife Coordinators can respond. Finally, the documented findings of the program with regards to local marine debris will be evaluated to determine if any local programmatic solutions can be applied to mitigate various aspects of marine debris. Example: If significant amounts of marine construction debris (e.g., dock frames)
Eliminating Light Pollution on Sea Turtle Nesting Beaches in Alabama

Eliminating light pollution on sea turtle nesting beaches by correcting problematic lights on properties with a history of sea turtle disorientations. The project targets problem lights along Alabama’s Gulf Coast in order to create and improve contiguous stretches of dark beach rather than small pockets of habitat. As coastal development continues, the problem of beachfront lighting continues to hamper sea turtle recovery efforts.

Each year nesting loggerhead sea turtle females and hatchlings are negatively impacted by artificial lights, with some never making it back to the gulf to replenish this dwindling population. The Gulf of Mexico oil spill in 2010 had a very articulated network of bays, bayous, canal and inlets, therefore systematic programming is necessary to cover the entire area effectively. The waterways listed in paragraph 4, above, will be the focus area for the program. Every type of debris is “manageable” will be targeted within these areas. For the two year (13 months of active work) period of this proposal, we project the following amounts of debris will be recovered: 1. Construction & Demolition (wood, lumber, tires, etc): 112 Tons 2. Mixed C&D/Municipal waste (trash, bottles, bagged trash, etc): 70 Tons The area covered will total approximately 2,823 surface acres. This total does not include six man-made canals throughout the city, which total nearly four miles in length, by an average of 40 feet in width (approx. 25 surface acres). Our experience has shown, however, that these canals do not typically harbor significant amounts of marine debris, and therefore they are only patrolled occasionally, or when a citizen calls regarding a specific problem within a canal.

**Project Information**

<table>
<thead>
<tr>
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<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminating Light Pollution on Sea Turtle Nesting Beaches in Alabama</td>
<td>12871</td>
<td>Nicole Woerner</td>
<td>Gulf Shores, Orange Beach</td>
<td>1500000</td>
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</tbody>
</table>

**Project Description**

Board "cut off", etc. are observed, collected and recorded by OBWEP coordinators, then additional permitting safeguards and construction inspection attention MAY be applied to the marine construction permit process via city building codes. Area to Be Improved: The Waterways Enhancement Program is designed to systematically patrol coastal waters adjacent to Orange Beach on a daily basis in an efficient manner. Orange Beach has a very articulated network of bays, bayous, canal and inlets, therefore systematic programming is necessary to cover the entire area effectively. The waterways listed in paragraph 4, above, will be the focus area for the program. Every type of debris is “manageable” will be targeted within these areas. For the two year (13 months of active work) period of this proposal, we project the following amounts of debris will be recovered: 1. Construction & Demolition (wood, lumber, tires, etc): 112 Tons 2. Mixed C&D/Municipal waste (trash, bottles, bagged trash, etc): 70 Tons The area covered will total approximately 2,823 surface acres. This total does not include six man-made canals throughout the city, which total nearly four miles in length, by an average of 40 feet in width (approx. 25 surface acres). Our experience has shown, however, that these canals do not typically harbor significant amounts of marine debris, and therefore they are only patrolled occasionally, or when a citizen calls regarding a specific problem within a canal.

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

<table>
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<th>Decision Criteria</th>
<th>Y/N</th>
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<tr>
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<tr>
<td>Oil Pollution Act 835.54 (Y/N)</td>
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<tr>
<td>15 CFR 990.54 (Y/N)</td>
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**Restoration Types Addressed**

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<tr>
<td>Marine Mammals</td>
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<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction</td>
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<tr>
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<tr>
<td>Oyster Reef</td>
<td>N</td>
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<td>Birds</td>
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<tr>
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<tr>
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<tbody>
<tr>
<td>Nicole Woerner</td>
<td>Gulf Shores, Orange Beach</td>
<td>1500000</td>
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</table>

**Project Description**

Board "cut off", etc. are observed, collected and recorded by OBWEP coordinators, then additional permitting safeguards and construction inspection attention MAY be applied to the marine construction permit process via city building codes. Area to Be Improved: The Waterways Enhancement Program is designed to systematically patrol coastal waters adjacent to Orange Beach on a daily basis in an efficient manner. Orange Beach has a very articulated network of bays, bayous, canal and inlets, therefore systematic programming is necessary to cover the entire area effectively. The waterways listed in paragraph 4, above, will be the focus area for the program. Every type of debris is “manageable” will be targeted within these areas. For the two year (13 months of active work) period of this proposal, we project the following amounts of debris will be recovered: 1. Construction & Demolition (wood, lumber, tires, etc): 112 Tons 2. Mixed C&D/Municipal waste (trash, bottles, bagged trash, etc): 70 Tons The area covered will total approximately 2,823 surface acres. This total does not include six man-made canals throughout the city, which total nearly four miles in length, by an average of 40 feet in width (approx. 25 surface acres). Our experience has shown, however, that these canals do not typically harbor significant amounts of marine debris, and therefore they are only patrolled occasionally, or when a citizen calls regarding a specific problem within a canal.

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**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

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Project Name: Alabama Barrier Island and Dune Habitat Restoration by Quantifying Dune Vegetation and Elevation Linkages and Evolution

Project Description: Beaches along the northern Gulf of Mexico incurred significant damage from the Deepwater Horizon oil spill, along with associated impacts on species (birds, beach mice, etc.) that rely on beach and dune habitat. Beach and dune restoration approaches are being considered and implemented throughout the northern Gulf through a variety of funding streams. Robust linkages must be made between short- and long-term habitat response and resiliency. These data and connections are particularly important in the context of functional restoration outcomes, adaptive management, and structured decision making, which requires this information for decision-support. The purpose of this project is to identify and implement appropriate methodologies for acquiring dune vegetation and elevation data, and use that information to establish a correlative and predictive relationship between vegetation and dune evolution in response to storms and long-term drivers. Our results can be used to improve barrier island restoration outcomes across Alabama and Gulf-wide, particularly within the arena of plant elevation restoration targets and ecosystem development following dune restoration. Project Objectives are to:

• Assess the value of existing and new data sources for evaluating dune habitat quality at temporal and spatial scales useful for decision-support. Data sources considered, some of which are available for the entire Gulf of Mexico, include commercial aerial imagery or satellite imagery, or freely-available satellite imagery.
• Evaluate and predict the evolution of dune habitat characteristics (vegetation, elevation) in response to drivers (storms, etc.) and potentially correlated system parameters (e.g., beach width, which controls fetch for Aeolian dune building).
• Provide results that can be used to inform decision-making on evolution and/or vegetation targets for beach and dune restoration projects. There is an ongoing NFWF-funded effort (USGS collaborating with U.S. Army Corps of Engineers and the Alabama Department of Conservation and Natural Resources) to evaluate Dauphin Island's evolution under potential restoration projects, and USGS is also conducting dune growth and ecological research at this site. As a result, the proposed work will provide opportunities for leveraging of resources and effort. The methodology would be portable to other beach and barrier island systems. In Alabama, this effort has the potential to enhance design and evaluation of current and future projects funded under NRDA (e.g., Town of Dauphin Island, Mid-Island Parks) or elsewhere. Project is potentially scalable in multiple ways, including spatial area (from sub-division of Dauphin Island to multiple northern Gulf islands), range of data acquired and spatial resolution (increased or total reliance on freely-available satellite data and existing lidar), and temporal scale (less frequent and/or shorter periods of spatial data analysis and/or field data collection). Scalability may be enhanced by leveraging of resources and/or collaborations across USGS centers and other agencies, which can develop efficient distribution of the workload for larger-scale implementation. Cost estimate is for a 3-year, moderately intensive effort, with leveraging of funding in the form of any USGS ST, Petersburg Coastal and Marine Science Center personnel.

Project Information

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<td>P. Soupy Dalyander</td>
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<tr>
<th>Project Name</th>
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| Anticipating using GPS tagged manatees and UAS technology. | | Program Description: Manatee Surveillance in Mobile Bay and coastal areas – seagrasses and other submerged aquatic vegetation (SAV) are an important resource both in freshwater and saltwater aquatic habitats for food and shelter of many aquatic organisms. SAV forms the basis of many aquatic ecological communities, including those in the nearshore Gulf of Mexico. Telemetry from Florida manatees has been used successfully to locate SAV beds, with more manatee visits correlated with higher density and diversity of vegetation (Stone et al. 2012,2013). We will use manatee telemetry data from a current USGS project to identify SAV target locations. We will use an Unmanned Aircraft System (UAS) to acquire high-resolution images of the identified SAV beds to determine their extent. Recently acquired software (eCognition, http://www.ecognition.com/) will be used to characterize the density of SAV within the identified beds. We will then compare findings with existing SAV maps and sample representative mapped beds to determine differences in extent and density from previous surveys and also to the beds mapped by the manatees. The efficiency and cost savings of this approach compared to traditional wide-scale aerial surveys for SAV discovery and change detection should be significant. Mission flight characteristics would include flying multiple 30 min missions from the shoreline or bridges (or other manmade structures or boats) over small rivers/canals, bays or lakes. This work is in partnership with USFWS and state agencies. Need(s)/Priority to be Addressed and SAV bed locations, extent growth, and resilience analysis and refinement of seagrass mapping. Year 3: finalization of SAV habitat map, reporting of results. References Stone, D.H., J.P. Reid, W.J. Kenworthy, G. McCarato, and S.M. Butler. 2012. Manatees Mapping Seagrass. Seagrass Watch 46: 8-30. Stone, D.H., J.P. Reid, and W.J. Kenworthy. 2013. Mapping spatial resources with GPS telemetry locations: manatees and seagrasses beds in the Ten Thousand Islands, Florida. Marine Ecology Progress Series 476:285-299.

Marine Turtle Triage and Treatment | | The City of Orange Beach has been working for many years to truly set the bar when it comes to wildlife and habitat preservation. This project builds upon that foundation of work once again. The city currently operates a state and federally permitted wildlife rehabilitation facility that accepts nearly all species of mammals, reptile and birds. Those we do not have the proper facilities to work with on a long term basis still receive triage, initial treatment and are then transferred to an appropriate facility for additional treatment and rehabilitation. The purpose of this project is envisioned as a three year effort. Years 1-3: data collection (new acquisition of high-res imagery by UAS technology), manatee data processing and seagrass mapping. Year 2: continued data collection, analysis and refinement of seagrass mapping. Year 3: finalization of SAV habitat map, reporting of results. References Stone, D.H., J.P. Reid, W.J. Kenworthy, G. McCarato, and S.M. Butler. 2012. Manatees Mapping Seagrass. Seagrass Watch 46: 8-30. Stone, D.H., J.P. Reid, and W.J. Kenworthy. 2013. Mapping spatial resources with GPS telemetry locations: manatees and seagrasses beds in the Ten Thousand Islands, Florida. Marine Ecology Progress Series 476:285-299.
The Gulf of Mexico is the primary spawning ground of the western Atlantic bluefin tuna population, a stock depleted to just 55 percent of the 1970 level. The oil spill occurred at the peak of the 2010 spawning season in the Gulf’s northeastern Gulf spawning hotspot. Scientists estimate that the spill degraded 30 to 50 percent of the bluefin’s known Gulf of Mexico habitat and further study has since confirmed that the spill damaged Atlantic bluefin tuna health, particularly among the early-life history stages. The Gulf of Mexico pelagic longline fishery results in harmful bycatch of bluefin tuna and approximately 80 other species, including billfish, endangered sea turtles, and depleted sharks. Government catch data from 2007-2009 indicates the fishery killed 48,345 non-target animals, including 6,009 anchoveta, 5,844 dolphinfish, 2,747 scad, 1,745 sharks and rays, 858 wahoo, 794 billfish (manta, sailfish, spearfish), 612 bluefin, and 169 byssus tuna, and interacted with 127 humpback and 27 loggerhead sea turtles. Actual mortality is much greater as only an average of 22% of the hooks set were observed. Based on their shared habitat preferences with bluefin tuna, it is possible that many of these species also suffered similar interactions with and injury from the spill. A voluntary pelagic longline gear and vessel transition program can help mitigate such impacts.

project is to provide exactly that same level of response and care to injured or ill marine turtle species. Orange Beach works hand in hand on a daily basis with US Fish and Wildlife Service and the local permit holder for marine turtles, Share the Beach. We have many Share the Beach members on staff here at the city and provide a significant amount of support and resources to this group already. We also work, closely with and assist the Alabama Sea Turtle Stranding and Salvage Network. A large gap exists in both of these programs. When an illness or injury incident occurs with a hatching, sub-adult or adult sea turtle the closest facility for evaluation and treatment is approximately two hours away on a perfect day with no traffic issues. Combine that time with the coordination of staff, transport ability, after hours access at the receiving as well as many other factors and you are faced with the reality that these listed and/or protected turtles do not have access to an acceptable level of treatment. A large number of the incidents that occur are caused by human impact such as hooking, entanglements, marine debris ingestion and more. Many of these incidents can be handled with minimally invasive procedures/techniques at a properly equipped facility with trained staff which would then allow a larger percentage of turtles to be treated and released faster. Generally speaking shorter periods of captivity and minimized handling decrease the stress on the animal and improve outcomes. We propose an expansion to our current facility/program to allow for the initial evaluation, triage, treatment, release and improved transport capability when needed. The project would include the physical expansion of facilities to provide proper evaluation and holding areas; the purchase and installation of video conferencing gear to allow remote consultation and observation by receiving facility or program veterinary staff; the purchase of the proper diagnostic and treatment equipment; the proper training for existing program staff to be able to work safely and effectively; a new staff member to oversee the program.

Pelagic Longline Gear and Vessel Transition Program in the Gulf of Mexico

12837  
Bobby Nguyen  
Gulf of Mexico

The Gulf of Mexico is the primary spawning ground of the western Atlantic bluefin tuna population, a stock depleted to just 55 percent of the 1970 level. The oil spill occurred at the peak of the 2010 spawning season in the Gulf’s northeastern Gulf spawning hotspot. Scientists estimate that the spill degraded 30 to 50 percent of the bluefin’s known Gulf of Mexico habitat and further study has since confirmed that the spill damaged Atlantic bluefin tuna health, particularly among the early-life history stages. The Gulf of Mexico pelagic longline fishery results in harmful bycatch of bluefin tuna and approximately 80 other species, including billfish, endangered sea turtles, and depleted sharks. Government catch data from 2007-2009 indicates the fishery killed 48,345 non-target animals, including 6,009 anchoveta, 5,844 dolphinfish, 2,747 scad, 1,745 sharks and rays, 858 wahoo, 794 billfish (manta, sailfish, spearfish), 612 bluefin, and 169 byssus tuna, and interacted with 127 humpback and 27 loggerhead sea turtles. Actual mortality is much greater as only an average of 22% of the hooks set were observed. Based on their shared habitat preferences with bluefin tuna, it is possible that many of these species also suffered similar interactions with and injury from the spill. A voluntary pelagic longline gear and vessel transition program can help mitigate such impacts.
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<td>Grommet Island</td>
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<td>The Hensel Family</td>
<td>Virginia</td>
<td>350000</td>
<td>Reference the web site <a href="http://www.GrommetIsland.org">www.GrommetIsland.org</a> in 2010, the citizens of Virginia Beach, VA, USA, constructed and opened the first 100% accessible beach park for the disabled. The beautiful beaches along the Alabama-Gulf Coast have near zero facilities usable by physically disabled citizens. This project will provide a unique and long overdue beach recreation experience for citizens and visitors with physical disabilities. Briefly, the Grommet Island Beach Park is an elevated sand and &quot;carpeted&quot; beach with unique &quot;play ground&quot; equipment and features plus shaded &quot;relaxation&quot; areas - all in a wheel chair accessible environment. This project was completed in Virginia Beach in 2010 for a total cost of just under $1.8M Site selection considerations include - adjacent parking lot with abundant handicapped parking spaces - adjacent accessible bathroom facility (will require utilities - sewer, water, electric). The Virginia Beach Grommet Island has been operational for 3-1/2 years and 4 summers (as of Sept, 2013). It has been a tremendous success with attendance by disabled folks and their families way beyond expectations. Over the past 4 summers, Virginia Beach has become known as a destination vacation for the disabled. The local hotel/motel industry has responded by remodeling scores of rooms with wheel chair accessible bathrooms and facilities to meet the surge in demand for accessible vacation lodging. The large crowds overwhelmed the original &quot;temporary&quot; or &quot;porta-potty&quot; style bathrooms originally provided at Grommet Island. The City of Virginia Beach (at their expense) constructed replacement &quot;permanent&quot; accessible bathroom facilities. Virginia Beach quickly recognized the large positive economic boost the disabled visitors and their families brought to their city. This whole experience has been so positive for Virginia Beach, the Grommet Island sponsors are now raising funds to build an entire &quot;city park&quot; designed to accommodate disabled folks. On 4 acres - they envision a 4 acre &quot;park&quot; to provide fishing opportunities for disabled guests.</td>
<td>Trustee Portal</td>
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<td>10-Year enhancement for improving Gulf of Mexico Sea Turtle Stranding</td>
<td>11947</td>
<td>Chris Robbins</td>
<td>Gulf of Mexico</td>
<td>1000000</td>
<td>Proposed Restoration Project: The project will augment resources available to the Sea Turtle Stranding and Salvage Network (STSSN) in the Gulf, led by NOAA, and help participating entities respond to and learn from future sea turtle strandings and thus increase the survival of rescued animals and the recovery of populations impacted the Deepwater Horizon (DWH) oil disaster. Link to Injury: Sea turtles were exposed to petroleum hydrocarbons resulting from the Deepwater Horizon oil spill.</td>
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- Project Name: Science capacity
- Lead:  
- Location:  
- Cost:  

The collection of biological information from stranded animals is critical to understanding more clearly the long-term effects of the DWH disaster and other human activities on Gulf sea turtles. Description: This project would increase capacity for sea turtle stranding programs at the state or regional level such that they are in a better position to respond to strandings, maximize survival of live stranded animals, and could do more with dedicated funding to help support monitoring and response to strandings. Since April 2010, the number of sea turtle strandings in the northern Gulf has approached 2,000 animals, far exceeding the historical average. Stranded sea turtles would not be located, rescued and rehabilitated were it not for the Network and the participating organizations. Rehabilitation ed animals released back into the wild are given another opportunity to reproduce and thus contribute to the recovery of populations impacted by episodic events like the DWH disaster. Sea turtles, among other species, are the ocean’s ‘canary in the coal mine,’ and stranding networks, through tissue sampling or post-mortem exams, collect valuable information on the condition of animals that can not only help scientists understand the cause of illness or death but detect subtle or significant changes in ecosystem condition or function. The collection of biological information from stranded animals is critical to understanding more clearly the long-term effects of the DWH disaster and other human activities on Gulf sea turtles. Description: This project would increase capacity for sea turtle stranding programs at the state or regional level such that they are in a better position to respond to strandings, maximize survival of recovered animals, and improve the consistency and quality of pathological information collected from tissue samples or post-mortem exams. Specifically, this project would increase capacity across Gulf STSSN programs in the field by making investments in the following operational areas: 1) developing and implementing uniform animal detection and data collection methods; 2) equipment (including vehicles); 3) supplies (including fuel); 4) collection, banking, shipment and analysis of samples (neocarcin); 5) data entry, management and synthesis for scientific use and public consumption and 6) rehabilitation facilities (including salary support and other administrative costs such as coordination with other networks and resolving permit problems). In regards to #1, this project would cover the cost of developing uniform animal detection and data collection methods, which are important for understanding how stranded turtles represent the entire population. Hiring experienced researchers and veterinarians from other regions to train local responders in the activity of collecting information from stranded animals is needed to ensure that information collected from stranded animals is consistent across.
Development and Distribution of Gear Technology to Improve Fuel Economy and Reduce Bycatch in the Gulf Shrimp Fishery

11676  Judy Jamison  Gulf states  1500000

The offshore shrimp trawl fishery accounts for a significant portion of landings in the Gulf of Mexico. Due to a multitude of events (i.e., hurricanes, oil spill, imports), the fishery has seen a substantial decline in fishing while operating costs have continuously risen. With increasing fuel prices, fuel saving technologies are a logical avenue to assist in reducing operating expenses. A paucity of information exists documenting the effect of gear technologies on fuel consumption. Cambered trawl doors are currently being utilized by some fishermen in the southeastern United States. These trawl doors have evolved significantly over the past decades, but recently have not received much attention in the southern shrimp fishery. Evaluations of these doors have yielded promising potential to reduce fuel consumption. Several door sizes have been evaluated, but cambered trawl doors, 50% smaller than the traditional wood or aluminum doors, are documented to have fuel savings of 25-30% during actual fishing conditions. Additionally, bycatch reduction remains a high priority issue in the southeast. Bycatch reduction has been shown to improve catches and reduce fuel consumption. We propose to conduct a series of experiments aimed at documenting the fuel savings achieved by cambered trawl doors and continue to improve the bycatch reduction capability already in use in the fishery. More specifically we aim to: 1) Evaluate cambered door gear technology within the southeastern shrimp trawl fishery; 2) Continue to elicit industry participation in evaluating more complex bycatch reduction devices (BRDs); and 3) Conduct result

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<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction</td>
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<tr>
<td>Wetland, Coastal, and Nearshore Habitat</td>
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<td>Oyster Reef</td>
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<td>Birds</td>
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<td>Habitats</td>
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<td>Ecosystem Services</td>
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<tr>
<td>Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation</td>
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<td>Project is consistent with programmatic restoration goals</td>
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<tr>
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<td>Project readiness</td>
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<tr>
<td>Sustainability/Long-term Viability</td>
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<tr>
<td>Project is time critical</td>
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<td>Project is consistent with criteria identified in the public notice</td>
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Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

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<thead>
<tr>
<th>Criteria</th>
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<tbody>
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Public Notice

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Oil Pollution Act (OPA) Criteria

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<tr>
<th>Criteria</th>
<th>15 CFR 990.54</th>
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Additional Criteria

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<tr>
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Submitted via Trustee Portal

Trustee Portal

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<table>
<thead>
<tr>
<th>Project Name</th>
<th>Lead Location</th>
<th>Project Description</th>
<th>Lead Agency</th>
<th>Project Type</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<tbody>
<tr>
<td>5-Year Increase in Gulf of Mexico Fishery Observer Coverage for Monitoring Marine Mammals, Sea Turtles, and Bluefin Tuna</td>
<td>Gulf of Mexico</td>
<td>Temporary (1-year) increase in vessel coverage for Gulf of Mexico shrimp trawl, shark gillnet and pelagic longline observer programs to quantify the extent to which marine mammal, sea turtle, and bluefin tuna bycatch mortality is a source of stress to injured populations. Going forward, these data will shed light on whether bycatch mortality is limiting recovery from injury related to the BP oil disaster and help managers identify restoration measures that can be implemented to shorten recovery times. A temporary but significant increase in observer coverage in the shrimp trawl, shark gillnet and pelagic longline fisheries is needed to improve estimates of marine mammal, sea turtle, and bluefin tuna bycatch rates and mortality in these fisheries. A temporary but significant increase in observer coverage in the shrimp trawl, shark gillnet and pelagic longline fisheries is needed to improve estimates of marine mammal, sea turtle, and bluefin tuna bycatch rates and mortality in these fisheries.</td>
<td>Chris Robbins</td>
<td>Gulf of Mexico</td>
<td>Monitoring Marine Mammals, Sea Turtles, and Bluefin Tuna</td>
<td>Trustee Portal</td>
<td>Y N N N Y Y Y Y</td>
<td>Project is consistent with criteria identified in the public notice (Y/N) Project has reasonable probability of success (+ / 0 / -)</td>
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**Additional Criteria**
- Project is consistent with programmatic restoration goals
- Project is consistent with criteria identified in the public notice (Y/N) Project has reasonable probability of success (+ / 0 / -)
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Deployment of New Turtle Excluder Devices in Shrimp Fisheries</td>
<td>438</td>
<td>John Williams</td>
<td>Gulf of Mexico</td>
<td>$100,000</td>
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## Project Description

The objective of this project is to provide a complete set of new Turtle Excluder Devices (TEDs) to all shrimp fishing vessels required to use TEDs in the Gulf and South Atlantic, including skimmer trawls, if required. The benefits of this project will be to increase the overall effectiveness of public and private sector efforts to protect and restore endangered and threatened species of sea turtles and other species of concern. Endangered and threatened populations of sea turtles that forage and nest throughout the Gulf and South Atlantic region were adversely impacted by the oil spill and by the clean-up activities, including the use of dispersants and controlled burns. These impacts reduced the overall effectiveness of long-standing public and private sector efforts in the US and internationally to protect and restore these sea turtle populations throughout the Atlantic basin. A major component of these efforts is the use of TEDs in the US shrimp fishery. TEDs are highly effective in reducing injury and mortality of sea turtles and other species of concern, including various species of coastal sharks. The effectiveness of TEDs to exclude sea turtles and other species decreases over time with constant use; hence maintenance. The cost of new TEDs and maintenance is high relative to the financial condition of the shrimp fishery, and this serves as a disincentive to replace or maintain old, less effective gear. This can reduce the level of sea turtle protection achieved by the fishery. The full deployment of new TEDs on all shrimp vessels required to use TEDs would reduce sea turtle injury and mortality, increase the effectiveness of public and private efforts to protect and restore endangered sea turtles, and contribute to the mitigation of the adverse impacts of the oil spill and clean-up activities on these species. Please see attached project cost estimate analysis.
Bird Friendly City Initiative

Conduct tagging and tracking of vertebrates to monitor their large marine habitat use changes in status, species’ rates of recovery of species and the overall health of the Gulf ecosystem. Studying the responses of animals at high trophic levels to ecosystem change like a major oil spill can shed light on the health and stability of the marine food webs that support them. Food webs themselves are challenging to monitor directly. Monitoring populations at high trophic levels, such as female sperm whale social aggregations, with modest home ranges, could be an effective way of comparing known affected areas with those that are more like “control regions.” By tagging and tracking wide-ranging, offshore distributions. Tags also enable scientists to pinpoint animals for useful for helping scientists track the movement of marine animals with wide distribution, and exposure to hydrocarbons. These data are transmitted via satellite

- Project Name: Bird Friendly City Initiative
- Project Description: Establish a grant program that would provide funds to awards to towns along the gulf coast that establish bird friendly initiatives. A non-profit could be tasked with defining what qualifies as bird friendly and establish the program. I believe beach towns along the gulf coast would be willing to establish bird friendly measures if there was some funding involved. Such measures could include fencing dunes areas for least tern nesting sites, establish dog leash laws, establishing clear beach access points to beach that avoids dunes and nesting habitat, leaving the wrack alone, etc.

Birds that are negatively impacted by the Deepwater Horizon (DWH) oil spill using satellite tagging and tracking with modest home ranges, could be an effective way of comparing known affected areas with those that are more like “control regions.” By tagging and tracking wide-ranging, offshore distributions. Tags also enable scientists to pinpoint animals for useful for helping scientists track the movement of marine animals with wide distribution, and exposure to hydrocarbons. These data are transmitted via satellite

- Project Name: Conduct tagging and tracking of large marine vertebrates in the Gulf of Mexico to monitor their status, distribution, and changes in habitat use
- Project Description: Satellite-based tags or radio transmitters will be used to track the movement, habitat use and status of marine mammals, sea turtles, and marine birds impacted by the Deepwater Horizon (DWH) oil spill. The information would be used for the following: 1) monitor species’ exposure to areas of lingering DWH oil; 2) detect important changes in habitat use, distribution, or life history of species/stocks that may be a result of the spill; 3) help determine the rate of recovery since the DWH event; and 4) inform recovery strategies. Link to Injury: Surface oil directly impacted marine mammals, sea turtles and marine birds, as documented through aerial surveys, at sea observations and animal recovery efforts for the DWH Oil Spill (OSPAR) Criteria

<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Project Description</th>
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<tbody>
<tr>
<td>Birds Friendly City Initiative</td>
<td>David</td>
<td>Establish a grant program that would provide funds to awards to towns along the gulf coast that establish bird friendly initiatives. A non-profit could be tasked with defining what qualifies as bird friendly and establish the program. I believe beach towns along the gulf coast would be willing to establish bird friendly measures if there was some funding involved. Such measures could include fencing dunes areas for least tern nesting sites, establish dog leash laws, establishing clear beach access points to beach that avoids dunes and nesting habitat, leaving the wrack alone, etc.</td>
</tr>
<tr>
<td>Conduct tagging and tracking of large marine vertebrates in the Gulf of Mexico to monitor their status, distribution, and changes in habitat use</td>
<td>Chris Robbins</td>
<td>Satellite-based tags or radio transmitters will be used to track the movement, habitat use and status of marine mammals, sea turtles, and marine birds impacted by the Deepwater Horizon (DWH) oil spill. The information would be used for the following: 1) monitor species’ exposure to areas of lingering DWH oil; 2) detect important changes in habitat use, distribution, or life history of species/stocks that may be a result of the spill; 3) help determine the rate of recovery since the DWH event; and 4) inform recovery strategies. Link to Injury: Surface oil directly impacted marine mammals, sea turtles and marine birds, as documented through aerial surveys, at sea observations and animal recovery efforts for the DWH Oil Spill Natural Resource Damage Assessment. Six cetacean species were observed swimming in surface oil in offshore waters and hundreds of bottlenose dolphin strandings have been reported during an Unusual Mortality Event that began in February 2010 in the northern Gulf. More than 450 visibly oiled, live sea turtles and 18 visibly oiled sea turtle carcasses were also recovered during DWH response from April 2010 through February 2011. Another 50+ stranded sea turtles with no visible external signs of oiling were also reported during this period. A number of visibly oiled live and dead marine birds were also recovered during DWH response. Benefit and Rationale: Satellite-linked tags and radio transmitters attached to marine animals can provide a wealth of information on habitat use, foraging behavior, distribution, and exposure to hydrocarbons. These data are transmitted via satellite or radio waves in virtual real time to scientists. Satellite-based tags, in particular, are useful for helping scientists track the movement of marine animals with wide-ranging, offshore distributions. Tags also enable scientists to pinpoint animals for follow-up visual and photographic assessments of health and reproductive success (i.e., calf presence) following episodic events like DWH. Between 2010 and 2012, scientists initiated tagging of oceanic marine mammals (e.g., sperm whales) in the Gulf, estuarine and coastal/shelf dolphins, and loggerhead and Kemp’s ridley turtles as part of injury assessments conducted for the DWH Oil Spill Natural Resource Damage Assessment (NRSAG). Expanded and, in some cases, continued monitoring of cetaceans, sea turtles, and marine birds impacted by the DWH oil spill using satellite or radio transmitters is important for tracking trends in the status, species’ rates of recovery of species and the overall health of the Gulf ecosystem. Studying the responses of animals at high trophic levels to ecosystem change like a major oil spill can shed light on the health and stability of the marine food webs that support them. Food webs themselves are challenging to monitor directly. Monitoring populations at high trophic levels, such as female sperm whale social aggregations, with modest home ranges, could be an effective way of comparing known affected areas with those that are more like “control regions.” By tagging and tracking wide-ranging, offshore distributions. Tags also enable scientists to pinpoint animals for useful for helping scientists track the movement of marine animals with wide distribution, and exposure to hydrocarbons. These data are transmitted via satellite</td>
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### Project Information

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<th>Submitted By</th>
<th>Primary Location</th>
<th>Cost</th>
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### Project Description

Tagging large marine vertebrates and comparing their collective movements to oceanographic conditions over time, scientists are in a much stronger position to learn whether or where ecosystem change is occurring (see www.glosp.org). For example, pattern changes in the movements of sentinel species derived from satellite tracks could be a sign that the abundance or distribution of prey is shifting, perhaps in response to environmental drivers such as habitat degradation, climate disruption, or other stressors. This information can help resource managers fine-tune recovery strategies.

**Description:** Scientists familiar with the species of marine mammal, sea turtle and marine birds impacted by the DWH oil spill will decide which species are appropriate for tagging, whether for the first-time or as part of on-going studies initiated under NRDA injury studies. The duration of the tagging and tracking will be determined by the lead PIs but should continue for 5 to 10 years to account for inter-annual variability and so that sufficient data for animals with long life spans can be obtained. The project is broken down into three phases.

**During Phase 1,** scientists identify priority species (see below) for tagging, define research objectives and sample size, obtain required permits, and execute field work (e.g., radio, satellite tagging). During Phase 2, scientists collect geospatial animal tracking data and conduct vessel-based health assessments of tagged animals to include tissue sampling (e.g., remote biopsy, live capture/release) and visual documentation of individuals and offspring when possible. During Phase 3, data from Phase 2 is analyzed, interpreted, reported, synthesized for the public, and published in the scientific literature. One or more of these phases would repeat as necessary if, for example, tags are non-responsive (broken or lost) or additional tagging is needed to maintain an acceptable sample size or time series data for identifying trends. The data from tagging studies will be evaluated against historical and other baseline data, as available, on habitat use, foraging behavior, distribution and abundance. Observed changes from baseline will be used to assess DWH impacts on population status and rate of recovery and inform restoration strategies going forward. Priority species and geographies for tagging and tracking representing marine species that were either oiled or exposed to oil: Marine mammals: Estuarine populations of bottlenose dolphin in Barataria Bay, Mississippi Sound and Sarasota Bay (control site), coastal/shelf populations of delphinids (with emphasis on bottlenose dolphins), and endangered sperm whales, Bryde’s whale and other species of oceanic delphinid that were documented in oiled waters or in the oil spill impact zone. Sea turtles: Nesting female Kemp’s ridley along the Texas coast and loggerhead sea turtles in NW Florida, Peninsular Florida (e.g., Pinnelas County) and in SW Florida (e.g., Dry Tortugas). Pelagic sea birds: Gulf of Mexico pelagic populations of northern gannets, Audubon’s shearwaters, and royal terns will be tagged at their breeding colonies (i.e., gannets at north Atlantic colonies, shearwaters at Caribbean island colonies, and terns at island beach colonies in the northeast Gulf of Mexico). Nearshore populations of brown pelicans and black skimmers will be tagged in the northeast Gulf of Mexico. Location of Project: Sulfide Rich Implementing Entity(ies): The entities listed next to each of the animal groups have experience in tagging and tracking wildlife; many were PIs on studies initiated under the DWH Oil Spill NRDA and are in a position to continue...
The project seeks to determine what protected, dense spawning aggregates of oysters managed for improved coastal habitat.

This project will permanently protect lands identified by the U. S. Fish and Wildlife Service (USFWS) as the highest priority for acquisition and long-term management by the Bon Secour National Wildlife Refuge. It will add land, which is currently under agreement for purchase by The Conservation Fund, totaling approximately 251 acres of sensitive coastal lands to the Little Point Clear Unit at this Refuge. These lands include significant frontage along St. Andrews Bay, Bon Secour Bay, salt and freshwater wetlands, as well as numerous tidal sloughs, and adjacent upland areas. This acreage shares property borders with the USFWS, and will immediately be managed for improved coastal habitat.

Little Point Clear

Establishment and evaluation of protected oyster spawning aggregates in

Little Point Clear Unit - land protection

Little Point Clear

Establishment and evaluation of protected oyster spawning aggregates in

Establishment and evaluation of protected oyster spawning aggregates in
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>ID</th>
<th>Submitted By</th>
<th>Priority Lead</th>
<th>Location</th>
<th>Cost</th>
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<tr>
<td>Mississippi Sound</td>
<td>73</td>
<td>Baldwin County Commission</td>
<td>Fish River, Weeks Bay, lower Mobile Bay</td>
<td>830000.0</td>
<td>$30,000,000</td>
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This project is intended to restore floodplain wetlands within the Fish River watershed and SAV in Weeks Bay and lower Mobile Bay, and to prevent further degradation of ecological resources through improved storm water management and sediment retention. During design storm events, flood waters would be directed into constructed wetlands at multiple locations where the County has demonstrated successful plantings, and subsequent opening of advanced stocker sized oysters in Mobile Bay and Mississippi Sound can be thwarted by aggressive predation from oyster drills. The proposed practice of protecting broodstock is well established for many terrestrial restoration efforts, e.g. nesting sites for numerous species. The results of this proposal will lead to direct, statistically validated procedures for planted oyster broodstock which can be used in future restorative efforts for improved long-term success. Located in Portersville Bay (Mississippi Sound), Alabama we hold the riparian lease rights to a 10 acre oyster reserve within which oyster harvest has been reduced to zero. The project will use the reserve, to establish and evaluate protected broodstock and control sites (survival, drill presence) and newly culched areas (recruitment, drill presence). We will install a replicated matrix of test and control plots. Oysters grown by the Mobile Bay Oyster Gardening Program (established in 2001) will be stocked within these plots in November of the project’s first year. Test and control plots will be evaluated in April, July and October for survival rates of the oyster drill. Any necessary adjustments to the protective elements will be made between year 1 and year 2 allowing for a second and third year evaluation of the protective elements. For years 4 and 5, the most promising protective elements will be continued with scheduled evaluations of broodstock survival. Additionally, areas within the reserve will be culched in the traditional method, and evaluated simultaneously for evidence of recruitment, survival and any predation activity.

### Restoration Types Addressed

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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<tr>
<td>Wetland, Coastal, and Nearshore Habitat (Y / N)</td>
<td>Monitoring, Adaptive Management, and Administrative Oversight (Y/N)</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<td>Sea Turtles (Y / N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project has reasonable probability of success (Y/N)</td>
<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
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<td>Oyster Reef (Y / N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project is technically feasible (+/0/-)</td>
<td>Project readiness (+/0/-)</td>
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<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
<td>Sustainability/Long-term Benefit of project (+/0/-)</td>
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<td>Marine Mammals (Y/N)</td>
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<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
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<td>Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project benefits more than one natural resource and/or service (+/0/-)</td>
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<td>Project prevents future and collateral injury to natural resources and services (+/0/-)</td>
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<td>Project readiness (+/0/-)</td>
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### Project Description

Annual generation during natural spawning activities and subsequently greater spat set rates on culched and natural hard bottom sites. This project builds upon a recently completed NFWF funded project which demonstrated successful plantings, and subsequent opening of advanced stocker sized oysters in Mobile Bay and Mississippi Sound. We hold the riparian lease rights to a 10 acre oyster reserve within which oyster harvest has been reduced to zero. The project will use the reserve, to establish and evaluate protected broodstock and control sites (survival, drill presence) and newly culched areas (recruitment, drill presence). We will install a replicated matrix of test and control plots. Oysters grown by the Mobile Bay Oyster Gardening Program (established in 2001) will be stocked within these plots in November of the project’s first year. Test and control plots will be evaluated in April, July and October for survival rates of the oyster drill. Any necessary adjustments to the protective elements will be made between year 1 and year 2 allowing for a second and third year evaluation of the protective elements. For years 4 and 5, the most promising protective elements will be continued with scheduled evaluations of broodstock survival. Additionally, areas within the reserve will be culched in the traditional method, and evaluated simultaneously for evidence of recruitment, survival and any predation activity.
The diamondback terrapin (Malaclemys terrapin) is a keystone species in the salt marshes of the northern Gulf of Mexico (NGoM) which were significantly impacted by the DWH Oil Spill. In addition to being critical habitat for the terrapin’s survival, the salt marsh ecosystem also serves as a nursery for a variety of species that are important for recreational and commercial fisheries. Terrapins are a slow growing, long-lived, top-of-the-food-chain predator, which makes them an ideal sentinel species for evaluating the long term impact of the DWH Oil Spill on the “health” and productivity of the salt marsh habitat. Although it was once a plentiful and important economic resource, due to a variety of threats including the DWH Oil Spill, terrapins are now scarce in the NGoM. In Alabama, terrapins are listed as a “Priority One Species of Special Conservation Concern” by the DCNR. The proposed research will facilitate the restoration of the terrapin, thus enhancing the stability and productivity of the salt marsh. A multi-pronged approach will be used to alleviate the major threats to the terrapin. 1) Terrapin nest predation will be significantly decreased in Heron Bay by capturing adult females on the nesting beaches and then incubating their eggs. 2) To avoid the high mortality rate associated with early life stages, several hundred hatchlings per year will be reared for approximately two years, then released in Heron Bay. 3) Nesting beach abandonment and quality will be assessed and actions for restoring optimal nesting habitat or establishing new nesting habitat will be prioritized and recommended to DCNR. We intend to work with DCNR to develop a strategy (including future funding) for enhancing and creating new nesting habitat. 4) The project will address the major threat of crab trap-induced mortality through the implementation of turtle excluder devices (TEDs) on crab traps. This will be accomplished by working with the Marine Resources Division of DCNR, MS/AL Sea Grant, and the Alabama Cooperative Extension Center to contract individuals in the local crab fishery and will be the first step in showing the local crab fishery that TEDs have no significant impact on crab catch. 5) We will continue our monitoring and evaluation of the survival status and restoration of the diamondback terrapin population in Alabama through multiple survey methods.

The primary objective of Half Shell High School (HSHS) is to carry out a long-term oyster restoration effort in the Alabama portion of the Mississippi Sound. HSHS students, under the guidance of their teachers and area

Project Information

<table>
<thead>
<tr>
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<tr>
<td>Restoration of the Diamondback Terrapin, a Keystone Species in the Salt Marshes of Alabama</td>
<td>Shaw Wible</td>
<td>University of Alabama at Birmingham</td>
<td>Heron Bay</td>
<td>421713</td>
<td>The diamondback terrapin (Malaclemys terrapin) is a keystone species in the salt marshes of the northern Gulf of Mexico (NGoM) which were significantly impacted by the DWH Oil Spill. In addition to being critical habitat for the terrapin’s survival, the salt marsh ecosystem also serves as a nursery for a variety of species that are important for recreational and commercial fisheries. Terrapins are a slow growing, long-lived, top-of-the-food-chain predator, which makes them an ideal sentinel species for evaluating the long term impact of the DWH Oil Spill on the “health” and productivity of the salt marsh habitat. Although it was once a plentiful and important economic resource, due to a variety of threats including the DWH Oil Spill, terrapins are now scarce in the NGoM. In Alabama, terrapins are listed as a “Priority One Species of Special Conservation Concern” by the DCNR. The proposed research will facilitate the restoration of the terrapin, thus enhancing the stability and productivity of the salt marsh. A multi-pronged approach will be used to alleviate the major threats to the terrapin. 1) Terrapin nest predation will be significantly decreased in Heron Bay by capturing adult females on the nesting beaches and then incubating their eggs. 2) To avoid the high mortality rate associated with early life stages, several hundred hatchlings per year will be reared for approximately two years, then released in Heron Bay. 3) Nesting beach abandonment and quality will be assessed and actions for restoring optimal nesting habitat or establishing new nesting habitat will be prioritized and recommended to DCNR. We intend to work with DCNR to develop a strategy (including future funding) for enhancing and creating new nesting habitat. 4) The project will address the major threat of crab trap-induced mortality through the implementation of turtle excluder devices (TEDs) on crab traps. This will be accomplished by working with the Marine Resources Division of DCNR, MS/AL Sea Grant, and the Alabama Cooperative Extension Center to contract individuals in the local crab fishery and will be the first step in showing the local crab fishery that TEDs have no significant impact on crab catch. 5) We will continue our monitoring and evaluation of the survival status and restoration of the diamondback terrapin population in Alabama through multiple survey methods.</td>
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<tbody>
<tr>
<td>Half Shell High School Oyster Restoration</td>
<td>Julian Stewart</td>
<td>Alma Bryant High School</td>
<td>Fortis Bay</td>
<td>478000</td>
<td>The primary objective of Half Shell High School (HSHS) is to carry out a long-term oyster restoration effort in the Alabama portion of the Mississippi Sound. HSHS students, under the guidance of their teachers and area</td>
</tr>
</tbody>
</table>
The overall environmental goal is to restore area oyster reefs to the point where they may once again be commercially harvestable. However, oysters will be grown for both restoration activities and the commercial half-shell oyster market. Funds generated from the sale of the single half-shell oysters will be used to expand and sustain the activities beyond the project termination. Additionally, OBOF provides a new sustainable seafood industry for this area and provides the added environmental benefit of improved water quality due to their filter-feeding activities.

Nursery activities will be carried out at an existing OBOF northwest of Point aux Pins. A grow-out site will be developed approximately 500 meters south of the nursery site. The grow-out site will be expanded and developed in phases during the subsequent years. Once the growing oysters reach sufficient size, they will be relocated to the restoration site at Portersville Bay and other areas as needed.

HSHS will become an integral component of the aquaculture science and marine biology programs at ABHS as well as the newly formed “Coastal Studies Signature Academy.” Students will also be responsible for monitoring the survival, growth, reproductive success of the oysters as well as developing predator control measures and water quality effects. The academy is partnered with Dauphin Island Sea Lab (DISL) with the overall goal of increasing the graduation rate, increasing the number of students pursuing higher education opportunities, and educating the general public in coastal resource management.

Lower Perdido Bay Restoration

Coastal & submerged resources of Mobile Bay have been significantly impacted by coastal development, stormwater runoff, altered hydrology, erosion, and fisheries operations. More than 50% of seagrass beds in Mobile County & 80% of seagrass beds in Baldwin County have been lost in the last 60 years. In 2009, the Alabama Chapter of The Nature Conservancy worked with federal and state agencies to designate a “No Motor Zone” to help protect seagrass beds from further boat impacts in lower Perdido Bay. We have also worked with Dauphin Island Sea Lab to restore prop scars from boat activities and educate the public on these sensitive habitats in the same area. This project involves restoration, enhancement and protection activities for an estimated 2000 ft. of shoreline, using kelping/shoal reef/reef restoration techniques, as well as protection efforts for 157 acres of seagrass habitat. Almost 1500 linear feet would be maintained, as well as protection efforts for 157 acres of seagrass habitat. The school, in collaboration with federal and state agencies and non-governmental organizations, will design and implement this restoration project. The school and community have a long-standing history of aquatic programs and are dedicated to the restoration of the Mobile Bay ecosystem. The project will use techniques to enhance and restore seagrass beds, including the use of artificial reefs and the creation of a “No Motor Zone” to protect seagrass beds from further boat impacts. This project will also provide educational opportunities for high school students, and a sustainable means of sustain the activities beyond the project termination. Additionally, OBOF provides a new sustainable seafood industry for this area and provides the added environmental benefit of improved water quality due to their filter-feeding activities.
The facility has been located here for many years and is a positive economic impact business that serve locals, visitors, and commercial population of Aloe Bay. The area is home to many T&L species, including the West Indian manatee. Several islands support coastal, shore and wading birds roosting and foraging, including tricolor herons, reddish egrets, little blue herons, snowy egrets, white ibis and brown pelicans. Great blue herons, great egrets, clapper rails, willets & woodcock also forage in the marsh. A variety of waterfowl, coastal, shore and wading birds, waterfowl, nursery habitat for coastal finfish & shellfish such as speckled seatrout, redfish, Atlantic croaker, shrimp, blue crabs. The area is home to many T&E species, including the West Indian manatee. Several islands support coastal, shore and wading birds roosting and foraging, including tricolor herons, reddish egrets, little blue herons, snowy egrets, white ibis and brown pelicans. Great blue herons, great egrets, clapper rails, willets & woodcock also forage in the marsh. A variety of waterfowl, coastal, shore and wading birds, waterfowl, nursery habitat for coastal finfish & shellfish such as speckled seatrout, redfish, Atlantic croaker, shrimp, blue crabs.
### Dauphin Island's Restoration Project

- **Project Name:** Dauphin Island's Restoration Project
- **Management:** Town of Dauphin Island
- **External Peer Review:** In-Depth Environmental Review
- **Independent Restoration:** Sanctuary
- **Shoreline:** West End Beach

#### Project Description
- Dauphin Island is a long barrier island situated off the Alabama Gulf Coast. The Sanctuary is of vital importance because it is the largest segment of protected forest on the Island and the first landfall for neo-tropical migrant birds after their long flight across the Gulf of Mexico from Central and South America each spring. The Bird Sanctuary has been named one of the top four locations in North America for birds (Y/N) - Tropical Migrant Birds (Y/N) - Sea Turtles (Y/N) - Recreational Use (Y/N) - Habitat on Federal Lands (Y/N) - Project is consistent with criteria identified in the public notice (+/0/–) - Project prevents future and collateral injury to natural resources and services (+/0/–) - Project meets Trustees' goals (+/0/–) - The effect of the project alternatives on public health and safety (+/0/–) - Project complies with applicable laws and regulations (+/0/–) - Project is technically feasible (+/0/–) - Sustainability/Long-term benefit of project (+/0/–) - Project is time critical (+/0/–) - Project offers opportunities for external funding (+/0/–)

#### Project Information

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<td>Independent External Peer Review of Dauphin Island's West End Beach Restoration Project</td>
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<td>Jeff Capps/Town of Dauphin Island</td>
<td>West End Beach/ Dauphin Island</td>
<td>2520000</td>
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#### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- Project is consistent with criteria identified in the public notice (+/0/–) - Project prevents future and collateral injury to natural resources and services (+/0/–) - Project meets Trustees' goals (+/0/–) - The effect of the project alternatives on public health and safety (+/0/–) - Project complies with applicable laws and regulations (+/0/–) - Project is technically feasible (+/0/–) - Sustainability/Long-term benefit of project (+/0/–) - Project is time critical (+/0/–) - Project offers opportunities for external funding (+/0/–)

#### Additional Criteria

- Project is considerate of strategic frameworks (Y/N/NA) - Project is consistent with criteria identified in the public notice (+/0/–) - Project is not already required by existing regulations (Y/N) - Project complies with applicable laws and regulations (+/0/–) - Project is not already fully funded (Y/N) - Project is technically feasible (+/0/–) - Sustainability/Long-term benefit of project (+/0/–) - Project is time critical (+/0/–) - Project offers opportunities for external funding (+/0/–)
Dauphin Island’s East End consists of the Historic Fort Gaines, the Dauphin Island Sea Lab, the Dauphin Island Campground, and the Audubon Bird Sanctuary. Recently, the Town of Dauphin Island and its partners, the Dauphin Island Sea Lab, the Park & Beach Board, and the U.S. Coast Guard has successfully been awarded a CAPI SBM grant for a shoreline restoration project on the East End of the Island. This area of the Island is under constant assault of shoreline erosion and it is estimated that this area of the Island is losing around nine feet per year. To make this project a true success story we feel it is important to find a way to make the shoreline more stable by incorporating dune planting, educational signage, and shoreline monitoring. This project will go a long way to protect and enhance the guest experience while visiting the Audubon Bird Sanctuary and the East End Beach.

The project aims at implementing control burns and invasive species management strategies to enhance birding and wildlife habitat. The Park & Beach Board, Dauphin Island Sea Lab, and the Town of Dauphin Island are proposing to leverage our resources of the State of Alabama’s Coastal Impact Assistance Program (CIAP) grant for an East End Shoreline Restoration project to make this project a true success story for Dauphin Island, the State of Alabama, and the National Fish & Wildlife Foundation. The Park & Beach Board is seeking to partner with the National Fish & Wildlife Foundation so that together we can restore and properly manage the Sanctuary and the East End Beach.

Oyster Restoration in Coastal Alabama

The primary objective is to carry out a long-term oyster restoration effort in lower Mobile Bay and the Alabama portion of the Mississippi Sound. Alma Bryant High School students, under the guidance of their aquaculture and marine biology teachers and area experts, will spawn, set, and grow oysters that ultimately will be deployed in dense spawning aggregates and protected breeding sites in the project area. The oysters will be produced using the latest techniques in off-bottom oyster culture. This approach maximizes survival rates as the growing oysters are protected from predators and supplied with optimum growing conditions. Growing the oysters in baskets at the surface of the water effectively eliminates predators and provides optimum dissolved oxygen levels and increased food levels. In nature, the survival rate for oyster larvae surviving to reproduce is maybe on the order of one in a million as most are eaten before even growing beyond the larval stage. Using today’s off-bottom growing techniques, the survival rate increases to thousands or even tens or hundreds of thousands per million. Also deploying the oysters as subadults greatly increases the chances of surviving to reproduce. Nursery and grow-out activities will be carried out in Sandy Bay near Point aux Pins. Oyster gardening and oyster culture operations in this area have demonstrated it to be one of the most productive oyster growing areas in the region. The remote area is somewhat isolated from development and pollution sources but is accessible by road. Nursery operations will be conducted at a permitted site in the northern portion of Sandy Bay. A grow-out site will be permitted and developed in water controlled by Dauphin Island Sea Lab approximately 500 meters to the south. This project will become an integral component of the aquaculture science and marine biology.
Environmental Restoration of Cotton Bayou and Perdido Islands

The City of Orange Beach, AL, has identified a restoration project that will serve to remedy harm and reduce the risk of future harm to Gulf Coast natural resources that were impacted by the Deepwater Horizon oil spill. Cotton Bayou and its associated two canals are located in the heart of Orange Beach and are connected to the Gulf of Mexico by Perdido Pass. The canals and other shallow waters of Cotton Bayou historically served as nursery habitat for aquatic and avian wildlife. Over the years, development and re-development of the natural canal shoreline have been replaced with seawalls and the canals have accumulated sediments that limit tidal circulation, contribute to long-term degradation in water quality, reduce dissolved oxygen concentrations and support algal blooms.

The City’s proposed project has the goals of preserving and increasing native habitat for aquatic and avian wildlife, enhancing circulation patterns in the canals, restoring water quality and serving as a model for similarly impacted communities along the Gulf Coast. The project approach is designed to leverage public funds to implement this restoration project and re-establish resources that will serve to restore impacted species from the Macondo oil spill such as shrimp, crab, oysters, sea turtles, and blue herons. The project approach was developed with a long term vision composed of three phases utilizing the best available science to ensure maximum success:

- Phase I is a proof of concept. During this phase we will gather information, define the intended problems, identify potential solutions, and determine the feasibility of implementation. This first step will serve to bring the stakeholders together with the City and define the intended goals for the project(s).
- Phase II will develop the design and environmental permitting for the selected project(s), establish costs and prepare construction Bid Documents.
- Phase III will facilitate construction of the project(s) and set the stage for the community to start reaping the benefits. Phase IV is the on-going operation and maintenance of the constructed facilities and monitoring of the improvements.

Phase I, II and III will each develop documents as deliverables that support the next funding request from NFWF. In this way each installment of funds can be measured against the veracity of the documentation to ensure a cost effective approach is being employed each stage of investment and to ensure maximum environmental benefits are realized.

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<tr>
<td>Environmental Restoration of Cotton Bayou and Perdido Islands Canals</td>
<td>84</td>
<td>Phillip Weik/City of Orange Beach</td>
<td>Cotton Bayou/Perdido Bay</td>
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Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- Oil Pollution Act (OPA) Criteria (15 CFR 990.54)
  - Project is technically feasible (+ / 0 / -)
  - Project readiness (+ / 0 / -)
  - Project offers opportunities for external funding (+ / 0 / -)
  - Project is not already required by existing regulations (Y/N)
  - Project is not already fully funded (Y/N)
  - Project complies with applicable laws and regulations (Y/N)
  - Project is consistent with criteria identified in the public notice (Y/N)
  - Project meets Trainer goals (+ / 0 / -)
  - Project is consistent with criteria identified in the public notice (Y/N)
  - Project is technically feasible (+ / 0 / -)
  - Project readiness (+ / 0 / -)
  - Project offers opportunities for external funding (+ / 0 / -)
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  - Project is not already fully funded (Y/N)
  - Project complies with applicable laws and regulations (Y/N)
  - Project is consistent with criteria identified in the public notice (Y/N)
  - Project meets Trainer goals (+ / 0 / -)
  - Project is consistent with criteria identified in the public notice (Y/N)

Additional Criteria

- Project is not already required by existing regulations (Y/N)
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- Project meets Trainer goals (+ / 0 / -)
- Project is consistent with criteria identified in the public notice (Y/N)
Project Name: Improved Bypassing of Beach Sands Dredged from the Mobile Ship Channel

Project ID: 87

Submitted By: Jeff Collier

Location: Dauphin Island

Cost: 2400000

Project Description:

This project will fund the incremental cost of improved sand bypassing at Mobile Pass. Specifically, this is the additional cost of disposing beach quality sand in depths less than 20 feet in appropriate locations around the Sand Island Lighthouse (or the general area of the 1987 “feeder bar” location on the shoals west of the lighthouse) instead of in the areas currently used for disposal. Dauphin Island, Alabama is located northwest of the ebb-tidal delta of Mobile Pass. The ebb-tidal channel system feeds sand naturally by wave action onto the beaches of Dauphin Island. 

The Town of Dauphin Island is committed to working hand-in-hand with the Corps of Engineers in the future to place beach quality sands dredged from the ship channel around the Sand Island Lighthouse to address the long-term problem of removing sand from the littoral system.

Dauphin Island is important not only for the residents but for the entire coastal system as it is the sand source for the Mississippi-Alabama barrier island chain.

Project Name: Improved Channel Bypassing of Beach Sands

Project ID: 28

Submitted By: Jeff Collier

Location: Dauphin Island

Cost: 2400000

Project Description:

The Mobil Project is a major project that addresses the long-term problem of removing sand from the littoral system and has a permanent impact on beach stabilization and associated ecological and economic impacts on Dauphin Island. Our project has two main objectives: 1) Restore eroded beach habitat on Robinson and Bird islands and 2) restore Cotton Bayou’s channel and basin for commercial boating access. The U.S. Army Corps of Engineers in cooperation with partners will dredge Cotton Bayou to its historic depth and use the dredged material for beneficial use to create roughly 3.3 acres of beach habitat on Robinson and Bird islands. This project will benefit the ecosystems by creating essential beach habitat that is used by animal species impacted by the oil spill. The project will also benefit Alabama’s coastal economy, attracting birders to the Gulf Coast, improving the access of charter fishermen to Dauphin Island, increasing the promotion of local tourism and in turn offsetting impacts of the oil spill in this area. 

The project will fund the incremental cost of improved sand bypassing at Mobile Pass. Specifically, this is the additional cost of disposing beach quality sand in depths less than 20 feet in appropriate locations around the Sand Island Lighthouse (or the general area of the 1987 “feeder bar” location on the shoals west of the lighthouse) instead of in the areas currently used for disposal. Dauphin Island, Alabama is located northwest of the ebb-tidal delta of Mobile Pass. The ebb-tidal channel system feeds sand naturally by wave action onto the beaches of Dauphin Island. 

This project is consistent with programmatic restoration goals (+/0/-), Project meets Trustees’ goals (+/0/-), Project is not already required by other regulations (-/0/+), Project is not already fully funded (Y/N), Project is technically feasible (+/0/-), Project readiness (+/0/-), Sustainability/Long-term Benefit of project (+/0/-), Project is time critical (+/0/-), Project offers opportunities for external funding & collaboration (+/0/-), Project benefits more than one natural resource and/or service (+/0/-).
Dauphin Island protects south Mobile County from hurricane storm surge and waves as well as defines and protects the extremely productive estuary of the eastern Mississippi Sound.

Saltwater marsh is an important ecosystem on Dauphin Island, Alabama, providing not only diverse habitat but also providing protection from coastal storm events. Eroding shorelines east of the Dauphin Island Airport have resulted in a loss of production.

We propose creating a $5 million fund that can be used to cover the costs associated with property owners donating conservation easements in our coastal watersheds. The primary impediment to the establishment of conservation easements are the costs the property owner must bear. We propose creating a conservation easement fund dedicated to covering those costs to encourage the development of new conservation easements.

The fund would not be used to buy easements, rather it would be used to pay for the appraisal costs, baseline documentation reports, stewardship and legal fees associated with creating conservation easements. Permanent conservation easements on private property have emerged as one of the most successful options for protecting valuable waterfront habitat from development.

The easements would be restricted to the floodplain areas of coastal rivers in Mobile and Baldwin Counties that drain into Mobile Bay, Weeks Bay and Wolf Bay. The goal would be to preserve as much of the natural floodplain of the rivers as possible. If the river shorelines are left in a natural state, rather than armored or developed, flood control is better, erosion is lessened and critical wetland habitat is preserved.

The $5 million fund would be set up so that only Alabama land trusts that are accredited with the national Land Trust Alliance could pursue easements. The accredited land trusts would be responsible for monitoring and stewardship, with a portion of the $5 million conservation easement fund set aside for each property, based on standard Stewardship calculations.

The effect of the project alternative on public health and safety +/0/-
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Dauphin Island–
Aloe Bay
Beneficial Use
Restoration

Baldwin, Mobile County


Aloe Bay 
Dauphin Island


2494952


The saltwater marshes along the Gulf Coast of Alabama are significantly productive ecosystems, providing food, shelter, and breeding habitat for important fishing species as well as bird habitat, drawing hundreds of birders to coastal Alabama each year. These habitats were gravely impacted by the Deepwater Horizon oil spill, leading to diminishing productivity of fishable species and ultimately negatively impacting seafood production.

Saltwater marsh is an important ecosystem on Dauphin Island, Alabama, providing not only diverse habitat but also providing protection from coastal storm events. Existing shorelines east of the Dauphin Island Airport have resulted in a loss of saltwater marsh habitat, negatively impacting the lucrative ecotourism draw of birding on the island. At the same time, Aloe Bay, on the north side of the island,
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<td>Fill Borrow Pits Dug in 2010 to Protect Against Oil Spill Damage</td>
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<td>Jeff Collier/ Town of Dauphin Island</td>
<td>Dauphin Island</td>
<td>5600000</td>
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This project will fill holes dug on the northern side of the barrier island of Dauphin Island, Alabama in May 2010 in response to the BP oil spill to build small sand piles and dunes as a defense against the impending surface oil slicks. Following a barrier island overwashing event on May 2, 2010, the Town of Dauphin Island constructed emergency sand barriers along the Gulf facing beaches as the BP oil spill was approaching the island. It should be noted that, to date, this response to the oil spill has been a total success. But, the holes on the island must now be filled or this legacy of the response to the oil spill could lead to a new disaster. Because of the emergency nature of the May 2010 operation, a portion of the sand for these barriers was mined from 20 privately owned lots on the north side of island’s west end. Sand from the 20 lots was dug using backhoes up to within 40 feet of the emergency natural dunes as a defense against the impending surface oil slicks. The barrier island could breach at these areas (in the general vicinity of the 2400 block of Bienville Blvd) in the next major hurricane if these holes are not filled. Such a breach will sever the developed portion of the island in two a quasi-permanent inlet could develop (like “Katrina Cut”) at these hole/pond locations.

This project will fill the holes dug in 2010 with beach and barrier island compatible sands from an offshore source, an upland source, or a riverine source. The Town of Dauphin Island has identified a source of good quality sand already which could be used for this project. The sand source is a submerged shoal roughly 5 miles south of the eastern end of the island. The Town would like to fill the holes with sand from the designated borrower site (alternative sand sources are upland pits, excess dredged sands from the Alabama Port Authority, and sand along the rivers managed by the USACE for beneficial uses). It is possible that this project could be done in phases if the sand source is not appropriate or does not meet the project’s requirements. Sand from the 20 lots was dug with no attempt at restoring dune habitat. The project area was left as dowels of sand that can serve as a warning to the public that sand is present. The public is encouraged to avoid these areas and practice caution as it is possible that the sand could wash away and create more problems for the public. The project team has gone through several steps of planning and coordination with multiple agencies to get this project off the ground.

The barrier island could breach at these areas (in the general vicinity of the 2400 block of Bienville Blvd) in the next major hurricane if these holes are not filled. Such a breach will sever the developed portion of the island in two a quasi-permanent inlet could develop (like “Katrina Cut”) at these hole/pond locations.

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<tbody>
<tr>
<td>West End Beach and Barrier Island Restoration Project</td>
<td>92</td>
<td>Jeff Collier/ Town of Dauphin Island</td>
<td>Dauphin Island</td>
<td>Total $35 million to $21 M</td>
<td>The Town of Dauphin Island proposes to widen the beach at its natural elevation and install a dune system using an offshore sediment source. The objective of the restoration project is to increase island longevoty and reduce overwash by nourishing the beach and dune system. In addition, the project would protect existing infrastructure and habitats that would otherwise be subject to degradation if the current land loss trends continued. The project area extends west from the current pier near monument DI-18 to monument DI-2. Beach fill will be hydraulically dredged from an offshore borrow area located in the Gulf of Mexico about a mile south-southwest of the Sand Island Lighthouse and pumped to the project area. The beach fill extends along approximately 4.25 miles of shoreline and requires approximately 3.59 million cubic yards to construct based on surveys conducted in July 2010. The fill template is designed seaward of the existing houses and infrastructure. Between DI-2 and DI-16, the template has a 25 foot wide dune crest at an elevation of +12.0 feet, NAVD with side slopes of 1V:1H. To protect the dune, a beach berm extends approximately 300 feet seaward at an elevation of +5.5 feet, NAVD. The beach berm has a 1V:1H slope to the seaward construction toe of fill. The construction template will shift the MHW shoreline an average of 427 feet seaward of its existing condition. Between DI-16 and DI-18, the existing beach widens and the fill template is designed on top of the existing profile warranting only the dune portion to be constructed. Transport of excavated material from the borrow area to the project area will occur with a hopper dredge or hydraulic dredge through a series of submerged, floating and shore-supported pipelines. Once deposition of material occurs at the fill site, the contractor will move the sand using heavy equipment to shape the beach to the design cross-sections. Final design volume will be based upon pre-construction surveys. Three levels of projects are proposed: one, a full restoration to historic conditions; two, a partial restoration to historic condition; and three, a restoration that will hold existing conditions. The cost of each level of project is estimated at $59, $38, and $21 M respectively.</td>
</tr>
<tr>
<td>Bon Secour Wetlands, Preservation, And Habitat Protection Project</td>
<td>96</td>
<td>Andy Bauer/ City of Gulf Shores</td>
<td>Oyster Bay/ Baldwin County</td>
<td>Total $500 M to $109 acres</td>
<td>Preserve and preserve 100 acres of predominately wetland habitat from private property owners in southwestern Baldwin County within the Mobile Bay Estuary. The property will be used primarily for habitat conservation and will protect/enhance fresh and estuarine water quality. The 100 acres is to be added to 109 acres of wetlands owned by the City of Gulf Shores and another 592 acres of wetlands owned by Baldwin County for a total project; totaling 1,200 contiguous acres of wetlands. The lands involved are primarily wetlands, with isolated upland areas in some tracts. The Natural Wetlands Inventory categorizes most of these as freshwater emergent, estuarine emergent or freshwater forested wetlands. There are large areas of brackish wetlands in the southwest corner of this project area on both sides of</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
<td>Submitted By/Primary Lead</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
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<tr>
<td>Alabama Artificial Reef Plan - Phase I</td>
<td>97</td>
<td>Tim Gothard</td>
<td>Gulf of Mexico</td>
<td>$36,000</td>
<td>Prior to the Deep Water Horizon Oil Spill in 2010, Alabama’s artificial reef system was shown to have strengthened the ecological and environmental health of the northern Gulf of Mexico by providing habitat for economically viable reef fish, and creating a marine environment which made it possible for fish populations to flourish. The diverse and spatially extensive reef complex significantly increased the carrying capacity of reef fish over the years and yielded an astonishing level of productivity. In 2011, this man-made reef system was directly responsible for generating over $13 million in state and municipal tax revenues for the State of Alabama, and supporting over 2,460 jobs. However, fishery biologists with decades of experience conducting research offshore of Alabama indicate reef fish populations are limited by a habitat bottleneck due the fact that many of state’s northern Gulf of Mexico wetland areas are now inundated which caused widespread loss of vegetation. Much of the privately held wetlands are prime candidates for development. Access points and natural habitat management access trails are provided for habitat maintenance/monitoring and wetland restoration purposes and will provide wildland urban interface zones between the surrounding single family subdivisions. The Bon Secour Wetlands Preservation and Habitat Protection Project are aligned with the goals of the Mobile Bay National Estuary Program Comprehensive Conservation and Management Plan and the Baldwin County Wetlands Conservation Plan.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
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</table>
| Stormwater Quality Rehabilitation Project | Dauphin Island | $500,000 | The Town of Dauphin Island is proposing a comprehensive stormwater quality rehabilitation project that will serve to remedy harms and reduce the future risk of harm to Gulf Coastal Natural Resources that were impacted by the DWH Oil Spill. The overall majority of the stormwater runoff produced by the Town of Dauphin Island discharges directly into the Mississippi Sound carrying pollutants, sediment, litter, etc. damaging the overall water quality of the sound and the surrounding coastal areas. The shallow coastal waters, estuaries, saltwater marshes, and associated wetland habitats in and around the Mississippi Sound on the north side of Dauphin Island provide native and nursery habitat for numerous aquatic and avian species. The main goal of this project is to improve the native habitat along the north side of the island and in the sound by restoring the overall water quality in the sound, improving water quality of the stormwater discharge into the sound, reducing sediment and litter transport into the sound, reducing overall stormwater discharge into the sound, and serving as a model for similarly impacted communities along the gulf coast. These objectives will be accomplished by making necessary repairs and improvements to the existing stormwater drainage facilities, including, but not limited to, grading and stabilization measures, updating and improving existing infrastructure, rerouting stormwater to centralized wetland treatment areas, and retention/detention areas.

The project approach is designed to leverage public funds to implement this rehabilitation project and re-establish resources and habitat that will benefit the growth and repopulation of impacted species from the DWH Oil Spill such as shrimp, fish, crab, oysters, sea grasses, blue herons, seagulls, etc. The project approach was developed with a long time goal oriented initiative and is divided into four phases to... |
Upper Wolf Bay Savanna and Marsh Acquisition for Conservation

99  Dan Dumont/ Alabama Forest Resources Center  Baldwin County/ Upper Wolf Bay  3000000

Acquisition of this tract for subsequent transfer to public or conservation organization ownership would create an opportunity for future maintenance/management and restoration activities to be conducted. Management and restoration costs are not included in this project and would be assumed by the new owner. The tract significantly contributes to the striking viewshed of upper Wolf Bay and has been designated as a Geographic Area of Particular Concern (GAPC) in the Alabama Coastal Area Management Plan (ACAMP), it is recognized as a Gulf Ecological Management Site (Gulf of Mexico Program), and it is recognized as a Gulf Ecological Management Site (Gulf of Mexico Program). In 2007 Wolf Bay was designated as an Outstanding Alabama Water by ADEM and the EPA. The parcel consists of 458 acres of wetlands and 111 acres of uplands. A botanical survey by Troy University in September of 2010 yielded 147 plant species and several state-listed animal species have the potential to occur. As coastal forests are diminished by development, the tract becomes increasingly important to Neotropical migrant birds as a stopover while on migration. Restoration of longleaf pine is possible on 55 acres of agricultural land. Natural communities include East Gulf Coastal Plain Wet Flatwood Bog, Southern Coastal Plain Blackwater River Floodplain Forest, and 2.6 acres of agricultural land. Natural communities include East Gulf Coastal Plain Wet Flatwood Bog, Southern Coastal Plain Blackwater River Floodplain Forest, and 2.6 miles of shoreline supporting Black Needle Rush Tidal Herbaceous Alliance. Protection of the mature slash pine savanna and adjacent marsh will enhance water quality in the estuary of Wolf Bay, providing economic benefits to the state. The forest of development is good, however, as the 111 acres of uplands would allow for a large development to occur.

Dauphin Island Sea Lab Research Building

100  John Valenti/ Dauphin Island Sea Lab  Dauphin Island  7000000

Construction of a new 15,000 sq. ft State-of-the-Art Research Facility that can support both resident scientists and visiting scientists from the 22 member institutions of the 40-year old Marine Environmental Sciences Consortium (MESC). Aging research laboratories, built by the Air Force in the 1950’s, have prevented the MESC from being as competitive for extramural money nationally and internationally as they could be. Funding for the construction of this facility would also allow the resident scientists at Dauphin Island Sea Lab (administrative home of the MESC) and scientists at MESC-member institutions to form stronger state-wide research collaborations that lead to cutting edge science proposals for the state. Beyond these critical priorities, construction of this facility would lead to the RESTORE Act-funded Center of Excellence to achieve goals far beyond what might be possible. These objectives are directly related to the economic health of lower Alabama where tax revenues are based strongly on the health of the resources found in our coastal waters. Additionally, funding for the construction of this new facility would magnify the economic impacts of the OSL via growth of staff and facility who would live locally.

Alabama Cooperative

101  Stephanie Rudolph/Auburn  Dauphin Island  3750000

For Alabama Cooperative Aquatic Animal Health Network will recruit and use the best available scientists and science to serve society and stakeholders who value the
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>No./ID</th>
<th>Submitted By/Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Animal Health Network</td>
<td></td>
<td>University of Alabama, School of Fisheries, Aquaculture, and Aquatic Sciences</td>
<td></td>
<td>health of Alabama’s aquatic natural resources. We propose the establishment of a service, science, and training-oriented aquatic animal disease diagnostics network closely integrated with a Gulf of Mexico sentinel and environmental monitoring program. The disease diagnostics network links cross-discipline cooperative laboratories for aquatic animal health that will serve the Alabama Department of Conservation and Natural Resources (including Marine Resources Division and Wildlife and Freshwater Fisheries Division), stakeholders concerned with the health of marine resources and the high standard of Alabama’s seafood, academics conducting ecosystem research in the region, citizens and students eager to learn about the Gulf of Mexico, and the missions of the Gulf of Mexico Research Initiative’s consortia of scientists. This project combines the expertise, resources, and experience of a team of established aquatic animal health experts, who will centralize aquatic animal disease diagnostic services, promote deeper understanding of aquatic animal diseases, translate results to citizens, and train a new generation of aquatic animal health experts who operate in the Gulf of Mexico. This network leverages our FDA- and USDA-affiliated disease diagnostics laboratories to provide aquatic animal disease diagnostic capabilities that will serve wildlife agencies and others. The Gulf of Mexico sentinel project extends those human and physical resources and expertise to conduct baseline monitoring through systematic collections of biological and environmental chemical data from selected sentinel fishes across 4 ecologically discrete and economically invaluable Gulf of Mexico essential habitats, including those subject to restoration. This will generate new data on the physiology and health status of aquatic species in their respective habitats, shed light on community- and ecosystem-level impacts of environmental change and restoration efforts, and forge baseline data vital to and requisite for comparable assessment studies conducted in the future and in light of restoration efforts for fish and shellfish in the region.</td>
</tr>
<tr>
<td>Gulf Coast Wildlife Recovery &amp; Interpretive Center: Feasibility, Preliminary Planning, and Preliminary Design Phase (Phase I)</td>
<td>103</td>
<td>Philip West/City of Orange Beach</td>
<td>Orange Beach</td>
<td>275000</td>
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<tr>
<td></td>
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<td></td>
<td>over 7,000 birds were impacted by the Deepwater Horizon Oil Spill, and white rescue efforts were unprecedented during the oil spill response, these worthwhile efforts have effectively been disbanded for the south Alabama region. There is a great need for a permanent, full-time wildlife rescue and rehabilitation program for the south Baldwin (Orange Beach, Gulf Shores, Gulf State Park, Foley and Fort Morgan) region. Due to our location along the northern Gulf of Mexico coastline, we play a significant role for both seasonal migratory birds and for shorebirds, seabirds and waterfowl. We routinely witness injuries, entanglements, fatigue and illness among these and other species. When coupled with interactions with tourists, these unfortunate situations lead to negative perceptions about the communities in which they occur. Our goal with this project is to create a bona-fide, effective wildlife rescue and rehabilitation facility that will be fully open to the public and educational groups. The project would offer meaningful response for wildlife emergencies and rehabilitation, provide significant opportunities for conservation education, and yet offer a worthwhile and unique experience for the regional visitor (i.e., ecotourism). Moreover, the project will prevent negative perceptions for those visitors and residents that encounter sick or injured wildlife,</td>
</tr>
</tbody>
</table>

### Restoration Types Addressed

- Public Notice
- Oil Pollution Act (OPA) Criteria (15 CFR 990.54)
- Addional Criteria

<table>
<thead>
<tr>
<th>Project is consistent with programmatic restoration goals (Y/N)</th>
<th>Project delivers benefits cost-effective (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project meets Trustees’ goals (+/0/-)</td>
<td>Project is technically feasible (+/0/-)</td>
</tr>
<tr>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
<td>Project readiness (+/0/-)</td>
</tr>
<tr>
<td>Project is not already fully funded (Y/N)</td>
<td>Project is time critical (+/0/-)</td>
</tr>
<tr>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
</tr>
</tbody>
</table>
### Project Information

**Project Name**: Benton Tract Restoration; Mobile Bay Neotropical Migratory Bird Habitat

**ID**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By</th>
<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benton Tract</td>
<td>Tim Kant/ City of Fairhope, Pelican Coast Conservancy</td>
<td>Walter Ernest/ Pelican Coast Conservancy</td>
<td>Fairhope, Dauphin Island</td>
<td>2500000</td>
</tr>
</tbody>
</table>

**Description**

- with little or no apparent effort made by any agency to offer assistance or care for the bird or animal. Several of the priorities of the facility and program will be:
  - Provide staff and personnel to respond to wildlife emergencies
  - Promote conservation and natural resource education and technical assistance
  - Reduce human-wildlife conflicts
  - Coordinate with and work closely with State and Federal resource management agencies in the interest of wildlife conservation and education; there will be no land cost associated with this project, as the facility will either be located on city-owned property. Over time, we believe the project will become largely self-sustaining, with funds becoming available from private donations and endowments, but it is doubtful these would ever cover the full cost of operation, etc. For Phase I of this project, we propose to complete the feasibility study, planning and preliminary design of the facilities and overall program.

**Habitat Restoration Types Addressed**

- Importance of stopover habitats, work with government and other agencies to ensure a balance between human land uses and conservation, educate landowners about practices that strengthen the island’s unique ecosystem and promote the economic value of ecotourism by attracting more birders to Dauphin Island.

**Additional Criteria**

- The 407 Acre Andrew Benton Tract is within the Weeks Bay Coastal Area. This property contains high quality dune habitat. The project would allow the Weeks Bay Reserve to expand its conserved habitat on Bon Secour Bay. This property contains high quality dune habitat. The project would allow the Weeks Bay Reserve to expand its conserved habitat on Bon Secour Bay.

- Dauphin Island has been identified by The National Audubon Society as a Globally Important Birding Area. 348 species have been reported on the island. The objective of this proposed project is to maintain a network of quality stopover habitats, work with government and other agencies to ensure a balance between human land uses and conservation, educate landowners about practices that strengthen the island’s unique ecosystem and promote the economic value of ecotourism by attracting more birders to Dauphin Island. This project seeks to establish a land acquisition fund that will be utilized to acquire Neotropical migratory birding habitat on Dauphin Island. The Pelican Coast Conservancy seeks funds from the NWF Gulf Environmental Benefit fund or other similar sources of funding to permanently protect the remaining lots in the Gorgas Swamp, Tupelo Gum Swamp and island primary dune habitat. The project would only work with willing sellers. This project could also include the placement of a perpetual conservation easement on the conserved sites. The conservation easement could ensure project transparency and third party oversight. In addition to the many permanent species that reside on the island, a variety of waterfowl, seabirds, and shorebirds are commonly observed in and around the island during the winter season. Federally endangered Piping Plovers and other shorebirds ply the sandy beaches in search of invertebrates buried in the sand, while various species of loons, gulls, terns and waterfowl are often observed in the waters of the Gulf of Mexico and Mississippi Sound.

- Mobile Bay Preservation and Restoration:

- 1470000

- Ty X was opened from the direct impacts from the 2010 DWH oil spill, yet contains similar habitats/species that are similar to other coastal streams that were not so fortunate. Although this area did not fall within the geological nexus of the DWH
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Location</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Mobile Bay Creek Reach Project</td>
<td>Orange Beach</td>
<td>$900,000</td>
</tr>
<tr>
<td>Gulf Coast Environment Research Station</td>
<td>Orange Beach</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Project Description

**Mobile Bay Creek Reach Project**

The Mobile Bay Creek Reach Project focuses on the restoration of Mobile Bay Creek, a critical water body in the Mobile Bay area. The project aims to enhance water quality, restore habitat, and protect the biodiversity of the area. Key restoration activities include:

- **Habitat Restoration**: Restoring wetlands and riparian areas to improve water quality and biodiversity.
- **Sediment Management**: Reducing sedimentation to protect the health of the bay and the surrounding ecosystems.
- **Threat Mitigation**: Addressing threats such as saltwater intrusion and erosion to ensure the resilience of the coastal environment.

This project is part of a larger effort to create a sustainable ecosystem by preserving and enhancing natural resources in the Mobile Bay area. The project is expected to improve water quality, protect marine life, and support local habitats, contributing to the overall ecological resilience of the region.

**Gulf Coast Environment Research Station**

The Gulf Coast Environment Research Station (GCERS) is a science and engineering facility located in Mobile, Alabama, designed to advance environmental research and technology transfer in the Gulf region. The station focuses on:

- **Research and Development**: Conducting cutting-edge research in environmental science and engineering.
- **Education and Outreach**: Providing educational opportunities and public outreach to promote environmental awareness.
- **Collaboration**: Engaging with local community partners to address environmental challenges.

The GCERS is a hub for innovation, serving as a model for sustainable environmental management and serving as a catalyst for economic development in the region.
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion of Auburn University Shellfish Laboratory</td>
<td>108</td>
<td>Bill Walton/University of Alabama's Center for Economic Development</td>
<td>Dauphin Island</td>
<td>3500000</td>
</tr>
</tbody>
</table>

### Project Description

The Auburn University Shellfish Laboratory, located on the Dauphin Island Sea Lab campus on the east end of Dauphin Island, Alabama, has provided instruction, research and outreach in the area of shellfish ecology and production to the citizens of Alabama, the region and the nation since it was opened in 2003. It is one component of the Auburn University Marine Extension and Research Center. The hatchery production of shellfish larvae and seed has supported a wide variety of on-shore research projects including focus areas of shellfish aquaculture, hatchery practices, shellfish and reef ecology, shellfish diseases, human pathogens associated with shellfish, and shellfish restoration. The ACUSL hatchery has also provided shellfish larvae and seed for other agencies and institutions around the Gulf of Mexico on an as needed basis.

With the current and projected investment in oyster restoration projects by NGOs and the federal government, oyster stock enhancement by state agencies, and private oyster farms, we anticipate a growing need for both production of oysters and shell condition testing, habitat assessment work, etc. Therefore, we propose to modernize and expand the current Shellfish laboratory by adding a 54,000 square foot facility adjoining the current facility. This expansion will include: 1) an enclosed hatchery with live algal production facilities (5,000 square feet) allowing greater production over a longer period of time each year; 2) additional laboratory, office and meeting space for disease monitoring, habitat assessment, growth and recruitment monitoring, etc.; 3) additional nursery tanks for both production and applied research, and 4) remote set tanks and support services for work with oyster restoration and stock enhancement. Importantly, the additional space would provide economic benefits to Alabama's coastal communities through enhanced aquatic habitats, and public confidence in the health and sustainability of our coastal environments.

### Additional Criteria

<table>
<thead>
<tr>
<th>Damage Assessment (PDARP) Criteria</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Restoration Types Addressed</th>
</tr>
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<tbody>
<tr>
<td>Project is consistent with programmatic restoration goals (+ / 0 / -)</td>
<td>Project supports existing regional or local conservation plan (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
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<tr>
<td>Project delivers benefits cost-effectively (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project is not already required by federal regulations (Y/N)</td>
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<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
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<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project is not already required by federal regulations (Y/N)</td>
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<tr>
<td>Project Name</td>
<td>Lead Location</td>
<td>Cost</td>
<td>Project Description</td>
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<tr>
<td>Little Lagoon</td>
<td>Dauphin Island</td>
<td>$758,350</td>
<td>This expansion is envisioned as a partnership with both the industry and the state, where AUSL could provide significant additional services to Alabama's coastal marine invertebrate fisheries.</td>
<td></td>
</tr>
<tr>
<td>Laguna Cove</td>
<td>Gulf Shores</td>
<td>$300,842</td>
<td>The Acquisition of coastal wetlands is a mechanism that will benefit the natural resources of the Gulf Coast that were impacted by the spill. The fee title acquisition and placement of a conservation easement on these two tracts currently owned by the Eire Meyer Foundation would demonstrate an important effort to protect and enhance natural and living resources with proceeds from the NFWF Gulf Restoration Program. The parcel could become a future City of Gulf Shores public park or be added to the land holdings of the State of Alabama's Gulf Shores.</td>
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<thead>
<tr>
<th>Project Name</th>
<th>Submitted By</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat enhancement of marine fisheries off coastal Alabama.</td>
<td>Stephen Gaudian/School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University.</td>
<td>Dauphin Island</td>
<td>It is clear that the 2010 DWH oil spill affected associated fisheries through reduced access (losses) and reduced demand ( Gulf seafood was contaminated). The primary objectives of this project will be to mitigate these impacts by (1) increasing access to the reef fish fisheries by substantially increasing reef habitat through a large artificial reef deployment program, (2) providing a robust assessment of the effectiveness of this habitat enhancement, and (3) providing valid scientific data to confirm that gulf seafood is free from DWH oil spill related contamination. One of the most promising approaches to mitigate the reduction in access to reef fisheries caused by the DWH oil spill event is to increase habitat for major fisheries species through an extensive and effective artificial reef program. Such habitat enhancement may also increase the resilience of these valuable resources to future disturbances. This project will add a large number (504) of large- sized, long-lasting artificial reefs (&quot;super-reefs&quot; = 25 ft. tall pyramid reefs) to the permitted reef zones off the coast of Alabama. Artificial reef placement, particularly distance between reefs can have profound influence on the effectiveness of any given artificial reef program. Therefore the habitat enhancement of this project will be tightly coupled with a robust investigation of the effects of reef spacing on a number of critical metrics including natural and fishing related mortality, condition, growth, abundance, biomass, production, diet, and movement of several important fisheries species (with a focus on red snapper) as well as community characteristics such as species richness, evenness, and diversity. This will be accomplished through application of a wide array of proven methods, each of which have been developed and optimized for this system by our lab over the last 24 years. Methods include standardized hook and line and trap sampling, visual surveys by divers and ROVs, hydroacoustic surveys, fine-scale passive acoustic tracking, stomach content analysis with DNA barcoding, otolith aging techniques, genomics studies, proteomics and microbiology studies. These methods will provide a comprehensive combination of data on population and community characteristics, individual condition and growth, individual movement, and resource use, and will allow an unprecedented assessment of the effectiveness of the artificial reef deployment at different levels of reef spacing.</td>
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<th>Project Name</th>
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<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laguna Cove Little Lagoon Natural Resource Protection</td>
<td>Walter Ernest/Pelican Coast Conservancy</td>
<td>Gulf Shores</td>
<td>The Acquisition of coastal wetlands is a mechanism that will benefit the natural resources of the Gulf Coast that were impacted by the spill. The fee title acquisition and placement of a conservation easement on these two tracts currently owned by the Eire Meyer Foundation would demonstrate an important effort to protect and enhance natural and living resources with proceeds from the NFWF Gulf Restoration Program. These tracts contain a significant amount of waterfront frontage on Little Lagoon. The parcels are also accessible from West Beach Boulevard. The project site is in close proximity to the boundaries of the Bon Secour National Wildlife Refuge. The parcel could become a future City of Gulf Shores public park or be added to the land holdings of the State of Alabama’s Gulf Shores.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project Description</td>
<td>Restoration Types Addressed</td>
<td>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</td>
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<tr>
<td>Spanish Fort Ecological Park</td>
<td>The City of Spanish Fort has identified a tract of land for preservation of wetlands and the construction of an ecological park. This project is situated south of where Bay Minette Creek discharges into the Delta. This project will serve to protect natural resources while creating a destination for locals and visitors to enjoy the cultural, historical and environmental importance of the site.</td>
<td>Recreational Use (Y/N)</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
</tr>
<tr>
<td>Identification, Prioritization, and Quantitative Assessment of Ecosystem Benefits of Restoration Actions within the Perdido and Perdido Bay Watersheds</td>
<td>This project establishes a program to identify and prioritize critical ecosystem restoration actions within the Perdido and Perdido Bay watersheds, and provide science-based quantitation of ecosystem benefits of restoration actions. The watersheds cover about 1,200 square miles, and are bisected by the Alabama-Florida border. They drain a variety of land use/cover types, including upland forests, wetlands, agricultural areas, and urban development.</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project prevents future and cumulative degradation of physical resources and services (+ / 0 / -)</td>
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</tbody>
</table>

State Park. The parcel is one of the largest undeveloped tracts located on Little Sagona. This site has previously been approved for a subdivision and a large scale marina.

The purpose of this project would be to acquire the property from the Erie Meyer Foundation and place a perpetual conservation easement on the acquired property. The Atlantic Coast Conservancy/Pelican Coast Conservancy could serve as the qualified holder of the perpetual conservation easement.

Spanish Fort Watershed

Perdido Bay Watershed

Identify, Prioritize, and Quantitative Assessment of Ecosystem Benefits of Restoration Actions within the Perdido and Perdido Bay Watersheds

Project Information

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<tr>
<td>111</td>
<td>Mike McNally/ City of Spanish Fort</td>
<td>Spanish Fort</td>
<td>31,000.00</td>
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2575000

Perdido Bay Watershed

Perdido Bay Watershed

2575000

Perdido Bay Watershed

This project establishes a program to identify and prioritize critical ecosystem restoration actions within the Perdido and Perdido Bay watersheds, and provide science-based quantitation of ecosystem benefits of restoration actions. The watersheds cover about 1,200 square miles, and are bisected by the Alabama-Florida border. They drain a variety of land use/cover types, including upland forests, wetlands, agricultural areas, and urban development. Water and sediment quality impairment and degradation of biological resources consistent with point and nonpoint source pollution from residential, agricultural, and industrial sources is widespread throughout the area. Evidence of ecological degradation includes imbalances in natural plankton populations, benthic and fish communities, and adverse changes in trophic dynamics and the loss of aquatic habitat. This project will substantially reduce uncertainties and increase effectiveness in identification and prioritization of potential restoration actions, quantify ecosystem benefits from current and future restoration actions, and improve decision-making in adaptive management of restoration actions. These goals will be accomplished by (1) characterizing existing environmental/ecological watershed conditions by establishing a science-based, integrated monitoring network for water and sediment quality, physical/hydrologic characteristics, and benthic invertebrate, planktonic, and fish community structure; (2) creating a dynamic, robust GIS
<table>
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<th>Project Name</th>
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<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Little Point Clear Unit - Bon Secour National Wildlife Refuge - Three Rivers</td>
<td>113</td>
<td>Fort Morgan</td>
<td>4750000</td>
<td>This project will provide permanent protection to approximately 237 acres which consists of a variety of coastal habitats. The Bon Secour National Wildlife Refuge is home to the endangered Alabama beach mouse, which is associated with the sand dunes and sea oats. Refuge beaches serve as nesting sites for loggerhead, and Kemp's Ridley sea turtles. Habitat types include beaches and sand dunes, scrub forest, fresh and saltwater marshes, fresh water swamps, and uplands. More than 170 species of birds have been identified on the refuge during migratory seasons, with many shorebirds and wetland-dependent species utilizing the habitats present for resting, wintering and nesting needs.</td>
<td>AL Portal</td>
<td>N N Y N N N N</td>
<td>N Y N</td>
<td>Y N</td>
<td>Monitoring, Adaptive Management, and Administrative Oversight (Y/N)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
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<tr>
<td>Fairhope Coastal Environmental Education Network (CCEN)</td>
<td>126</td>
<td>Fairhope</td>
<td>1395000000</td>
<td>CEEN carries out the City of Fairhope’s 2006 Comprehensive Plan to expand coastal environmental education and outreach, promote green infrastructure and outdoor public recreation areas, restore and protect watershed health, mitigate impacts from coastal storms, and increase coastal resiliency. CEEN’s grey and green infrastructure functions as an integrated ecological systems and connects the 108-acre Auburn University Gulf Coast Research and Extension Center (GCREC) to the planned 108-acre Fly Creek Nature Preserve and existing outdoor public green spaces in Fairhope. CEEN will i) strengthen synergies among local and state governments, conservation groups, and Alabama universities, ii) engage coastal citizens by promoting environmental education, outreach, and research, iii) restore and protect coastal wetlands, iv) mitigate environmental impacts of coastal storm surges, flooding, and natural disasters, v) enhance hurricane shelter and emergency management infrastructure, and v) ensure long-term coastal resiliency for generations to come. CEEN also showcases landscape horticulture and 21st century sustainable agricultural practices, creates tourism opportunities, and represents a long-lasting community development model in sustainable for coastal Alabama. This project links the 108-acre Fly Creek Nature Preserve to the 800-acre GCREC using natural drainage systems as well as walking, hiking, and biking trails. Infrastructure improvements include: i) extending Volanta Avenue across Highway 98 into GCREC site (to include a traffic signal); ii) construction of a platinum LEED certified environmental education facility (94,000 sq ft) housing a 400-seat auditorium, flexible indoor exhibit space, multimedia hub classrooms, offices, and</td>
<td>AL Portal</td>
<td>N Y N N N N N</td>
<td>N Y N</td>
<td>Y N</td>
<td>Sustainability/Long-term Benefit of project (+/0/-)</td>
<td>Project is technically feasible (+/0/-)</td>
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<tr>
<td>City of Prichard Land Acquisition Project</td>
<td>127</td>
<td>Chickasaw</td>
<td>2394000</td>
</tr>
<tr>
<td>Development of a sustainable groundwater management plan to support long-term economic growth in Baldwin County</td>
<td>128</td>
<td>Baldwin County</td>
<td>988000</td>
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</tbody>
</table>

**Project Description**

City of Prichard Land Acquisition Project:

Chickasaw: This project requests Restore Act funds to acquire land for conservation and recreation. There are numerous available parcels for acquisition adjacent to Chickasabogue Park and Chickasaw Creek. Chickasabogue Park is a 1,100-acre outdoor recreation facility and wildlife refuge. It provides a wide variety of outdoor activities in a natural setting while protecting the environment and preserving the diversity of plants and animals indigenous to the area. This park provides access to Chickasaw for canoeing, kayaking, fishing and boating. Additional parcels can create a network of water-based canoe and kayak trails that will tie into the Bartram Canoe Trail developed by the Alabama Department of Conservation and Natural Resources. The land will be acquired and will be conserved and protected. Eligible land includes undeveloped wetlands and uplands located within the City's municipal boundary.

Development of a sustainable groundwater management plan to support long-term economic growth in Baldwin County:

Baldwin County: Baldwin County is the largest county in the State of Alabama, and it is also one of the fastest growing counties in our state. Within the past 20 years, population in this county has doubled from about 95,000 residents in 1990 to 190,000 residents in 2010. Due to its rapid economic growth, the water demand within this county has also doubled from a net demand of 30 Mgal/day in 1990 to over 60 Mgal/day now. Baldwin County residents are 100 percent dependent on groundwater aquifers for water supply. The water currently extracted from Baldwin County aquifers are assumed to be recharged by rainwater or replenished by water moving from deeper formations. The dynamics of groundwater flow and recharge patterns within the complex aquifer system is not well understood. Therefore, the ability of this fragile aquifer system to meet future water demands in a sustainable manner, is unclear. Several nearby Alabama communities (e.g., Dothan, Alabama) that rely on groundwater have reported significant declines in groundwater levels. It is highly likely that similar declining trends are also occurring in Baldwin County aquifers, but there are no data available to quantify these effects. Baldwin County residents have noticed several springs running dry (e.g., Magnolia Spring) and streams having reduced base flow, which are indications of reduction in groundwater flow. Contamination events from various natural and anthropogenic sources have threatened the quality of groundwater. Baldwin county residents are beginning to notice their groundwater showing traces of fertilizers which could be signs of groundwater contamination. The county has a major waste site in Pensacola, Alabama, with groundwater contaminated by benzene. Also, saltwater intrusion is a major problem in several coastal aquifers. The objective of this proposal is to develop a sustainable water allocation plan for managing groundwater in Baldwin County. This two year project will include field data collection, GIS-based mapping.
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<tr>
<td>Harrod Tract</td>
<td>129</td>
<td>Ben Raines/ Weeks Bay Foundation</td>
<td>Fish River, Weeks Bay, lower Mobile Bay</td>
<td>$270,000</td>
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</tbody>
</table>

**Project Description**

The Harrod Tract is one of the largest remaining undeveloped parcels of swamp, marsh and river shoreline in coastal Alabama. It includes 7,600 feet of Fish River shoreline, including frontage along Turkey Branch and Waterhole Branch, two of Fish River’s primary tributaries. Multiple smaller bayous are present on the property.

The Weeks Bay Foundation and the Weeks Bay National Estuarine Research Reserve along with the State of Alabama have collaborated over the years to protect several thousand acres of wetlands around Weeks Bay, Mobile Bay, and the Fish River watershed. The Project property is adjacent to previously protected wetlands and is the largest privately-owned tract in the lower part of Fish River. The intent is to protect the property through fee simple purchase by the Weeks Bay Foundation or the State of Alabama. Location and Conservation Values: The Project property is located in Baldwin County, Alabama, near where Fish River meets Weeks Bay which joins to Mobile Bay. The northeast side of the 251-acre property is adjacent (bisected by Waterhole Branch) to approximately 175 acres of land conserved by the State of Alabama as part of the Weeks Bay National Estuarine Research Reserve. The Project property has approximately 7,600 feet of undisturbed waterfront on Fish River, Turkey Branch and Waterhole Branch and approximately 110 acres of delineated wetlands comprised of fringing marsh grading into hardwood cypress and gum swamps.

The extensive marsh edge provides habitat for a host of estuarine organisms including shrimp, crabs, and fish. Hundreds of species of migratory birds use the habitat annually, while more than a dozen resident species of shore bird are found at the edges and within the property along with the expected array of wetland flora and fauna. As the extensive wetlands are immediately adjacent to higher elevation uplands, the wetlands serve to absorb and clean runoff and preserve water quality of Fish River. The adjacent uplands included in the property provide areas for wetlands to retreat under projected sea level rise. The upland areas are suitable for restoration as pitcher plant bog and pine savanna.

The property is listed in the Mobile Bay National Estuarine Program “Conserving Alabama’s Coastal Habitats: Acquisition and Restoration Priorities of Mobile and Baldwin Counties” and also falls within the Land Acquisition Area indentified by the Weeks Bay National Estuarine Research Reserve Management Plan. As an addition to the Alabama Real Time Coastal Harrod Tract, it is consistent with the Mobile Bay National Estuarine Research Reserve Management Plan.

The Weeks Bay Foundation and the Weeks Bay National Estuarine Research Reserve have joined the Harrod Tract project with other efforts to protect coastal Alabama’s coastal habitats and to ensure the sustainability of the area’s future, while complementing long-term economic growth of this region.

Of existing groundwater assets, mapping of contamination sources, and development of a computer model using the MODFLOW code. We will also develop vulnerability assessment maps to delineate the impacts of climate-change induced weather changes and sea level rise on groundwater availability. Groundwater is the lifeblood of Baldwin County therefore this study is critical to the long-term economic growth of this region.

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<td>Project has reasonable probability of success (+ / 0 / -)</td>
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accurately define status and trends due to a lack of sustained data collection combined with shifting baselines. Alabama’s Real-Time Coastal Observing System (ALRT COS, www.mymobilebay.com) has reported hydrographic and meteorological data from seven stations on north-south and east-west transects throughout coastal Alabama on hourly, or shorter, time scales for 12 years, sharing data with the National Data Buoy Center, Gulf of Mexico Coastal Ocean Observing System, and the National Coastal Data Center. Our data have been utilized in a variety of peer-reviewed publications and by various state and federal agencies to confirm severe weather events and model weather predictions, manage public health and conservation of oyster harvesting, and monitor coastal water quality. The website currently averages 6000+ unique hits per month by fishermen, boaters, scientists, educators, and resource managers accessing current conditions, historical patterns, and archived data. Dauphin Island Sea Lab (DISL) and Mobile Bay National Estuary Program (MBNEP) seek funding to support existing monitoring and infrastructure and maintain the high level of quality controlled data generation and dissemination from coastal Alabama. The high costs of equipment, construction, and development of communications to disseminate data have already been invested and current maintenance of the system is being funded by the MBNEP and DISL. However, without sustained funding these stations cannot be maintained. Proposed funding will expand the parameters to include real-time pH and optical turbidity readings, and monthly chlorophyll, turbidity, and nutrient water grabs in line with the GCOOS build-out plan. ALRT COS will provide supporting data for monitoring individual restoration projects and continue ecosystem-wide monitoring for ten years, beyond the monitoring lifespan of many individual projects. Additionally, the stations will complement proposed biological monitoring (e.g. avian, fisheries, marine mammals) by providing system-wide physical data on hourly scales. Data will also assist in adaptive management of resources and proposed aquaculture projects where response to rapid changes may be necessary. Continued ecosystem-wide monitoring is necessary for successful restoration and management of this valuable area.

GulfQuest (Galleries, Exhibits, and Programs)

GulfQuest will open in 2015 on Mobile’s downtown waterfront. GulfQuest (National Maritime Museum of the Gulf of Mexico) will be the first maritime museum dedicated to the heritage and culture of the Gulf of Mexico – a $62 million educational tourism attraction that will raise the profile of Alabama and the Gulf Coast through its distinctive exhibits and programs. In addition to its sale focus on the Gulf region, GulfQuest will be unique among maritime museums by featuring interactive, hands-on exhibits, complemented by maritime artifacts. For this project, GulfQuest will establish three new interactive galleries focused on (a) Gulf of Mexico marine life (2,500 sq. ft.), (b) the Gulf seafood industry (750 sq. ft.), and (c) recreational fishing in Gulf waters (750 sq. ft.). While GulfQuest’s exhibits address aspects of these topics, the new galleries will focus exclusively on these areas, engaging visitors to explore the environmental aspects of the Gulf of Mexico: marine life including the types of fish, shrimp and oysters that are vital to the Gulf’s seafood industry and recreational fishing; Gulf seafood; and how it’s harvested, processed and distributed for consumption worldwide; and Gulf fisheries that have made recreational fishing a

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|                                                  | recreational fishing a
mainstay for regional tourism. Throughout, emphasis will be placed on the protection of natural resources (fisheries, habitats and wetlands). For each gallery, GulfQuest will develop new educational programs for families, school groups, and educators throughout the region. These programs will utilize the new galleries/exhibits as resources and expand their themes through hands-on experiences in the museum’s classrooms. Conducted by GulfQuest educators, programs will be offered for school (K-12) and youth groups; for families on weekends, holidays and summertime; and for educators to incorporate activities in their classrooms. School programs will be linked to the goals and objectives of the curriculums from each Gulf Coast state. With GulfQuest’s emergence as a regional cultural attraction, these exhibits and programs will provide entertaining and educational experiences for Gulf Coast residents of all ages and backgrounds, families vacationing in the region, and retirees who visit during the winter months. Over 300,000 visitors to GulfQuest each year will have an opportunity to experience these galleries and be prompted to value their relationship with the Gulf Coast’s environment and protect it for future generations.

GulfQuest will be unique among maritime museums in the Gulf region. To act large audiences from the surrounding region. Beginning in the museum’s second year of operation (2016), GulfQuest will host one “blockbuster exhibition” each year. These large-scale exhibitions require significant square footage (up to 6,000 sq. ft.), which GulfQuest can accommodate with its existing gallery space.

"Titanic: The Artifact Exhibition" will open at GulfQuest in the spring/summer of 2016. In addition, GulfQuest is in discussions to host blockbuster exhibitions such as "Real Pirates" from National Geographic (featuring artifacts from the pirate ship Whydah); "La Belle: The Ship That Changed History" from the Bullock Texas State History Museum (featuring artifacts from the flagship of La Salle). The funding ($4 million) will help GulfQuest underwrite the fees and expenses associated with hosting the blockbuster exhibitions for four years, including the marketing expenses required to promote these exhibitions throughout Alabama and the Gulf Coast region. To saturate the market, all media (outdoor, online, print, television, radio) will be utilized. GulfQuest will supplement the marketing budget for these exhibitions through the museum’s corporate sponsorships and media partnerships. With Mobile and Baldwin counties already serving as a regional destination, GulfQuest’s blockbuster exhibitions will provide a compelling reason for thousands of additional visitors to travel to Alabama from the Southeastern U.S., including New Orleans, Houston and Atlanta. In addition, the appealing nature of these exhibitions will convince those already visiting to extend their stay. With these exhibitions, GulfQuest will provide a compelling reason for thousands of additional visitors to travel to Alabama from the Southeastern U.S., including New Orleans, Houston and Atlanta. In addition, the appealing nature of these exhibitions will convince those already visiting to extend their stay.

GulfQuest: National Maritime Museum of the Gulf of Mexico (135)

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<th>Submitted By</th>
<th>Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>GulfQuest Blockbuster Exhibitions</td>
<td>135</td>
<td>Tony Zodrow, GulfQuest National Maritime Museum of the Gulf of Mexico</td>
<td>Mobile, AL</td>
<td>$62 million</td>
<td></td>
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</tbody>
</table>

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<th>Project Information</th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Project Addressed</td>
<td>Damage Assessment</td>
<td>Monitoring, Adaptive Management, and Administrative Oversight</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
</tr>
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</table>

<p>| Damage Assessment | Monitoring, Adaptive Management, and Administrative Oversight | Project is consistent with programmatic restoration goals (Y/N) | Project is consistent with criteria identified in the public notice (Y/N) | 15 CFR 990.54 |
|---------------------|---------------------------------------------------------------|----------------|----------------|---------------------------------|-------------------|
| Project Addressed | Damage Assessment | Monitoring, Adaptive Management, and Administrative Oversight | Project is consistent with programmatic restoration goals (Y/N) | Project is consistent with criteria identified in the public notice (Y/N) | Project is consistent with public health and safety criteria (Y/N) | Project is technically feasible (Y/N) | Project readiness (Y/N) | Project meets Trustees' goals (+ / 0 / -) | Project is not already funded by non-Federal sources (Y/N) | Project is not already required by existing regulations (Y/N) | Project complies with applicable laws and regulations (Y/N) | Project supports existing regional or local conservation plan (Y/N) | Project is not already fully funded (Y/N) | Project is consistent with criteria identified in the public notice (Y/N) | Project is time critical (+ / 0 / -) | Project is consistent with programmatic restoration goals (Y/N) | Project is considered of strategic frameworks (Y/N/NA) | Project is in discussions to host blockbuster exhibitions such as &quot;Real Pirates&quot; from National Geographic (featuring artifacts from the pirate ship Whydah); &quot;La Belle: The Ship That Changed History&quot; from the Bullock Texas State History Museum (featuring artifacts from the flagship of La Salle). The funding ($4 million) will help GulfQuest underwrite the fees and expenses associated with hosting the blockbuster exhibitions for four years, including the marketing expenses required to promote these exhibitions throughout Alabama and the Gulf Coast region. To saturate the market, all media (outdoor, online, print, television, radio) will be utilized. GulfQuest will supplement the marketing budget for these exhibitions through the museum’s corporate sponsorships and media partnerships. With Mobile and Baldwin counties already serving as a regional destination, GulfQuest’s blockbuster exhibitions will provide a compelling reason for thousands of additional visitors to travel to Alabama from the Southeastern U.S., including New Orleans, Houston and Atlanta. In addition, the appealing nature of these exhibitions will convince those already visiting to extend their stay. With these exhibitions, GulfQuest Blockbuster Exhibitions | 4300000 | Mobile, AL | $62 million |</p>
<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Industrial Base Analysis and Impact of Jobs Lost</td>
<td>136</td>
<td>Donald Epley/ USA Center for Real Estate &amp; Economic Development</td>
<td>uk</td>
<td>1129000</td>
<td>The industrial base of Southwest Alabama will be determined using North American Industrial Classification System data. The largest 20 industries will be ranked by several indicators to examine the industries driving the economy. This analysis will follow a demonstration project completed earlier in the State of Indiana that concentrated on 23 industries which contained 82 classifications of manufacturing. This project will add several that are unique to the Coast such as Fishing, Shipping, and Tourism. The second part of the study will concentrate on leakages to the Coastal economy in the form of imports. The economic impact of purchases made outside the region will be interpreted into the number of jobs lost. These jobs could exist on the Coast by creating new firms that produce the products purchased outside the area. This type of analysis is very useful for a detailed examination of new firms and industry potential for the area. One needed product of the analysis will be a cluster analysis which recommends industries that create the most economic impact on the local economy and in need of future funding and policy support.</td>
</tr>
<tr>
<td>Enhancing Oyster Restoration Efforts in Coastal Alabama</td>
<td>144</td>
<td>Ernie Anderson/ Organized Seaweed Association of Alabama (OSAA)</td>
<td>Potoshia Lois Sandy Bay/Point aux Pins</td>
<td>250000</td>
<td>This project is a partnership between the Organized Seaweed Association of Alabama (OSAA), Auburn University (Shellfish Lab/ASUL), Mississippi-Alabama Sea Grant (MASG), and Alma Bryant High School (ABHS). The primary objective of the project is to carry out a long-term oyster restoration effort in lower Mobile Bay and the Alabama portion of the Mississippi Sound. OSAA commercial oyster farmers and ABHS teachers/ students, under the guidance of area experts (AUSL/MASG), will set and grow oysters that ultimately will be deployed in restoration sites in coastal Alabama. We will contribute significant numbers of live oysters to restoration projects throughout the coastal waters of Alabama, increasing the likelihood of success of restoration efforts, jump-starting oyster populations in these areas, and increasing the return on investment of restoration dollars. While wild oyster set is expected and hoped for, successful oyster set is not guaranteed. Supplemental planting will provide two benefits. It ensures that the site has an initial population of oysters before competing species (e.g., barnacles, mussels) become established and preempt oyster settlement and decreases the time for oysters to reach sexual maturity. Additionally, supplemental stocking will help oysters become established in areas where larval supply may be limited and will decrease the time to see a return on investment of restoration dollars. The enhancement of natural oyster reef structure and oyster abundance as early as possible will also provide critical &quot;ecosystem services&quot; through improved water quality, increased biodiversity and creation of more diverse habitat. The oysters will be produced using the latest techniques in off-bottom oyster mariculture (OBOM). This approach maximizes survival rates as the growing oysters are protected from predators and supplied with optimum growing conditions. Growing the oysters in baskets at the surface of the water effectively eliminates predators and provides</td>
</tr>
</tbody>
</table>
### Frequency Radar

**Project Name:** Hydrologic Causeway Network

**Mobile No./Proj:** 146

**Submitted By Primary Lead:** University of South Dzwonk

**Location:** Mobile Bay

**Cost:** 2703298

**Project Description:**

High frequency radar (HFR) is used to measure surface ocean currents, local wave conditions, and to detect boat traffic. Networks of HFRs are the backbone of coastal monitoring and are critical for navigational safety, commercial and recreational fishing, drilling and gas/oil operations as well as spill mitigation and search and rescue efforts. The proposed HFR network will generate an extensive footprint from which surface velocity data will be obtained with a spatial resolution of 500 m and a temporal frequency of 1 hr. Several locations will be tested around Mobile Bay to ensure that site placement will maximize the spatial coverage. The proposed project will deliver real time current data as well as additional data products, such as realistic tidal current predictions and frontal positions, to a variety of user groups to improve the safety and efficiency of marine operations, to enhance the ability to make informed public health and safety related decisions, and to augment the real-time monitoring of coastal hazards. The maps of current patterns and frontal locations will aid resource managers and the fishing industry to avoid/target these specific areas for various purposes such as gas/oil permitting, disposal dredge materials, or adaptive fishing practices. The improved understanding of the physical environment in Mobile Bay will help determine the transport and fate of suspended sediment, essays, nutrients, oil-derived substances, harmful algal blooms (HABs), etc. We expect many additional scientific and operational projects will be conducted with the HF radar network. The establishment of a five 25 MHz HFR sites around Mobile Bay will help determine the transport and fate of suspended sediment, essays, nutrients, oil-derived substances, harmful algal blooms (HABs), etc. We expect many additional scientific and operational projects will be conducted with the HF radar network. The establishment of a five 25 MHz HFR sites around Mobile Bay will help determine the transport and fate of suspended sediment, essays, nutrients, oil-derived substances, harmful algal blooms (HABs), etc. We expect many additional scientific and operational projects will be conducted with the HF radar network. The establishment of a five 25 MHz HFR sites around Mobile Bay will help determine the transport and fate of suspended sediment, essays, nutrients, oil-derived substances, harmful algal blooms (HABs), etc. We expect many additional scientific and operational projects will be conducted with the HF radar network.
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<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Submitted ID</th>
<th>Al Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure advancement for Marine Observations in Coastal Alabama (IMOCA)</td>
<td>We would have the needed repair funding in hand based on ticket sales for access as a staging area for the BP cleanup. If the site had not suffered, we estimate that at least 10% of the site would have been used by renewable, recreational, and scientific sectors of the Alabama economy.</td>
<td>2653905</td>
<td>N</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>Project Name</td>
<td>Implemented or Proposed</td>
<td>Mitigation/Repair/Removal/Structural Restoration (V/V/N)</td>
<td>Project is consistent with programmatic restoration goals (V/V/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project is technically feasible (+/0/-)</td>
</tr>
<tr>
<td>Submitted ID</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project has reasonable probability of success (V/N)</td>
<td>Project meets Trustees’ goals (+/0/-)</td>
<td>Project is not already funded (Y/N)</td>
</tr>
<tr>
<td>Location</td>
<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project prevents future and continued adverse effects on public health and safety (V/N)</td>
<td>Project is not already required by other regulations (V/N)</td>
<td>Project is not already required by other regulations (V/N)</td>
</tr>
<tr>
<td>Cost</td>
<td>Oyster Reef (Y/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project supports existing regional or local conservation plan / restoration effort (Y/N)</td>
<td>Project readiness (+/0/-)</td>
<td>Project is not already required by other regulations (V/N)</td>
</tr>
<tr>
<td></td>
<td>Birds (Y/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Sustainability/Long-term Benefit of project (+/0/-)</td>
<td>Project is not already required by other regulations (V/N)</td>
</tr>
<tr>
<td></td>
<td>Sea Turtles (Y/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project is consistent with criteria included in the public notice (V/N)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
<td>Project is not already required by other regulations (V/N)</td>
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<tr>
<td>Repairs to the Fort Morgan Fishing Pier</td>
<td>The project proposes to make mandatory repairs to the Fort Morgan Fishing Pier, located at Fort Morgan State Historic Site in Baldwin County. The fishing pier is currently closed to disrepair and an unsafe condition of the structural pilings. Alabama Historical Commission staff estimate that at least 50% of the pilings are no longer load bearing, and therefore the pier was closed to the general public. The pier is heavily used (over 5,000 annual visitors) and was previously open to the public 24/7. We can confirm that during the period of the oil spill the pier was closed and the overall situation at Fort Morgan plummeted. The site was also used as a staging area for the BP cleanup. If the site had not suffered, we estimate that we would have the needed repair funding in hand based on ticket sales for access to</td>
<td>1000000</td>
<td>N</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>Promotions for Fort Morgan State Historic Site</td>
<td>152</td>
<td>Alabama Historical Commission</td>
<td>Fort Morgan</td>
<td>200000</td>
<td>We request funding for tourist promotions to increase visitation at Fort Morgan State Historic Site. Annual visitation nearly hit zero after the oil spill and we have been slowly gaining momentum ever since, but we are still in desperate need of promotions to encourage tourist visitation to the site. A local, state, and national campaign would only generate more interest in the history and natural landscape of Baldwin County, encouraging more tourists to visit and spend time in the area. The site was used as a staging area during the BP Oil Spill cleanup operations.</td>
</tr>
<tr>
<td>Sustainable Gulf Coast Oyster Restoration and Coastal Protection using Central Oyster Hatcheries and Gulf State Remote Setting Sites</td>
<td>154</td>
<td>Louisiana Sea Grant Consortium</td>
<td>Louisiana</td>
<td>600000</td>
<td>In the face of poor spat sets, low harvests and declining oyster populations, a new approach is needed to restore oysters and the communities that depend on them. We propose a comprehensive long-term oyster restoration plan that restores habitat, improves water quality, revitalizes the economy of the Gulf oyster community, replenishes living coastal and marine resources and enhances community resiliency by revitalizing the Gulf oyster industry economy. This will be accomplished by massively expanding regional oyster hatchery production capacity, establishing remote setting bases in each of the five states, working with state resource agencies in oyster restoration and stock enhancement and actively engaging university-based scientists in monitoring and adaptive management. This project will enhance and restore oyster populations throughout the region, providing significant ecosystem services (carbon sequestration, nitrogen removal, habitat for living marine resources and cultural) and encourage community resilience through long-term sustainable economic growth and job creation. The region-wide project will: 1. Use existing oyster hatchery capacity while conducting a rigorous site assessment (6 mos.) for a bio-secure mega-hatchery with the capacity to provide &gt; 50 billion oyster eyed larvae/year, with spawners specific to each state within 18 mos. 2. Build remote setting facilities in each state, capable of producing &gt;10 billion spat on cultch 3. Enhance up to 180,000 acres over 9 yrs. with 500,000 spat on cultch/acre, deployed by state resource agencies 4. Establish a university-based monitoring program in each state, to guide adaptive management 5. Reduce risk by adding a second bio-secure mega-hatchery in year 4 6. Support update of GSMFC oyster regional plan. For this project, siting and construction of the first hatchery and the dockside remote setting facilities will be accomplished within 18 mos. Larval production will be supported for 9 yrs., with monitoring to occur during this time, with 90 billion remote setting facilities.</td>
</tr>
</tbody>
</table>

### Additional Criteria

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<td>Wetland, Coastal, and Nearshore Habitat (Y / N)</td>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project complies with applicable laws and regulations (Y/N)</td>
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### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

| Project is consistent with criteria identified in the public notice (Y/N) | Project is consistent with criteria identified in the public notice (Y/N) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) |

### Public Notice

| Project is consistent with criteria identified in the public notice (Y/N) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) |

### Oil Pollution Act (OPA) Criteria

| Project is consistent with criteria identified in the public notice (Y/N) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) | Project offers opportunities for external funding & collaboration (+ / 0 / -) |

### Additional Criteria

<p>| Project is consistent with criteria identified in the public notice (Y/N) | Project offers opportunities for external funding &amp; collaboration (+ / 0 / -) | Project offers opportunities for external funding &amp; collaboration (+ / 0 / -) | Project offers opportunities for external funding &amp; collaboration (+ / 0 / -) | Project offers opportunities for external funding &amp; collaboration (+ / 0 / -) |</p>
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</thead>
<tbody>
<tr>
<td>Sanitary Sewer Construction Project</td>
<td>The City of Daphne, Alabama is proposing a sanitary sewer construction project that will serve to remedy harm and reduce the future risk of harm to Gulf Coast Natural Resources that were impacted by the DWH Oil Spill. The majority of the residents in the City of Daphne currently have sanitary sewer collection available to them except for six areas within the City limits and are still currently being served by onsite sewage disposal systems (septic tanks). The goal of this project is to completely serve the citizens of Daphne with sanitary sewer collection thus improving the water quality into Mobile Bay which in turn will provide a much improved native and nursery habitat for numerous aquatic and avian species. The objective of this project will be to remove all residential septic systems in the City which are notorious for adding pollutants, fecal coliform, etc. into the area creeks and ultimately to Mobile Bay. The City of Daphne is proceeding with the Engineering Design and Bid Documents for this project and will have this project “shovel ready” for any proposed funding.</td>
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</tr>
<tr>
<td>Characterization and Sublation of Significant Sand Resource Areas, Essential for Beach Restoration, Offshore Alabama</td>
<td>Offshore sand resources are essential to the maintenance of amenity beaches and the intertidal and beach habitat they provide. Sand reserves offshore Alabama have not been delineated in a manner to be represented as significant Federal Outer Continental Shelf (OCS) sediment resource areas nor have suitable borrow sources been characterized to maintain engineered beaches long term. Beach restoration targets habitat preservation, vital economic interest from tourism industry, and the buffer effect on existing coastal development and infrastructure. Based on the completion and interpretation of existing data, areas that may be mined for beach-compatible sand used in restoration in the northern Gulf of Mexico can and should be better defined. The proposed study is to support coastal restoration efforts and promote sand resource identification and dredging feasibility of State water bottom and OCS sand deposits. In order to maintain and improve coastal infrastructure, economy, and coastal habitat resiliency, viable nearshore sand sources suitable for beach placement are essential and the need to identify sand sources through further data assimilation and collection has never been greater.</td>
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</table>

**Task 1:** Data Rescue and Geospatial Update: Updating the Offshore Alabama Sand Information System (OASIS) platform is needed because new work has generated several datasets that addressed depleting sand sources; these data are needed to help fill gaps and allow for further delineation of sand-source potential. The GSA will procure data resources and incorporate them into OASIS. Task 1 also includes permitting and LORAN-C correction.

**Task 2:** Site Investigation and Data Processing Utilizing the OASIS platform, the GSA
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development and operation of an apparatus to monitor the fate and transport of volatile organic contaminants in aquatic ecosystems</td>
<td>Christian Oertli, University of South Alabama, College of Arts and Science, Department of Chemistry</td>
<td>Mobile</td>
</tr>
</tbody>
</table>

### Project Description

will collaborate with stakeholders to develop suitable investigation target areas. This is necessary for cost-effective data and field collection interests. The GSA will complete a geophysical survey and geotechnical exploration and analysis. Data processing will include core logging, seismic interpretation, sediment characterization, and geospatial analyses. In that other areas of gulf-fronting beaches outside the limits of engineered beaches in Alabama are likely targets for future beach restoration, further native beach sand characterization is warranted.

**TASK 3: Outreach** The new work will be disseminated through the web-based OASIS platform with data collected in Task 2. Reporting is done through Open-File Report publications and presentations.

### Additional Criteria

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<tr>
<th>Public Notice</th>
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<tbody>
<tr>
<td></td>
<td>Project is consistent with programmatic restoration goals (+ Y / 0 / - N)</td>
</tr>
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<td></td>
<td>Project is consistent with criteria identified in the public notice (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project has received an effective public notice (+ Y / 0 / - N)</td>
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<tr>
<td></td>
<td>Project is not already required by existing regulations (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project has reassembled public health and safety (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project prevents future and collateral injury to natural resources and services (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project benefits more than one natural resource and/or restoration effort (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project offers opportunities for external funding &amp; collaboration (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project readiness (+ Y / 0 / - N)</td>
</tr>
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<td></td>
<td>Sustainability/Long-term Benefit of project (+ Y / 0 / - N)</td>
</tr>
<tr>
<td></td>
<td>Project is time critical (+ Y / 0 / - N)</td>
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<td></td>
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<tr>
<td></td>
<td>Project offers opportunities for external funding &amp; collaboration (+ Y / 0 / - N)</td>
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</tr>
<tr>
<td>Project has received an effective public notice (+ Y / 0 / - N)</td>
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<td>Sustainability/Long-term Benefit of project (+ Y / 0 / - N)</td>
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### Project Information

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<th>Location</th>
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<tbody>
<tr>
<td>Development and operation of an apparatus to monitor the fate and transport of volatile organic contaminants in aquatic ecosystems</td>
<td>Christian Oertli, University of South Alabama, College of Arts and Science, Department of Chemistry</td>
<td>Mobile</td>
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</tbody>
</table>

### Project Description

The development and operation of an analytic instrument capable of rapid on-site trace analysis of organic constituents in environmental waters is proposed. While traditional analysis involves elaborate sample preparation, this apparatus permits direct analysis of environmental water. The various advantages from real-time data include the opportunity for adaptive project management and strategic project realignment during the progression of a mission. Yet, the current status of the applied technology remained mostly in the research state with few commercially available instruments limited to analysis of dissolved gas.

This proposal intends to apply experience gained from an industrial effluent application to the monitoring of environmental water samples. This novel application promises to provide a convenient, cost effective and vital analytic tool for rapid identification and quantification of pollutants in a variety of waters within the Gulf Coast Ecosystem Restoration Programs.

The proposal solicits funds of $315,000 for the construction of an instrument as follows:

* In stage I a prototype instrument will be developed for laboratory evaluation and system performance validation as required by the Gulf Coast Ecosystem Restoration Program. In addition to vital instrument performance data, this phase provides educational and hands-on experience in the field of environmental chemistry for two students. Instrument validation data is expected within six months and completion is expected at twelve months.

* In stage II the instrument will be modified for on-site testing optimizing the design for field application. Likewise this phase again provides an educational opportunity for students in the USA Chemistry or Engineering Departments.

The operating principle is based on a mass spectrometer equipped with an inlet that separates the organic constituent from its water matrix. It has been successfully tested by the applicant to detect trace Epichlorohydrin in effluent from a chemical plant. The general analytic principle is known as the Membrane Inlet Mass Spectrometer and has been used in various applications for over forty years providing scientific data of volatile organic compounds in water. Its expansion into...
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<tr>
<td>Graham Creek Nature Preserve Expansion</td>
<td>Leslie Gahagan/ City of Foley</td>
<td>Foley</td>
<td>650,000</td>
<td>The City owns Graham Creek Nature Preserve, a 484-acre park that contains headwater wetlands, pine savannas, mixed forests and tidal wetlands habitat with recreational and educational opportunities for the community and tourists alike. Graham Creek Preserve is bisected by Graham Creek and is bordered by this requested property acquisition along the northeastern boundary. This property would expand the park with 125 acres of pine savanna along the northern side and tidal wetlands along Graham Creek through the southern interior. With this expansion visitors could access coastal habitats for bird watching, fishing, kayaking and other recreational opportunities. The existing educational programs would be expanded to incorporate this large area of shoreline. Educational signage would inform visitors of the natural ecosystem and native species. The site contains a variety of species of pitcher plants and rare orchids that would proliferate under prescribed burning operations. There are several gopher tortoise colonies that exist on this land as well. Tidal wetlands along the edges of the sinuous stream channel provide excellent protected nursery grounds for fish and shellfish. This property is also a favorite wading site for Brown Pelicans, Wood Ducks and many other bird species. The City would include the property as part of the nature parks system for management, maintenance, and restoration efforts such as prescribed burning operations. Educational signage would alert the public to the natural habitat along the creek and interior cove. With this expansion visitors could access coastal habitats for bird watching, fishing, kayaking and other recreational opportunities. The existing educational programs would be expanded to incorporate this large area of shoreline. Educational signage would inform visitors of the natural ecosystem and native species. The site contains a variety of species of pitcher plants and rare orchids that would proliferate under prescribed burning operations. There are several gopher tortoise colonies that exist on this land as well. Tidal wetlands along the edges of the sinuous stream channel provide excellent protected nursery grounds for fish and shellfish. This property is also a favorite wading site for Brown Pelicans, Wood Ducks and many other bird species. The City would include the property as part of the nature parks system for management, maintenance, restoration and research purposes. This last remaining undeveloped land along Graham Creek will be key in protection of this entire ecologically sensitive habitat.</td>
</tr>
<tr>
<td>Wolf Creek Park Expansion</td>
<td>Leslie Gahagan/ City of Foley</td>
<td>Foley</td>
<td>325,000</td>
<td>The City owns Wolf Creek Park, a 25-acre property that contains coastal habitat with recreational and educational opportunities for the community and tourists alike. Wolf Creek Park is the northern boundary of the requested acquisition. This property would expand the park with the remainder of the coastal bird rookery habitat along the creek and interior cove. With this expansion visitors could access coastal habitats for bird watching, fishing and kayaking. Educational signage would inform visitors of the natural ecosystem and native species. The site contains a variety of species of pitcher plants and rare orchids that would proliferate under prescribed burning operations. Also there is a natural cypress wetland along the interior side of the shoreline. Tidal wetlands along the creek provide excellent protected nursery grounds for fish and shellfish. Ornithologists have noted the large aquatic bird populations that nest on this property as well. Furthermore, the property can absorb tidal surges to prevent coastal flooding upstream. The City would include the property as part of the nature parks system for management, maintenance, restoration (removal of invasive exotic plant species), water quality monitoring and ecotourism marketing.</td>
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<td>Project Description</td>
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<tr>
<td>Comprehensive weather, water, and sediment monitoring in Mobile and Baldwin Counties using terrestrial and marine-based sensing systems.</td>
<td>Mobile Bay - Alabama University of South Alabama, Department of Earth Sciences South Alabama Mesonet</td>
<td>Mobile Bay</td>
<td>2431863</td>
<td>The economics, environmental, aesthetic, and recreational benefits provided by the Mobile Bay area depend on a clean environment. Natural events like hurricanes, storm surge, flash floods, and strong winds directly impact water quality via storm runoff, turbulent mixing, or other processes. Extensive and continuous monitoring of weather and water-quality parameters will establish baselines and assist in long-term science-based planning. Processes and driving forces controlling water quality will be identified. Real-time data allows short-term decision making and immediate disaster response. These are essential steps in maintaining resilient and sustainable coastal communities. The project will build on existing monitoring sites operated by the University of South Alabama, PORTS, DSHU/MBNWF, NERRS, and MAWSS. Four new land-based sites will be installed in the same configuration as the existing South Alabama Mesonet stations, which monitor 8 meteorological and 2 soil parameters. New stream-based sites will be installed and existing sites will be upgraded to a standardized sensor suite. Water-based parameters measured continuously will be stream stages/discharges, turbidity/sediment influx, temperature, dissolved oxygen, salinity/conductivity, pH, nitrate, and sediment influx. Automated samplers will store samples of metals, organics, and toxicity during regular intervals or predefined events to be gathered later for lab analysis. Surface-based rain gauge and Mobile Doppler Weather radar (WSR-88D) rainfall data will be integrated. Satellite remote sensing will map water temperature and spatial resolution of event-sedimentation and phytoplankton (an indicator of water quality). GIS will relate changes to the watersheds over time to changes in water quality and create predictive models of environmental health. A real-time, web-based data management and -visualization system will provide information to emergency managers, urban planners, port authorities, residents, and policy makers. End users in (marine) biology will assess changes in biodiversity and plant communities as a function of natural and anthropogenic disturbances. Civil engineers will determine flood risk and continuous monitoring of meteorological can provide triggering events for evacuation of users.</td>
</tr>
<tr>
<td>Mobile County Emergency Operations Center</td>
<td>Mobile County - Mobile County Commission</td>
<td>Mobile County</td>
<td>1500000</td>
<td>Construct a new Emergency Operations Center of approximately 35,000 square feet to serve as the multi-agency response and resource coordination center for Mobile County and its political subdivisions during disasters. The existing facility cannot adequately support the number of personnel required to effectively manage emergency response to incidents with the work space, billeting space, and sanitation facilities needed. Today’s homeland security threat environment also requires physical security enhancements for a critical facility such as this. Due to the nature of the current facility, further expansion or enhancements are either not feasible or are not considered cost effective.</td>
</tr>
<tr>
<td>Mobile County Conservation Acquisition</td>
<td>Mobile County - Mobile County Commission</td>
<td>Mobile County</td>
<td>800000</td>
<td>The Mobile County Commission utilized SMI in Coastal Impact Assistance Program (CIAP) funding to establish a local Habitat Conservation Program that includes property acquisition and management activities designed to conserve, protect, restore and enhance diverse habitat types found throughout Mobile County. Initial CIAP activities were focused on acquiring parcels that contain longleaf pine.</td>
</tr>
</tbody>
</table>
Coastal Monitoring

Project Name
Yancey Branch Network (COCO) and Community Comprehensive Watershed

Location
Daphne

City
Daphne

Cost
7926889

Project Description

The Yancey Branch Watershed lies in the heart of Daphne. It begins on the east side of US Hwy 98 and ends at the City of Daphne’s Bay Front Village-Padre Island Park, along Mobile Bay. Over the years, the watershed has experienced tremendous commercial and residential growth. The changes in land use in the watershed have resulted in increased stormwater runoff rates. The Yancey Branch Watershed is experiencing severe storm channel erosion, private and public property damage from flooding, water quality impairments, and coastal habitat loss. The City of Daphne would like to use available funds to complete a comprehensive watershed study, including a hydrology component, and a watershed management plan. The outcome of this project will be the protection of ecosystem services provided by coastal marsh and wetlands, and other habitat types in Mobile County.

Yancey Branch Watershed Restoration

No./ID
165

Location
Daphne

Submitted By
Ashley Cambell (City of Daphne)

Project Description

The Yancey Branch Watershed lies in the heart of Daphne. It begins on the east side of US Hwy 98 and ends at the City of Daphne’s Bay Front Village-Padre Island Park, along Mobile Bay. Over the years, the watershed has experienced tremendous commercial and residential growth. The changes in land use in the watershed have resulted in increased stormwater runoff rates. The Yancey Branch Watershed is experiencing severe storm channel erosion, private and public property damage from flooding, water quality impairments, and coastal habitat loss. The City of Daphne would like to use available funds to complete a comprehensive watershed study, including a hydrology component, and a watershed management plan. The plan would be used to guide the restoration of the watershed which will include but may not be limited to: land acquisition, stream and wetland restoration & preservation, and stormwater management. The restoration of Yancey Branch Watershed would complement the goals of the available Alabama Coastal Restoration funds by improving the water quality in Yancey Branch which in turn would improve water quality in Mobile Bay. Mobile Bay and its unique coastal habitats; coastal wetlands, marshes, beaches, and submerged aquatic vegetation will benefit greatly from the implementation of the project.

Comprehensive Coastal Monitoring and Community Engagement Network (CCMN)

No./ID
166

Location
Gulf of Mexico

Submitted By
Renee Coffin/ Dauphin Island Sea Lab

Project Description

Environmental monitoring efforts in coastal Alabama, as in many Gulf estuaries, have traditionally focused on individual subunits of the watershed: rivers and streams, bays, and near coastal waters. Within coastal Alabama established networks have worked to fill gaps, optimize effort, and disseminate data for managers, researchers, regulators, and recreational users. We propose combining these efforts (Alabama Project Suggestions 130,147,161) into a comprehensive hydrological and water quality watershed monitoring network with a heavy emphasis on generating end-user data products. This network implements monitoring strategies developed by regional organizations (e.g. GOMA, CCOS, and GOMURC) and will expand existing relationships with MAWSS, ADEM, ADPH, ADECA, ADRM, ABNEP, AADNR, NWS, NCEC, NOAB, NEPS, PORTS, and NOAA to coordinate and leverage watershed monitoring. Operation and maintenance for existing monitoring, infrastructure for future monitoring expansion, a platform for integrating restoration monitoring into long-term databases, leveraging and

Gulf of Mexico

1926889

Environmental monitoring efforts in coastal Alabama, as in many Gulf estuaries, have traditionally focused on individual subunits of the watershed: rivers and streams, bays, and near coastal waters. Within coastal Alabama established networks have worked to fill gaps, optimize effort, and disseminate data for managers, researchers, regulators, and recreational users. We propose combining these efforts (Alabama Project Suggestions 130,147,161) into a comprehensive hydrological and water quality watershed monitoring network with a heavy emphasis on generating end-user data products. This network implements monitoring strategies developed by regional organizations (e.g. GOMA, CCOS, and GOMURC) and will expand existing relationships with MAWSS, ADEM, ADPH, ADECA, ADRM, ABNEP, AADNR, NWS, NCEC, NOAB, NEPS, PORTS, and NOAA to coordinate and leverage watershed monitoring. Operation and maintenance for existing monitoring, infrastructure for future monitoring expansion, a platform for integrating restoration monitoring into long-term databases, leveraging and
The Three Mile Creek Watershed drains 30.1 sq. mi. (nearly 20%) of the conservation, watershed restoration, environmental education and passive recreation. The City of Mobile wishes to use the available Alabama Coastal Restoration funds to purchase an urban parcel in the headwater wetlands of D’Olive Creek to further the MBNEP Estuary Program (MBNEP) has undertaken a comprehensive restoration of the watershed’s principal tributaries: D’Olive Creek, Tiawasee Creek, Joe’s Branch have accelerated erosion and stream channel degradation, which has led to excessive sediment loads and destruction of habitats and infrastructure to the point that the waterbody’s principal tributaries: D’Olive Creek, Tiawasee Creek, Joe’s Branch have been listed on ADEM’s 303d List; impaired by siltation. The Mobile Bay National Estuary Program (MBNEP) has undertaken a comprehensive restoration of the watershed which involves implementing stormwater management in the headwaters and stream and wetland restoration throughout the watershed. During the restoration efforts, it was determined that implementing a management measure in the area of this proposed land acquisition would greatly reduce the quantity and velocity of the stream flow along D’Olive Creek which in turn would reduce stream channel erosion, reduce sediments migrating downstream to riverine and coastal habitat, protect ADEQ wetland and streambank areas along I-10 and State Highway 90 and reduce downstream residential flooding claims. The City of Daphne wishes to use the available Alabama Coastal Restoration funds to purchase the 53 acre parcel in the headwater wetlands of D’Olive Creek to further the MBNEP restoration efforts and to allow the City to pursue the much needed transportation improvement: County Road 161/ I-10 interchange. This project will be foundational to establishing a regional monitoring plan to protect the ecosystems that drive local economies. A coordination of monitoring efforts between agencies across the watershed, and integration into regional and Gulf wide monitoring are all outcomes of consolidation. Combining these data streams facilitates development of data products. To ensure stakeholder involvement in data development, we will work with local, regional, and federal organizations already invested in stakeholder needs, data visualization, and outreach. Annual workshops will be held to reframe the needs of the end-users and to ensure data derived products are meeting those needs. Additionally, a workshop will be held the first year with local organizations to develop a water quality report card for the watershed, to be updated and published every year. Transparency in our process, working with organizations that already have critical connections and trust developed with stakeholders, and consistent data production will engender maximum buy in from all local stakeholders, including managers, researchers, regulators, recreational users, and community planners. Developing reliable, scalable, standardized, integrated, comprehensive monitoring networks is critical to establishing baselines and assessing the cumulative impacts from restoration efforts, climate change, and events. This project will be foundational to establishing a regional monitoring plan to protect the ecosystems that drive local economies.

### Project Information

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<th>Submitted By</th>
<th>Lead</th>
<th>Location</th>
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<tr>
<td>D’Olive Creek Watershed Land Acquisition</td>
<td>167</td>
<td>Ashley Campbell / City of Daphne</td>
<td>Daphne</td>
<td>$900,000</td>
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<td>Three Mile Creek Lower Watershed Land Acquisition and Planning</td>
<td>168</td>
<td>Omarie Key / City of Mobile, AL</td>
<td>Mobile</td>
<td>$315,000</td>
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### Project Description

The D’Olive Creek watershed drains parts of the cities of Spanish Fort and Daphne. The watershed is in transition from forested, agricultural, and residential land uses to residential and commercial development. This land-use transition and its related urban contaminants and impervious surfaces have profoundly impacted water quality and habitat in the watershed and Mobile Bay. Increasing runoff has accelerated erosion and stream channel degradation, which has led to excessive sediment loads and destruction of habitats and infrastructure to the point that the waterbody’s principal tributaries: D’Olive Creek, Tiawasee Creek, Joe’s Branch have been listed on ADEM’s 303d List; impaired by siltation. The Mobile Bay National Estuary Program (MBNEP) has undertaken a comprehensive restoration of the watershed which involves implementing stormwater management in the headwaters and stream and wetland restoration throughout the watershed. During the restoration efforts, it was determined that implementing a management measure in the area of this proposed land acquisition would greatly reduce the quantity and velocity of the stream flow along D’Olive Creek which in turn would reduce stream channel erosion, reduce sediments migrating downstream to riverine and coastal habitat, protect ADEQ wetland and streambank areas along I-10 and State Highway 90 and reduce downstream residential flooding claims. The City of Daphne wishes to use the available Alabama Coastal Restoration funds to purchase the 53 acre parcel in the headwater wetlands of D’Olive Creek to further the MBNEP restoration efforts and to allow the City to pursue the much needed transportation improvement: County Road 161/ I-10 interchange. This project will be foundational to establishing a regional monitoring plan to protect the ecosystems that drive local economies.
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<tr>
<td>169</td>
<td>Coastal Restoration in Alabama coastal waters</td>
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</table>

**Location:**
- Alabama’s early coastal restoration projects aim to stabilize eroding sandy shorelines and coastal marshes with the goal of regaining lost ecological and economic value. These restoration projects are mostly unique, with methods ranging from intertidal breakwaters made of concrete units to subtidal breakwaters built from oyster shell, as well as commercial products. The projects and their locations are as follows (see attached map):
  - Alabama Port (30°34′4″N 88°32′4″W);
  - Bon Secour Bay (30°34′7″N 87°43′4″W);
  - Coffee Island (30°34′7″N 88°08′4″W);
  - Little Bay (30°34′7″N 88°27′4″W);
  - Mon Louis Island (30°41′7″N 87°50′4″W);
  - Pelican Point (30°36′7″N 88°02′4″W);
  - Point Beauregard (30°36′7″N 87°42′4″W);
  - Swift Tract (30°31′7″N 87°7′4″W).

**Cost:**
- $55,000,000

**Submitted By:**
- Bret Webb, University of South Alabama

**Lead Location:**
- Alabama coastal waters

**Submitted Lead:**
- AL-Portal

### Restoration Types Addressed

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<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<td>Project is consistent with criteria identified in the OPA notice (Y/N)</td>
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<td>Project Name</td>
<td>ID</td>
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<td>Africatown Welcome Center</td>
<td>175</td>
<td>The Deepwater Horizon Oil Spill profoundly impacted the cultural, economic, and environmental resources of coastal Alabama and demonstrated that extraction of natural resources from the Gulf of Mexico comes with substantive risks. Although these risks are often necessary to ensure economic prosperity for the State and Nation, such risks must be balanced by preparation for and response to an oil spill. Key to adequate response, damage assessment, mitigation and restoration activities is the availability of a well-trained scientific workforce and new research and technological developments. Currently no program in Alabama comprehensively addresses these response needs. USA is the established leader in the field of marine and coastal sciences among Alabama Universities with the only Marine Sciences and Environmental Toxicology programs approved by the Alabama Commission on Higher Education. Coupled to these two programs is a broad base of expertise in chemistry, coastal engineering, and socioeconomics across the University. While the current programs have been successful, infrastructure constraints have hampered their growth. We propose an ambitious project to facilitate growth of coastal and environmental sciences at USA. The goal of the project is to establish USA as a leader in coastal and environmental sciences and provide the scientific workforce necessary to respond to environmental threats that could jeopardize the cultural, ecological, and economic resources of the State. The central element of the USA-CES initiative is the construction of a 100,000 square foot building. The building will provide teaching and research space for the Marine Sciences and Environmental Sciences programs. The project also includes funding for critical instrumentation, specialized research labs and technology necessary to understand the fate and effects of environmental contaminants in coastal ecosystems. The building will also provide a venue for faculty in other USA departments whose professional interest lie in the broad field of interdisciplinary Environmental Sciences. Future oil and other contaminant spills can occur anytime and establishing an education and research program focused on training the scientific workforce necessary to respond to future spills would be an important and economically beneficial asset to coastal Alabama.</td>
<td>Mobile</td>
</tr>
</tbody>
</table>
### Project Name
- **Proposed Meaher Family Home**

#### Project Information
- **Project ID**: 176
- **Submitted By / Primary Lead**: Coastal Restoration Center
- **Location**: Mobile
- **Cost**: £4,300,000

#### Project Description
The trans-Atlantic slave trade had been outlawed for more than fifty years when wealthy Mobile businessman Timothy Meaher brought the last known ship filled with captives Africans into the United States. Some say he lost a $100,000 bet that he could do it without being caught. Authorities were already on to Meaher and his co-conspirators by the time the Clotilda arrived in Mobile Bay. Under the cover of darkness, the crew and cargo — including the Africans — were mugged up the Mobile River in smaller boats. They landed on the river’s verdant banks, near land owned by the Meaher family, where Africatown sits today. Although Meaher lost his bet and was brought to trial, he was never convicted. After slavery, the newly-freed Africans worked together to build a tight-knit community called Plateau or Africatown, which they designed and governed to feel like their African home. They built houses, communities as a historic signifiers of the community and ultimately preservation of the rare African and cultural history to the public; contribute to the gulf coast and state tourism industry and economy; provide job opportunities for the residents of the community; promote the historic attributes and qualities of the community and ultimately preservation of the rare historic significance of an area that is at the brink of extinction. The Welcome Center will be approximately 20,000 square feet and will showcase the historic significance of an area that is at the brink of extinction. The Welcome Center will be approximately 20,000 square feet and will showcase the historic significance of an area that is at the brink of extinction. The Welcome Center will be approximately 20,000 square feet and will showcase the historic significance of an area that is at the brink of extinction. The Welcome Center will be approximately 20,000 square feet and will showcase the historic significance of an area that is at the brink of extinction.
### Project Information

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<tr>
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<th>Submitted By Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hog Bayou Campground and RV Plaza</td>
<td>177</td>
<td>Neutral Rushden/ Africatown Community Development Corporation</td>
<td>Mobile</td>
<td>$1900000</td>
</tr>
<tr>
<td>Conservation, Preservation, and Protection of Hog Bayou, Mobile County</td>
<td>179</td>
<td>Neutral Rushden/ Africatown Community Development Corporation</td>
<td>Mobile</td>
<td>$2150000</td>
</tr>
</tbody>
</table>

### Project Description

- **Hog Bayou Campground and RV Plaza**
  - The primary objective of the project is to use funding to acquire the property known as the Old International Paper Company site, and construct facilities and infrastructure to provide a range of recreational and educational opportunities along with public access options to Hog Bayou while protecting the area from future development pressures. The acquisition of this property along with the construction of campgrounds and other amenities will provide visitors with a convenient area of interest located minutes away from downtown Mobile and minutes from four (4) other Mobile County. This project concentrates on the major concern related to the amount of pollutants and chemical exposures to not only Hog Bayou but to the Mobile-Tensaw Delta. The proposed Hog Bayou project will create Hog Bayou as a Tensaw Delta amenity that provides recreational and educational opportunities for visitors with a convenient area of interest located minutes away from downtown Mobile and minutes from four (4) other Mobile County. The primary objective of the project is to fund the acquisition of the privately owned land that was the original site of Captain Timothy Meaher’s Family Home for reconstruction of the family home for public access to information related to the historic content of the era and the original settlers of Africatown. In a phased approach, once the land is secured, a design of the original Meaher home and its reconstruction would bring to the Africatown community an important part of the history of the community. It would add a significant boost to the local economy, provide preservation support to the environment and surrounding infrastructure for future use and access.

- **Conservation, Preservation, and Protection of Hog Bayou, Mobile County**
  - The primary objective of the project is to provide for the environmental protection of the area of Mobile County known as Hog Bayou. In a recent report published by the South Alabama Regional Planning Commission on the Mobile-Tensaw River Delta, the National Park Service, Stewardship and Partnership Programs, Atlanta outlined "THREATS TO ECOLOGICAL INTEGRITY: Cumulative impacts from continued agricultural, residential, commercial, and industrial development and expanded oil..."
<table>
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<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Project Description</th>
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<tbody>
<tr>
<td>The Earth Solutions Lab at the University of South Alabama</td>
<td>Joe Moore/ Moore innovations and The University of South Alabama</td>
<td>The Earth Solutions Lab is a transformative collaboration of academic, government and private business entities designed to clearly and efficiently identify, test, commercialize and implement solutions to coastal environmental protection and infrastructure needs. As the coastal population increases, a balance of environmental protection and economic development must be maintained, focusing on the principles of Coastal Zone Management (CZMP) and &quot;Smart Growth&quot; to: 1. protect critical natural resources 2. optimize the use of coastal lands 3. create coastal resilience to natural hazards 4. reduce vulnerability to development. Primary Objectives: 1. Create an innovative model for educating a new generation of problem solvers who - collaboratively with key parties - find innovative and cost-effective solutions to complex coastal problems; 2. Develop and implement coastal habitat and wetland protection solutions (living shorelines, etc.), stormwater management strategies to encourage low-impact development, coastal infrastructure resiliency strategies to protect the environment &amp; enhance coastal economic development. Activities: 1. Test, optimize &amp; implement stable shoreline protection/habitat protection strategies (living shorelines) in target coastal areas of Alabama; 2. Construct &amp; test low impact stormwater management solutions in coastal Alabama; 3. Identify &amp; address key coastal resiliency issues &amp; prioritize strategies of infrastructure protection; 4. Create state-of-the-practice guidance communications (print, DVDs, TV programs, etc.) to efficiently transfer knowledge of solutions for quick implementation; 5. Transform curriculum at USA to focus on solving coastal issues in multi-part collaboration. Outcomes: The Earth Solutions Lab...</td>
</tr>
</tbody>
</table>
will. 1. Create an 3TIER educational model which tackles complex coastal problems and studies economic development through a state-of-the-art learning & execution, b. cooperation with government, business & industry partners to identify technical/economic/solutions, c. inclusion of high school & college students, instructors, government agencies, business, and industry in developing solutions to coastal development problems. 2. Implement & monitor new techniques for protecting coastal environments; 3. Communicate acquired knowledge and transfer quickly to other efforts; 4. Bring economically viable & sustainable solutions/methods/devices to market that solve coastal environmental & economic issues.

Effects of Disturbance and Habitat Degradation on Community Resilience, Food Web Dynamics, and Ecosystem Integrity in the Mobile-Tensaw Delta

181  Kelly Major  University of South Alabama  Alabama coastal waters  $44,175  The Mobile-Tensaw Delta (MTD) is ecologically productive, diverse and economically valuable. The habitat and recreational resources of the MTD are critical to the AL coast. This project will improve resource management and preserve economic interests of the region (e.g., recreational revenue generated by sport fishing and birding) that depend upon water quality for ecosystem health. The MTD is affected by eutrophication, development, industrial pollution (DWH spill), habitat degradation, storms, flooding, and drought. We will relate these disturbances to ecosystem dynamics. We have previously measured changes in local biodiversity in time and space. We plan to link intensity and source of disturbance to ecosystem dynamics and biodiversity of the MTD. We propose 2 questions: 1. What enhances habitat and recreational resources of the MTD are critical to the AL coast. We will strategically sample the MTD and compare new data to existing data. We have 4 yrs of data on plant and animal communities, spanning the spectrum of disturbances in the MTD. Sixteen sites [9 monitored >10 years] were established along north/south-east/west gradients along the MTD. Samples for baseline PAH levels were collected in 2010. We will sample distribution and abundance of the major plants, invertebrates, fishes, reptiles and amphibians using appropriate methods, and through coarse- and fine-scale sampling of occurrence and abundance, diversity, richness will be estimated. Biotic stress and changes in plant productivity will be physiologically measured. We will estimate energy flow through aquatic and terrestrial food webs using stable isotopes. Seasonal and episodic habitat variability will be tracked with environmental data. Working from individual organisms to regional scale, characterizes ecological impacts of different disturbances in space and time in the MTD. This project will inform restoration of habitat for ecological community resilience.

Assessment and Protection of the Mobile/ Tensaw Delta and the coastal streams of Alabama

182  John McCreadie  University of South Alabama  Alabama coastal waters  $167,595  The annual oildrill zone of coastal Louisiana is a classic example of how freshwater can affect marine habitats. Human-induced changes of Alabama's coastal streams and the waters of the Mobile/Tensaw Delta (MTD) can be expected to have a significant impact on the water quality of surrounding saltwater habitats, especially the all-important estuaries. We have not yet assessed if the BP oil spill has had a significant impact on either the coastal streams of Alabama or the MTD. Conservation and protection of Alabama's coastal freshwater habitats requires rapid and accurate means of assessing water quality. The Environmental Protection Agency (EPA) uses aquatic macroinvertebrates as their centerpiece in environmental
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Location</th>
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</table>
| Big Creek Lake Reservoir Spill Containment Structure | Charles Hyland/ Mobile Area Water and Sewer System (MAWSS) | Mobile County | 70,000
| Alabama Harmful Algal Bloom (AHAB) Program Initiative | Allison Robertson/ University of South Alabama, Marine Science Department | Alabama coastal waters | 70,759

## Project Description

Monitoring, restoration, and protection of running water ecosystems. This is because these organisms play a major role in ecosystem processes and are sensitive to environmental changes - they are the "canaries in the coal mine." My laboratory is in a unique position to assess the potential impacts of the BP oil spill on the coastal freshwater habitats of Alabama, having collected considerable quantitative macroinvertebrate data from these areas before and after the spill. I request funds to re-collect samples from these freshwater (to brackish) habitats and then, by employing EPA's Rapid Bioassessment Protocols (RBP), compare water quality of these habitats both before and after the oil spill. EPA’s RBP is the premier approach for assessing changes in water quality. I propose to employ RBP II, involving the systematic comparison of macroinvertebrates at each site before and after the spill. Hence, changes (or lack thereof) in the invertebrate biota will be used as a yardstick by which the complex relationship between ecosystem health and the BP oil spill will be measured. In addition, data from the project will provide a long-term benchmark by which future insults (e.g., re-suspension of benthic oil after a major weather event) can be detected. Collections would be completed within 6-12 months, an additional year is needed for identifications and data analyses. Freshwater sites of coastal Alabama are not only important for recreational fishing and ecotourism, as well as having a direct effect on inshore marine productivity, these habitats are also a 'hot bed' of biodiversity. My preliminary collections from these habitats show that at least 6% of the species collected are new to science. This status alone makes these waters worthy of our attention.

## Restoration Types Addressed

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tr>
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## Public Notice

Project Information

- Project Name: Big Creek Lake Reservoir Spill Containment Structure
- Submitted By/Primary Lead: Charles Hyland/ Mobile Area Water and Sewer System (MAWSS)
- Location: Mobile County
- Cost: $70,000

The proposed project is to install a permanent spill containment structure to protect the Big Creek Lake Reservoir from spills associated with transportation mishaps and acts of terrorism that could contaminate the major source of Mobile region's drinking water supply. Currently there is no mechanism in place to contain such spills entering the reservoir. This project will be constructed at the intersection of AL 98 and Big Creek Lake in western Mobile County.

Project Information

- Project Name: Alabama Harmful Algal Bloom (AHAB) Program Initiative
- Submitted By/Primary Lead: Allison Robertson/ University of South Alabama, Marine Science Department
- Location: Alabama coastal waters
- Cost: $70,759

Harmful algal blooms (HABs) are a major environmental problem across the United States and are frequent in the marine, estuarine, and freshwater systems of Alabama. HABs can produce potent toxins and significant impacts including mass mortalities of farmed and wild fish and shellfish, severe human illness from consumption of contaminated seafood or exposure through swimming or inhalation, and illness and death in livestock, pets, and native species. These HAB events represent a real and present threat to the health and viability of our aquatic ecosystems in Alabama and the industries and jobs that rely on them. The overarching goal of this project is to initiate the first Statewide HAB monitoring program in Alabama. The first step towards this goal will be to combine field, laboratory and modeling studies in a coordinated effort to characterize the physical, chemical and biological processes governing the growth, distribution and impacts of HAB species in Alabama waters. We will deploy real-time environmental water quality sensors, buoy, and sampling devices that allow collection and automated hourly imaging of phytoplankton to identify toxic species as they enter the coastal waters, and a sub-surface environmental sample processor capable of detecting HAB species and their toxins in the field. These methods will be combined with traditional monitoring of water quality in the field. These methods will be combined with traditional monitoring of water quality.
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<tbody>
<tr>
<td>Sewer System To Replace On-Site Systems in Riverine Areas</td>
<td>185</td>
<td>Charles Hyland</td>
<td>Dog River</td>
<td>1100000</td>
<td>In this project, it is proposed to construct a low pressure sewer system within riverine areas of the Dog River Watershed to service existing residential and commercial properties. Properties in these riverine areas are currently utilizing on-site septic systems to service their sewage disposal needs. In this project, it is also proposed to conduct an evaluation of the structural integrity of an existing major sewer trunk line varying in size from 36” to 48” which conveys sewage collected within the Dog River Watershed to the C. C. Williams Wastewater Treatment Plant. This project will connect failing on-site systems to sanitary sewer and allow a rapid response to mitigate the harmful effects of HABs, protecting consumers, natural resources, and our coastal and freshwater resources and ecosystem health.</td>
</tr>
<tr>
<td>Biopolymer Based Materials for the Removal of Harmful Metals from Mobile Bay Water</td>
<td>186</td>
<td>William Reischert</td>
<td>Mobile Bay</td>
<td>56300</td>
<td>Contamination of waterways by atmospheric deposition, industrial waste water and runoff is a common problem in industrial areas, and the Mobile Bay Estuary area is no different. The introduction of metals into the ecosystem can have negative effects. While there are a number of methods for the removal of these metals from water, many introduce new chemicals that can also be hazardous to the environment. One method that might provide a clean, effective process for the removal of metals from waste water is the modification of biomass to produce new absorption materials. Biomass, such as cellulose and chitin, are a potentially inexpensive and renewable source of new advanced materials. Chitin is the major component of crab and shrimp shells and is a common byproduct of the fishing industry. Due to its chemical composition, chitin has the potential to remove heavy metals from waste water. Until recently, the use of chitin in many applications was limited by its insolubility in common solvents. However, now that ionic liquids (ILs) are being used for its dissolution, this roadblock has been removed.</td>
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<td>Low Pressure Sewer System To Replace On-Site Systems in Sensitive Riverine Areas</td>
<td>Charles Hyland</td>
<td>In this project, it is proposed to construct a low pressure sewer system within riverine areas of the Dog River Watershed to service existing residential and commercial properties. Properties in these riverine areas are currently utilizing on-site septic systems to service their sewage disposal needs. In this project, it is also proposed to conduct an evaluation of the structural integrity of an existing major sewer trunk line varying in size from 36” to 48” which conveys sewage collected within the Dog River Watershed to the C. C. Williams Wastewater Treatment Plant. This project will connect failing on-site systems to sanitary sewer and allow a rapid response to mitigate the harmful effects of HABs, protecting consumers, natural resources, and our coastal and freshwater resources and ecosystem health.</td>
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A part of our overall mission will be to promote the health and vitality of our region, and the Center will train and support these personnel.

These RED Team pre-deployments will be in custody of the various fire and police agencies within the Gulf Coast region, and the Center will train and support these personnel.

As a part of our overall mission will be to promote the health and vitality of our region, and the Center will train and support these personnel.

These RED Team pre-deployments will be in custody of the various fire and police agencies within the Gulf Coast region, and the Center will train and support these personnel.
The goal will be achieved through four outcomes: 1) the development of a programmatic restoration plan for the region; 2) the coordination and development of regional expertise and resources; 3) the promotion of tourism and seafood consumption in the Gulf Coast region; and 4) the development, the protection of the environment, and community leadership. The goal is to increase tourism in the region in ways that ensure the wealth of ecotourism sites along the Alabama coast, any efforts to build tourism should include a focus on ecotourism.

The Ecotourism brings long-term benefit of project (+ / 0 / -)  
The effect of the project alternative on public health and safety (+ / 0 / -)  
Project is technically feasible (+ / 0 / -)  
Project offers opportunities for external funding & collaboration (+ / 0 / -)  
Project is time critical (+ / 0 / -)  
Project is not already fully funded (Y/N)  
Project is not already required by existing regulations (Y/N)  
Project complies with applicable laws and regulations (Y/N)  
Project benefits more than one natural resource and/or service (+ / 0 / -)  
Project is not already required by existing regulations (Y/N)  
Project meets Trustees’ goals (+ / 0 / -)  
Project is consistent with criteria identified in the public notice (Y/N)  
Project is consistent with programmatic restoration goals (Y/N)  
Project is consistent with criteria identified in the public notice (Y/N)  
Project has reasonable probability of success (+ / 0 / -)  
Project prevents future and collateral injury to natural resources and services (+ / 0 / -)  
Project benefits more than one natural resource and/or service (+ / 0 / -)  
The effect of the project alternative on public health and 

The goal will be achieved through four outcomes: 1) the development of a Sustainable Tourism Leadership Consortium, consisting of community, business, and industry leaders, interdisciplinary faculty and subject-matter experts who will identify and work for the implementation of sustainable tourism policies and...
### Project Information

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<thead>
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<tr>
<td>Perch Creek Nature Trail at McNally Park</td>
<td>The Perch Creek Nature Trail at McNally Park is phase one of an economic redevelopment plan for an underserved struggling area of town by connecting residents and visitors to critical habitats within the City and exposing them to the unique heritage and culture of this diverse community. The project creates a recreational and educational trail through wetlands that lie between the nation’s fourth largest estuary Mobile Bay and the Mobile’s urban river, the Dog River on the State’s 30th list of impaired Waterbodies. It is the first part of a master plan to connect the Crape Myrtle Bike Trail now undergoing technical assistance via a grant from the U.S. National Park Service (NPS) and the Dog River Blueway Trail, also a part of the NPS river trail system, together by creating a destination point featuring the beauty and ecological value of the City’s only peninsula. The project will catalyze new impact development and eco-friendly employment opportunities along the community’s major corridor, give much needed access to area waterways, and serve to protect the natural and historic resources of the Peninsula in advance of the expansion of Mobile Aeroplex at Brookley via Airbus Americas, Inc., which is currently underway and is projected to greatly impact the mostly residential community. Through experiencing such urban beauty, users will connect their human experience to the natural world around them and expand their desire to retain storm water protection through better wetland function and coverage such as is offered through the development of the Perch Creek Nature Trail.</td>
</tr>
<tr>
<td>Mitigating Barotrauma in Red Snapper and Other Reef Fishes: A Means to Expedite Population Recovery and Increase Recreational Fishing Season Length</td>
<td>Reef fishes are the most targeted fishes in the US Gulf of Mexico (GOM), and increasingly shortened recreational fishing seasons have real economic impacts on coastal Alabama. Regulatory discards are the greatest challenge for rebuilding the GOM red snapper stock, and they also represent substantial economic and ecological losses. For example, the ratio of total kill (dead discards plus landed catch) to landed catch has averaged 3.5:1 for the past ten years. This study is aimed at developing methods to mitigate release mortality that would mean a larger percentage of the total kill (dead discards plus landed catch) could be taken as landings. Reducing discard mortality also would aid in the recovery of the red snapper stock such that the overall quota would increase. Both of these measures would serve to extend the recreational season, thus have positive economic impacts on coastal Alabama. Study objectives will be addressed via a multidisciplinary study that employs acoustic telemetry and conventional tagging in the artificial reef permit zones off coastal Alabama.</td>
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<tr>
<td>Stormwater Wetland Construction in Big Creek Lake Watershed</td>
<td>This project will construct 3 stormwater wetlands within the Big Creek Watershed. These wetlands will provide stormwater detention and treatment of the stormwater entering into the Big Creek Lake. The constructed wetlands will reduce total organic carbon in stormwater runoff though the uptake of and filtration processes. Also, this project will detain water upstream in the watershed to accelerate treatment. After these wetlands are constructed, they will be monitored and used as demonstration project for local educational programs.</td>
</tr>
<tr>
<td>Waterline Crossing to Serve as an Emergency Backup Line to Spanish Fort Area</td>
<td>This project will install a 38,200 linear feet (7.2 miles) of additional water line to serve the City of Spanish Fort and its surrounding area. Currently, the Spanish Fort Water Board purchases its water from the Mobile Area Water and Sewer System. The entire system is served by a singular waterline crossing over the Mobile Bay Causeway. This project would install a second water line to serve as a back up in case the main line was damaged from natural or man-made causes. An interruption in service would result in the loss of drinking water for over 20,000 residential and commercial customers.</td>
</tr>
<tr>
<td>Pumps to Supply Emergency, Backup Water Source</td>
<td>This project will install pumps at Mobile Area Water and Sewer System's Regulator House Station which would be able to pump raw water from the Mobile River to the Nickley Water Treatment Plant. Currently, all of the potable water used by MAWS originates from Big Creek Lake. This installation of these pumps will provide for an alternative water source to serve all of MAWS' customers, including the City of Spanish Fort. The piping already exists, but the pumps are currently lacking to complete this project.</td>
</tr>
<tr>
<td>The World-Beater® All Beach 10K</td>
<td>The World-Beater® All Beach 10K is a sanctioned Guinness World Records race of 6.2 miles, run completely on the beach stretching from Orange Beach, Alabama, to the Gulf Shores public beach at the end of Alabama Highway 59. In its inaugural year the winner was awarded the Guinness World Record for the &quot;Fastest 10KM Run on Sand,&quot; certification of which can be found at <a href="http://www.guinnessworldrecords.com/world-records/11000/fastest-10km-run-on-sand-2012">http://www.guinnessworldrecords.com/world-records/11000/fastest-10km-run-on-sand-2012</a>. The national trend in running is toward &quot;challenge running&quot;</td>
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<tr>
<td>Project Name</td>
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<tr>
<td>Mobile County Soccer &amp; Aquatic Center Complex</td>
<td>196</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project Description</td>
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<td>--------------</td>
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<tr>
<td>Mobile County Soccer and Aquatic Center</td>
<td>Approximately 13 acres of the site have been set aside for the future water park. An area has also been identified for the proposed ~25,500 square foot natatorium. The goal in creating a Mobile County Soccer and Aquatic Center is to enhance the quality of life for Mobile County residents, support a profitable sports tourism industry, and environmental protection. Along with serving to host tournaments, this facility will add to the local community’s quality of life by offering individuals the opportunity to recreate, socialize in open space, and participate in soccer, trail walking/jogging, and water related activities. This regional and district level park will provide opportunities for organized sport clubs, scholastic athletics for training and competitive purposes, and outdoor space designed to cater to teams or individuals within the Mobile Metropolitan Statistical Area as well as those who reside within a one hour drive from the site.</td>
</tr>
<tr>
<td>Bayfront Park Restoration and Improvement</td>
<td>One of the primary goals of the proposed project is the creation, development and implementation of a strong regional community branding program to allow the two county region of southwest Alabama to continue to overcome the direct negative effects, and effects of the ongoing negative imagery, of the coastal Alabama region stemming from the Deepwater Horizon Incident. This effort will inspire and encourage community members from across the two-county region to “sing from the same sheet of music” about the region and allow the region to continue to advance beyond the negative images and negative perceptions that linger as a result of the spill. By setting on a common identity, vision, and brand, and by working together to achieve it, the coastal communities within the region stand to benefit much more than if each were working alone, and this project seeks to pull all those efforts together to advance the region as a whole and implement strategies to fully recover for the effects of the oil spill. A simple google search of “Alabama BP” confirms the oil-stained imagery and perception that our region continues to battle. It is undisputed that we have a long way to go to overcome the negative perception and damage to the Coastal Alabama brand created by the Deepwater Horizon Incident. Although there have been multiple successful media campaigns aimed at addressing the on-going negative/lingering perceptions as to the oil on the coast, and damage to our coastline, this grant application takes those multiple efforts and pulls them into an overall plan to help ensure full recovery and continued restoration of our region. This project will help ensure that this region continues on its path to recovery on a measured and well developed path, while at the same time creating a brand for the region which shows that coastal Alabama has recovered and is open for business.</td>
</tr>
</tbody>
</table>

73
Project Name: Restoration and Chickasabogue Enhancement

Submitted By/Primary Lead:
- Bill Melton
- County

No./Proj ID:
- 00

Cost:
- 6000000

Project Description:
- "estuarine marine wetland" in the National Wetland Inventory. The County Commission provides full-time staffing and maintenance of the grounds. Currently, the park receives over 300 visitors on the weekends and over 1,200 per week during the peak summer months. Recreational activities include covered picnic areas, fishing, kayaking, bird watching, and wildlife observation.

The proposed project is to provide enhanced public access, salt marsh restoration, and infrastructure protection at Bayfront Park. A phased approach will begin with planning and design tasks that focus on defining specific goals and objectives, quantifiable performance criteria, specific habitat conditions in the park, the scope of wetland restoration and enhancement, and the feasibility and preliminary design for creating a living shoreline or sandy beach area along the armored section of the Mobile Bay shoreline. This design phase will include obtaining any permits required. The second phase will include construction and monitoring. The final phase will focus on assessing project performance and implementing a long-term monitoring program.

The scope of this project also includes developing a public access plan designed to promote public support and stewardship. The public access plan will be undertaken concurrently with the facility and habitat restoration design tasks. The process will develop educational and recreational activity goals and objectives so that the park provides visitors with information on specific habitats and resource conservation and provides greater opportunities to experience and enjoy nature. New activities envisioned for the park include an osprey watching program, geocaching, interpretive nature trail, and kayak launch. Man-made nest platforms would provide a safe, natural habitat for ospreys. Live cam, strategically placed so as not to disturb nests, would enable remote observation of osprey behaviors and nesting without disturbing the natural ecosystem. Geocaching offers a real-world, outdoor treasure hunting game experience with the utilization of GPS enabled devices.

Chickasabogue Park is a 1,100 acre urban natural area containing environmentally sensitive wetlands, bog, and sandhill pine habitats. It provides a wide variety of outdoor activities in a natural setting while protecting the environment and preserving the diversity of plants and animals indigenous to the area. The County Commission provides full-time staffing and maintenance of the grounds. Currently, the park receives over 370,000 visitors per year. Recreational activities include swimming, camping, picnic areas, fishing, canoeing, hiking, bird watching, and wildlife observation. A popular attraction revolves around a championship 27 hole disc golf course, sanctioned by the Professional Disc Golf Association (PDGA), drawing competitors from all over the Southeast. Several major PDGA tourneys held throughout the year. The Ron Saw, was the setting for the 2014 first annual Chickasabogue Paddle. The event was a success with over 60 participants. Along with restoring habitats in the park, the proposed project will provide enhanced freshwater beach access, nature and hiking trails, paddle trail launching, camps and picnic facilities. A phased
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
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</thead>
<tbody>
<tr>
<td>Southeast Mobile County Sanitary Sewer/Oyster Reefs Protection Project</td>
<td>201</td>
<td>Lee Sunmenuge - Mobile County</td>
<td>Mobile County</td>
<td>$484,702</td>
</tr>
</tbody>
</table>

## Project Description

The goal of this project is to mitigate and prevent further and future damage to oyster and other sensitive wildlife habitats caused by poorly-functioning septic systems in Southeastern Mobile County. The proposed scope of work includes the construction of 18 miles of new public sewer collection mains throughout communities along Fowl River and Mobile Bay and the connection of 600 households to the new system. MCWSFPA currently serves over 13,000 customers in Mobile County with public water and sewer services. Residents in south Mobile County have access to the public water system, but public sewer does not exist in this area. Residents rely on individual on-site septic tanks with high failure rates due to poorly-drained soils. MCWSFPA is expanding its sewer system to Heron Bay, Alabama Port and Delta Port with funding provided by a Coastal Impact Assistance Program (CIAP) Grant ($6.3 million). The project proposed here is Phase II of that project that will continue to extend public sewer services to the Fowl River and the Mon Louis Island communities.

The project area, located along Mobile Bay, Fowl River and Portersville Bay, is subject to major storm events, and experiences heavy rainfall. Soil conditions are wet and sandy and generally not conducive to septic tank use. These conditions cause high rates of septic tank failure. This results in public health hazards caused by human exposure to raw sewage and environmental hazards when bacteria and pathogens enter nearby waterways. These waterways are home to the richest populations of fish and shellfish communities in Alabama. Oyster habitat is vital to the health of an estuary, effectively filtering nutrients, algae, bacteria, fine sediments and toxins from the water and improving water quality. The Alabama Marine Resources Division (MRD) through funding from NOAA’s Emergency Disaster Recovery Program (EDRP), has engaged in an extensive effort to plant oyster and relay oyster populations to expand reefs in this area. Specific projects have planted shells in Portersville Bay, Heron Bay, and the relayed oyster populations from northern Mobile Bay to the mouth of Fowl River. Significant damage occurs especially during rainy summer months, when the Mobile County Health

## Restorative Types Addressed

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<tr>
<th>Restoration Types Addressed</th>
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<tbody>
<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction</td>
<td>Coastal Habitat</td>
<td>Biological</td>
<td>Environmental</td>
<td>Economic</td>
<td>Social</td>
<td>Cultural</td>
<td>Education</td>
<td>Recreation</td>
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## Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

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<tbody>
<tr>
<td>Public Notice</td>
<td>Oil Pollution Act (OPA) Criteria</td>
<td>Additional Criteria</td>
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<tr>
<th>OPA Criteria</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>(15 CFR 990.54)</td>
<td>Project is consistent with programmatic restoration goals and restoration plan</td>
</tr>
<tr>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
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## Notice

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<td>Project is technically feasible (+ / 0 / -)</td>
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<tr>
<td>Project readiness (+ / 0 / -)</td>
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<tr>
<td>Sustainability/Long-term Benefit of project (+ / 0 / -)</td>
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<td>Project is time critical (+ / 0 / -)</td>
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<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
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<tr>
<td>Project complies with applicable laws and regulations (Y/N)</td>
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<tr>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
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<td>Project delivers benefits cost-effectively (+ / 0 / -)</td>
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<tr>
<td>The effect of the project alternative on public health and safety (+ / 0 / -)</td>
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<td>Project is not already required by existing regulations (Y/N)</td>
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<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
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### Project Information

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<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Household Hazardous Waste Collection Day Program</td>
<td>Bill Melton</td>
<td>Mobile County</td>
<td>200,000</td>
</tr>
<tr>
<td>Using Off-Bottom Oyster Farming to Restore Alabama Oyster Reefs</td>
<td>Ernie Anderson</td>
<td>MS Sound</td>
<td>452,683</td>
</tr>
</tbody>
</table>

### Project Description

- Department will close systems due to pollution from failing on-site septic tanks. There is an urgent need to resolve this problem and to reduce fecal contamination on our coastline in southwest Mobile County.

- The newly proposed project would build upon the momentum and experience gained from the Coastal Impact Assistance Program (CIAP). These one day collection events provide the residents of Mobile County the opportunity to properly dispose of residential household hazardous waste. During each event, the County allows residents to drop off a variety of items not eligible for regular waste collection. Some of the wastes to be collected include paints, thinners, herbicides, pesticides, used oil, and electronics. Three events held in 2013 and 2014 have collected over 292 tons of materials dropped off from over 3,200 vehicles.

- This newly proposed project would build upon the momentum and experience gained from the CIAP project to continue to provide the residents of Mobile County periodic household hazardous waste collection and drop off days. The County intends to conduct at least two HHW events per year for the duration of the program. Collection sites will be established at various locations throughout the County. Costs for each event are based on costs generated in previous years for the same event. A media campaign will be developed and implemented to inform citizens as to what is considered household hazardous waste and provide details on collection events. All hazardous wastes generated as a result of this project will be transported by truck by certified hazardous waste transporters to be properly disposed of in a permitted landfill.

- This project is a long-term oyster restoration effort in the Alabama portion of the Mississippi Sound. Trained oyster farmers and high school teachers and students, under the guidance of area experts, will spawn, set, and grow oysters that will be transplanted on historic oyster reef areas. Also, protected dense spawning aggregates will be created and tested to provide predator protection for concentrations of adult spawning oysters.

- The oysters will be produced using the latest techniques in off-bottom oyster farming (OBOF). Local culture efforts have produced high survival and rapid growth rates as the oysters are protected from predators and are grown in the food-rich, well oxygenated surface waters. This approach will also provide new economic/business opportunities for area residents, new education opportunities for high school students, and a sustainable means of continuing the restoration activities for years to come.

- The overall goal is to restore area oyster reefs to the point where they may once again be commercially harvestable. However, oysters will be grown for both restoration activities and the commercial half-shell oyster market. Oysters grown...
The restoration, protection, and enhancement of the water resources of South Baldwin County is critical for the continued growth and positive development of the region. The local rivers, estuaries and bays offer a high-quality of life for local residents, support both commercial and recreational fisheries, and provide the habitat for diverse and abundant marine life. Urban runoff has been identified as one of the most serious threats to water quality nationwide. When unchecked, drainage from urban areas can destabilize streambeds through erosion, carry trash and debris into rivers and bays, choke waterways with excess sediment, and carry pollutants including pesticides, heavy metals and fertilizer into the aquatic environment. In order to protect our local water resources for the future, urban pollution sources should be identified, quantified, prioritized, and reduced or eliminated through the most cost-effective means possible. The City of Foley and the surrounding urbanized area drain almost entirely into two main watersheds: Bon Secour River, and Wolf Bay. The Wolf Bay watershed encompasses approximately 50% of the City limits within the three basins, but drains just 15% of the Foley Urbanized Area contained in these watersheds, as indicated by the 2010 Census. Conversely, the Bon Secour basin covers only 26% of the City Limits, but drains 55% of the Urbanized Area of concern. This suggests that long-term planning and the promotion of low-impact development may be more cost-effective for Wolf Bay, while the retrofitting of existing infrastructure and other physical treatment methods, including constructed wetlands, may be required in the relatively more urbanized basin of the Bon Secour River. The proposed City of Foley Regional Stormwater Wetland project consists of property acquisition and three main restoration components: 1) A stormwater conveyance channel with integrated upwellers, an offshore nursery area, and a classroom/laboratory. The grow-out areas will include existing permitted oyster farms as well as a new nursery facility to be located at Point aux Pins. There the oysters will be set and nursed until they are large enough to be transferred to the farmers grow out cages. The nursery facility will include on-shore nursery tanks (upwellers), an off-shore nursery area, and a classroom/laboratory. The nursery tanks (upwellers) will be set with adult oysters obtained from the farmers who will be provided. Oysters transferred to the farmers grow out cages. The nursery facility will include on-shore nursery tanks (upwellers), an off-shore nursery area, and a classroom/laboratory. The grow-out areas will include existing permitted oyster farms as well as a new nursery facility to be located at Point aux Pins. The nursery facility will include on-shore nursery tanks (upwellers), an off-shore nursery area, and a classroom/laboratory. The grow-out areas will include existing permitted oyster farms as well as a new nursery facility to be located at Point aux Pins.
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayou La Batre US 98 Express</td>
<td>Bill Mallon</td>
<td>Mobile County</td>
<td>1,500,000</td>
<td>Construct a corridor in southwest Mobile County, from Bayou La Batre north to Semmes, to facilitate the flow of goods and services and provide hurricane evacuation to all of the southern portion of Mobile County to I-10 and the new Highway 98, and to facilitate access to the Mobile Regional Airport.</td>
</tr>
<tr>
<td>Infrastructure Improvements of existing park and green spaces</td>
<td>Melanie Baldwin</td>
<td>Prichard</td>
<td>150,000</td>
<td>This project requests Restore Act funds to construct improvements for outdoor recreation on city-owned property throughout the City of Prichard. The City of Prichard currently owns several hundred acres adjacent to Chickasawbouge Park. This project can be restored and improved for public access and outdoor recreation. Further, the City of Prichard has obtained ownership of a railroad easement that runs from Chickasaw Creek south to 3-mile creek. This easement has tremendous potential for improvement as a pedestrian bike trail. The trail will provide a link throughout the City limits and will tie schools, parks, creeks, and other public facilities together.</td>
</tr>
<tr>
<td>Drainage and Sewer Infrastructure Improvements of facilities along West Turner Road and Dunlap Circle</td>
<td>Melanie Baldwin</td>
<td>Pritchard</td>
<td>150,000</td>
<td>There are numerous low lying areas in the City of Prichard associated with the Eight Mile Creek, Three Mile creek and Chickasaw Creek watershed. Several areas in the City are constructed on filled wetlands. As a result of inadequate and aged infrastructure such as old cracked terra cotta sewer lines, polluted flows into the City's creeks and streams, these creeks are located on the Alabama 303d list. The Sevin Spring Branch and Three Mile Creek are listed for agricultural and municipal pollutants, municipal collection system failure, urban runoff and storm sewers. This project will install and construct new sewer and storm sewer collection system to improve runoff into adjacent waterways and to help improve the overall water quality of Mobile Bay. There are two areas on West Turner Road and Dunlap Circle that flood regularly. Polluted runoff will flood the streets and yards, providing an environmental and health hazard. This project will install adequate drainage facilities while improving water quality of stormwater runoff.</td>
</tr>
<tr>
<td>City of Chickasaw Sewer Rehabilitation Project</td>
<td>Byron Pittman</td>
<td>Chickasaw</td>
<td>1,500,000</td>
<td>The City of Chickasaw is a historic coastal community located where Chickasaw Creek flows into the Mobile River at the southern extent of the Mobile-Tensaw Delta. With approximately 6,000 residents, the City contains a newly formed school system, a vibrant port, and a rich historical heritage. The City was developed in the early part of the 20th Century for providing housing for the shipbuilding industry. The City is unique as over 25% of the municipal limits are located within a FEMA-designated flood zone. Many of these areas consist of densely populated residential neighborhoods. The City of Chickasaw Utilities Board owns and operates the City's wastewater collection and treatment system, but unlike most municipal systems, does not provide potable water to its wastewater customers. The City of Prichard Utilities Board provides water services to Chickasaw's residents, resulting in a disconnect between the water and sewer systems. Traditional revenue generated from water systems, can provide capital funding for wastewater infrastructure. The City is requesting approval to install new sewer force mains to facilitate the flow of goods and services and provide hurricane evacuation to all of the southern portion of Mobile County to I-10 and the new Highway 98, and to facilitate access to the Mobile Regional Airport.</td>
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### Project Information

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<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reuse Water System for the City of Foley and Blue Collar Country Sports and Entertainment Complex</td>
<td>213</td>
<td>Richard Peterson</td>
<td>Baldwin County</td>
<td>$350,000</td>
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</tr>
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</table>

The project is a reuse water system for the proposed Blue Collar Country/City of Foley development of athletic fields and landscaping areas associated with the Blue Collar Country complex. The reuse water system will minimize wastewater effluent discharges into Wolf Creek and Wolf Bay, while preserving groundwater resources that provide base stream flows to Wolf Creek and Wolf Bay, thus minimizing the deleterious effects to fauna and biota of salt water migration into the estuary during drought conditions. This project will utilize Aquifer Storage and Recovery, ASR, wells to store and recover the reuse water in the shallow aquifer for the irrigation needs of this project.

The project will also serve as a demonstration project for similar applications to capture storm water and recharge the shallow aquifer with excess storm water during rain events to further enhance the base flows of coastal streams and water quality feeding into those streams. Base flows can also be augmented with the recovery of stored water from this application during prolonged drought conditions. With continued economic growth and the subsequent development of coastal Alabama, storm water runoff will continue to increase in volume while shortening the duration of runoff events, exacerbating this condition.

The project will introduce ASR concepts in Alabama for applications with other wastewater effluents where the ecology can be better protected from variations in salinity, as seen with oysters in Apalachicola, FL in the Georgia-Alabama-Florida water issues. The professional expertise of this project in ASR well applications, Geology and Public Infrastructure are committed to work with State Regulatory agencies to develop a comprehensive approach to total water management in coastal Alabama through ASR well use and site specific applications of geology and infrastructure where the highest environmental and ecological benefit can be realized.

Specifically, this project will utilize tertiary treatment improvements at the Wastewater Treatment Facility located on Chickasaw Creek adjacent to Mobile Bay to provide base stream flows to Wolf Creek and Wolf Bay, thus minimizing the deleterious effects to fauna and biota of salt water migration into the estuary during drought conditions. This project will utilize Aquifer Storage and Recovery, ASR, wells to store and recover the reuse water in the shallow aquifer for the irrigation needs of this project. This project is a reuse water system for the proposed Blue Collar Country/City of Foley development of athletic fields and landscaping areas associated with the Blue Collar Country complex. The reuse water system will minimize wastewater effluent discharges into Wolf Creek and Wolf Bay, while preserving groundwater resources that provide base stream flows to Wolf Creek and Wolf Bay, thus minimizing the deleterious effects to fauna and biota of salt water migration into the estuary during drought conditions. This project will utilize Aquifer Storage and Recovery, ASR, wells to store and recover the reuse water in the shallow aquifer for the irrigation needs of this project.

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Specifically, this project will utilize tertiary treatment improvements at the wastewater facility in Foley, provided by the Utilities Board of the City of Foley, to produce a Class A reuse water with a connecting reuse water transmission facility.
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<th>Project Name</th>
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<tr>
<td>Project Name</td>
<td>No./ ID</td>
<td>Submitted By/ Primary Lead</td>
<td>Project Description</td>
<td>Submitted via AL Portal</td>
<td>Water Quality/Nonsolar Source Protection/Wetlands (Y/N)</td>
<td>Wetlands, Coastal, and nearshore habitat (Y/N)</td>
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<tr>
<td>Dauphin Island Wastewater Treatment and Outfall improvements</td>
<td>215</td>
<td>Vaile Feemster</td>
<td>Dauphin Island</td>
<td>Deliver reuse water to four AER wells in the parking area of the sports venue of the project to store and recover reuse water for the irrigation needs of the project. Planning and permitting will be coordinated with the Alabama Department of Environmental Management.</td>
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<td>To improve the overall health of the estuaries in and around Dauphin Island including fishery and shellfish habitats, the Dauphin Island Water and Sewer Authority (DIWSA) plans to upgrade treatment processes and techniques including those practices that directly affect the wastewater plant discharge into Aloe Bay. These improvements will reduce potential or actual impacts on receiving water quality, the general health of the Island's surrounding waters, shellfish harvesting, fishery management, tourism, commercial enterprises, recreational use, and local and regional economic values. Major components of this project include:</td>
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<td>• Relocation of the Aloe Bay wastewater discharge outfall to a deeper discharge outfall that provides the least environmental impact. Environmental analyses would be performed to determine the best location for the discharge outfall.</td>
<td>Y</td>
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<td>• Secondary Filtration and Disinfection Upgrades - The project will improve the treatment plant’s filtration and disinfection capabilities to provide higher levels of contaminant removal and virus and bacteria deactivation.</td>
<td>Y</td>
<td>Y</td>
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<td>• Mechanical Upgrades - The project would provide upgrades to mechanical equipment to increase the reliability of the treatment process.</td>
<td>Y</td>
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<td>• Computer monitoring system improvements - Improved facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.</td>
<td>Y</td>
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<td></td>
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<td>• Structural improvements</td>
<td>Y</td>
<td>Y</td>
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<td></td>
<td>• Improved Solids Handling</td>
<td>Y</td>
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<td>• Infiltration repairs and improved pumping capabilities within the collection system</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Dauphin Island Water Supply</td>
<td>215</td>
<td>Vaile Feemster</td>
<td>Dauphin Island</td>
<td>In 2010 and for the duration of the BP oil spill, Dauphin Island’s primary source of drinking water originated from a shallow well aquifer. This aquifer is known to be susceptible to surface contaminants, and extensive testing and protection efforts had to be performed throughout the oil-spill and subsequent cleanup. The integrity of this aquifer, which now serves as the sole backup to Dauphin Island’s drinking water needs, remains liable in the event of another disaster such as that in 2010. The BP oil spill highlighted the risk associated with some of the components of Dauphin Island’s water production and distribution system, and these issues must be addressed. Further distressing Dauphin Island’s water production capability is that no inter-connections with other utilities are practical. The remoteness of the</td>
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<tr>
<td>Project Name</td>
<td>Submitted By Primary Lead</td>
<td>Submitter No.</td>
<td>Location</td>
<td>Cost</td>
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</table>
| Planning for Economic Diversification of Bayou La Batre and Surrounding Area | Brett Gorgas | Bayou La Batre | 500000 | Planning for Economic Diversification of Bayou La Batre and Surrounding Area is a project that focuses on diversifying the local economy by developing projects that will bring greater economic diversification with additional employment opportunities for the 6,500 citizens in the City and immediate surrounding area. It is equally vital that the City carefully attract those businesses that can integrate well with the existing economy and simultaneously promote conservation of the local natural resources.

However, Bayou La Batre is a small community without the financial resources to undertake this type of comprehensive economic planning and development. The objective of this project is to provide financial support over the next five years for Bayou La Batre to initiate a comprehensive economic and community development strategy. Projects would include, but are not limited to: 1) developing a comprehensive regional planning commission joint long range plan for Bayou La Batre; 2) developing infrastructure programs and programs that support local tourism; 3) promoting Bayou La Batre’s economic development with local commerce; 4) coordinating the City’s participation in the comprehensive Bayou La Batre Watershed study being conducted by the Mobile Bay National Estuary Program (MBNEP) with funding from the National Fish and Wildlife Foundation Gulf Environmental Benefit Fund; 5) assisting the City with the development and enhancement of features that protect its unique heritage and quality of life such as parks, recreational facilities, and marine habitats; and 7) developing and executing plans for moving the City’s publicly owned ferry service.

This project will provide the resources necessary for establishing a highly diversified local economy and creating attractive job opportunities for local citizens while focusing attention on protecting natural resources - a balanced approach to economic development.

Redevelop City Docks | Travis Short | Bayou La Batre | 31351400 | Redevelop City Docks is a project that focuses on redeveloping the city docks to allow for the expansion of commercial goods export/export. The city docks property is currently owned by the City of Bayou La Batre. The project aims to provide the resources necessary for establishing a highly diversified local economy and creating attractive job opportunities for local citizens while focusing attention on protecting natural resources - a balanced approach to economic development.

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDAARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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<td>Project Name</td>
<td>Bayou la Batre</td>
<td>Planning for Economic Diversification of Bayou La Batre and Surrounding Area</td>
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<td>Location</td>
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</table>
### Project Name 
**CHARLIE DMMA Rehabilitation and Bayou Coden Maintenance Dredging**

**Project Description**

This project includes two phases:
- Phase 1: Rehabilitation of existing dredge material management area (DMMMA) known as disposal area "CHARLIE".
- Phase 2: Dredging of the "inner harbor" portion of the Bayou Coden navigation channel.

A description of each phase is below:

**Phase 1:** Rehabilitation of Disposal Area "CHARLIE" - The approximate 38-acre site will be modified to increase capacity and initiate an intensive DMMA site maintenance program in order to allow long-term, sustainable use for dredging of the Bayou Coden inner harbor. Proposed actions include:
- Remove trees from outside slope (leave stumps)
- Remove trees from crown and inside slope (remove stumps)
- Floor cuts with marsh buggy relaying to
- Start widening and raising perimeter dike with off-site borrow material
- Fabricate/Install new 16-ft weir with pipes

**Assumptions:**
- Approximate 6K linear feet of dike to be constructed with off-site borrow source
- Ultimate dike rising approximately 3 ft. above existing

**Phase 2:** Dredging of the "inner harbor" - The outer portion of the Federal navigation channel in Portersville Bay was recently dredged; however, the inner harbor portion was not. Dredging of the inner harbor is contingent upon rehabilitation of disposal area "CHARLIE." After that is accomplished, dredging can be performed. However, funding through normal Corps of Engineers' programs typically used in the past has become problematic and difficult to obtain.

**Phase 2 of this project will alleviate this uncertainty and assure waterway users that needed maintenance dredging will be performed.**

### Project Name 
**DELTA DMMA Rehabilitation and Bayou La Batre Maintenance Dredging**

**Project Description**

This project includes two phases:
- Phase 1: Rehabilitation of existing dredge material management area (DMMMA) known as disposal area "DELTA".
- Phase 2: Dredging of the "inner harbor" portion of the Bayou La Batre navigation channel.

A description of each phase is below:

**Phase 1:** Rehabilitation of Disposal Area "DELTA" - The approximate 70-acre site will be modified to increase capacity and initiate an intensive DMMA site maintenance program in order to allow long-term, sustainable use for dredging of the Bayou La Batre inner harbor. Proposed actions include:
- Ultimate dike rising approximately 3 ft. above existing
- Approximately 6K linear feet of dike to be constructed with off-site borrow source
- Remove trees from crown and inside slope (remove stumps)
- Fabricate/install new 16-ft weir with pipes

**Assumptions:**
- The project offers opportunities for external funding & collaboration
- The effect of the project alternative on public health and safety (+ / 0 / -)
- The project meets Trustees' goals (+ / 0 / -)
- The project has a reasonable probability of success (+ / 0 / -)
- Project readiness (+ / 0 / -)
- Sustainability/Long-term Benefit of project (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
- Project is not already fully funded (Y/N)
- Project is not already required by existing regulations (Y/N)
- Project benefits more than one natural resource and/or service   (+ / 0 / -)
- Project prevents future and collateral injury to natural resources and services (+ / 0 / -)
- Project is not already required by existing regulations (Y/N)
- Project complies with applicable laws and regulations (Y/N)
- Project is time critical   (+ / 0 / -)
- Project offers opportunities for external funding & collaboration (-/0/+)
- Project is not already required by existing regulations (Y/N)
- Project readiness (+ / 0 / -)
- Sustainability/Long-term Benefit of project (+ / 0 / -)
- The effect of the project alternative on public health and safety (+ / 0 / -)
- The project meets Trustees' goals (+ / 0 / -)
- The project has a reasonable probability of success (+ / 0 / -)
- Project readiness (+ / 0 / -)
- Sustainability/Long-term Benefit of project (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
- Project is not already fully funded (Y/N)
- Project is not already required by existing regulations (Y/N)
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- Project prevents future and collateral injury to natural resources and services (+ / 0 / -)
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- Project complies with applicable laws and regulations (Y/N)
- Project is time critical   (+ / 0 / -)
- Project offers opportunities for external funding & collaboration (-/0/+)
- Project is not already required by existing regulations (Y/N)
- Project readiness (+ / 0 / -)
- Sustainability/Long-term Benefit of project (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
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- Project prevents future and collateral injury to natural resources and services (+ / 0 / -)
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- Project is technically feasible (+ / 0 / -)
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- Project offers opportunities for external funding & collaboration (-/0/+)
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- Project readiness (+ / 0 / -)
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- Project is technically feasible (+ / 0 / -)
- Project is not already fully funded (Y/N)
- Project is not already required by existing regulations (Y/N)
- Project benefits more than one natural resource and/or service   (+ / 0 / -)
- Project prevents future and collateral injury to natural resources and services (+ / 0 / -)
- Project is not already required by existing regulations (Y/N)
- Project complies with applicable laws and regulations (Y/N)
- Project is time critical   (+ / 0 / -)
### Project Name: Enhanced Nutrient Removal at the Saraland Wastewater Treatment Facility

**Project Description:**
- Removal of nutrients is necessary to meet numeric nutrient goals and to protect the water quality of Bayou Sara Creek and the Mobile River. The treatment facility can better assimilate the treated water being discharged. After that is accomplished, nutrient removal can be performed.

**Assumptions:**
- Approximately 7.5 linear feet of dike to be constructed with borrow source
- Main cross-dike and perimeter dike for factory to be constructed with adjacent material
- Ultimate dike raised approximately 3 ft. above existing with additional 10 ft. crown widths

**Project Information**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Proj ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tr>
<td>Enhanced Nutrient Removal at the Saraland Wastewater Treatment Facility</td>
<td>221</td>
<td>Howard Rubenstein</td>
<td>Saraland</td>
<td>1200000</td>
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**Restoration Types Addressed**

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Project Information</td>
<td>Restoration Types Addressed</td>
<td>Public Notice</td>
<td>Oil Pollution Act (OPA) Criteria</td>
</tr>
<tr>
<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
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<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
<td>Project is not already fully funded (Y/N)</td>
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<tr>
<td>Project complies with applicable laws and regulations (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
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<td>Project benefits more than one natural resource and/or habitat (+ / 0 / -)</td>
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<td>Project reduces the extent of borrow materials and/or fill (+ / 0 / -)</td>
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install 13,600 linear feet of water and sewer lines under Interstate 65 and the lack of fire protection. Further, lack of adequate water and sewer infrastructure, including 800 linear feet of water and sewer lines under Interstate 65 and the lack of fire protection. Further, lack of adequate water and sewer infrastructure, including potable water and centralized sewer to most areas within the City limits, except for the City of Saraland. This area does not have any fire hydrants for suitable fire protection, forcing the City of Satsuma Fire Department to rely on site septic tanks after infrastructure has been installed to transport the sewer to the facility. In summary, this project will provide the adequate wastewater....

The City of Saraland has emerged as one of Mobile County’s up and coming community. The City’s wastewater collection system serves approximately 5,600 customers and is comprised of over 70 miles of gravity sanitary sewer lines, over 1,300 manholes, over 11 miles of force mains, and 35 lift stations. The sewer is transported to the City’s Wastewater Treatment Facility (WWTF) where it is treated and effluent is discharged into Bayou Sara. This project requests funding to implement a 50% upgrade to the WWTF’s overall capacity. The current WWTF is permitted for 2.6 million gallons per day and this project will request an upgrade of 1.3 million gallons per day, or 50% of overall treatment capacity. The wastewater will continued to be treated via a Sequencing Batch Reactor (SBR) and will discharge to Bayou Sara via a modified NPDES permit. The project costs will include engineering, permitting, and construction. This project will provide a long-term innovative solution for addressing growth in Saraland along with providing centralized sewer treatment to many unserved areas currently relying on site septic tanks after infrastructure has been installed to transport the sewer to the facility. In summary, this project will provide the adequate wastewater infrastructure to allow the City of Saraland to accommodate future growth and economic development.

City of Saraland 222 Howard Rubenstein Saraland 1408102

The City of Saraland has emerged as one of Mobile County’s up and coming community through the development of its own school system and easy commuter access to the area’s large employers. The City’s wastewater collection system serves approximately 5,600 customers and is comprised of over 70 miles of gravity sanitary sewer lines, over 1,300 manholes, over 11 miles of force mains, and 35 lift stations. The sewer is transported to the City’s Wastewater Treatment Facility (WWTF) where it is treated and effluent is discharged into Bayou Sara. This project requests funding to implement a 50% upgrade to the WWTF’s overall capacity. The current WWTF is permitted for 2.6 million gallons per day and this project will request an upgrade of 1.3 million gallons per day, or 50% of overall treatment capacity. The wastewater will continued to be treated via a Sequencing Batch Reactor (SBR) and will discharge to Bayou Sara via a modified NPDES permit. The project costs will include engineering, permitting, and construction. This project will provide a long-term innovative solution for addressing growth in Saraland along with providing centralized sewer treatment to many unserved areas currently relying on site septic tanks after infrastructure has been installed to transport the sewer to the facility. In summary, this project will provide the adequate wastewater infrastructure to allow the City of Saraland to accommodate future growth and economic development.

Northwest Satsuma Water and Sewer Project 223 Paul Murray Satsuma 1454920

The City of Satsuma is a coastal community located in Mobile County at the southern extent of the Mobile-Tensaw Delta. With approximately 6,000 residents, the City contains a newly formed school system, extensive park and recreation facilities, and provides numerous public services for its residents. The City provides potable water and centralized sewer to most areas within the City limits, except for the area west of Interstate 65, in the northwestern quadrant of the City. This area has approximately 100 homes which are served by private wells and on-site septic tanks. The city residents in this area pay the same taxes and fees as other city residents but are not provide equal services. This area does not have any fire hydrants for suitable fire protection, forcing the City of Satsuma Fire Department to truck water for fires. Further, the residential insurance rates are much higher due to the lack of fire protection. Further, lack of adequate water and sewer infrastructure, hinders economic growth in the only undeveloped area within City limits. This project will bring 800 linear feet of water and sewer lines under Interstate 65 and install a lift station on the western side of the Interstate. Further, this project will install 15,000 linear feet of 6-inch water lines, 4,200 linear feet of 8-inch gravity...
This project involves the acquisition of approximately 1,200 acres spanning across Dauphin Island from the east end at Pass Drury to the north side at Aloe Bay to the west end along the Mississippi Sound. The property will be transferred to the Dauphin Island Foundation for the ecological and environmental benefit of Dauphin Island and the surrounding environment. New commercially and residential parcels located from the main boulevard to the village to the west end on Mississippi Sound are included in the transfer for the ecological, environmental, seafood and tourism benefit of Dauphin Island. The total of 39 parcels represents a broad diversity of significant bottomland, shoreline, wetland, dune and woodland habitat strategically located on this barrier island. Their conservation for ecological and environmental preservation and use for seafood and tourism applications represents a unique and important opportunity for many Dauphin Island stakeholders to preserve, protect and promote Dauphin Island's unique natural habitat and seafood and tourism resources.

This project benefits the coastal ecosystem by enhancing inshore, nearshore, and offshore reef sites, and engineering a system throughout their life cycle. The Plan proposes to establish bridges between habitats by enhancing inshore, nearshore, and offshore reef sites, and engineering a system throughout their life cycle. The Plan proposes to establish bridges between habitats by enhancing inshore, nearshore, and offshore reef sites, and engineering a system throughout their life cycle. The Plan proposes to establish bridges between habitats by enhancing inshore, nearshore, and offshore reef sites, and engineering a system throughout their life cycle. The Plan proposes to establish bridges between habitats by enhancing inshore, nearshore, and offshore reef sites, and engineering a system throughout their life cycle.

Prior to the Deep Water Horizon Oil Spill, Alabama's artificial reef system was shown to have strengthened the ecological and environmental health of the northern Gulf of Mexico by providing habitat for economically viable reef fish, and creating a marine environment which made it possible for fish populations to flourish. The diverse and spatially expansive reef complex significantly increased the carrying capacity of reef fish over the years and yielded an astonishing level of production. In 2011, this man-made reef system was directly responsible for generating over $13 million in state and municipal tax revenues for the State of Alabama, and supporting over 2,460 jobs. However, fishery biologists with decades of experience conducting research offshore of Alabama indicate reef fish populations are limited by a habitat bottleneck due to the fact that many of state's artificial reefs have reached the end of their usable life. In addition, research conducted in the years following the BP oil spill indicates that the spill may have had a tremendously negative impact on the early life-stage fish populations throughout the northern Gulf, effectively reversing the previously recognized growth trends. Fortunately, these problems can be resolved. Alabama's Artificial Reef Plan represents a comprehensive review of Alabama's artificial reef infrastructure, and proposes an engineered effort that delivers the necessary enhancement and construction required to ensure the state's artificial reef system is ecologically sound for years to come.
<table>
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<tr>
<th>Project Name</th>
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<th>Submitted By / Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
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<tbody>
<tr>
<td>Escatawpa River Trail System</td>
<td>227</td>
<td>Bill Melton</td>
<td>Mobile County</td>
<td>6000000</td>
<td>of the Escatawpa River, located on the western boundary of Mobile County, drains the western area of the County into the Pascagoula River, Mississippi Sound, and out to the Gulf of Mexico. The Escatawpa River, a scenic and recreational river bordered by hardwood swamps and white sandbars, supports a variety of sub tropical flora and fauna and provides scenic views, vistas, and multiple recreational opportunities. In the early 1980s, the Escatawpa River was evaluated by the National Park Service to determine its suitability for inclusion in the Wild and Scenic Rivers Act. The National Park Service identified the Escatawpa River as a high quality undeveloped black water stream. The goal of the Escatawpa River Trail System project is to enhance public access to, and appreciation for, black water river ecosystems in Mobile County. The river is a high quality, undeveloped black water system with a long and narrow watershed area consisting of a 100 mile total length and approximately 15 miles wide. This fragile black water ecosystem contains significant and sensitive plant and animal habitats, providing an educational, scenic opportunity to enhance the public’s understanding and appreciation of this natural resource. The County proposes to enhance public access to the Escatawpa River black water ecosystem by developing a 10-15 mile water trail system along the east side of the river from Mason Ferry Road extending south to US Highway 98. This includes the acquisition of public access easements and the development of associated facilities. In addition, the project includes the construction of north and south trailhead development of associated facilities. Principal features of the trail system include interpretative signage, canoe and/or kayak launch pads, boat launch with piers, paved parking areas, restroom facilities, group pavilions, picnic areas, and parking for trailers. AL Portal</td>
</tr>
<tr>
<td>Mobile County Blueways Trail Development</td>
<td>228</td>
<td>Bill Melton</td>
<td>Mobile County</td>
<td>8000000</td>
<td>The Mobile County Commission proposes to bring together a broad based stakeholder group to develop and implement a comprehensive Mobile County Blueways Plan. The objectives of this water based trail development project include the enhancement of the public’s access to local waters, protection of sensitive environments along the coast, the promotion of eco-tourism opportunities, and increased opportunities for business and revenue income in Mobile County. The approach calls for engaging in a planning process to develop the guiding vision and commitment required to define the physical and programmatic elements of a water based trail system that integrates conservation and protection of water resources as an economic engine for the entire County. This multi-phase project includes: • Creation of a countywide Blueways Task Force • Developing an inventory and evaluation of existing access points • Performing a Needs Assessment and Market Analysis focused on paddle trail and nature based tourism development • Creation of a Facility/Infrastructure plan and associated construction specifications. AL Portal</td>
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</table>
Component 2: Modeling overbank flows through the Delta

tide cycles to develop the ratings for the new gages. Numerous measurements will be made over a wide range of flow conditions and River near the Delta. The new gages will be added on the Mobile and Tensaw River, to better define flow rates and (Figure 1). USGS proposes to accurate

time streamgages, to the current (Figure 2). A physical

Distribution of flows and flow rates through the Mobile-Tensaw River Delta
229 Alena Clark Mobile N00000
The Mobile River Basin (MRB), at nearly 44,000 square miles, ranks as one of the largest and most biologically diverse river basins in the U. S. draining parts of GA, TN, MS, and AL. The Alabama and Tombigbee Rivers converge to form the Mobile-Tensaw River Delta (Delta), a 960 square mile complex of braided river channels, serving as the interface between fresh upland waters and the brackish waters of Mobile Bay. The Delta functions as a productive fishery resource, biodiversity preserve, water quality filter, and future conservation legacy for Alabama. Enhancing Alabama’s ability to accurately determine the flow rates and distribution of flows through the Delta is critical as the state moves forward with improving water resource assessments and policies. Expanding the hydrological foundation of the delta will 1) aid in ecological and fisheries research linked to Alabama’s seafood industry, 2) result in more accurate measurements of water flow quality and future conservation legacy for quality and future conservation legacy for Alabama. Enhancing Alabama’s ability to accurately determine the flow rates and distribution of flows through the Delta is critical as the state moves forward with improving water resource assessments and policies. Expanding the hydrological foundation of the delta will 1) aid in ecological and fisheries research linked to Alabama’s seafood industry, 2) result in more accurate measurements of water flow quality and future conservation legacy for Alabama. Enhancing Alabama’s ability to accurately determine the flow rates and distribution of flows through the Delta is critical as the state moves forward with improving water resource assessments and policies. 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<tr>
<td>Compressed Natural Gas Filling Station to Support Economic Development and Reduce Carbon Footprint</td>
<td>230</td>
<td>Daphne</td>
<td>1500000</td>
<td>The Utilities Board of The City of Daphne (aka “Daphne Utilities”) is proposing a Compressed Natural Gas (CNG) filling station that will provide clean-burning natural gas for use in properly-equipped public-use vehicles in the Daphne area. The filling station is intended to provide service to an “anchor fleet” of vehicles that will include vehicles operated by Daphne Utilities, the City of Daphne and possible future fleets including the Baldwin County Board of Education. The intent of the project is to lead to the development of a fleet of light-duty and heavy-duty vehicles powered by natural gas that will not only reduce air emissions but also provide significant fuel savings to the respective fleets. Natural Gas vehicles emit significantly lower exhaust emissions over gasoline or diesel fuel vehicles. According to Natural Gas Vehicles for America when compared to gasoline or diesel vehicles, CNG vehicles exhibit Carbon Monoxide emissions reductions of 70 - 90%, Non-Methane Organic Compound reductions of 50-75%, Nitrous Oxide emission reductions of 75-95%, and Carbon Dioxide emissions reductions of 20-30%. In addition, natural gas used as a vehicle fuel provides significant fuel savings over gasoline or diesel fuel and may reduce fuel costs by as much as $1.00 per gallon equivalent over gasoline or diesel. The environmental benefits of a fleet of CNG vehicles are as described above through emissions reductions and in addition to the reduced vehicles emissions, the CNG fueling process is virtually emissions free - fuel vapors do not escape into the atmosphere such as occurs when gasoline or diesel fuels are pumped into a vehicle. Southwest Alabama is expected to eventually fall within a U.S. Environmental Protection Agency “non-attainment” zone as result of the production of ozone. Should Baldwin County fall within a non-attainment zone it will be vital that tailpipe emissions of vehicles are reduced. An ever-growing fleet of CNG vehicles fueled by Daphne Utilities will serve to mitigate the air quality issues experienced in southwest Alabama.</td>
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</table>
| Sediment geochemistry investigation of the Mobile-Tensaw River Delta | 231 | Mobile Basin | 215000 | The Alabama and Tombigbee Rivers merge at the terminus of the Mobile Basin to form the Mobile-Tensaw River Delta, a 960 mi<sup>2</sup> complex of braided river channels, off-channel bays and lakes, interconnecting streams, and forested and emergent wetlands serving as the interface between fresh upland waters and the brackish waters of Mobile Bay (Fig. 1) and which functions as a productive fishery resource, biodiversity preserve, water-quality filter, and future conservation legacy for Alabama. The Mobile River Basin, at nearly 44,000 square miles (mi<sup>2</sup>), ranks as one of the largest and most biologically diverse river basins in the United States draining parts of Georgia, Tennessee, Mississippi, and Alabama (Fig 1). The environmental setting and water-quality issues in the Mobile-Tensaw River Basin were recently summarized by Johnson and others (2002) as part of the U.S. Geological Survey National Water-
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<tbody>
<tr>
<td>Oyster Bay Restoration Feasibility Study</td>
<td>232</td>
<td>Ben Raines</td>
<td>Baldwin County</td>
<td>600000</td>
<td>We propose a multi-part feasibility study for a project that will restore the water quality of both Oyster Bay and the Intracoastal Waterway (ICW) by redirecting the treated wastewater from the cities of Orange Beach and Gulf Shores. At present, the treated wastewater from the two cities is dumped into the ICW, where it contributes to high nutrient levels, algal blooms and the classification of oysters in the ICW as unsuitable for human consumption.</td>
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The critical problem with using the Intracoastal Waterway as a receiving water is that the manmade canal does not flow as a river does, and the water in the canal tends to slosh back and forth with tidal shifts, without thorough flushing. As the coastal community grows, so will the issues associated with using the canal for treated effluent. In addition, a new regime of stricter effluent guidelines expected in the next 5 to 10 years will likely make it much more difficult for the municipalities to meet the new standards for discharge to state waters. 

Meanwhile, the ICW is responsible for destroying the traditional salinity regime in Oyster Bay. When the ICW was created, Oyster Bay was separated from its natural connection with the Bon Secour River, and higher salinity water was directed into the bay through the canal, to the detriment of the native oysters. Additionally, sediments disturbed by barge traffic moving through the ICW as it passes through Oyster Bay buried ancient oyster reefs.

Our plan is multi-pronged and involves injecting the waste streams underground for a period of time, which will further reduce contaminants, then using the treated wastewater from the cities of Orange Beach and Gulf Shores. At present, the treated wastewater from the two cities is dumped into the ICW, where it contributes to high nutrient levels, algal blooms and the classification of oysters in the ICW as unsuitable for human consumption. 

A study undertaken during the NAVIGA Mobile Basin program (McPherson and others, 2003) found that total nitrogen, nitrate, and total phosphorus loads were nearly twice as high in the Tombigbee River compared to the Alabama River (greater agricultural influences in the Tombigbee River) and also noted differences with respect to pesticide contamination. O’Neil and Mettee (2008) conducted a synoptic water and sediment-quality survey in the upper (north of 1-65 bridge) Mobile-Tensaw Delta Delta in 2005-07. Part of this study entailed the collection of one series of bottom sediment samples (November 2005) with the goal of assessing the presence of toxic trace metals and related constituents. Sediment samples were collected once from each station during November 2005. The variable constituent concentrations indicated that additional sediment sampling was needed to adequately characterize inorganic constituents in the delta region. Comprehensive sediment resource studies of the delta are lacking.

The purpose of the proposed investigation is to expand our basic resource knowledge of aquatic and terrestrial sediment quality in the Mobile-Tensaw Delta region in Alabama. Approximately 200 samples will be collected in five geographic zones in the delta delineated from north to south (Fig. 2).
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<tbody>
<tr>
<td>O'Dive Creek Property Purchase, Habitat Study, and Nutrient Removal Research/Educational Facility</td>
<td>233</td>
<td>Danny Lyndell</td>
<td>Daphne</td>
<td>$975000</td>
<td>Currently the Utilities Board of the City of Daphne (aka “Daphne Utilities”) operates a municipal wastewater treatment plant at its water reclamation facility adjacent to O’Dive Creek which empties into Mobile Bay. The utility produces a high quality effluent that consistently meets or exceeds all regulatory treatment parameters for TSS, dissolved oxygen, pH, enterococcus, and others. Nutrient loads are not currently regulated by the Alabama Department of Environmental Management in this waterway, however, it is anticipated that within the next 5 years, nutrient loads will be regulated to some degree. This proposed project seeks to investigate natural alternatives to nutrient removal. Daphne Utilities is dedicated to innovative ideas and technologies as are apparent with their many environmental and green initiatives (biodiesel production, grease recycling, energy efficient equipment retrofits, Compressed Natural Gas Vehicles, etc.). This project adds to that long line of environmentally-conscious projects. This project proposes the purchase of approximately 8 acres of land along O’Dive Creek. Daphne Utilities’ water reclamation facility borders this property to the north with O’Dive Creek to the north. Along this section of O’Dive Creek are numerous cypress trees and a population of crayfish, the Rusty Gravedigger (Cambarus miltus), which have a very limited natural habitat. As part of this project, Daphne Utilities will stabilize any areas along the creek front that have erosional concerns, conduct a study to determine the population dynamics of the Rusty Gravedigger, and build an educational/research facility adjacent to the purchased property. The new 5,000 square foot facility will be used to conduct research geared towards developing natural alternatives for nutrient removal. Research will be supported by local educational institutions. In addition to research, the facility will also be used as an educational facility to teach local school groups about environmental stewardship, wastewater treatment, and biological diversity to name a few. Daphne Utilities will work closely with the Weeks Bay Foundation (who will be acting as the fiscal agent) and the Dauphin Island Sea Lab (who will handle research priorities) to support these efforts, and all work will be performed under the regulations and requirements of the Alabama Department of Environmental Management. Project Partners: Just Calmian DSL, Ben Raines Weeks Bay Foundation.</td>
</tr>
<tr>
<td>Expansion of Helen Wood</td>
<td>234</td>
<td>Keri Coumans</td>
<td></td>
<td></td>
<td>This project is part of the City’s Bay Shore Habitat Acquisition and Conservation Initiative, which aims to preserve the</td>
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<tr>
<td>Park and Preserve</td>
<td></td>
<td>Keri Coumanis</td>
<td></td>
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<td>Removing undeveloped properties on the City’s bay shore, restore and conserve priority habitats, connect the community to our natural surroundings and foster an overall environmental ethic. Phase 1: Land Acquisition. Land acquisition by the City of Mobile of up to +40 acres of bay shore property (former MAWSS wastewater treatment plant and adjacent properties) in the Dog River Watershed, for purposes of environmental restoration and conservation of coastal resources. Contiguous bay shore properties to the south, down to the City’s Helen Wood Park on the mouth of Dog River, are undeveloped and publicly-owned (ADCNR). Land acquisition will allow restoration, sensibilization and intact preservation of the City’s southernmost stretch of remaining undeveloped bay shore properties, remove incompatibility development pressures on priority habitats (see NDKA Habitat Priority Planner, Mississippi-Alabama Habitats Tool at <a href="http://habitats.dl.org/">http://habitats.dl.org/</a>) and connect the community to natural spaces in an undererved part of the City. Acquisition of this land by the City will allow shoreline alignment of the proposed regional Crepe Myrtle Trail under development by Mobile United with planning assistance from the National Parks Service (NPS), which would connect this preserved property to existing City parks Helen Wood, McNally, Bay Shore) and proposed preserve projects at Perch Creek (City of Mobile, Peninsula of Mobile), Brookley Bayfront (MBNEP), and Three Mile Creek (City of Mobile, others). Phase 2: Site Remediation. Phase 2 of this project would remove the abandoned wastewater treatment infrastructure, conduct environmental testing, and perform any environmental remediation that may be needed to facilitate restoration of the acquired land to a natural state. Phase 3: Site Planning and Implementation. Phase 3 would involve planning, design and implementation, providing habitat preservation, public access to preserved areas for passive recreation uses (including planned linkage to the regional Crepe Myrtle Trail), resources for environmental education, and long-term stewardship. The City will coordinate with and build upon planning and development efforts on Mobile’s coastal Peninsula by the USEPA, Auburn University, NPS, and numerous local community and environmental advocacy groups.</td>
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<td>Perch Creek and Park</td>
<td>235</td>
<td>Keri Coumanis</td>
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### Restoration Types Addressed

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<tr>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tr>
<td>Wetland, Coastal, and Nearshore Habitat</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project prevents future and collateral injury to natural resources and services (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
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<td>Sea Turtles</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
<td>Project offers opportunities for external funding and collaboration (+ / 0 / -)</td>
<td>Project is time critical (+ / 0 / -)</td>
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<td>Birds</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project prevents future and collateral injury to natural resources and services (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
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<td>Recreational Use</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
<td>Project offers opportunities for external funding and collaboration (+ / 0 / -)</td>
<td>Project is time critical (+ / 0 / -)</td>
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<td>Oyster Reef</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project prevents future and collateral injury to natural resources and services (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
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<td>Project Description</td>
<td>Restored Types Addressed</td>
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<td>Wastewater Reuse Project for the City of Daphne and the Eastern Shore of Mobile Bay</td>
<td>This project proposes to build a reuse water infrastructure in order to use treated municipal wastewater for irrigation purposes on public and private property in Daphne, Alabama along the eastern shore of Mobile Bay. By intercepting the discharge from the only wastewater treatment facility serving the area, the reuse water will not only reduce effluent discharges into Mobile Bay, it will reduce overall nutrient loading into the waterway. In addition, this reuse project will eliminate the current irrigation wells which have potential for contamination of the drinking water aquifer, overpumping of the aquifer effecting scarce resources and the potential for saltwater intrusion. Finally, this reuse project will serve an educational component providing one of the only wastewater reuse projects in Alabama and the only project in coastal Alabama to demonstrate its efficacy and effectiveness to other wastewater utilities in the State of Alabama.</td>
<td>AL Portal</td>
<td>N Y N N N N N N</td>
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<tr>
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<td>Safe Harbor Dock Facility for Coastal Alabama</td>
<td>237</td>
<td>Travis Short</td>
<td>Bayou La Batre</td>
<td>$450,000.00</td>
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</table>

The Safe Harbor Dock Facility Project for Coastal Alabama is a much needed addition to a limited accessible working waterfront, and will protect the Alabama Fishing Fleet and Recreational vessels of Mobile County during tropical weather events. This project promotes commercial and recreational fishing industries and will protect the coastal environment.

Bayou La Batre, Alabama was the first permanent settlement in southern Mobile County, established in 1786 as the result of a Spanish land grant. Commercial fishing along coastal Alabama began not long after the arrival of European settlers. Bayou La Batre’s early beginnings as a small fishing village is now known to many Alabamians as the “Seafood Capital of Alabama” for the seafood landings and economic impact to the state of Alabama. There is no longer sufficient shoreline docking for vessels and catch handling activities. Seafood processing on the working waterfront provides a major source of employment for the residents of Bayou La Batre. On August 25, 2005, Hurricane Katrina produced the largest storm surge ever recorded in the area, reaching nearly 18 feet and pushing commercial seafood boats, and the cargo ship MV Caribbean Clipper on shore. Over 80 boats, shrimp boats, oyster boats, crab boats, and recreational boats lay aground in mud or pushed nearly 2 miles in marshes and wooded areas. Trenches had to be dug to remove the vessels resulting in significant temporary habitat destruction. A Safe Harbor will provide the community with a place to moor vessels during significant storm events. Reducing losses in this manner will ensure a more stable fishing industry.
Biofiltration for Project Name Elimination of Wastewater Control and Overflows

Preserve Brookley Bayfront

No./ Proj 239

Walter Ernest By/ Van Baggett

Mobile, AL 7000000 100000 Cost

areas. In addition, this project will provide real reducing the incidence of SSOs, especially those located in environmentally sensitive These solutions will have applicability to all wastewater utilities co

low for dealing with destructive corrosive gases in sanitary sewer systems with low

biologists from a local university. The purpose of the project is to de

unnoticeable as a treatment structure to the passerby. This research project will be

The structures are designed to blend in with the natural environ

biosolids, soil, and constructed

structures in the City of Daphne and along the shores of Mobile Bay. Corrosive gases are produced within these structures

Utilities”) owns and maintains sanitary sewer collection piping and pumping

sewer collection infrastr

addition, odors impact air quality and quality of life for residents living near sanitary

system structures, pumping and electrical equipment, and produce noxious odors.

failure of structures an

Sanitary sewer collection systems produce corrosive gases which damage collection

structures. The Utilities Board of City of Daphne (aka “Daphne

This project aims to preserve the remaining undeveloped property on the City’s bay shore, restore and conserve priority habitats, connect the community to our natural surroundings and foster an overall environmental ethic. This parcel is one of the largest unfragmented waterfront parcels in the city of Mobile. The parcel consists of over 140 acres of bayfront property on the western shore of Mobile Bay in the Sarroes Bend Watershed, see attached “Sarroes Bend WS Map.” The acquisition of this parcel will allow the ability to perpetually conserve and restore priority intertidal marsh and flats, priority maritime forest, non-timber wetland and upland habitats, create buffers and employ best management practices to improve water quality; and expand passive recreation amenities and public access to the coast of Mobile Bay. Land conservation activities will remove incompatible development pressures on priority coastal habitats (see KADIA Habitat Priority Planner, Mississippi-Alabama Habitat Tool at http://habitat.dils.org/) in a highly urbanized and developing part of the City (just east of the Mobile Aeroplex). The placement of a perpetual conservation easement on the protected property will provide long term conservation of the historic, cultural and ecological conservation values of this property. This project compliment efforts to create off-shore oyster reefs and living shore line initiatives underway at this location and plan linkages to regional coastal biking trails (e.g., the Crepe Myrtle Trail). This project will include long-term monitoring and stewardship by the Pelican Coast Conservancy.

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According to eatgulfseafood.com, the Gulf of Mexico sustainably produces more than 500 million pounds of in-shell oysters each year. The eastern oyster found in the Gulf is typically larger in size than oysters found elsewhere in the US. The Gulf's warm waters are the perfect place for oysters to thrive and grow quickly. Bayou La Batre, Alabama was the first permanent settlement in southern Mobile County, established in 1786 as the result of a Spanish land grant. Commercial fishing along coastal Alabama began not long after the arrival of European settlers. Bayou La Batre's early beginning as a small fishing village is now known to many Alabamians as the “Seafood Capital of Alabama” for the seafood landings and economic impact to the state of Alabama. The proposed site for the Oystermen Support Dock is Delta Port Marina, located near Coden, Alabama. The Bayou La Batre Port Authority would have to purchase the property and upgrade the existing docks and parking areas. However, if this site becomes unavailable or infeasible, an alternate location would be identified during the planning phase of the project. The site upgrades would benefit both the city of Bayou La Batre and the Coden community. There would be boat landings, an Alabama Department of Conservation and Natural Resources (ADCNR) office, an Auburn Shellfish Lab/office, boat launches, cold storage, and vehicle parking. The creation of the Oystermen Support Dock will increase cooperation and sharing of information and data between the oystermen and ADCNR and researchers at Auburn University. This will have a positive impact throughout the Gulf Coast Region.

The mission of the ASMC is to build a marketing program to help consumers feel confident about the safety of Alabama seafood. The funds requested through this proposal will augment previous years funding received by the ASMC. As outlined above, the ASMC was expediently created and marketing and public relations activities were initiated and are on-going. Through the ASMC, the infrastructure is in place to immediately and efficiently utilize awarded funds. The work of the ASMC program will be focused primarily within the State of Alabama. The Gulf of Mexico infrastructure is in place to immediately and efficiently utilize awarded funds. The work of the ASMC program will be focused primarily within the State of Alabama.
There will be additional public relations and marketing work done regionally with an emphasis in the southeast United States. The audience served by the comprehensive seafood marketing and public relations program will be multi-faceted. We will primarily be targeting the seafood loving consumers. We can drive the demand from the consumer side, restaurants, distributors and retailers will have an incentive to increase their use of Alabama seafood. Other targets include journalists, bloggers, distributors, grocers, retailers, restaurateurs, chefs, event planners, foodservice companies and other state organizations.

Alabama Gulf Coast Recovery Council Older Worker Program

Background - SARPC currently operates the Senior Community Service Employment Program (SCSEP) funded by Dept. of Labor. The SCSEP program provides training and job experience for individuals 55 and older through part time employment. Participants are assigned to Host Agencies (Government or Non-profit 501 C-3 Agencies). Grant funds and a local match (ten percent 10%) pay the wages. The program benefits the Older Worker by providing employment and Host Agencies by providing part time employees at no cost. After the Oil Spill, SARPC experienced a sharp increase in applications to the SCSEP program. The increase in applications was attributed to a number of factors: 1) Local businesses were reducing workforce and often the first to go were older workers. 2) Older Workers that previously received help from family members were no longer receiving assistance because family members were financially impacted by the Oil Spill and finally 3) Older Workers that may have previously been able to cover expenses with Social Security were now faced with sheltering or feeding younger family members impacted by the Oil Spill.

PROGRAM PROPOSAL - SARPC proposes establishing a locally funded Older Worker Program. The Alabama Gulf Coast Recovery Council Older Worker Program (ACRCOWP) would be designed on the model of the Senior Community Service Employment Program (SCSEP) funded by Dept. of Labor. The SCSEP program provides training and job experience for individuals 55 and older through part time employment. Eligible participants should be age 55 and older, unemployed (ACRCOWP) would be designed on the model of the Senior Community Service Employment Program (SCSEP) funded by Dept. of Labor. The SCSEP program provides training and job experience for individuals 55 and older through part time employment. Eligible participants should be age 55 and older, unemployed, and meet family income guidelines. For purposes of this program income guidelines would be defined as less than 150% of poverty. Participants selected to the program income guidelines would be attributed to a number of factors: 1) Local businesses were reducing workforce and often the first to go were older workers. 2) Older Workers that previously received help from family members were no longer receiving assistance because family members were financially impacted by the Oil Spill and finally 3) Older Workers that may have previously been able to cover expenses with Social Security were now faced with sheltering or feeding younger family members impacted by the Oil Spill.

PROGRAM BENEFITS - The Older Worker Program would benefit the Older Workers and Job Seekers. Employment Program. Eligible participants should be age 55 and older, unemployed, and meet family income guidelines. For purposes of this program income guidelines would be defined as less than 150% of poverty. Participants selected to the program. The Older Worker Program would benefit the Older Workers and Host Agencies. Grant funds and a local match (ten percent 10%) pay the wages. The Older Worker Program benefits the Older Workers by providing employment and Job Seekers by acquiring job experience and job skills. Participants are assigned to Host Agencies (Government or Non-profit 501 C-3 Agencies). The Older Worker Program empowers the Older Worker to develop professional skills, gain work experience, and increase social interaction with peers and mentors. The goal of the program is to help the Older Worker achieve self-sufficiency in the workplace. Job Seekers would benefit by developing and increasing their job skills.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitter/Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin Beach Express</td>
<td>Cal Markert</td>
<td>Baldwin County</td>
<td>Estimated at $5.5 million</td>
<td>The proposed Baldwin Beach Express is a controlled access highway extension of the recently completed Southern Beach Express along CR83. It will run between Interstate 65 and Interstate 10. The proposed 24.5 mile link will provide a continuous high-speed north-south route between I-65 and Alabama's Gulf Coast. Not only does this project provide additional and vastly increased capacity for coastal evacuation during hurricane events, it also provides for a rapid emergency response artery from the northern support regions. $8.5 Million has been expended already in design engineering, environmental planning and permitting. The footprint of the proposed project has been minimized by reducing median size and required right-of-way, reducing its impacts on the project area. Of significant economic importance is the project’s support to Alabama's tourism industry — especially that of our gulf coastal communities and our region’s state parks — and to the growth of Baldwin County. It will assist in leaders of opportunity across multiple industries and also provide new opportunities for public access to national resources within north-central Baldwin County for outdoor recreation. 5.4 million visitors came to Alabama’s gulf beaches in 2013, up from 4.9 million in 2012. 10% of our visitors come from states northeast and north of Alabama within driving distance, traveling via north-south interstate routes, eventually using Interstate 65 and a combination of secondary highways. Access to and through Baldwin County on a direct, high-speed highway link provides today’s visitors another positive decision point in choosing where to expend their valuable vacation and recreation time. Tourist throughout Alabama generates more than 108,000 jobs, mostly dependent upon Alabama’s Highways for visitor travel and employment access. This project supports a significant transformational job creation movement: South Alabama’s new aerospace industry and the Baldwin Mega Site located in Bay Minette, AL. The Mega Site project is expected to contribute $3,000 to 5,000 jobs. This proposed project contributes to the economic resilience of our gulf coast and the state of Alabama.</td>
</tr>
<tr>
<td>Development of a laboratory facility for monitoring and</td>
<td>Prabhakar Clement</td>
<td>Baldwin County</td>
<td>Total Cost: $3,000,000.00</td>
<td>The Deepwater Horizon (DWH) oil spill accident extensively impacted several sandy beaches located along the Gulf of Mexico (GOM). One of the unique characteristics of the DWH spill was that when the floating emulsified oil approached GOM beaches a portion of the mousse interacted with suspended sediments and sank.</td>
</tr>
<tr>
<td>Project Name</td>
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<td>Submitted By</td>
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<tr>
<td>Tar balls washing along Alabama’s beaches</td>
<td>Tar balls, once formed, are highly mobile in the nearshore environment and can be found on Alabama’s beaches. Auburn University oil spill research team has collected and archived a large number of BP oil spill related tar balls that have been washing along Alabama’s beaches since June 2010. There are many basic research questions related to these potentially harmful tar balls that are yet to be answered and these include: how are these tar balls formed and transported from tar mats? How to identify and fingerprint these tar balls? How can we determine when toxic chemicals in tar balls impact beach microfauna, meiofauna and macrofauna? What are the harmful effects to beachgoers when they are exposed to these tar balls via direct skin contact? Can we develop better methods for characterizing various chemical contaminants and their degradation by-products in the tar balls? Can we develop strategies for monitoring the rate of recovery of tar ball contaminated beaches? The project will use a multi-year laboratory tar ball monitoring project to develop a state-of-the-art characterization and oil spill monitoring laboratory to investigate these important research questions. The tar ball monitoring efforts will cover the entire 30-mile long amenity beaches located from Orange Beach to the Fort Morgan tip.</td>
<td>Feemster Vaile</td>
<td>Dauphin Island</td>
<td>7992000</td>
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**Additional Criteria**

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<thead>
<tr>
<th>Criterion</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
<td>-</td>
<td>0</td>
<td>+</td>
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<tr>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>+</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Project readiness (+ / 0 / -)</td>
<td>0</td>
<td>-</td>
<td>+</td>
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<tr>
<td>Project is not already required by existing laws and regulations (Y/N)</td>
<td>Y</td>
<td>N</td>
<td>N</td>
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<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Y</td>
<td>N</td>
<td>N</td>
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<tr>
<td>Project has a reasonable probability of success (+ / 0 / -)</td>
<td>-</td>
<td>0</td>
<td>+</td>
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<tr>
<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
<td>N</td>
<td>Y</td>
<td>N</td>
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<tr>
<td>Project offers opportunities for external funding collaboration (+ / 0 / -)</td>
<td>-</td>
<td>0</td>
<td>+</td>
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<tr>
<td>Project is time critical (+ / 0 / -)</td>
<td>-</td>
<td>0</td>
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<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Y</td>
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<td>N</td>
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<tr>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>+</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Project readiness (+ / 0 / -)</td>
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<td>-</td>
<td>+</td>
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<tr>
<td>Project is not already required by existing laws and regulations (Y/N)</td>
<td>Y</td>
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<tr>
<td>Project Name</td>
<td>Project Description</td>
<td>Restoration Types Addressed</td>
<td>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</td>
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<tr>
<td>Assessment of Injury: During the DWHOS marine mammals were exposed to oil and dispersants and impacted by cleanup activities. Aerial surveys conducted under the Natural Resource Damage Assessment found six species of whales or dolphins swimming in surface oil in the GOM and confirmed dolphins and manatees in areas where heavy oiling was observed. Two dolphins were rescued after being trapped behind oil booms in AL during the spill, and the MS-AL coastline had the highest number of perinatal dolphin mortalities. Live dolphin health assessments in Barataria Bay, LA in 2011 showed dolphins in the area had compromised immune function and disease consistent with oil exposure. The potential for long-term impacts exists for marine mammals that were exposed to contaminants, necessitating collection of key demographic and biological data as soon as possible.</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>No./Y</td>
<td>N</td>
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<tr>
<td>Fairhope Soccer Complex</td>
<td>The Fairhope Soccer Complex is a proposed outdoor recreational facility for the City of Fairhope, Alabama. The facility would allow the hosting of several outdoor sport competitions and tournaments</td>
<td>Marine Mammals (Y/N)</td>
<td>Sea Turtles (Y/N)</td>
</tr>
<tr>
<td>Fairhope Soccer Complex</td>
<td>The Fairhope Soccer Complex is a proposed outdoor recreational facility for the City of Fairhope, Alabama. The facility would allow the hosting of several outdoor sport competitions and tournaments</td>
<td>Marine Mammals (Y/N)</td>
<td>Sea Turtles (Y/N)</td>
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</tbody>
</table>

**Fairhope Soccer Complex**

**Project Description**

The Fairhope Soccer Complex is a proposed outdoor recreational facility for the City of Fairhope, Alabama. The facility would allow the hosting of several outdoor sport competitions and tournaments.

**Assessment of Injury: During the DWHOS marine mammals were exposed to oil and dispersants and impacted by cleanup activities. Aerial surveys conducted under the Natural Resource Damage Assessment found six species of whales or dolphins swimming in surface oil in the GOM and confirmed dolphins and manatees in areas where heavy oiling was observed. Two dolphins were rescued after being trapped behind oil booms in AL during the spill, and the MS-AL coastline had the highest number of perinatal dolphin mortalities. Live dolphin health assessments in Barataria Bay, LA in 2011 showed dolphins in the area had compromised immune function and disease consistent with oil exposure. The potential for long-term impacts exists for marine mammals that were exposed to contaminants, necessitating collection of key demographic and biological data as soon as possible.**

**Rationale/ Benefits:** Biological data on dolphins are limited due to ongoing DWHOS litigation and sample sequestration from stranded animals. This project will establish metrics and set new baselines for evaluating effects on dolphins in Alabama waters by sampling live animals. These new biological data can be applied to understand effects on ecosystem function, fisheries, and human health and will be useful for comparison to demographic and biological data from stranded animals when available.

**Dolphin recovery will have the broader impact of supporting the ecotourism industry in AL.**

**Approach:** The project will compare metrics of dolphin abundance and condition among sites in AL (Perdido Bay, Mobile Bay) by 1) photo-identification to determine abundance by mark-recapture methods, identify individuals for long-term tracking of movements and fate, and define individual body condition, 2) remote biopsy sampling to define genetic structure, physiological condition and diet, and contaminant exposures, and 3) measuring environmental drivers of condition and health. This work will define the status of dolphins following the DWHOS and build capacity for enduring future research and collaborative activities.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project No./ID</th>
<th>Submitted By/ Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotions on Year-Round Tourism Opportunities on Alabama's Gulf Coast</td>
<td>250</td>
<td>Colette Sweten</td>
<td>Coastal, AL</td>
<td>$300,000</td>
<td>Coastal Alabama has huge potential for year-round tourism. The region enjoys about visitation as a family summer beach destination but it also has assets that appeal to non-summer visitors. Budget priorities have dictated that marketing focus be on driving summer business. Increasing visitation by just 10 percent in the months of March, April, May, September, October and November, however, would result in an additional $12.6 million in annual lodging rentals in Gulf Shores and Orange Beach alone. Other sectors will see proportionate increases. The result will be more tax funding to the state and cities and a more stable year-round employment of many underemployed tourism industry workers and will allow businesses to better train employees to offer exceptional customer service all year. The benefits will extend beyond these two cities, as this program will promote regional businesses and attractions. The timing of this opportunity also coincides with the development of the proposed outdoor recreational complex.</td>
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<tr>
<td>Project Name</td>
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<td>Primary Lead</td>
<td>Location</td>
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</tbody>
</table>
| Spanish Fort Estates Erosion Mitigation and Battlefield Preservation | 251 | Matthew Hinton | Spanish Fort | 8940000 | $500,000 | Erosion control along the Eastern Shore Bluffs at the mouth of the Blakeley River is arguably the most significant historic location in the entire state of Alabama. Originally the site of a French trading post in the early 1700s, the Bluffs, about 300 feet above the river delta below, became a strategic defensive location for the Spanish government, which built a fort around the time of the American Revolution. It was here in 1781 that the Spanish repelled a British attack to re-take Mobile, which led to a counter-attack by Pensacola that expelled the British from the Gulf Coast forever. Nearly a century later, the same Bluffs would provide defense for the Confederate Army in the form of Fort McDermott and Red Fort, which became the site of the “Final Battle of the Civil War”, concluding in Union victory exactly one day before Lee’s surrender at Appomattox.

Today, the Bluffs are occupied by a sprawling neighborhood by the name of “Spanish Fort Estates”, which offers remarkable views of the Mobile-Tensaw Delta and the City of Mobile skyline. With work beginning in the 1950s, prior to the incorporation of the City of Spanish Fort in 1993, storm water runoff was of little concern during the construction process. Many of the valleys that were used for drainage have become gullies and canyons, eroding private land and dumping large quantities of sediment into the wetlands and estuary below, threatening to alter the unique ecosystem of the Mobile Bay National Estuary. The issue threatening not only the natural environment and its historic significance, but also the value of the estimated $20,866,500 in real property directly abutting the ravines. Although the area could not be protected from development, it is imperative that erosion within Spanish Fort Estates be mitigated to save the historical, ecological and private property values along the Bluffs. The City would like to alleviate... |
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camden Headcut Repair</td>
<td>Prabhakar Clement</td>
<td>Spanish Fort</td>
<td>AL Portal</td>
</tr>
<tr>
<td>Development of a community-based tar ball and beach recovery monitoring program</td>
<td>Prabhakar Clement</td>
<td>Coastal Baldwin County</td>
<td>AL Portal</td>
</tr>
</tbody>
</table>

### Project Description

- **Camden Headcut Repair**
  - Located at the terminus of Wildflower Trail in the Cambron neighborhood, the real estate developer and a local resident have employed a stop-gap measure to mitigate a head cut to the north of the cul-de-sac to no avail. The head cut continues to undermine the retaining wall, which now threatens at least one residential property. Increased runoff velocity from the head cut has resulted in the destabilization of Sibley Creek below, which has led to the loss of several trees that have been undermined due to erosion. The estimated cost to repair the head cut and stabilize the creek bed is $260,000.

- **Development of a community-based tar ball and beach recovery monitoring program**
  - The 2010 Deepwater Horizon (DWH) oil spill event continues to impact Alabama’s amenity beaches till to date. Our recent May 2015 field survey, completed 5 years after the DWH accident, shows that the current tar ball activity levels along the white sandy beaches located in between Orange Beach and Fort Morgan are at least 100 to 1000 times higher than the expected background level. During our survey, we gathered about 50 to 100 tar balls within 30 to 45 mins from every sampling point. Currently, it is unclear when these levels would reach the low background levels of 1 or 2 tar balls per km every six months that existed prior to the BP oil spill. Our past research efforts have shown it is highly unlikely that the Alabama system would reach this very low background level in the next five to ten year period. Therefore it is extremely important to develop a long-term monitoring plan to manage this problem. One of the limitations of tracking tar ball activity levels is that they are influenced by highly dynamic coastal processes, and hence they need to be tracked continuously. Unfortunately, automatic monitoring is impossible since tar balls are discrete objects that need to be manually recovered. The objective of this proposal is to build a community-based tar ball monitoring program to facilitate this continuous monitoring process. The proposed monitoring program will employ a three-tier approach to identify and document the origin of the tar balls. It has been well established by our past research efforts that the DWH tar balls have several unique physical and chemical characteristics. Our monitoring protocol will use the following 3 distinct steps to objectively identify and document tar ball characteristics: 1) simple field based physical characterization step community members will be trained to do this; 2) simple laboratory testing step (selected community group leaders will be trained to do this); and 3) advanced chemical and other biomarker fingerprinting step (this will be conducted at the National Science Foundation funded oil spill test facility at Auburn University). Step 3 requires advanced instruments and the funds requested as part of this effort will be used to build a state of the art oil spill testing facility that will serve entire Gulf Coast region. The data collected will be directly uploaded into a web system and will be made available to a broader community.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bon Secour River Headwater Restoration</td>
<td>The restoration, protection, and enhancement of South Baldwin’s water resources is critical for the continued growth and positive development of coastal Alabama. Our local rivers, estuaries and bays offer a high quality of life for local residents, support both commercial and recreational fisheries, and provide the habitat for countless species. In order to protect and restore our local water resources, urban pollution sources should be identified, quantified, prioritized, and then reduced or eliminated. The City of Foley and the surrounding urbanized area drain almost entirely into two distinct watersheds: Bon Secour River, and Wolf Bay. The Wolf Bay watershed encompasses approximately 50% of the City Limits, but drains just 35% of the Foley Urbanized Area contained in these watersheds, as indicated by the 2010 Census. Conversely, the Bon Secour basin covers only 26% of the City Limits within the study area, but drains 55% of the Urbanized Area of concern. This suggests that long-term planning and the promotion of low-impact development may be more cost-effective for Wolf Bay, while the retrofitting of existing infrastructure and other physical treatment methods, including constructed wetlands, may be required in the relatively more urbanized basin of the Bon Secour River. A ninety-four (94) acre tract of land has been identified for purchase in the headwater region of the Bon Secour River. This property is the most downstream undeveloped parcel within the City Limits, and encompasses the main river channel as well as the junction points of three tributaries. Therefore, this land is ideally located for cost-effective protection and restoration of the Bon Secour River. The proposed Bon Secour River Headwater Restoration project consists of property acquisition and three main construction components: 1) streamside flow diverters, physical treatment devices, and forebay to remove the fishable, sediment, and other coarse debris; 2) a seventy (70) acre, multi-bay constructed stormwater wetland for the biological treatment of urban runoff prior to discharge into the Bon Secour River, and 3) a multi-media outreach program to explain and promote low-impact design (LID) techniques for use in new construction and redevelopment within the region. Permanent educational kiosks will be installed at key locations along the project to raise public awareness of the threats to our ecosystem from urban runoff and the need for, and methods of, treating these discharges.</td>
<td>Project is consistent with programmatic restoration goals Y (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice Y (Y/N)</td>
<td>Project delivers benefits cost-effectively (Y/N)</td>
<td>Project meets water quality and habitat goals Y (Y/N)</td>
<td>Project meets fishery and commercial fishing goals Y (Y/N)</td>
</tr>
<tr>
<td>Extension of Effluent Force Main from Bayou La Batre WWTF</td>
<td>The effluent force main from the Bayou La Batre WWTF extends approximately one (1) mile into Portersville Bay. Although the compliance of the WWTF is good, there are concerns to indicate that the effluent flow rate and allowable pathogens limits are of concern to the shellfish harvesting industry along the Bayou La Batre and Bayou Coden areas. Working with the ADCNR, Fish &amp; Wildlife and Army Corp of Engineers, we are identifying solutions to achieve the goal of the effluent not potentially inhibiting the shellfish harvesting industry in the area. The project will relocate the effluent further into the Bay and Mississippi Sound as to provide adequate mixing to prevent an impact on the shellfish harvesting farms and wild harvesting areas. The proposed project will require design, bidding, award, inspection, and close out the project. The preliminary engineering cost estimate is approximately $12 million to achieve the relocation of the effluent force main further into Portersville Bay/Mississippi Sound.</td>
<td>Project is consistent with programmatic restoration goals Y (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice Y (Y/N)</td>
<td>Project delivers benefits cost-effectively (Y/N)</td>
<td>Project meets water quality and habitat goals Y (Y/N)</td>
<td>Project meets fishery and commercial fishing goals Y (Y/N)</td>
</tr>
</tbody>
</table>
The City of Saraland Water Board provides potable water service to 4,700 customers for residents in the City of Saraland (north Mobile County) and surrounding area. The water system has grown steadily since its inception in the 1960s, enabling the system to improve its infrastructure through capital projects throughout the years. However, recent growth in Saraland spurred on by the creation of a city-wide school system and large annexations has caused the water system to fall behind on its necessary infrastructure upgrades. This project will install necessary water system infrastructure for the City of Saraland and its surrounding area through the construction of a new well, water treatment plant, and a booster pump station. In addition, approximately 15,000 linear feet (3 miles) of 8” and 10” water distribution lines will be installed along State Highway 318 (Industrial Parkway) and State Highway 45. The improvements in this project have been developed by the Saraland Water Board’s consultant engineer in conjunction with the System Operator. The engineer has determined this project is much needed and will provide the most cost-effective benefit to the entire system. The new well will be located near an existing water storage tank on State Highway 158 (just past Walmart). A test well was dug a few years ago, and this is the best place to locate the new well and estimated flows will be 300-350 gallons per minute. The newly pumped water will be treated and pumped via a 750 gallons per minute booster pump. This additional volume will be added to the existing infrastructure on the west side of Interstate 65, and will provide necessary “looping” of the system. “Looping” typically refers to the elimination of a dead end water main by connecting the dead end to another water main to complete a “loop”. This project integrates the entire water system in order to improve the efficiency of the water system while improving infrastructure for existing and future economic development.
**Project Information**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Shine Road Water Well and Pump Station</td>
<td>Annette Johnson</td>
<td>Bayou La Batre</td>
<td>450,000</td>
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<tr>
<td>Iron and Manganese Removal - Sand Filtration - Existing Wells</td>
<td>Annette Johnson</td>
<td>Bayou La Batre</td>
<td>500,000</td>
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<tr>
<td>Water Distribution System Upgrades</td>
<td>Annette Johnson</td>
<td>Bayou La Batre</td>
<td>400,000</td>
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<table>
<thead>
<tr>
<th>Project Description</th>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
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<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Shine Water Well project involves the installation of a production water well to provide potable water for the City of Bayou La Batre residents, commercial and industrial clients. An test production well was drilled less than 10 years ago and quantity measurements indicated the ability to provide greater than 950 gallons per minute (3,568 MGD) of potable water. With the field road well and the Vanity Fair well, there was not a need to install and begin producing water unless the need was evident. Recently, the Vanity Fair well has begun losing production capacity and as recently as two years ago, had to have the system rebuilt to install new screens. There is concern the Vanity Fair well will not last more than another year. Therefore, the need for the Shine Road well to be installed and begin production is quite evident now. The project will involve the construction of the well, pump station with variable speed pumps, controls for the pump to eliminate overfilling the tanks, and chemical feed system with analyzers. The project, since the test well analysis has been performed, should take less than two years to complete. But it is a priority due to the situation with the Vanity Fair well. Also, recently, there was concern from the Bayou La Batre Fire Department, that there was not enough flow capable to handle the necessary fire flow requirements for the schools nor industries. This additional flow will provide the necessary fire flow needs.</td>
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<tr>
<td>The City of Bayou La Batre is served by two (2) existing production wells. Both wells together produce greater than 1400 gallons per minute. Although this has proven sufficient for drinking water supply, there is still issues with discoloration of the water caused by iron and manganese. The aquifer on the Alabama coast exhibit higher than normal levels of iron and manganese concentrations than more inland wells and aquifers have in the source water. To reduce the concentration of iron and manganese and limit the issues with &quot;red water&quot;, there is a proposed project to install a green sand filter to remove and bind the iron and manganese and reduce exponentially the levels of iron and manganese in the source water. Both wells will receive these sand filtration units. The backwash from the sand filters will flow to the WWTF. The project cost for the installation of green sand filtration units on the existing wells is approximately $5,000,000. The removal of the iron and manganese will greatly improve the taste and odor of the drinking water from the Bayou La Batre Utilities Department.</td>
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<tr>
<td>Recently, during a review of the distribution system fire flow capacity for the Acona North Elementary School, it was determined that parts of the distribution were not sized properly to allow the higher volumes necessary for the fire protection for the school. This is also a deadly and fire potential has the ability to allow a higher level of disinfection by-products to develop and required more frequent flushing of the system and increase the loss water percentages out of the system. The solution to provide the higher volumes of flow and the elimination of the dead end areas is to loop the water system and upgrade the size of the distribution lines. Also, there is the opportunity to increase the service line size to the Beach front and Shell Bolt</td>
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</table>
The Bayou La Batre WWTF was completed in 2012. Although a very state of the art WWTF, it lacks the necessity for additional upgrades. The Bayou La Batre Utilities Board wants to upgrade the level of treatment of the class B sludge to a Class A/EQ sludge. The higher level of sludge classification requires additional pathogen removal. This can be accomplished by the installation of auxiliary backup pumps to eliminate sanitary sewer overflows throughout the collection system. The upgrades will involve installing larger pumps with controls, and installing by-pass pumps instead of generators. The collection system rehabilitation is over five (5) miles of collection system that is exhibiting high infiltration and inflow. The collection system is recommended to be slip lined, which the method used for I&I reduction less than five years ago on other areas of the collection system. It is anticipated to cost $11,500,000.00 to perform this system upgrade. The environmental benefit is reduced infiltration and inflow and reduction of sanitary sewer overflows into highly sensitive waters of the State of Alabama.

The Bayou La Batre WWTF was completed in 2012. The initial treatment of the waste activated sludge included the aerobic digestion to reduce organics and pathogens, along with the dewatering of the sludge into a cake form to dispose as an agricultural amendment. This sludge application is currently handled by an outside firm responsible for the management and reporting of the biosolid applications on the agricultural fields. The Bayou La Batre Utilities Board wants to upgrade the level of treatment of the sludge from a Class B to a Class A/EQ sludge. The higher level of sludge classification requires additional pathogen removal. This can be accomplished by the installation of the Biosol Unit. This unit provides treatment via higher temperatures and higher pH values to achieve the pathogen reduction. With the achievement of the higher level of pathogen removal, it allows the Utilities Board to the opportunity to market the product for soil amendment. The product can be used as potting soil. During the construction of the new WWTF in 2010, another adjacent space was plumbed for adequate water flow service to these areas. The collection system includes over 10 lift stations that are in need of upgrading the structures, pumps, and controls along with the installation of auxiliary backup pumps to eliminate sanitary sewer overflows throughout the collection system. The upgrades will involve installing larger pumps with controls, and installing by-pass pumps instead of generators. The collection system rehabilitation is over five (5) miles of collection system that is exhibiting high infiltration and inflow. The collection system is recommended to be slip lined, which the method used for I&I reduction less than five years ago on other areas of the collection system. It is anticipated to cost $11,500,000.00 to perform this system upgrade. The environmental benefit is reduced infiltration and inflow and reduction of sanitary sewer overflows into highly sensitive waters of the State of Alabama.
### Project Information

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<th>Submitted By</th>
<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Handicap Elevator</td>
<td>265</td>
<td>Annette Johnson</td>
<td>Baldwin County Utilities Board</td>
<td>Baldwin County</td>
<td>$300,000.00</td>
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<td>Bayou La Batre WWTF- Operations Elevated Walk</td>
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<td>Baldwin County Utilities Board</td>
<td>Baldwin County</td>
<td>$300,000.00</td>
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<td>Perdido Watershed Access Improvement</td>
<td>266</td>
<td>Cal Markert</td>
<td>Baldwin County</td>
<td>Baldwin County</td>
<td>$300,000.00</td>
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<tr>
<td>New Stream-Gaging Station On Fish River At County Road 32</td>
<td>267</td>
<td>Cal Markert</td>
<td>Baldwin County</td>
<td>Baldwin County</td>
<td>$300,000.00</td>
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</table>

### Project Description

Handicap elevator into the main floor: The Baldwin County Utilities Board has requested the installation of a handicap elevator at the WWTF. This will serve two purposes, handicap accessibility, but also the ability to evacuate any injured personnel from the office floor to ground level without accessing the stairs. There exists a location outside the entrance on the office floor which will allow the construction of this handicap service elevator. The preliminary engineering cost is approximately $300,000.

The Bayou La Batre WWTF was completed in 2012. The existing method to access the treatment plant is via multiple sets of stairs. To better serve the operators analyzing the process in the aeration basin for mixed liquor suspended solids, pH, alkalinity, dissolved oxygen, etc., it is proposed to construct a walkway from the laboratory office to the aeration basin. The project is approximately $300,000.

Located at the conjunction of the Perdido and Styx Rivers, this site offers access to multiple habitats due to the diversity of coastal water environments. This project will repair deteriorating wooden hardwall bulkhead structures currently in an increasing state of deterioration. There are public safety considerations, public access to the natural resource considerations, as well as environmental impact considerations should the existing bulkhead wall fail. The Project plans to replace the wooden bulkhead structure with new synthetic sheet pile anchored with steel “H” beams as tie backs. An Interpretive Information Phase for improvements to the public park and vehicular parking area will include interpretive and informative signage regarding the watershed and the site location, watershed and habitat educational materials, pathway design and security lighting. Businesses in the Seminole area will benefit from increased utility of the park and watershed. Access through interpretive and educational materials placed strategically in the park, public awareness of watershed issues and the diversity of coastal water environments will be increased. Partnering will be sought for Interpretive Information planning and design with ADCNR, Alabama Water Watch, Mobile Bay NEP, FDEP, North West Florida Water Management District, Baldwin County Historical Society.

### Public Notice

Oil Pollution Act (OPA) Criteria (15 CFR 990.54)

<table>
<thead>
<tr>
<th>Notice</th>
<th>Public</th>
<th>OOPA Criteria</th>
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<tbody>
<tr>
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### Additional Criteria

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (YN)</td>
<td>The Bayou La Batre WWTF was completed in 2012. The existing method to access the treatment plan is via multiple sets of stairs. To better serve the operators analyzing the process in the aeration basin for mixed liquor suspended solids, pH, alkalinity, dissolved oxygen, etc., it is proposed to construct a walkway from the laboratory office to the aeration basin. The project is approximately $300,000.</td>
</tr>
<tr>
<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (YN)</td>
<td>Located at the conjunction of the Perdido and Styx Rivers, this site offers access to multiple habitats due to the diversity of coastal water environments. This project will repair deteriorating wooden hardwall bulkhead structures currently in an increasing state of deterioration. There are public safety considerations, public access to the natural resource considerations, as well as environmental impact considerations should the existing bulkhead wall fail. The Project plans to replace the wooden bulkhead structure with new synthetic sheet pile anchored with steel “H” beams as tie backs. An Interpretive Information Phase for improvements to the public park and vehicular parking area will include interpretive and informative signage regarding the watershed and the site location, watershed and habitat educational materials, pathway design and security lighting. Businesses in the Seminole area will benefit from increased utility of the park and watershed. Access through interpretive and educational materials placed strategically in the park, public awareness of watershed issues and the diversity of coastal water environments will be increased. Partnering will be sought for Interpretive Information planning and design with ADCNR, Alabama Water Watch, Mobile Bay NEP, FDEP, North West Florida Water Management District, Baldwin County Historical Society.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project Description</td>
<td>Restoration Types Addressed</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>Lillian Beach Restore and Shoreline Protection Improvements</td>
<td>The project will create and enhance 700 linear feet of beach habitat while providing long-term stability and shoreline protection, increase existing habitat value and resilience, increase public safety and protect the investment made in prior improvements providing greater public access to natural resources. To enhance and protect shoreline habitat, this project will also remove, repair and/or replace existing poorly performing breakwater structures.</td>
<td>- Shoreline</td>
</tr>
<tr>
<td>Development of a Comprehensive Economic Effort to Provide Jobs and Economic Stability for the Communities of South Mobile County</td>
<td>The project will create and enhance 700 linear feet of beach habitat while providing long-term stability and shoreline protection, increase existing habitat value and resilience, increase public safety and protect the investment made in prior improvements providing greater public access to natural resources. To enhance and protect shoreline habitat, this project will also remove, repair and/or replace existing poorly performing breakwater structures.</td>
<td>- Shoreline</td>
</tr>
</tbody>
</table>

**Project Information**

- Project Name: Lillian Beach Restore and Shoreline Protection Improvements
- Project Description: The project will create and enhance 700 linear feet of beach habitat while providing long-term stability and shoreline protection, increase existing habitat value and resilience, increase public safety and protect the investment made in prior improvements providing greater public access to natural resources. To enhance and protect shoreline habitat, this project will also remove, repair and/or replace existing poorly performing breakwater structures.
- Restoration Types Addressed: Shoreline
- Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria: Water Quality/Nonpoint Source Nutrient Reduction (Y/N)
- Public Notice: N
- Oil Pollution Act (OPA) Criteria (15 CFR 990.54): N
- Additional Criteria: N

**Project Information**

- Project Name: Development of a Comprehensive Economic Effort to Provide Jobs and Economic Stability for the Communities of South Mobile County
- Project Description: The project will create and enhance 700 linear feet of beach habitat while providing long-term stability and shoreline protection, increase existing habitat value and resilience, increase public safety and protect the investment made in prior improvements providing greater public access to natural resources. To enhance and protect shoreline habitat, this project will also remove, repair and/or replace existing poorly performing breakwater structures.
- Restoration Types Addressed: Shoreline
- Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria: Water Quality/Nonpoint Source Nutrient Reduction (Y/N)
- Public Notice: N
- Oil Pollution Act (OPA) Criteria (15 CFR 990.54): N
- Additional Criteria: N
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment Reduction Program</td>
<td>Mobile County</td>
<td>274</td>
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</tbody>
</table>
Grand Bay Sewer

Service Project

This project will extend 4,400 linear feet of new decentralized sanitary sewer service to 300 customers in the Grand Bay area to remove failing on-site septic tanks. The residents and businesses in Grand Bay rely on individual on-site septic tanks with high failure rates due to poorly-drained soils and its adjacency to Grand Bay - an ecologically significant water body located west of Portersville Bay, north of the Mississippi Sound at the Alabama Mississippi border.

Grand Bay, Alabama is a densely populated unincorporated area located in southwestern Mobile County. This community is located in a heavily-traveled corridor of Interstate 10 and Highway 90 between Alabama and Mississippi. The Grand Bay community is well-established as it contains schools, numerous retail businesses, several households. The Grand Bay Water Works Board, Inc. (The Board) is a non-profit public utility in southeast Mobile County serving a geographic area of approximately 45 square miles. The system currently supplies drinking water to approximately 4,100 customers and public sewer to approximately 500 customers. In the past 10 years, with encouragement by the Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM), the Board has implemented state-of-the-art decentralized concepts in its strategy to serve customers with public sewer. This regional decentralized approach to wastewater treatment reduces the number of surface water discharges, offers alternative to costly centralized treatment and collection, eliminates failing septic systems, and protects public health and the environment. To date, two facilities have been constructed in Grand Bay, promoting alternatives to high energy traditional wastewater treatment and disposal. This project will construct the collection system consisting of 4,400 linear feet of collection line including hook up and septic tank abandonment costs and will provide much needed infrastructure to remove the environmental threat to the adjacent productive freshwater and oyster habitat of Grand Bay and Mississippi Sound.

Low Pressure
Sanitary Sewer

for Dauphin Island Parkway

This project will construct new low pressure sanitary sewer south of the Dog River and directly West of Mobile Bay. The new infrastructure will serve areas that currently do not have access to centralized sanitary sewer and use on-site individual systems. Many of these systems suffer from lack of maintenance and/or damage from rising floodwaters. Further, there are many aging on-site septic systems built to lower standards and were damaged by Hurricane Katrina. The project will serve 438 residences and businesses south of the Dog River Bridge, west of Mobile Bay and north of the Theodore Ship canal. Most of the new sewer will be installed via direct cut and directional bore. This project will eliminate the discharge of pathogens into surface waters and will improve water quality and help Alabama’s seafood industry thrive. Project costs will include engineering, permitting and

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## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Priority Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Perch Creek Area Sanitary Sewer Trunk Line Cured-in Place Pipe (CIPP) Project</td>
<td>278</td>
<td>Charles Hyland</td>
<td>Mobile, AL</td>
<td>5098590</td>
<td></td>
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<tr>
<td>Enhancement and Stabilization of Priority Coastal Shoreline on Fowl River</td>
<td>270</td>
<td>Christian Miller</td>
<td>Fowl River</td>
<td>1590000</td>
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</tbody>
</table>

### Project Description

Construction of new sewer lines along with the costs of household connections including required grinder pumps.

### Construction

- **Perch Creek Area Sanitary Sewer Trunk Line Cured-in Place Pipe (CIPP) Project**
  - This project will install 26,800 linear feet of Cured-in-Place Pipe or CIPP inside sewer trunk lines in the Dauphin Island Parkway community. This innovative technology is to install a liner into the existing leaky older sewer line. The Dauphin Island Parkway community is a densely populated area located just north of the Dog River in southern extent of the City of Mobile. The area is a low-lying and suffers from frequent flooding events. During Hurricane Katrina, the area was inundated and many homes were severely damaged. Sanitary Service is provided by the Mobile Area Water and Sewer System (MAWSS) and most of the sewer collection infrastructure is need of upgrade and repair. There are several 16”, 18”, 24”, 30”, 36”, and 48” trunk lines that date back to the 1940’s and 1950’s when Brookley Field was a bustling economic engine for the area. The old trunk lines have outlived their useful lives and as result, there is a great deal of inflow and infiltration (I and I) into these lines. Further, the lines can be compromised by roots causing dangerous backups and sewage spills. This project will install CIPP in problematic sewer trunk lines located in the Perch Creek basin (just north of the Dog River). These trunk lines often break, causing "band-aid" fixes to the main lines. This project will greatly improve the function of the sewer basin and will result in less sewage spills and overflows. In addition, the flows to the Water Water Treatment Facility will be greatly reduced.

- **Enhancement and Stabilization of Priority Coastal Shoreline on Fowl River**
  - This proposed project, designated as the highest priority coastal zone project in the recently completed Fowl River Comprehensive Watershed Management Plan (WRMP), would stabilize 2,200 linear feet of shoreline providing habitat enhancements and protection of priority coastal wetlands and uplands. The project consists of bank regrading, limited structural stabilization of the shoreline and marshes, backfilling with suitable material where needed, and installation of appropriate vegetation. The lower reach of Fowl River, which encompasses the project area, is characterized by coastal marshes and areas of low topographic relief. The project area has established saltwater marshes and fringe marshes consisting mainly of smooth cord grass and saltwater rushes, with some forested wetlands at higher elevations. The project area comprises habitats that support a diversity of wildlife, including coastal and wading birds, freshwater, neotropical migratory birds, and nursery habitat for coastal fish and shellfish (such as speckled seatrout, redfish, Atlantic croaker, shrimp, and blue crabs). Shorelines along Fowl River have changed dramatically over the previous 80 years. The morphologic changes that have occurred in Fowl River are mostly due to natural processes, but have been exacerbated by anthropomorphic stressors within the watershed. These processes include changes in streamflow and sediment loading, high flood events, high water events, sea level rise, and wave action. Primary issues facing the intertidal zone of Fowl River are sea level rise and loss of habitat. The Sea Level Affecting Marshes Model (SLAAM) analyses performed as part of the WRP show that tidal marsh habitats have adequate space to migrate into low-lying undeveloped upland areas as sea levels rise. Accordingly, it is recommended that...
Survey and shoreline change analysis of Mobile Bay and Mississippi Sound, Baldwin and Mobile Counties, Alabama.

Shoreline change on Alabama’s tidal shoreline can be characterized as inevitable and unpredictable. Although chiefly due to tropical storm systems, all natural processes coupled with human erosion practices are the dominant cause of adverse impacts. Shoreline change can also be observed through ensuing beach recovery from these adverse effects, beach-front development, inlet maintenance, and shoreline stabilization practices. It is essential to document and quantify shoreline change rates to increase public awareness of erosion issues and make up-to-date data accessible to stakeholders. No comprehensive study has been done to explore backshore and nearshore topography to establish any feasible baseline condition and understand short and long term change rates in Mobile Bay and Mississippi Sound. Both locations are targets for living shoreline installation and restoration. Shorelines of particular interest include failing armored shorelines, natural beach and marsh shorelines, and shorelines previously identified with critical erosion along the western and the northeast section of Mobile Bay. Further, it has been suggested that the Gaillard Island and channelization have had a negative impact along the western shoreline (James Leon Smith, Sr., PE, United States Army Corps of Engineers, retired, personal communication, February 2, 2016). Objectives for change detection are supported through the assessment of historic orthophotography and the collection and compilation of survey-grade topography that quantifies understanding of shoreline change. These objectives are: 1) Implementation of recent orthophotography and conversion of historical aerial imagery into orthophotography for shoreline vector development and use in the Digital Shoreline Analysis System (DSAS) erosion model to establish shoreline change trends. 2) Annual field acquisition and comparison of backshore and nearshore shore-parallel topographic survey data. The Geological Survey of Alabama (GSA) will establish and monitor 166 transects across the locations mentioned above. A Topcon RTK GPS and a SonarMite MILSpec™ Echo Sounder will be used to acquire backshore and nearshore topographic data to establish a needed baseline and trend assessment. The DSAS model will statistically quantify estimated erosional processes and shoreline change trends. This project will generate geospatial characterization data that will be used in planning within Alabama’s coastal waters and direct further erosion need assessments.

Sediment characterization and geochemistry distribution within Mobile Bay and Mississippi Sound, Baldwin and Mobile Counties, Alabama.

The last investigation of the sediments of Mobile Bay was published in 1979 by W.O. Ishpording and G.M. Lamb. Their study was limited in coverage and no further sediment work has been attempted since. The lithological character, distribution, and quality of sediments in Mobile Bay is influenced by many factors such as dredging, in-filling, natural and human-influenced hydrodynamics, geomorphologic change, and contamination. Sediments in Mobile Bay are derived from multiple sources including smaller watersheds and rivers draining the Mobile-Tensaw River Delta complex. The goal of this investigation is determine the distribution, character, and quality of sediments, determine the source of sediments, and compare this new information to the Ishpording and Lamb 1979 study.
bottom lithology and sediment quality is integral for any hard bottom mitigation, planning, or restoration activity. An investigation of the type proposed will be critical as bottom sediment resources are targeted for placement or use regarding restoration and mitigation activities that must maintain high quality ecological functions. The Geological Survey of Alabama will sample bottom sediment in Mobile Bay and Mississippi Sound using standard sediment sampling methods estimated on a 1.5-km grid spacing. These samples will be analyzed for grain size using either a laser gran size analyzer or a Rho-Tap and hydrometer method. Clay smears will be developed and analyzed using x-ray diffraction. Additionally, samples will be collected within estimated 4-km grid for organic and archeological characterization. In partnership with the University of Alabama sediment trace metal content will be determined using inductively coupled plasma spectrometry (ICP), Gas chromatography-mass spectrometry will be used to determine organic isotopic and molecular composition of sediments to yield tracers (total organic carbon [TOC], total nitrogen [TN], d13C, d15N) for sediment sources and source-specific biomarkers including normal and isoprenoid hydrocarbons, fatty acids, and fatty alcohols. These tracers have characteristic values for each potential source and allow distinguishing and estimating contributions of sediments of various sources. Products of these investigations will include a GIS project for all analytical results, contour maps of organic elements and clay percentages, and an updated bottom sediment map determined using the Wentworth scale and Shepard classification and nomenclature.

Current and wave analysis study of Gaillard Island in Mobile Bay, Mobile County, Alabama

Current Name: Krishnamurty
Coastal AL:

Change along Alabama’s tidal shoreline is best characterized as inevitable and unpredictable. Significant shoreline change is due to unpredictable tropical storm systems, but shoreline erosion is also a function of the inevitable daily natural hydrodynamic processes coupled with human-induced practices that adversely impact shorelines. The western shoreline of Mobile Bay has been documented as an area of significant erosion. It has been suggested that Gaillard Island, an artificial island created by the U.S. Army Corps of Engineers for disposal of dredged ship channel sediments, the actual channels themselves, as well as ship movements in these channels, have a negative impact along the western shoreline (James Smith, Sr. P.E., U.S. Army Corps of Engineers, retired, personal communication, February 2, 2016). It is essential to document and quantify current patterns and wave regimes along the western shoreline where hydrodynamics are modified by the position of Gaillard Island, dredged channels, and by shipping activity. The proposed investigation will quantify current patterns and wave regimes along the western shoreline of Mobile Bay to understand the hydrodynamic impact of Gaillard Island. No comprehensive study has been completed exploring the wave and current regime around the island and waters between the island and western shoreline. The Geological Survey of Alabama (GSA) will partner with the University of South Florida School of Geosciences to monitor wave and current regimes for 40 days. A ship-mounted acoustic doppler profiler will be used to acquire current data and assess the impacts of geomorphology, ebb and flood tides, and waves generated in the shipping channel as influenced by Gaillard Island. To better...
<table>
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<th>Project Name</th>
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<tr>
<td>Linking water quality, marine food web dynamics, and ecosystem health in Alabama: Improving seafood safety and human health</td>
<td>Foley</td>
<td>2988322</td>
<td>Alabama is home to significant heavy industry and agriculture, whilst also supporting high seafood productivity, building oyster aquaculture, and tourism industry along the coast. The combined effects of toxins and anthropogenic contaminants on marine biota represent a significant and continued threat to both ecosystem and human health, yet are poorly characterized in the coastal zones of Alabama. This project will develop, integrate, and enhance water and marine sediment monitoring in Mobile Bay and using key marine and estuarine bionomic species (invertebrates, fish, alligators), evaluate health indices and food web dynamics. This will allow us to assess impacts and characterize and improve on environmental contaminant baselines in our waterways, so we may identify the sources and sinks of these toxins and dedicate efforts towards prevention and science-based management of these critical resources. We will develop publicly accessible tools that will provide near-real-time data on water and sediment quality, contaminant levels in key species, and ecological risk in coastal areas. These much-needed datasets will inform remediation and mitigation efforts to improve the sustainability and recovery of our seafood species and improve the safety and health of local seafood.</td>
</tr>
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</table>

| Coastal Avian Rescue & Rehabilitation Center | Foley | 810000 | Baldwin County boasts a variety of coastal and upland habitats that are home to a variety of native and migratory bird species. Many of these habitats and actual birds were impacted by the Deepwater Horizon release. At the time of the incident there were no facilities in Baldwin County to rescue or rehabilitate these avian species that were impacted. Since that time, the Coastal Wildlife Rescue and Rehabilitation Center was created and permitted as a volunteer, nonprofit group to meet the needs of injured birds throughout Baldwin County. This group is located in the Foley's Graham Creek Nature Preserve where they have 0.5 acre with an office trailer as rehab facilities and flight cages. As a volunteer effort with no funding, they struggle to maintain their purpose of successful rescue and rehabilitation of birds. In 2014, they acquired 247 birds, including migratory species, songbirds, shore birds and raptors. There were 85 successfully released, and 120 were either dead on arrival or perished from their injury. There were also 12 transfers to larger facilities and 29 birds euthanized. These numbers demonstrate a dire need for a funded facility to address injured bird species in Baldwin County. This project seeks to absorb and enhance this federally permitted facility for the rescue, initial analysis, treatment, rehabilitation and subsequent release of the bird to its habitat. The first step would be the design and plan of a permanent facility to understand wave regimes that induce shoreline erosion, two directional wave gages will be deployed and monitored. The western shoreline is targeted for living shoreline installation and restoration and the data collected in this study will further our hydrodynamic knowledge of the system contributing to better design of living shorelines, restoration projects, coastal protection measures, and potential modifications to Dauphin Island. This investigation will create a hydrodynamic characterization and profile for use in coastal planning and direct further assessments of erosion impacts in the study area. |

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<th>Primary Lead</th>
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<td>Aloe Bay Harbour Town</td>
<td>291</td>
<td>Jeff Collier</td>
<td>Dauphin Island</td>
<td>2188485</td>
<td>Phase I of the Aloe Bay Harbour Town (See Project No 78) will consist of the required Architectural and Engineers fees, soil testing, Environmental Assessments/Permits and property acquisition (to connect existing town-owned properties). This project excludes ecological, environmental, economic and public access features that will preserve habitats and bolster local economies for years to come.</td>
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<tr>
<td>Magnolia River Preservation Project – Holmes Property</td>
<td>293</td>
<td>Yael Girard Girand</td>
<td>Weeks Bay</td>
<td>3233550</td>
<td>Preservation of the Property by the Weeks Bay Foundation (&quot;WBF&quot;) (1) protect it in perpetuity and (2) address restoration needs to ensure that it provides the best habitat for native and endemic species. This project will be accomplished with support from the town of Magnolia Springs and the Weeks Bay National Estuarine Research Reserve. The Property will be purchased from a willing seller at the Yellow Book appraised value and held by the WBF who, as an accredited land trust, will maintain the conservation value of the Property and prohibit any future development. In addition, the WBF will work with the Weeks Bay Reserve to create a management plan and prioritize restoration needs, including re-creation of longleaf pine savannas, pitcher plant bogs, and marsh and swamp habitat (where appropriate). As one of the few remaining tracts of undeveloped (but developable) upland forest Magnolia Springs, the Property has great environmental and public benefit. It is home to red bellied turtles (Pseudemys alabamensis) and gopher tortoise (Gopherus polyphemus). The red bellied turtle is listed as endangered and the gopher tortoise is listed as threatened by the US Fish and Wildlife Service. Protection of the Property will give these species valuable support. The scenic beauty of the Property is enjoyed by visitors and locals, and the estimated mile of waterfront wetlands provide habitat and shelter for wading birds and duck species and marine life. The filtration provided by the wetlands increase water quality and support such an array of aquatic life. Additionally, Magnolia River and Fish River are the two largest tributaries of Weeks Bay. Weeks Bay is listed as an &quot;Outstanding National Resource Water&quot; and is home to numerous native plant and animal species. Fish River is listed as a 303(d) waterway for unsafe levels mercury. It is only due to the excellent water quality of Magnolia River that Weeks Bay is able to sustain and support such an array of</td>
</tr>
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toward the Mobile Bay: A Study” by the Mobile Bay NRP. Annual expenditures related to Mobile Bay in the study included deepwater transportation, natural gas, waterfront homes, eco-sensitive industries, seafood industry, boat sales/repairs/maintenance, beach activities, charter boats, and non-consumptive expenditures. An earlier article on the similar subject titled “Economic Aspects” was prepared by William Hosking, Howard Clonts, Albert R. St. Clair, and myself, and was included on pages 121-135 of the January 1990 NOAA Estuaries of the Month Seminar Series Number 15: “Mobile Bay: Issues, Resources, Status, and Management”.

The primary objective of the proposed study is to update and expand the 1999 study so that the area’s policy makers, community leaders and the general public can be reminded of the importance of preserving the delicate balance of Mobile Bay for future generations. Expansion of the study will be in the area of in-depth literature survey of benefit valuation of maintaining the natural environment. There will be no surveys other than in-depth interviews of many key persons as well as my own research that includes a number of national journal publications on the related subjects. The secondary objective is to search for ways to apply findings of this study for practical use.

Hopefully, the study will generate information that can improve community discussion and decision-making process on numerous controversial issues relating to Mobile Bay that surface almost on a daily basis. One problem with many of these issues is that there is the other side that merits just as much attention as whatever the proposal may be.

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Promotion of Year-Round Tourism Activities on Dauphin Island, with emphasis on the “off season.”

<table>
<thead>
<tr>
<th>Project Name</th>
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<td>Toward Valuation of the Mobile Bay</td>
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<td>Sermoom Chang</td>
<td>Mobile Bay</td>
<td>$120,000</td>
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<tr>
<td>Promotion of Year-Round Tourism Activities on Dauphin Island</td>
<td>296</td>
<td>Jeff Collier</td>
<td>Dauphin Island</td>
<td>$250,000</td>
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All Portal: N N N N N N N N

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**Table:**

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<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tr>
<td>Wetlands/Water Quality</td>
<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Water Quality? Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Coastal Loss (Y/N)</td>
<td>Sustainable Long-Term Benefit (Y/N)</td>
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<td>Oyster Reef (Y/N)</td>
<td>Sea Turtles (Y/N)</td>
<td>Birds (Y/N)</td>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
</tr>
<tr>
<td>Marine Mammals (Y/N)</td>
<td>Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Monitoring, Adaptive Management, and Administrative Oversight Plan Evaluation (Y/N)</td>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
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Mobile Bay: As development continues throughout Baldwin County, and especially on the river banks of both Magnolia and Fish Rivers, we will see a decline in water quality. Protection of the Property will ensure that over a mile of riverfront remains in its natural state, thus mitigating erosion, siltation, eutrophication, and residential flooding – all factors that directly correlate to water quality and the health of the entire Weeks Bay ecosystem.
Improving Coastal Water Quality through implementation of Clean Marina Standards

<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Cost</th>
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<tbody>
<tr>
<td>297 Christian Miller</td>
<td>Mobile and Baldwin Counties</td>
<td>7323000</td>
<td>Mobile and Baldwin Counties</td>
<td>$2.6 million</td>
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- Marinas and recreational boating are recognized as potential sources of nonpoint source pollution in coastal watersheds. The Alabama-Mississippi Clean Marina Program (AMCMP) is a voluntary, incentive-based, program developed and implemented by Mississippi-Alabama Sea Grant Consortium and partners to promote environmentally responsible and sustainable marina and boating practices. 

- This program, created to reduce water pollution and erosion in state watersheds and coastal zones, helps marina operators protect the very resource that provides them their livelihood: clean water. The AMCMP promotes boater education, coordination among state agencies, and better communication of existing regulations, as well as offering incentives to creative and proactive marina operators. The AMCMP focuses on seven management measures identified by marina operators as priorities: Marina siting, design, and maintenance; Sewage management; Fuel management; Solid waste and petroleum recycling and disposal; Vessel operation, maintenance, and repair; Stormwater management and erosion control; Marina management and public education.

- One of the major impediments to new marinas entering the program and becoming designated as “Clean Marinas” are costs associated with retrofitting existing infrastructure to meet clean marina standards, primarily this is infrastructure related to stormwater management at the marina. Many existing marinas along the Gulf Coast were constructed before current stormwater management requirements were in place. As a result, upgrading infrastructure to meet clean marina guidance may be cost-prohibitive to many perspective marina operators.

- A potential avenue to incentivize upgrading coastal marinas would be the creation of a public relations outreach and financial partnerships with the Dauphin Island Chamber of Commerce and South Mobile County Tourism Authority. The result will be a more stable economy that allows its businesses and tourist attractions to thrive throughout the year, not just in the summer. In addition to supporting jobs for island residents, the income from tourism provides more than half of the revenue in the town’s $2.6 million annual budget. A healthy Dauphin Island economy also contributes to Mobile County and State of Alabama sales, lodging and property taxes. The ability to continue and expand its tourism outreach for another five years will permit Dauphin Island to promote its attractions that include: historic Fort Gaines; the 173-acre Audubon Bird Sanctuary and Dauphin Island Sea Lab and Aquarium, which offer numerous eco-tourism opportunities; Indian shell mounds dating back at least 1,000 years; and beaches on Middle Bay, the Gulf of Mexico and Mississippi Sound. In addition, Dauphin Island will be able to boost its new brand, “The Sunset Capital of Alabama,” and will build on its growing reputation as a laid-back, family-oriented tourist destination. Visitors are the key to Dauphin Island’s prosperity, both now and in the future. It is paramount that the island be able to continue its recovery from the BP oil spill. The Alabama Coastal Restoration funding is a key component of that recovery.
of a cost-share program to offset the costs associated with these upgrades. Examples of potential projects that could be funded through this program are: Low impact Development retrofits such as bio-retention basins, infiltration swales, and pervious pavement; installation of oil/grease separators in existing stormwater infrastructure, installation of approved secondary containment for fluids and chemicals, and educational signage. Additionally, a successful cost share program for Clean Marina implementation has the potential to spread to surrounding Gulf States through their respective Clean Marina programs which are managed through their state’s Sea Grant programs.

GulfQuest Deck 4 Exhibits Completion

**Project Name:** GulfQuest Deck 4 Exhibits Completion  
**Submitted by:** Tony Zadron  
**Location:** Mobile, AL  
**Cost:** 809,195

Opened in 2015 on Mobile’s downtown waterfront, GulfQuest (National Maritime Museum of the Gulf of Mexico) is the first maritime museum dedicated to the heritage and culture of the Gulf of Mexico—a $62 million educational tourism attraction that is raising the profile of Alabama and the Gulf Coast through its distinctive exhibits and programs. In addition to its sole focus on the Gulf region, GulfQuest is unique among maritime museums by featuring interactive, hands-on exhibits, complemented by maritime artifacts. Prior to the museum’s opening, GulfQuest completed almost all of its permanent exhibits, except for its remaining Deck 4 exhibits which will focus on ship design and shipbuilding as well as historic artifacts and display requirements. Due to the museum’s classrooms, GulfQuest will inc...
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<tbody>
<tr>
<td>Mobile Point Lighthouse Repair and Restoration</td>
<td>Fort Morgan</td>
<td>382890</td>
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</table>

The mobile point lighthouse is an iron tower built in 1872 to replace the original brick tower destroyed during the battle of Mobile Bay. In 1903 the iron tower was decommissioned and replaced by a steel tower. The historic lighthouse was removed from the site and stored until 1977, when it was donated to the state of Alabama. In 1991 the lighthouse was restored but had to be dismantled in 2003 because of deterioration. Since 2003 the lighthouse has been in storage. Structural reports indicate that before it was disassembled it was significantly rusted and in danger of damage during periods of high winds. Modern steel reinforcing components were more severely rusted than older cast iron components. The Mobile Point Lighthouse restoration will transform the community and region by enhancing the cultural resources of Fort Morgan, a National Historic Landmark. It will also improve the level of visitor satisfaction, which in turn increases the site's demand and produces an upturn in heritage tourism attendance and revenue.

Today, Fort Morgan's natural history extend beyond its military history. The acreage surrounding the fort contains unique ecosystems providing habitat for many birds, endangered species, and plant communities. As coastal habitat is lost to development, Fort Morgan's natural setting becomes more and more valuable as a refuge for these species and a setting for telling their stories. Today, Fort Morgan National Historic Landmark plays an important part in Alabama's Gulf Coast tourism industry.

and inventory storage space is severely limited. The construction of a new museum will provide separate areas for a gift shop and curatorial storage. It will also provide an orientation space for assembling group tours, a theater space for educational programming, more exhibit space, and a stable and secure environment necessary for safeguarding our cultural resources. The construction of Fort Morgan's New Museum will transform the community and region by enhancing the cultural resources of Fort Morgan, a national park, visited by over 75,000 people each year. This project will also improve the level of visitor satisfaction, which will in turn increase the site's demand and produce an upturn in heritage tourism attendance and revenue.

Fort Morgan tells an important story of the evolution of military defense strategies employed by the United States over a span of more than 150 years. Today's National Historic Landmark was, at the time of its construction, part of a state of the art defense system. After the Civil War when Fort Morgan's armaments had become obsolete, the US still recognized the strategic importance of the site and invested in upgrading its armaments with four massive batteries. The again Fort, though clearly outdated for its original purpose, continued to play a part in US military planning throughout the Spanish-American War, World War I, and World War II. During all of the conflicts, its role changed according to the military needs of the area. Fort Morgan's importance extends beyond its military history. The acreage surrounding the fort contains unique ecosystems providing habitat for many birds, endangered species, and plant communities. As coastal habitat is lost to development, Fort Morgan's natural setting becomes more and more valuable as a refuge for these species and a setting for telling their stories. Today, Fort Morgan National Historic Landmark plays an important part in Alabama's Gulf Coast tourism industry.

Mobile Point Lighthouse Repair and Restoration | 382890 | 75,000 |

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<td>Lisa D. Jones</td>
<td>Fort Morgan</td>
<td>AL Portal</td>
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</table>

**Project Description:**

Emplored by the United States over a span of more than 150 years. Today's National Historic Landmark was, at the time of its construction, part of the state of the art defense system. After the Civil War when Fort Morgan's armaments had become obsolete, the US still recognized the strategic importance of the site and invested in upgrading its armaments with four massive batteries. The again Fort, though clearly outmoded for its original purpose, continued to be be a part in US military planning throughout the Spanish-American War, World War I, and World War II. During all of the conflicts, its role changed according to the military needs of the area. Fort Morgan's importance extends beyond its military history. The acreage surrounding the Fort contains unique ecosystems providing habitat for many birds, endangered species, and plant communities. As coastal habitat is lost to development, Fort Morgan's natural setting becomes more and more valuable as a refuge for these species and a setting for telling their stories.

**Project Information:**

- **Submitted by:** Lisa D. Jones
- **Lead:** Fort Morgan
- **Location:** AL Portal
- **Cost:** 303

**Restoration Types Addressed:**

- Water Quality/Habitat Restoration
- Erosion Control
- Fencing

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria:**

- Project prevents harmful degradation of marine resources and affects marine system (Y)
- Project prevents harmful degradation of seabirds (Y)
- Project prevents harmful degradation of estuarine habitat (Y)
- Project prevents harmful degradation of coastal and nearshore habitats (Y)
- Project is consistent with public health and safety (+)
- Project is not already required by existing regulations (Y)
- Project complies with applicable laws and regulations (Y)
- Project offers opportunities for external funding & collaboration (+)

**Public Notice:**

- Project meets Trustees' goals (+)
- Project has reasonable probability of success (+)
- Project prevents future and continuing degradation of a natural resource and service (+)
- Project benefits more than one natural resource and/or service (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)

**Oil Pollution Act (OPA) Criteria:**

- Project complies with applicable laws and regulations (Y)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)

**Public Notice:**

- Project prevents harmful degradation of marine resources and affects marine system (Y)
- Project prevents harmful degradation of seabirds (Y)
- Project prevents harmful degradation of estuarine habitat (Y)
- Project prevents harmful degradation of coastal and nearshore habitats (Y)
- Project is consistent with public health and safety (+)
- Project is not already required by existing regulations (Y)
- Project complies with applicable laws and regulations (Y)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)

**Sustainability/Long-term Benefit of project:**

- Project supports existing regional or local conservation plan (+)
- Project is technically feasible (+)
- Project offers opportunities for external funding & collaboration (+)

**Monitoring, Adaptive Management, and Administrative Plans:**

- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)

**Additional Criteria:**

- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)
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- Project offers opportunities for external funding & collaboration (+)

**Public Notice:**

- Project prevents harmful degradation of marine resources and affects marine system (Y)
- Project prevents harmful degradation of seabirds (Y)
- Project prevents harmful degradation of estuarine habitat (Y)
- Project prevents harmful degradation of coastal and nearshore habitats (Y)
- Project is consistent with public health and safety (+)
- Project is not already required by existing regulations (Y)
- Project complies with applicable laws and regulations (Y)
- Project offers opportunities for external funding & collaboration (+)
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- Project offers opportunities for external funding & collaboration (+)
- Project offers opportunities for external funding & collaboration (+)

**Sustainability/Long-term Benefit of project:**

- Project supports existing regional or local conservation plan (+)
- Project is technically feasible (+)
- Project offers opportunities for external funding & collaboration (+)

**Monitoring, Adaptive Management, and Administrative Plans:**

- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)
- Project is consistent with criteria identified in the public notice (Y)
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- Project is consistent with criteria identified in the public notice (Y)
- Project is consistent with criteria identified in the public health and safety (+)

**Additional Criteria:**

- Project offers opportunities for external funding & collaboration (+)
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## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration of the Lighthouse Keeper's House</td>
<td>Lisa D. James</td>
<td>Fort Morgan</td>
<td>$495,680</td>
</tr>
<tr>
<td>Gulf Coast Revolving Loan Fund</td>
<td>Grover Brown</td>
<td>Mobile and Baldwin Counties</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

## Project Description

- **The Lighthouse Keeper's House**: A historic wooden structure located at Fort Morgan National Historic Landmark, the property of the Alabama Historical Commission. The house was constructed in 1870 and was used as housing for seasonal workers or became a revenue stream by serving as a vacation rental. With restoration, the structure would be a venue for events and educational programs.

- **Fort Morgan**: A historic fort employed by the United States over a span of more than 150 years. The fort, originally constructed in 1866, was expanded and utilized in various military conflicts, including the Civil War when Fort Morgan's armaments had become obsolete, the US still used the fort as an important defense system. After the American War, World War I, and World War II, the fort continued to play a part in US military planning throughout the 20th century.

## Restorations Types Addressed

- **Birds** (Y/N): No
- **Sea Turtles** (Y/N): No
- **Habitats** (Y/N): No
- **Wetland, Coastal, and Nearshore Habitat** (Y/N): No
- **Oyster Reef** (Y/N): No
- **Wetland, Coastal, and Nearshore Habitat** (Y/N): No
- **Sea Turtles** (Y/N): No
- **Habitats** (Y/N): No

## Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project readiness (+ / 0 / -)**: 0
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: -
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: 0
- **Oversight to Support Restoration Implementation (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project readiness (+ / 0 / -)**: 0
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: -
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: 0
- **Oversight to Support Restoration Implementation (Y/N)**: N

## Public Notice

- **Project meets Trustees' goals (+ / 0 / -)**: -
- **Project prevents future and current harm (+ / 0 / -)**: -
- **Project benefits more than one natural resource and/or service (+ / 0 / -)**: -
- **The effect of the project alternates on public health and safety (+ / 0 / -)**: -

## Oil Pollution Act (OPA) Criteria

- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project readiness (+ / 0 / -)**: 0
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: -
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: 0

## Additional Criteria

- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project readiness (+ / 0 / -)**: 0
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: -
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: 0

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<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitter Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Acquisition and Conservation of the Garrow’s Bend Watershed, Radcliff-Coast Islands-Mobile Bay</td>
<td>Sandy Howard</td>
<td>Mobile Bay</td>
<td>255000</td>
<td>The acquisition of coastal wetland property is a means of providing a source of mitigation for the environmental and economic damages that resulted from the Deepwater Horizon incident. This project consists of acquiring the fee title property interest and placing a perpetual conservation easement on both of the barrier islands. These islands are located in the Garrow’s Bend Watershed. These islands are in very close proximity to the Salt-Aire tract. Perpetual Land Conservation has been identified by the Mobile Bay National Estuarine Research Reserve’s Comprehensive Conservation Management Plan (CCMP) and the Partnership for Gulf Coast Land Conservation’s (PGCLC) “Conservation Vision as an important project region.”</td>
</tr>
</tbody>
</table>
| Peninsula Living Shoreline | Royce Halstead | Bon Secour Bay | 1579152 | The Peninsula Living Shoreline Project is located along 1.2 miles of shoreline in the southeast corner of Bon Secour Bay. The property contains 195 acres of forested wetland, salt marsh, tidal creek, and sand beach that buffers the community from the Bon Secour Bay. To the north, the property is adjacent to the Bon Secour National Wildlife Refuge and is an important coastal connection to the Refuge. Nesting bald

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3. Provide financial assistance to reduce the turnover rate caused by the failure of businesses due to inadequate start-up or expansion capital.

4. Encourage economic development by making available adequate and affordable credit to existing or new businesses that locate or expand commercial operations in the project operation area.

The project seeks $1.5 million from the Alabama Gulf Coast Recovery Council, that will be leveraged by $1.5 million from private financial institutions, and other state and federal sources. The total capitalization of the fund will be $3 million, which is intended for the purpose of making loans to businesses to spur economic growth. The fund will attract and supplement (not supplant) private sector financing from conventional lenders by creating a mechanism to mitigate the risk commonly associated with small business lending.

The fund will form collaborations with private lenders and provide businesses with low cost capital, long term financing that matches the useful life of the asset, technical assistance and reasonable interest rates. As a result, private lenders will participate through reduced collateral risk, reduced credit risk, and opportunities for business development on future projects within the community.

The project will lend to businesses located within Mobile and Baldwin County. Eligible businesses will be private-for-profit firms, industries, corporations, partnerships and sole proprietorships which may be included in the U.S. Small Business Administration (S.B.A.) definition of a small business.
Conservation of Upper Three Mile Creek Watershed

The acquisition of wetland property is a means of providing a source of mitigation for the environmental and economic damages that resulted from the Deepwater Horizon incident. This project consists of acquiring the fee title land acquisition and placing a perpetual conservation easement on a 48 acre palustrine forested wetland that is adjacent to the Copeland-Cox Tennis Center in Mobile Alabama (World's Largest Public Tennis Center). This parcel is located in the Three Mile Creek Watershed. The tract is in very close proximity to the City of Mobile's Langan Municipal Park and the University of South Alabama. Perpetual Land Conservation has been identified by the Mobile Bay National Estuaries Program's Comprehensive Conservation Management Plan (ECMP) and the Partnership for Gulf Coast Land Conservation's (PGLC) "Conservation Vision" as an important part of environmental stewardship. The acquisition of this tract could serve as a measure of long term watershed protection of flood plain areas. The fee simple acquisition of this parcel could allow future restoration activities to occur. Examples could include improved...
**Project Name: Canby Canyon Erosion Mitigation**

- **City Markert**: Baldwin County
- **Location**: Spanish Fort
- **Cost**: $300,000

**Summary of Mitigation Efforts:**

Canby Canyon, a significant gorge measuring approximately 60 feet deep by 200 feet wide for a distance of around 2500 linear feet. Nestled in the heart of the Spanish Fort Estates subdivision, "Canby Canyon" directly affects 72 residential properties, an estimated 363,343 square feet. The City of Spanish Fort has investigated numerous reports of erosion activities, native plant identification and the construction of walking trails and interpretive boardwalks. The preservation easement would ensure permanent protection of this parcel.

**Restoration Types Addressed**

- **Wetland, Coastal, and Nearshore Habitat (Y/N)**: N
- **Sea Turtles (Y/N)**: N
- **Recreational Use (Y/N)**: N
- **Restoration of significant gorge measuring approximately 60 feet deep by 200 feet wide for a distance of around 2500 linear feet. Nestled in the heart of the Spanish Fort Estates subdivision, "Canby Canyon" directly affects 72 residential properties, an estimated 363,343 square feet. The City of Spanish Fort has investigated numerous reports of erosion activities, native plant identification and the construction of walking trails and interpretive boardwalks. The preservation easement would ensure permanent protection of this parcel.

**Project Description:**

The Baldwin County Commission accepted ownership of a Dredge Material Disposal Area (DMDA) from the U.S. Army Corps of Engineers. The area is used to receive the sedimentation in the Bay Minette Basin has become a major issue as well, filling known boating channels and cutting access to local wharfs. The full environmental effects of sedimentation in Bay Minette are unknown at this time. Daphne Utilities has attempted to stabilize the erosion and protect its sewer line; however, the stabilization project has since failed and is in need of significant repairs. Because the problem can be attributed to both public discharges from the rights-of-way surrounding the canyon and discharges from private residential properties, the proposed project would include a comprehensive study of the sources of water contributing to the erosion, along with a number of projects aimed at stabilizing the erosion.
Project Name: Baldwin Beach

Description: Baldwin Beach is named one of the top four locations in North America for seeing fall and spring migrations! The Audubon Bird Sanctuary consists of 554 acres of maritime forests, marshes, and dunes; including a lake, a swamp, and a beach. Recently, the 3 mile trail system within the Sanctuary has been designated as a National Recreational Trail. It is located at the Eastern end of Dauphin Island, a 14-mile-long barrier island situated off the Alabama Gulf Coast. The Sanctuary is of vital importance because it is the largest segment of protected forest on the Island and the first landfall for neo-tropical migrant birds after their long flight across the Gulf of Mexico from Central and South America each spring. The Bird Sanctuary has allowed Dauphin Island to be recognized by the American Bird Conservancy and the National Audubon Society as being “globally important” for bird migrations. Dauphin Island’s East End consists of Historic Fort Gaines, the Dauphin Island Sea Lab, the Dauphin Island Campground, and the Audubon Bird Sanctuary. Recently, the Town of Dauphin Island and its partners, the Dauphin Island Sea Lab, the Park & Beach Board, and the U.S. Coast Guard has successfully been awarded a CIAP $8M grant for an East End Shoreline Restoration project to restore and properly manage the Sanctuary and the East End Beach.

Dauphin Island is under constant assault of shoreline erosion and it is estimated that this area of the island is losing around nine feet per year. To make this project a true success story we feel it is important to find a way to make the shoreline more stable by incorporating dune planting, educational signage, and shoreline monitoring. The project aims at implementing sustainability, controlled burns, invasive species management strategies to enhance birding and wildlife habitat for Public use. The Park & Beach Board, Dauphin Island Sea Lab, and the Town of Dauphin Island are proposing to leverage our resources of the State of Alabama’s Coastal Impact Assistance Program (CIAP) grant for an East End Shoreline Restoration project to make this project a true success story for Dauphin Island, the State of Alabama, and the National Fish & Wildlife Foundation. The Park & Beach Board is seeking to partner with the National Fish & Wildlife Foundation so that together we can conserve and properly manage the Sanctuary and the East End Beach.
This project proposes to purchase target parcels located in Big Creek Watershed to accomplish large-scale conservation of coastal habitats and protect water quality in Big Creek Lake Watershed. Big Creek Lake (or Converse Lake) is the potable drinking water supply for most of the populated areas of the City of Mobile and is located in eastern Mobile County. It is managed by the Mobile Area Water and Sewer System (MAWSS) which has committed numerous resources to protection of the water quality of the lake and its surrounding areas. Over the past 20 years, MAWSS has purchased 9,000 acres of critical areas surrounding the lake to proactively protect the water resources. In order to provide a landscape-scale conservation corridor to the neighboring Escatawpa Watersheds, this project proposes to purchase approximately 4,000 acres of pristine diverse habitats including upland long leaf sandy hills, pine flatwood savannas, oak cheniers, and freshwater wetlands. These parcels are owned by 2 land owners (GM & O – John Wilson and Shriner's hospital) and will provide critical landscape-level linkages to existing protected and managed areas, providing a more holistic approach to long-term management and stewardship for the entire system. These lands also contain habitats that support a diversity of wildlife, including black bear, coastal and wading birds, waterfowl, and neotropical migratory birds. The area is home to many threatened and endangered species, MS sandhill crane, MS diamondback terrapin, and Gopher tortoise. This project has identified 15 parcels, totaling approximately 4,000 acres north of US 98 in unincorporated Mobile County. As MAWSS has systematically purchased and adjacent to the Big Creek Lake, it assumed the landowners are willing sellers. The property will be appraised and a 15% management-stewardship fees are included in the project’s budget.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Project Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perdido River Water Quality Protection, Habitat Restoration and Recreational Enhancement Project</td>
<td>338</td>
<td>Larry Boudreau</td>
<td>Boudreau</td>
<td>Perdido East Watershed</td>
<td></td>
<td>One of the key features of the Perdido River and Bay is that they form the north-south boundary between Florida and Alabama. The Nature Conservancy (TNC) and Escambia County are working together to develop a joint proposal and partnership to improve and protect the river and bay water quality and increase the ecotourism recreational opportunity in the Perdido Watershed. At this point the following entities are engaged in the development of this proposal: Federal – USFWS, NRCS; State – FDEP; NSF/CWC, ADCNR, FL Sea Grant; Local – Escambia County, Baldwin County, NGO – TNC; Private – Waterlevel Ecological Services. Leveraging existing property owned by TNC (Perdido River Nature Preserve) and public land owned by Alabama and Florida, this proposal seeks to: Expand the boundary of the TNC Preserve across the river into AL, thus helping to protect both sides of the lower Perdido River’s floodplain; Restore longleaf and wetland habitat to improve &amp; protect Perdido River water quality; Enhance public access to natural habitat, and low impact water based recreation; and Leasen the impact of, and help facilitate, future growth, by protecting/restoring key wetland floodplains and using that investment to provide wetland mitigation for impacts associated with development on property containing lower quality wetland areas. The Perdido River watershed will face enormous development pressure as Navy Federal expands its Perdido campus to accommodate over 10,000 jobs by 2020 as well as the creation of a new “hi-tech” industrial park adjacent to the Navy federal campus. This proposal is critically important to protect the quality and habitat of the Perdido watershed and provide recreational access to a resource that was impacted by the Deepwater Horizon oil spill as the development occurs. The overall project has three components: Land acquisition to protect habitat and water quality; Habitat &amp; hydraulic flow restoration; Recreational opportunity; create a Perdido River “blueway trail” which will create the opportunity to navigate the Perdido River from the AL/FL line to the Gulf with camp sites strategically placed within a one day’s paddle along the river. This project could become the first “multi-state” Deepwater Horizon project that becomes the model for interstate cooperation to protect and restore a watershed, create and facilitate economic growth and enhance recreational opportunities.</td>
</tr>
</tbody>
</table>

| Mount Vernon Water Treatment Plant | 119 | Terry Williams | Mount Vernon | 1500000 | The proposed project is the construction of a water treatment plant for the Town of Mount Vernon, AL. The original plant was built in 1963 and has not been upgraded since, it is past its useful life; especially since it has had no significant maintenance or upgrades performed since construction. This is an extremely critical facility, the existing clear well is way undersized for current demand and ADEM regulations. There is a very thick layer of lime at the bottom of the clear well and the baffle walls show significant deterioration with rust and cracking. The chlorine room is dangerously small and the building, specifically the roof, show signs of deterioration past the point of rehabilitation. The well pump and motor are extremely aged and need replacement. |

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Y</td>
</tr>
<tr>
<td>Birds (Y/N)</td>
<td>N</td>
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<tr>
<td>Oyster Reef (Y/N)</td>
<td>N</td>
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<td>Recreational Use (Y/N)</td>
<td>N</td>
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<tr>
<td>Habitat &amp; Hydraulic Flow Restoration (Y/N)</td>
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<tr>
<td>Monitoring, Adaptive Management, and Administrative Oversight (Y/N)</td>
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<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
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<td>Project is consistent with criteria articulated in the public notic (Y/N)</td>
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</tr>
<tr>
<td>Project delivers benefits cost-effectively (Y/N)</td>
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<tr>
<td>Project meets Trustees’ goals (+/0/-)</td>
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<tr>
<td>Project is technically feasible (+/0/-)</td>
<td>0</td>
</tr>
<tr>
<td>Project is time critical (+/0/-)</td>
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</tr>
<tr>
<td>Project is not already fully funded (Y/N)</td>
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<tr>
<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
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<td>Project Name</td>
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<tr>
<td>--------------</td>
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</tr>
<tr>
<td>Accura Tidally Effective Environmental Oversight Of Projects in Coastal Alabama, Including RESTORE Act Projects, By The Replacement Of Substandard Facilities At The ADEM Coastal Office And Mobile Field Office</td>
<td>320</td>
</tr>
</tbody>
</table>

There is high water loss within the system (est. 2016). The Town of Mount Vernon doesn't have the funds to replace the plant. The new plant will have increased capacity for future growth. The design will be in compliance with current ADEM regulations. The Town of Mount Vernon owns the land in the vicinity of the existing water treatment plant and will be able to build a new one without having to purchase additional land.

Coastal Alabama is an area where two potentially conflicting activities, economic growth and environmental protection, must take place side-by-side. In this relationship between economy and environment, care must be taken to ensure balance. At the center of the effort to ensure balance is ADEM. Tasked with the statutory mandate of protecting Alabama's air/land/water resources, ADEM ensures that today's environmental resources support economic activity and at the same time are protected for all to enjoy.

While virtually all RESTORE Act funded projects will require ADEM oversight, ADEM efforts are currently divided between two substandard/inadequate facilities. The separation of the ADEM Coastal Program and the Mobile Field Office creates logistical/communication/technological issues that create inefficiencies in operations. Existing facilities are grossly inadequate to support ADEM efforts to review/approve RESTORE Act restoration projects and are grossly inadequate to support anticipated industrial growth. Projects receiving RESTORE Act funds will require ADEM action in the form of construction permits, coastal consistency determinations, environmental modeling, and inspections. Thus, this project facilitates and supports nearly all other RESTORE Act projects. ADEP facilities will support economic growth and facilitate timely actions on other RESTORE Act projects.

In addition to overseeing over 3,300 permits in the coastal area and performing over 1,000 inspections each year, ADEM utilizes its resources to respond to emergency events such as the 2010 Deepwater Horizon oil spill. ADEM led Alabama's response efforts, expanding over 65,000 staff hours (1,000 work years), and is one of the few agencies still responding to tar ball impacts. An investment by the Council in this effort, expending over 65,000 staff hours (>30 work years), and is one of the few agencies still responding to tar ball impacts. In this effort, the Council in this project will ensure ADEM maintains response capabilities for current and future coastal impacts.

ADEM has approached this project with a deliberate, scientific approach and has worked with an independent firm to develop a construction budget and cost estimate for this project. The cost estimate of $5.9 million is based upon a similar project recently completed in Mississippi.

ADEM has requested, but been unable to attain, funding from the General Fund or the NRDA process to support this project. In the event this project is not funded...
# Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Submitted By</th>
<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama State Port Authority Automotive Logistics/ Ro-Ro Terminal</td>
<td>321</td>
<td>H.S. Smitty Thorne</td>
<td>Mobile, AL</td>
<td>$10 Million in local purchases. The construction impacts total $35.5 Million in economic impacts as follows: Create 615 permanent, new direct, indirect and induced jobs generating $44 million in personal income and consumption impacts; $10 Million in local purchases.</td>
<td>$10 Million in local purchases. The construction impacts total $35.5 Million in economic impacts as follows: Create 615 permanent, new direct, indirect and induced jobs generating $44 million in personal income and consumption impacts; $10 Million in local purchases.</td>
</tr>
<tr>
<td>Ambassadors of the Environment Program - Gulf Shores</td>
<td>322</td>
<td>Dan Bond</td>
<td>Gulf Shores</td>
<td>The Gulf Coast of Alabama is an ecologically diverse region with abundant natural resources. Many habitat types are easily accessible here, including the open waters of the Gulf of Mexico, beaches and coastal dune systems, brackish and salt marshes, large and small estuaries, maritime and upland forests, and freshwater rivers and wetlands. The catastrophic Gulf oil spill of 2010 served to remind us how closely connected our way of life on the coast is to the health, clean environment. Education programs based on sound science are critical to raising environmental awareness, promoting stewardship, increasing community resilience, protecting natural resources, and preserving our quality of life. The City of Gulf Shores proposes to use Restore Act funds to implement a comprehensive environmental education program to provide future generations the opportunity to experience and</td>
<td>$10 Million in local purchases. The construction impacts total $35.5 Million in economic impacts as follows: Create 615 permanent, new direct, indirect and induced jobs generating $44 million in personal income and consumption impacts; $10 Million in local purchases.</td>
</tr>
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</table>
understand the importance of our vital natural resources. This program, called the "Ambassadors of the Environment Program", will be implemented in partnership with Jean-Michel Cousteau’s Ocean Futures Society, a non-profit marine conservation and education organization that currently operates eight such programs across the world. Through this program, students are introduced to the natural wonders of marine and coastal environments through presentations, snorkeling/skin diving excursions, kayaking, and hiking trips. Classes will focus on issues of biodiversity, sustainability, the unique ecology of the region, human impacts, and resource management. There will be a focus on critical environmental issues of the area – coastal development, Gulf oil spills, hurricanes, and sea level rise. Participants will engage in long-term monitoring, data collection, and restoration programs created in conjunction with local groups already working in the area.

The project will create a permanent facility on City-owned property where the public would engage in educational programs, and the program will be staffed and administered by the City. Sustainable characteristics of human communities will be demonstrated and experienced in the facility's solar collectors, composting toilets, recycling programs, organic gardens, and resource efficiency systems. Audiences would include primary and secondary school students, “Teach the Teacher” workshops, summer camps, environmental conferences and meetings, and ecotourism programs.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Priority</th>
<th>Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austal Vessel Completion Yard Phases 2 and 3</td>
<td>323</td>
<td>Bill Pfister</td>
<td>Mobile, AL</td>
<td>$2,000,000</td>
<td>This is Phases 2 and 3 of a 3 phase project for the final construction of the Austal Vessel Completion Yard (VCY). This involves the construction of a 20,000 square feet Operations Building with production, administrative, and storage spaces, construction of a Hazardous Storage Facility, construction of a 600' sheltered pier with heavy weather moorings and ship services, the dredging of an adjacent slip down to 30 foot depth, and the addition of another 150 parking spaces, in order to complete and trial US Navy contracted ships. It will also provide for the construction of a fendered pivot point at the slip entrance and fendering along the slip bulkhead. This provides Austal the capability to retain/maintain approximately down to 30 foot depth, and the addition of another 150 parking spaces, in order to complete and trial US Navy contracted ships. The slip provides a heavy-weather safe-refuge mooring location for ships that would otherwise be located in the Mobile River. The project also provides for the restoration of the property to its former productive shipbuilding activity from an abandoned state.</td>
<td>AL Portal</td>
<td>N</td>
</tr>
<tr>
<td>Dauphin Island Beach and Golf Study</td>
<td>324</td>
<td>Marc Whitehead</td>
<td>Dauphin Island</td>
<td>$375,000</td>
<td>The Dauphin Island location consisting of 164 acres is part of Dauphin Island (Alabama’s only barrier island) providing protection to over 10,000 acres in and around Mobile Bay and the Mississippi Sound by serving as a protective buffer. The Dauphin Island area specifically serves to provide an outdoor experience and two restaurants to the property owners of Dauphin Island and currently serving the general public. The outdoor experience consists of golf, natural habitat for watching animals, pool, beach access and fishing. The project above is the development of a planning-level feasibility study of the 164 acre area providing best use of the property through data research, economic impact, suggestions, details and plans for modification providing economic sustainability for the existing and suggested additions. These additions may consist of building restorations, golf course</td>
<td>AL Portal</td>
<td>N</td>
</tr>
</tbody>
</table>
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Innovating St. Louis Street: Mobile’s Technology Corridor</td>
<td>Keri Coumanis</td>
<td>Mobile, AL</td>
<td>$800,000</td>
</tr>
</tbody>
</table>

### Project Description

Innovating St. Louis Street: Mobile’s Technology Corridor

**SUMMARY:** Complete a thorough reconstruction of the St. Louis St. road bed; relocate all utilities; incorporate and implement comprehensive low-impact development techniques to manage stormwater.

**NARRATIVE:** The City of Mobile, building on a study and conceptual design undertaken by the General Services Administration’s Good Neighbor Program, is seeking funds to rebuild and upgrade the existing infrastructure found along, beside and beneath the St. Louis St. corridor. The St. Louis St. corridor is poised to be Mobile’s Downtown Technology Corridor, which will house “Innovate Mobile,” a regional science and research park. The City’s vision, in partnership with the University of South Alabama, is to create a “vibrant, live, work, play and learn district” in downtown Mobile. The proposed Downtown Technology Corridor will provide the community with a continuum of physical spaces dedicated to housing and promoting the growth of new technologies. The University recently purchased the historic Dodge Brothers dealership on St. Louis St.; the University intends to rehabilitate the existing building into “innovation accelerator,” or a high-tech space where startups will be housed. The accelerator will allow startup businesses or technologies to bridge the gap between incubation and commercialization. In addition to the University’s investment, St. Louis St. has and continues to experience a number of economic development projects. The GSA broke ground on the construction of a new $89m federal courthouse and five existing warehouses are being redeveloped into professional office or retail space. In order to bolster the success of these projects, the City aims to replace a 200 year-old redevelopment, modifying golf course to be a birding sanctuary, potential lodging facility (on or off 164 area tract), beach nourishment, various walking/biking trails, access options for boating guests, kayak and sailboat rentals, and deed restriction reviews/suggestions. This study is needed to provide data on different aspects and benefits to the tourism, coastal impact, seafood industry, job creation and sustainability of the facilities. In addition, several discussions with representatives of the Town of Dauphin Island have confirmed this feasibility study and planned improvements could positively impact and enhance the viability of the Aloe Bay Project submission. This study will also provide the negative impacts of not providing the improvements needed.

As Portal

| N | N | N | N | N | N |

### Restoration Types Addressed

- **Water Quality/Nonpoint Source Nutrient Reduction (Y/N):**
- **Wetland, Coastal, and Nearshore Habitat (Y/N):**
- **Oyster Reef (Y/N):**
- **Birds (Y/N):**
- **Sea Turtles (Y/N):**
- **Recreational Use (Y/N):**
- **Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N):**
- **Project is consistent with programmatic restoration goals (Y/N):**
- **Project is considerate of strategic frameworks (Y/N/NA):**
- **Project is consistent with criteria identified in the public notice (Y/N):**
- **Project delivers benefits cost-effectively (+/0/-):**
- **Project meets Trustees’ goals (+/0/-):**
- **Project has reasonable probability of success (+/0/-):**
- **Project prevents future and collateral injury to natural resources and services (+/0/-):**
- **Project benefits more than one natural resource and/or service (+/0/-):**
- **The effect of the project alternative on public health and safety (+/0/-):**
- **Project is not already required by existing regulations (Y/N):**
- **Project complies with applicable laws and regulations (Y/N):**
- **Project supports existing regional or local conservation plan or restoration effort (Y/N):**
- **Project is not already fully funded (Y/N):**
- **Project is technically feasible (+/0/-):**
- **Project readiness (+/0/-):**
- **Sustainability/Long-term Benefit of project (+/0/-):**
- **Project is time critical (+/0/-):**
- **Project offers opportunities for external funding & collaboration (+/0/-):**

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Oil Pollution Act (OPA) Criteria (15 CFR 990.54):**
- **Additional Criteria:**
Five very important Baldwin County projects are included in ALDOT's program of capacity improvements. This $56.8 Million funding request leverages a total of $69.8 Million in identified state funding to accomplish $126.6 Million in total capacity improvements. This $56.8 Million funding request leverages a total of $69.8 Million in identified state funding to accomplish $126.6 Million in total capacity improvements. This $56.8 Million funding request leverages a total of $69.8 Million in identified state funding to accomplish $126.6 Million in total capacity improvements. This $56.8 Million funding request leverages a total of $69.8 Million in identified state funding to accomplish $126.6 Million in total capacity improvements.

- **Project Name:** Inventions Lab
  - **ID:** 325
  - **Location:** Mobile, AL
  - **Cost:** $200,000

  Overview: The Coastal Community Council for M.O.R.E. (Making Opportunities and Resources Equitable Coalition) proposes a project to build capacity, plan, and implement an Inventions Lab in the Mobile and Washington Counties service area, located in the southwest corner of Alabama. This project intends to create innovative infrastructure system with modern day technologies, pavings and aesthetics. The proposed project calls for removing the existing roadway, drainage system, curbs and sidewalks of one-mile corridor; relocating all utilities so that they are subterranean; upgrading all existing underground stormwater pipes; or culverts (which date to 1945); replacing existing stormdrains with low impact development technologies and "green" stormwater collection devices; replacing all curb, gutter and sidewalks, and installing "innovative" street lamps and fixtures. The result being, the St. LouisSt. infrastructure will be as innovative as the entrepreneurial activities and economic development occurring along the corridor.

- **Project Name:** Baldwin County ALDOT Capacity Improvements, Rev011317
  - **ID:** 327
  - **Location:** Baldwin County
  - **Cost:**

  The five projects are listed with (construction cost estimates):
  - a) widening $100.160.8 from CR 64 to TR 104 ($125 million);
  - b) widening SR 181 from US 235 to SR 181 ($104.7 million);
  - c) widening SR 180 east of the Foley Beach Express ($67.6 million);
  - d) widening SR 180 west of the Foley Beach Express ($22.5 million);
  - e) widening SR 184 from TR 104 to CR 31 ($123 million).

  These projects provide additional and vastly increased capacity for coastal evacuation during hurricane events. They also provide for rapid emergency response arteries in already burgeoning growth areas of Baldwin County. The projects support our tourism industry and provide additional opportunities for access to jobs and education. Baldwin's population has climbed by 21,444 since 2010, pushing it past 200,000.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDAAP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
</table>
| Mobile Area Storm Water Mapping and Resiliency Planning | According to the latest Census data, no other county in Alabama is growing faster. The county added 3,000 residents in 2015 alone. The Daphne-Fairhope-Foley metro area, which includes all of Baldwin, was tied for the 12th highest growth rate in the county among metropolitan areas. Since 2010, the county's population has grown by 9.8 percent. According to statistics provided by the Baldwin County Association of Realtors, the county has experienced a 39 percent increase in the number of residential properties purchased since 2011. 3.4 million visitors came to Alabama's gulf beaches in 2015, up from 4.9 million in 2011. 30% of all visitors drive in from out of state. Tourism throughout Alabama generates more than 108,000 jobs, mostly dependent upon Alabama's highways for visitor travel and employment access.  
This proposed program of projects contributes to the economic resilience of our gulf coast and the state of Alabama. | Mobile, AL 35500-0004 | PHA01 1-Storm Water Infrastructure Mapping and Flow Modeling: Building on a 2009 City pilot study and mapping efforts completed by the Mobile Area Water and Sewer Service (MAWSS), develop a GPS inventory and geographic information system (GIS) database of the storm water infrastructure network in the City and surrounds. The City will undertake a regional approach to the mapping effort by identifying storm water infrastructure in areas that flow into the Three Mile Creek and Eight Mile Creek Watersheds.  
- Accurate GPS measurements locating storm water facilities will allow city to efficiently manage, design, and model the system and storm water flow within the watersheds that flow through the City and into Mobile Bay. The detailed storm water infrastructure mapping generated by this project will be foundational for many types of storm water management, flood control, water quality and watershed planning, and The project will aid in the implementation of watershed management plans.  
PHA02 2-Flood Loss Strategy: Using the data and digital GIS mapping developed in Phase 1, identify properties within the City that are subject to repetitive flood loss. Once those properties are identified, develop a strategy to remediate prospective losses. The City anticipates a significant overlap between repetitive flood loss properties and property to be identified as part of the future Mobile Greenway.  
PHA03 3-Storm Water Management Guidance Manual: Building on information and strategies developed in Phases 1 and 2, revise and update the City’s Flood Plain Management Plan. The existing Flood Plain Management Plan was prepared in 1984.  
- City Engineering must routinely address standard storm water management design measures on a case-by-case basis; this is inefficient for both the City and the applicant. An updated Storm Water Management Guide will systematize the modern best management practices expected by City Engineering, resulting in better upfront design by applicants and reduced workload for City staff, saving time and money for all parties. The updated manual would provide guidance on reliable Low Impact Development (LID) storm water management techniques. The City will identify incentives it could offer to encourage use of LID techniques. To gain buy-in from affected stakeholders, the City will hire an engineering consultant, engage a | AL Portal N N N N N N N N | N | N | N | N | N | N | N |

133
Three Mile Creek Restoration

Watershed

Greenway Initiative

Mobile, AL

Keri Coumanis

11000000

Mobile, AL Portal

Restoration Types Addressed

Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

Mobile

Project is consistent with criteria identified in the public

Project is consistent with criteria identified in the public

Project meets Trustees’ goals (+ / 0 / -)

Project has a reasonable probability of success (+ / 0 / -)

The project has been assessed for its potential to

Public Notice

Oil Pollution Act (OPA) Criteria

Additional Criteria

N

Oversight to Support Restoration Implementation (Y/N)

Project is not already required by another project (Y/N)

Project is technically feasible (+ / 0 / -)

Sustainability/Long term Benefit of project (+ / 0 / -)

Project is time critical (+ / 0 / -)

Project supports existing regional or local conservation plan or restoration effort (Y/N)

Project is not already fully funded (Y/N)

Project readiness (+ / 0 / -)

The effect of the project alternative on public health and safety (+ / 0 / -)

Project benefits more than one natural resource and/or service (+ / 0 / -)

Project prevents future and continuing degradation of public resources and services (+ / 0 / -)

Project complies with applicable laws and regulations (Y/N)

Project is not already required by another project (Y/N)

Project has a reasonable probability of success (+ / 0 / -)

Project meets Trustees’ goals (+ / 0 / -)

Project has a reasonable probability of success (+ / 0 / -)

Project is consistently with criteria identified in the

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### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Lead Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fairhope Area Community-Based Comprehensive Land Use Plan</td>
<td>331</td>
<td>Kain Wilson</td>
<td>Fairhope</td>
<td>630000</td>
</tr>
<tr>
<td>Working Waterfront and Green Space Restoration Project</td>
<td>332</td>
<td>Kain Wilson</td>
<td>Fairhope</td>
<td>6300000</td>
</tr>
</tbody>
</table>

### Project Description

- **Fairhope Area Community-Based Comprehensive Land Use Plan**: The City of Fairhope is a unique treasure for the State of Alabama as it still retains much of its original small-town ambiance, while providing state of the art services for its residents. Fairhope is known as a pedestrian’s paradise that has an active arts community, exceptional schools, excellent senior services, waterfront public spaces, and top-notch recreational programs for all ages. In an effort to improve the safety and quality of life, the City of Fairhope will continue to grow and prosper in the future as it retains much of its original small-town ambiance. A pedestrian’s paradise that has an active arts community, exceptional schools, excellent senior services, waterfront public spaces, and top-notch recreational programs for all ages.

- **Working Waterfront and Green Space Restoration Project**: The City of Fairhope is a unique treasure for the State of Alabama as it still retains much of its original small-town ambiance, while providing state of the art services for its residents. Fairhope is known as a pedestrian’s paradise that has an active arts community, exceptional schools, excellent senior services, waterfront public spaces, and top-notch recreational programs for all ages. In an effort to improve the quality of life, the City of Fairhope will continue to grow and prosper in the future as it retains much of its original small-town ambiance. A pedestrian’s paradise that has an active arts community, exceptional schools, excellent senior services, waterfront public spaces, and top-notch recreational programs for all ages.

### Restoration Types Addressed

- **Wetland, Coastal, and Nearshore Habitat (Y / N)**: N
- **Sea Turtles (Y / N)**: N
- **Recreational Use (Y/N)**: N
- **Habitat on Federal Lands (Y/N)**: N
- **Monitoring, Adaptive Management, and Administrative Oversight to Support Environmental Information (N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project supports existing regional or local conservation plan (+ / 0 / -)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N

### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- **Public Notice (OPA) Criteria (15 CFR 990.54)**
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is consistent with criteria identified in the public notice (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N

### Additional Criteria

- **Project prevents future and collateral injury to natural resources and services (+ / 0 / -)**: N
- **Project delivers benefits cost effectively (+ / 0 / -)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: N
- **Project is technically feasible (+ / 0 / -)**: N
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: N
- **Project is time critical (+ / 0 / -)**: N
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: N

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135
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted by (Lead)</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwestern Coastal Alabama Resiliency and Stewardship Center as</td>
<td>333</td>
<td>Jackie Antalan</td>
<td>Coastal AL</td>
<td>5800000</td>
</tr>
<tr>
<td>Mississippi Sound Coastal Eco-Tourism and Aquaculture Village</td>
<td>334</td>
<td>Brett Dungan</td>
<td>MS Sound</td>
<td>10520000</td>
</tr>
</tbody>
</table>

### Project Description

- **Southwestern Coastal Alabama Resiliency and Stewardship Center as**
  - Project will implement recommendations of the most recent waterfront study to provide a comprehensive vision and working waterfront including public spaces located on Mobile Bay in Fairhope. First, this project will contribute to the redevelopment the Fairhope Marina located at the mouth of Fly Creek. This project will integrate the Clean Harbors program to provide a mixed-used environmentally friendly working waterfront. Second, recommendations in the Fairhope Beach Management Plan, a comprehensive bluff and shoreline stabilization project, planning and redevelopment of the waterfront park areas (including acquisition of inholdings) will be implemented. This development includes integration of pedestrian access into waterfront areas and development of more water-based transportation infrastructure impeding access to waterfronts. Last, this project will utilize funds to develop a comprehensive stormwater education program in order to reduce pollution and sedimentation entering Mobile Bay from the City public spaces. This project will provide a necessary catalyst to the City can host waterfront tourism activities such as regattas, sailing events, and fishing tournaments. These events provide the City of Fairhope, Baldwin County and State of Alabama with much-needed tourism tax revenue.

- **Mississippi Sound Coastal Eco-Tourism and Aquaculture Village**
  - The purpose of this project is to implement an Eco-Tourism site on the Alabama Coast to demonstrate the viability of developing coastal marsh wetlands -and- adjacent coastal properties for aquaculture -and- eco-tourism, employing the fundamentals of Percutaculture -and- within the bounds of environmental stewardship. This project will also provide a site for disabled veterans to participate in weeklong challenge therapy programs in a coastal setting, including the support structures -and- raised-wheel-chair accessible boardwalks. It is essential that

### Restoration Types Addressed

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDAARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tr>
<td>AL Portal</td>
<td>N  N  N  N  N  N  N  N</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project prevents future and current harm (+/0/-)</td>
<td>Project meets Trustees' goals (+/-0)</td>
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<tr>
<td>AL Portal</td>
<td>N  N  N  N  N  N  N  N</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
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<td>Project meets Trustees' goals (+/-0)</td>
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<tr>
<td>AL Portal</td>
<td>N  N  N  N  N  N  N  N</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project prevents future and current harm (+/0/-)</td>
<td>Project meets Trustees' goals (+/-0)</td>
</tr>
</tbody>
</table>

### Programmatic Damage Assessment and Restoration Plan (PDAARP) Criteria

- Project is consistent with criteria specified in the public notice (Y/N).
- Project prevents future and current harm (+/0/-).
- Project meets Trustees' goals (+/-0).
- Project is technically feasible (+/-0).
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Maintaining and Expanding Information Infrastructure for Shipping and Boating Safety and Efficiency in Mobile Bay</td>
<td>Alabama Real-time Coastal Observing System (ARCOS) and its website, <a href="http://www.mymsbible.com">www.mymsbible.com</a>, have become emer</td>
<td>Gulf of Mexico</td>
<td>147,960</td>
</tr>
</tbody>
</table>

## Project Description

Business entrepreneurs take a lead role in creating sustainable models to support coastal communities economic revitalization.

- *Provide public access, including for handicapped*
- *Create a working coastal community, foster start-up businesses, and provide local jobs*
- *Be a center for aquaculture production and research*
- *Support aquaculture process that is sustainable and chemical-free*
- *Local high school horticulture and aquaculture students will be encouraged to participate in hands-on experience*
- *Provide an ecologically thriving learning laboratory interfacing with local schools, centers of excellence and research institutes*
- *Facilitate the exchange of innovation utilizing local knowledge, the scientific community, and digital technology*

## Restoration Types Addressed

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project delivers benefits cost-effectively (+ / 0 / -)</td>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td></td>
</tr>
<tr>
<td>Project prevents harm and reduces risk (+ / 0 / -)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td></td>
</tr>
<tr>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
<td>Project offers opportunities for external funding</td>
<td>&lt;</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
<td>Location</td>
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<tr>
<td>------------------------------------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Weeks Bay East Gateway Tract</td>
<td>336</td>
<td>Weeks Bay</td>
</tr>
<tr>
<td>Magnolia River North Gateway Tract</td>
<td>337</td>
<td>Weeks Bay</td>
</tr>
</tbody>
</table>
In order to eliminate untreated wastewater from entering the Mobile Bay Ecosystem, the City of Chickasaw is requesting funding from the RESTORE Act to construct a 1.5 MGD Wastewater Treatment Facility. This facility would be designed to use state of the art treatment technology to eliminate the existing failing lagoon system. Without this new WWTF, the City of Chickasaw Utilities Board will be forced to use state of the art treatment technology to eliminate the existing failing lagoon system. Portions of the lagoon area will be restored to coastal wetlands. This project would also provide the necessary infrastructure for Port of Chickasaw to continue to grow, creating a framework for economic prosperity through highly paid skilled jobs. Last, this project is endorsed by ADEM as they support any project that will improve water quality discharged to the Mobile River/Mobile Bay ecosystem.

Project Name: Development of New Wastewater Treatment Facility (WWTF) for the City of Chickasaw

Lead Project Manager: Byron Pittman
Location: Chickasaw
Cost: $5,000,000

Project Description:

All pathogens and mercury. It is only because of the excellent water quality of Magnolia River that Weeks Bay is able to sustain and support such an array of wildlife. As development continues throughout Baldwin County, and especially on the river banks of both Magnolia and Fish Rivers, we will see a decline in water quality. Protection of the Property will ensure that over 1.2 miles of combined river and bay frontage remains in its natural state. Thus mitigating erosion, siltation, eutrophication, and residential flooding – all factors that directly correlate to water quality and the health of the entire Weeks Bay ecosystem.

This Property contains nearly 100 acres of wetlands. These include estuarine and palustrine wetlands. There is also a small stream that bisects the Northern half of the property, running northeast to southwest. The scenic beauty of the Property is enjoyed by pleasure boaters, birders, and recreational fishermen who visit Weeks Bay and Magnolia River.

The Property meets the priority acquisition and protection goals of various groups. It falls within the Weeks Bay Reserve’s Coastal Zone and Core Priority Area, as well as the Weeks Bay Project Acquisition Area. The 2005 Baldwin County Wetland Conservation Plan highlights this area as containing wetlands to be considered for conservation.

Project Name: Salt Aire Shoreline Restoration

Lead Project Manager: Bill Melton
Location: Mobile, AL
Cost: $2,000,000

Project Description:

To protect the property, running northeast to southwest. The scenic beauty of the Property is enjoyed by pleasure boaters, birders, and recreational fishermen who visit Weeks Bay. The scenic beauty of the Property is enjoyed by pleasure boaters, birders, and recreational fishermen who visit Weeks Bay and Magnolia River. The Property meets the priority acquisition and protection goals of various groups. It falls within the Weeks Bay Reserve’s Coastal Zone and Core Priority Area, as well as the Weeks Bay Project Acquisition Area. The 2005 Baldwin County Wetland Conservation Plan highlights this area as containing wetlands to be considered for conservation.
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<thead>
<tr>
<th>Project Name</th>
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<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beach Club West</td>
<td>340</td>
<td>Drew Niedermer</td>
<td>Fort Morgan</td>
<td>$308,450</td>
<td>Objective: To acquire a large and ecologically diverse parcel of land in coastal Alabama. Outcome: Protection and management of approximately 79 acres of habitat for multiple protected species. This property provides one of the last known refuges for the endangered Alabama beach mouse, which utilizes the high ground on the property during storms. The beach is also utilized by three species of protected sea turtles, as well as piping plovers. The dune field is an important nesting area for least terns and other shorebirds, and is home to several rare plants. Additionally, a maritime forest is located on the northern boundary of the property, which provides a sanctuary for roosting migratory birds. Maritime forests on Beach Club West represent one of the last places on the Fort Morgan peninsula where one exists. A biological assessment has been performed by the USFWS and can be provided for information on the ecological value of the land. Beach Club West, in conjunction with the acquisition of Gulf Highlands, could be combined to create an incredible ecotourism opportunity. A site plan could be designed to best utilize the nearly 200 acres of property to both properly manage...</td>
</tr>
</tbody>
</table>

Revised shoreline would be reestablished by the amount of shoreline erosion and marsh loss experienced in the past 30 years. The project team recently produced a conceptual plan and estimated project cost as a first step in defining the proposed project. This project suggestion is based upon the conceptual plan. Development of a detailed restoration plan and associated construction documents and permit application based on this concept is underway and is scheduled to be complete by May 31st of 2017. The proposed salt marsh living shoreline and marsh restoration project has been designed to stabilize the property’s Mobile Bay shoreline and reestablish approximately 16 acres of tidal marsh. Approximately 5600 linear feet of low profile breakwater would be installed in shallow water offshore Salt Aire and Goat Island; these wave attenuation structures would serve to enhance growth of estuarine biota such as eelgrass, while reducing wave-induced erosion. Oyster growth on these structures would be enhanced by distributing oyster spat across the breakwater structures. The revised shoreline would be reestablished by placement of up to 80,000 CY of suitable sediments borrowed from the Fowl River Channel dredged material disposal area, located about 1.5 miles south of the project. Silt curtain would be installed to preclude excessive release of fine sediments from the placement area. The borrow area excavation would be reified by maintenance dredging material from the Fowl River Channel. Once sufficient compaction of the sediment placed at the shoreline has occurred, tidal channels would be excavated to provide tidal flushing and nesting access to the restored marsh. Approximately 70,000 marsh plants would be planted in the restored site after the tidal creeks have been excavated. Project construction monitoring would involve water quality (turbidity) testing on a daily basis to ensure compliance with state water quality standards. Post-construction success monitoring would include five years of elevation surveying, marsh plant survival and growth, and fishery resources, and photographic documentation (using drones) of site conditions during and after construction.
The Lower Dog River Bottomland Hardwoods Protection project aims to permanently preserve nearly 300 acres of undisturbed, high-quality, Palustrine, riverine wetlands in the Dog River Watershed. It comprises the largest contiguous acres in the Lower Dog River basin and will sustain critical habitat for threatened and endangered species like the Western Mudpuppy and the American Bald Eagle (Haliaeetus leucocephalus). Acquisition of this property will ensure a healthy and sustainable Dog River by retaining the natural eco-system services they perform: it slows the water down by allowing it to spread out over a natural floodplain thereby filtering the water and alleviating downstream flooding. Cumulative economic benefits will be derived from this project through increased eco-tourism activities like recreational fishing opportunities, canoe/kayaking, birding and nature photography and environmental education. Restoration and preservation are top priorities listed in both the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan and the draft Dog River Watershed Management Plan. Conservation of this little known area of extreme biodiversity is critical to the future health of Dog River.

The project implements the priority best management practices (BMPs) and restoration actions identified in the Dog River Watershed Management Plan (WMP). The ecology, hydrology, and water quality of the Greater Dog River Watershed have been degraded by cumulative impacts for over fifty years by conversion of natural and to hard surfaces, including channelization, to enhance runoff of rainfall and minimize urban flooding. Management measures designed to mitigate the impacts of urban development have been identified by the WMP and when implemented will reduce impacts to habitat and water quality associated with urban stormwater runoff. Phase I - The Mobile Bay Shore Habitat Conservation and Acquisition Initiative will utilize funds to acquire and preserve remaining high priority intact tidal marsh habitats within the City of Mobile. The goal of this initiative is preserving up to 1,000 acres of riparian, wetland, and marsh habitats in the Greater Dog River Watershed. Phase II - Stormwater Management and Low Impact Development (LID) Program. This Program will install multiple structural and nonstructural BMPs throughout the watershed to more effectively manage stormwater by increasing infiltration and reducing stormwater runoff with a goal of restoring water quality and hydrology. The LID Program includes sustainable stormwater BMPs and utilizes natural hydrologic cycles through multiple measures or practices that include:

### Table: Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Lower Dog River Bottomland Hardwoods Protection</td>
<td>Debi Foster</td>
<td>Dog River</td>
<td>1,802,500</td>
</tr>
<tr>
<td>Dog River Watershed Restoration</td>
<td>Christian Miller</td>
<td>Dog River</td>
<td>2,200,000</td>
</tr>
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</table>

### Additional Criteria

- Project is consistent with programmatic restoration goals (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
- Project readiness (+ / 0 / -)
- Sustainability/Long-term ([Y/N])
- Project will not cause significant, measurable adverse (Y / N)
- Project will not cause significant, cumulative adverse (Y / N)
- Project is not already fully funded (Y / N)
- Project is time critical (+ / 0 / -)
- Project offers opportunities for external funding & collaboration (+ / 0 / -)
- Project is consistent with public use of both properties while minimizing a (Y / N)
- Project's Comprehensive Conservation Management Plan and the draft Dog River Watershed Management Plan. Conservation of this little known area of extreme biodiversity is critical to the future health of Dog River.

### Project Description

The sensitive habitat and also allow for passive human recreation. Threat of development is high due to increased sales and construction along the Gulf Coast. All federal, state and local permits have been acquired to develop the property as a significant, multi-family resort. Development of Beach Club West would be in contradiction with the use of the immediately adjacent Gulf Highlands parcel. Beach Club West and Gulf Highlands parcel's collectively developed a habitat conservation plan (HCP) as part of the originally proposed developments. The HCP could be modified to incorporate a public use of both properties while minimizing a development footprint to areas of Beach Club West that have already been partially impacted.
Permeable pavement, bioretention areas, vegetated swales, constructed wetlands, and Gross Pollutant Removal Devices. This program will also include restoration of priority stream reaches and riparian habitat identified in the WMP. Restoring the natural hydrology of the watershed, restoring riparian buffers, and eliminating exotic species will benefit not only surface water and habitat quality. Phase III—Coastal Resiliency Program. Through this program, partial funding would be made available to offset the costs of creating natural, erosion-resistant (living) shoreline for private landowners instead of the traditional, degrading, vertical bulkheads. This ongoing program would help decrease the number of armored shorelines, increasing coastal resilience, ecological diversity, and habitat throughout the Dog River estuary.

Environmental-friendly alternatives to bulkheads for protecting shorelines: evaluation and implementation of effective living shoreline designs

Permeable pavement, bioretention areas, vegetated swales, constructed wetlands, and Gross Pollutant Removal Devices. This program will also include restoration of priority stream reaches and riparian habitat identified in the WMP. Restoring the natural hydrology of the watershed, restoring riparian buffers, and eliminating exotic species will benefit not only surface water and habitat quality. Phase III—Coastal Resiliency Program. Through this program, partial funding would be made available to offset the costs of creating natural, erosion-resistant (living) shoreline for private landowners instead of the traditional, degrading, vertical bulkheads. This ongoing program would help decrease the number of armored shorelines, increasing coastal resilience, ecological diversity, and habitat throughout the Dog River estuary.
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<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog River Watershed</td>
<td>350</td>
<td>Just Cedrain</td>
<td>AL waters</td>
<td>2031205</td>
<td>The main goal of this project is to carry out a cost-effectiveness analysis of how various marsh restoration designs ranging in plant density, platform slope and sediment grain size perform in terms of reducing runoff pollution under current and future sea level. With this information we will build a decision support tool to help managers maximize the reduction of runoff nutrient pollution through marsh restoration given their specific time and budget constraints. This project will provide science-based information important to the development of ordinances and regulations sought by coastal wetlands projects and efforts throughout the State of Alabama, encouraging imp...</td>
</tr>
<tr>
<td>Fowl River Watershed Conservation and Restoration Program</td>
<td>351</td>
<td>Christian Miller Miller</td>
<td>Fowl River</td>
<td>7241000</td>
<td>This project implements priority best management practices (BMPs) and restoration actions identified in the Fowl River Watershed Management Plan (WRMP). A 2015 assessment completed by GSA indicates relatively healthy water quality in the Fowl River Watershed, attributable to the relatively rural landscape, extensive wetlands and forests, and use of cover crops on agricultural fields. In order to improve and protect water quality and habitats for the future, steps should be taken to employ...</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
<td>Lead</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
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<tr>
<td>Deer River Coastal Marsh Stabilization and Restoration</td>
<td>351</td>
<td>Christian Miller Miller</td>
<td>Mobile Bay</td>
<td>480000</td>
<td>This project seeks to restore the erosion-impaired and storm-vulnerable marsh at the mouth of Deer River, adjacent to the Theodore Industrial Canal and Mobile Bay. In addition to restoration, the goal should be to establish the preservation and long-term sustainability of the ecological habitats of this system. The target area is regionally recognized as a priority saltmarsh habitat by the Mobile Bay National Estuary Program. The existing inter tidal marsh of the Deer River watershed is currently and has experienced excessive deterioration and loss of natural function caused by heavy storms, excessive tidal wave impact and predominantly the wave loading effects of cargo ships ingressing and egressing the Theodore Industrial Canal. Since 1997, approximately nine acres of intertidal marshland and shoreline have been eroding due to the ongoing loss of a pristine and prioritized aquatic resource area of Mobile Bay. Due to previous indicated impacts to the salt marsh of Deer River, there has been an added concern expressed by a group of citizens who reside along the canal portions of Deer River. These citizens of the Hollingers Island community live along stretches of the unimprovably reach of Deer River that has experienced degraded water and habitat quality, sedimentation, and benthic build-up along with solid waste pollution from receiving waters of Fowl River, and ultimately Mobile Bay. Wetland restoration projects have been identified for wetlands that have experienced significant change in land use and likely have experienced various types of hydrologic alterations. Similarly, identified stream restoration projects would restore stream ways that have been altered through channelization and changes in and use (mostly forested riparian buffers converted to row crops). Once installed, these BMPs will allow for increased flood capacity and increased nutrient uptake/sediment removal, prevent the further degradation of wetlands, prevent erosion and sediment transport from areas of active timber harvesting and agriculture, and control runoff from construction sites and urban areas with significant impervious cover.</td>
</tr>
<tr>
<td>West Fowl River Pathogen Study</td>
<td>353</td>
<td>Christian Miller Miller</td>
<td>Fowl River</td>
<td>450000</td>
<td>The proposed project seeks to identify sources of bacteria in the West Fowl River watershed. The West Fowl River Watershed is home to oyster farmers who have a long history of making a living off the Gulf waters. Recent water quality sampling for bacteria has exceeded regulatory thresholds and is impacting the local aquaculture industry.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
<td>Submitted By</td>
<td>Location</td>
<td>Cost</td>
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<tr>
<td>Bayou La Batre Pathogen Study</td>
<td>354</td>
<td>Christian Miller Miller</td>
<td>Bayou La Batre</td>
<td>$450000</td>
<td></td>
</tr>
</tbody>
</table>

The presence of elevated concentrations of indicator bacteria in surface waters could be a serious threat to human health and safety because they indicate the potential for the presence of disease-causing micro-organisms. In many watersheds, pathogens are typically seen in higher numbers after rain events as a result of runoff laden with gross pollutants. While the presence of pathogens during dry-weather conditions can be indicative of direct inputs of bacteria into the surface water system. Elevated bacterial loads have typically been attributed to a wastewater source such as a failed septic system, sanitary sewer leakage, periodic sanitary pump station overflows, illicit discharges, and illicit connections. However, significant bacterial loads can be documented from rotting vegetation and/or wildlife. Regardless of the source, elevated bacterial loads could pose a human health risk.

This project would include field surveys, bacterial sampling, and microbial source tracking to understand and identify areas of concerns in the watershed and identify potential sources of pathogens.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Gulf River Recreation</td>
<td>355</td>
<td>Rob Grant</td>
<td>Gulf Shores</td>
<td>$420000</td>
</tr>
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</table>

Develop boat launching ramp, parking area, and 75 site RV campground. Project study for boat ramp component completed in July 2006 by the City of Orange Beach. Proposed project area is a 30 acre tract of land within Gulf State Park located in Gulf Shores, AL.

**Additional Criteria**

- Project supports existing regional or local conservation plan or restoration effort (Y/N)
- Project readiness (+ / 0 / -)
- Sustainability/Long term Benefit of project (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
- Project offers opportunities for external funding & collaboration (+ / 0 / -)
- Project is not already required by existing regulations (Y/N)
The wood decking was the correct choice at the time, but we now recognize that alternative materials would likely have a longer life expectancy, and provide...Excessive nutrient enrichment, or eutrophication, of Gulf Coast estuaries and their
watersheds is a chronic threat that can lead to hypoxia (low oxygen levels), harmful algal blooms, habitat losses, and fish kills (PDARP/PEIS Section 5.5.4). The Nutrient Restoration Plan

The shorelines of coastal bays and estuaries on the Gulf of Mexico are the first line of defense against natural and man-made disasters. In Alabama, more than 80% of bay and tributary shorelines are privately owned. These landowners, especially on the major bay systems, i.e. Mobile Bay, Mississippi Sound, Bon Secour Bay, Wolf Bay, and Perdido Bay are experiencing high rates of erosion. The landowners experiencing the shoreline impacts and benefit communities to consider when developing a comprehensive shoreline restoration plan for the shoreline reaches along the major bays, including a set of recommendations for waterfront landowners, municipalities and communities to consider when implementing shoreline protection measures that will dually serve to protect property, while also contributing to overall coastal and community resilience. A 'Basis of Design' for the interconnected, but physiographically unique, stretches of shorelines, will provide recommendations for materials, methods and techniques that incorporate nature-based solutions as options for living shoreline implementation that can also contribute to enhanced fish and wildlife habitat, property values and aesthetics, community rating system (CRS) rankings and overall mental health. This project will help advance current efforts to promote the utilization of nature-based solutions for shoreline protection and benefit communities. This shoreline plan will provide capacity for improved coastal and community resilience by developing a single, comprehensive shoreline restoration plan that could otherwise not be accomplished through the efforts of any individual, municipality, or county due to the cross-boundary nature of Alabama's coastal systems and municipal borders. The tributary systems can accommodate a wider range and mix of living shoreline techniques, however larger water-bodies are less accommodating and require a more coordinated approach to ensure environmental, societal and individual goals are realized. In addition, climate impacts will exacerbate current, known impacts from seasonal storms, ship wakes, water quality degradation and habitat loss. By developing a comprehensive shoreline plan, this project will provide options and tools for individuals and communities to help enhance their overall environmental and societal resilience.

The original decking on the Gulf State Park Pier is now approaching ten years of age. The wood decking was the correct choice at the time, but we now recognize that alternative materials would likely have a longer life expectancy, and provide a more "customer friendly" surface than what presently exists. This project would replace the entire pier deck with more sustainable, ecologically friendly materials.

The shorelines of coastal bays and estuaries on the Gulf of Mexico are the first line of defense against natural and man-made disasters. In Alabama, more than 80% of bay and tributary shorelines are privately owned. These landowners, especially on the major bay systems, i.e. Mobile Bay, Mississippi Sound, Bon Secour Bay, Wolf Bay, and Perdido Bay are experiencing high rates of erosion. The landowners experiencing the shoreline impacts and benefit communities to consider when developing a comprehensive shoreline restoration plan for the shoreline reaches along the major bays, including a set of recommendations for waterfront landowners, municipalities and communities to consider when implementing shoreline protection measures that will dually serve to protect property, while also contributing to overall coastal and community resilience. A 'Basis of Design' for the interconnected, but physiographically unique, stretches of shorelines, will provide recommendations for materials, methods and techniques that incorporate nature-based solutions as options for living shoreline implementation that can also contribute to enhanced fish and wildlife habitat, property values and aesthetics, community rating system (CRS) rankings and overall mental health. This project will help advance current efforts to promote the utilization of nature-based solutions for shoreline protection and benefit communities. This shoreline plan will provide capacity for improved coastal and community resilience by developing a single, comprehensive shoreline restoration plan that could otherwise not be accomplished through the efforts of any individual, municipality, or county due to the cross-boundary nature of Alabama's coastal systems and municipal borders. The tributary systems can accommodate a wider range and mix of living shoreline techniques, however larger water-bodies are less accommodating and require a more coordinated approach to ensure environmental, societal and individual goals are realized. In addition, climate impacts will exacerbate current, known impacts from seasonal storms, ship wakes, water quality degradation and habitat loss. By developing a comprehensive shoreline plan, this project will provide options and tools for individuals and communities to help enhance their overall environmental and societal resilience.

The original decking on the Gulf State Park Pier is now approaching ten years of age. The wood decking was the correct choice at the time, but we now recognize that alternative materials would likely have a longer life expectancy, and provide a more "customer friendly" surface than what presently exists. This project would replace the entire pier deck with more sustainable, ecologically friendly materials. The wood decking was the correct choice at the time, but we now recognize that alternative materials would likely have a longer life expectancy, and provide a more "customer friendly" surface than what presently exists. This project would replace the entire pier deck with more sustainable, ecologically friendly materials.

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### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parkway Trail</td>
<td>Fort Morgan</td>
<td>$359</td>
</tr>
</tbody>
</table>

Reduction in nonpoint source pollution from agricultural and forested lands.

The Bayou La Batre watershed covers over 19,500 acres in south Mobile County and flows southwesterly into Portersville Bay and Mississippi Sound. The City of Bayou La Batre, which is located within the watershed, is the source of the urban component of the watershed. Total land use breakdown: 13% urban, 32% agricultural land, 51% forested, 2% water/wetlands. Row crops, pasture, and silviculture accounts for the agriculture land use within the watershed.

The racial makeup of the city was 52.44% White, 10.25% Black or African American, 0.26% Native American, 33.29% Asian, 0.43% Pacific Islander, 0.95% from other races, and 2.38% from two or more races. The large Asian population is attributable to a large influx of Vietnamese American shrimpers as immigrants following the Vietnam War as well as Cambodian and Laotian refugees and their children.

Bayou La Batre was originally placed on the State’s 303(d) list for pathogens in 1998 with a TMDL developed in 2009. The lower half of the Bayou La Batre sub-estuary is rated “Fair” while the upper half is rated “Poor.” There are no NPDES discharges within the watershed, and nonpoint sources appear to be a significant source of pathogen contamination, with the TMDL indicating sanitary sewer overflows and agriculture runoff being the probable sources.

The Bayou La Batre Nutrient Reduction Project would be implemented by NRCS in the Bayou La Batre Watershed in Alabama for the purpose of improving water quality by implementing conservation practices to reduce nutrient and sediment runoff. NRCS and its conservation partners would assist private landowners by developing conservation plans that identify natural resource concerns and conservation practices the landowner can implement to reduce nutrient and sediment runoff.

### Restoration Types Addressed

- **Wetland, Coastal, and Nearshore Habitat (Y/N)**: N
- **Oyster Reef (Y/N)**: Y
- **Recreational Use (Y/N)**: N
- **Watershed, Coastal, and Nearshore Habitat (Y/N)**: Y
- **Fish and Wildlife Habitat (Y/N)**: Y
- **Beach and Coastal (Y/N)**: N
- **Marshes, Estuaries and Wetlands (Y/N)**: Y

### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- **Project is consistent with programmatic restoration goals**: Y
- **Project has reasonable probability of success**: Y
- **Project prevents future and collateral injury to natural resources and services**: Y
- **Project meets Trustees’ goals**: +
- **Project delivers benefits cost-effectively**: +
- **Project has reasonable cost-effectiveness**: +

### Public Notice

- **Public notice (Y/N)**: Y
- **Project is consistent with criteria identified in the public notice (Y/N)**: Y

### Oil Pollution Act (OPA) Criteria

- **Project is not already required by existing regulations (Y/N)**: N
- **Project complies with applicable laws and regulations (Y/N)**: Y
- **The effect of the project alternates on public health and safety**: -
- **The effect of the project alternates on other natural resources**: -

### Additional Criteria

- **Project is technically feasible**: +
- **Project readiness**: +
- **Project offers opportunities for external funding & collaboration**: +
- **Project is time critical**: -
- **Project is not already fully funded (Y/N)**: N
- **Project supports existing regional or local conservation plan or restoration effort**: N
- **Project is not already required by existing regulations**: N
- **Project benefits more than one natural resource and/or service**: +
- **The effect of the project alternates on public health and safety**: -
- **The effect of the project alternates on other natural resources**: -
- **Project has reasonable cost-effectiveness**: +
- **Project delivers benefits cost-effectively**: +
- **Project meets Trustees’ goals**: +
- **Project has reasonable probability of success**: Y
- **Project prevents future and collateral injury to natural resources and services**: +

### Fort Morgan Parkway Trail Extension

- **Project Name**: Fort Morgan Parkway Trail Extension
- **Location**: AL Portal
- **Lead**: Rob Grant
- **Cost**: $443,360

This project would extend, and ultimately complete, the Fort Morgan Trail from Fort Morgan in the west to Gulf State Park and the Hugh Branyon Backcountry Trail in the east. Currently, a 15 mile gap exists between Fort Morgan and Pensacola Boulevard. The proposed extension will complement the existing ten foot wide concrete trail. When completed, the Fort Morgan Trail will provide approximately 30 miles of recreation trail from Fort Morgan to Orange Beach and will connect with numerous trail spurs and loops along the way.

A “mid-zone” trail head facility within the Parkway will provide parking spaces, restrooms, vending machines, interpretive signage, and informational kiosks.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>No.</th>
<th>ID</th>
<th>Submitted by Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fowl River Watershed Nutrient Reduction Program</td>
<td>360</td>
<td></td>
<td>Homer Wilkes</td>
<td>Fowl River</td>
<td>2000000</td>
<td>Excessive nutrient enrichment, and eutrophication, of Gulf Coast estuaries and their watersheds is a chronic threat that can lead to hypoxia (low oxygen levels), harmful algal blooms, habitat losses, and fish kills (PDARP/PEIS Section 5.5.4). The Nutrient Reduction restoration is consistent with the needs of the Fowl River Watershed in Alabama. The watershed would benefit from activities implemented to restore and enhance the ecological and hydrological integrity of water resources. The Fowl River Watershed (HUC 031002012006) encompasses 52,782 acres, drains much of southern Mobile County, and is a direct contributor to Mobile Bay. Land use in the Fowl River Watershed is varied and characterized as urban, residential, and rural. Twenty-one percent of the watershed area is classified as urban, 15% as crop or pasture land, and 63% as forested. Increasing development and continuing erosion and sedimentation threaten water and habitat quality. The Fowl River Nutrient Reduction Project would be implemented by NRCS in the Fowl River Watershed in Alabama for the purpose of improving water quality by implementing conservation practices to reduce nutrient and sediment runoff. NRCS and its conservation partners would assist private landowners by developing conservation plans that identify natural resource concerns and conservation practices the landowner can implement to reduce nutrient and sediment runoff. Through this project, landowners would receive financial assistance to apply conservation practices near the source of soil erosion and nutrient application with additional conservation practices. The cost of $2.0 M for development and implementation of conservation plans and practices in the Fowl River watershed. USDA-NRCS would implement this proposed alternative by helping landowners voluntarily implement conservation practices that reduce nutrient and sediment runoff. Through their experience with the Environmental Quality Incentives Program (EQIP), USDA-NRCS is knowledgeable about activities required for the successful implementation of the proposed conservation practices.</td>
</tr>
<tr>
<td>Phased Recreation Facilities Development at Meaher State Park</td>
<td>361</td>
<td></td>
<td>Rob Grant</td>
<td>Spanish Fort</td>
<td>3450000</td>
<td>This project could be developed in phases and would greatly increase and enhance outdoor recreation opportunities along a major east-west corridor used heavily by citizens and guests of Alabama. Meaher is a very popular state park and its campground frequently fills to capacity. This project would ultimately add 156 full-service campsites as well as support facilities such as parking, bath houses, a fishing pier, and utility infrastructure. In addition, ten (10) RV park model cabins would be built along with appropriate skirting, decking, steps and/or ramps.</td>
</tr>
<tr>
<td>Nutrient Reduction Projects - Mobile and Baldwin Counties</td>
<td>362</td>
<td></td>
<td>Homer Wilkes</td>
<td>Mobile and Baldwin Counties</td>
<td>6000000</td>
<td>Excessive nutrient enrichment, or eutrophication, of Gulf Coast estuaries and their watersheds is a chronic threat that can lead to hypoxia (low oxygen levels), harmful algal blooms, habitat losses, and fish kills (PDARP/PEIS Section 5.5.4). The Nutrient Reduction restoration is consistent with the needs of the Alabama coastal watersheds. The watershed would benefit from activities implemented to restore and enhance the ecological and hydrological integrity of water resources.</td>
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<tr>
<td>Project Name</td>
<td>Submitter Name</td>
<td>Location</td>
<td>Cost</td>
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| Presence, Potential Sources, Behavior and Fate of Endocrine Disrupting Chemicals in Northern Gulf of Mexico Estuarine Systems | Joel Hayworth | Gulf of Mexico | $6.0M | This project would address nutrient and sediment reduction in the Dog River, Bon Secour, and Wolf Bay Watersheds. The Nutrient Reduction Projects would be implemented by NRCS in the coastal watersheds in Alabama for the purpose of improving water quality by implementing conservation practices to reduce nutrient and sediment runoff. NRCS and its conservation partners would assist private landowners by developing conservation plans that identify natural resource concerns and conservation practices the landowner can implement to reduce nutrient and sediment runoff. Through this project, landowners would receive financial assistance to apply conservation practices near the source of soil erosion and nutrient application with additional conservation practices.

The cost of $6.0 M ($2 M for each watershed) for development and implementation of conservation plans and practices in the watersheds. USDA-NRCS would implement this proposed alternative by helping landowners voluntarily implement conservation practices that identify natural resource concerns and reduce nutrient runoff. Through their experience with the Environmental Quality Incentives Program (EQIP), USDA-NRCS is knowledgeable about activities required for the successful implementation of the proposed conservation practices.

This project will conduct the first detailed sediment, surface water, suspended organic, and sediment pore water assessment of northern Gulf of Mexico estuarine systems to identify the presence, potential sources, and physiochemical mechanisms controlling the behavior and fate of complex mixtures of known or suspected endocrine disrupting chemicals (EDCs) in these systems. EDCs are natural or synthetic compounds which, even at trace exposure levels, can alter early development in vertebrates and invertebrates and cause serious effects later in life or even in successive generations. Known or suspected EDCs include some of the more recalcitrant compounds associated with raw crude oil. EDCs can easily pass through ecological systems and are often persistent; moreover, the consequences of exposure are markedly different from how we usually think of exposure to environmental contaminants. At the levels found in natural systems, EDCs do not destroy cells or attack DNA. Rather, they target a developing organism's chemical messengers (hormones) and the messaging network (endocrine system). Organisms living in estuaries are particularly vulnerable to the effects of EDCs, since estuaries are sinks for contaminants moving from terrestrial to marine ecosystems. Estuaries are among the most productive biomes on earth; nearly 50% of the world's population lives or works in close proximity to estuaries. Consequently, estuaries are under increasing threat from both natural and anthropogenic stressors including EDCs. Little is known about the behavior and fate of potential EDCs entering estuaries. The proposed project will significantly advance our abilities to detect and quantify mixtures of EDCs at trace concentrations in complex estuarine samples and will provide the first quantitative mechanistic evidence linking the behavior of EDC mixtures (transport and partitioning) to their fate (spatiotemporal variation) in estuarine systems.|

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is not required by existing regulations (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
</tr>
<tr>
<td>Project is technically feasible (+/0/-)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
<td>Project supports existing regional or local conservation plans or restoration efforts (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project is considered for strategic frameworks (Y/N/NA)</td>
</tr>
<tr>
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<td>Project complies with applicable laws and regulations (Y/N)</td>
<td>Project is time critical (+/0/-)</td>
<td>Project is not required by existing regulations (Y/N)</td>
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<tr>
<td>Project Name</td>
<td>Lead Project Contact</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
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<tr>
<td>New RV Campground Expansion at Gulf State Park</td>
<td>Rob Grant</td>
<td>Gulf Shores</td>
<td>2500000</td>
<td>This project would construct 100 new RV campsites accommodating travel trailers and motor coaches with longer lengths and multiple slide-out sections, while still giving each site recreational space and privacy. Features would include adequate space for motor vehicles, bicycles, and pedestrians; paved campsite driveways and pads; full service utilities (electricity, water, sewer, cable TV, internet); energy-efficient bath houses; a modest sized recreational/leisure pond and pier; a central gathering place and office building, suitable to rent out for group functions; gazebos and pavilions; attractive non-invasive landscaping; a splash pad; RV dump station and washing area; playground; self-service laundry facility; dog play area. The primary area of interest to develop this project is the existing golf course, as noted in the recent Gulf State Park Master Plan.</td>
</tr>
<tr>
<td>New Pier at Alabama/Florida Point at Gulf State Park</td>
<td>Rob Grant</td>
<td>Orange Beach</td>
<td>4180000</td>
<td>Gulf State Park's existing pier is a very popular park amenity. Like many of our facilities, it becomes extremely crowded during peak season. We propose to build a similar facility at our Alabama/Florida Point Unit which contains about 1/3 of the park's beach frontage, and is presently underutilized. We believe that this will greatly enhance the public's access to coastal waters and their related natural resources, while also better balancing the public's use and impacts on park land. As is the case with our existing pier, we plan to provide ecological and environmental education and information through various media.</td>
</tr>
<tr>
<td>Expansion of Beach Access Areas - Cotton Bayou &amp; Romar Beach - Gulf State Park</td>
<td>Rob Grant</td>
<td>Orange Beach</td>
<td>4180000</td>
<td>As is the case with most all of our facilities at Gulf State Park, at various peak times they reach their maximum capacity and citizens/guests are not able to access our beautiful beach areas. This project would increase vehicle parking capacity and construct energy-efficient bath house facilities.</td>
</tr>
<tr>
<td>Biggs Point Shoreline Restoration &amp; Stabilization - Gulf State Park</td>
<td>Rob Grant</td>
<td>Orange Beach</td>
<td>197500</td>
<td>Restore eroded shoreline on south side of the Biggs Point Access Area and install a living wave barrier to prevent future erosion.</td>
</tr>
<tr>
<td>Loblolly Restoration bordering Splinterhill Bog Preserve</td>
<td>Gary Kolb Sr</td>
<td>Baldwin County</td>
<td>25125</td>
<td>Would like to select or clear cut about 125 Acres on the north border of the Splinterhill Bog Nature Reserve. We need help with site prep and planting. (I know the site is also interested in longleaf restoration. This land has been approved for purchase by Forever Wild, but not sure if it is going to happen anytime soon so we march on. Thanks, Gary Kolb., DO Work 251-937-5652 Home 251-977-3485</td>
</tr>
<tr>
<td>Deepwater Sand Search</td>
<td>Phillip Wierl</td>
<td>Orange Beach</td>
<td>500000</td>
<td>The City of Orange Beach, via our coastal engineering consulting firm, proposes to perform a Phase I deepwater sand search for purposes of attempting to locate a borrow site suitable for future beach project maintenance. The significant distance</td>
</tr>
</tbody>
</table>

Accumulation, egression, and remobilization as a function of dynamic estuarine system conditions (hydrodynamics, water quality parameters, physicochemical conditions of partitioning phases). The results of this project will provide the first detailed, data-driven assessment of the scope of EDC contamination in northern Gulf of Mexico estuarine systems, providing a basis for examining ecological and human risks posed by EDCs in these ecosystems, and inform potential restoration actions to address these risks.
Mobile and Tensaw River Flows: Quantifying Flow into Mobile Bay

The objective of the project is the better quantify surface-water flows in the Mobile and Tensaw Rivers further downstream from existing stream gauges and flow distribution through the delta at stages above bank-full elevation. Currently, the USGS operates an index velocity continuous flow station on the Mobile River at river mile 41 near Bucks, Alabama in cooperation with the Alabama Department of Economic and Community Affairs, Office of Water Resources and Alabama Power. https://waterdata.usgs.gov/al/nwis/uv/?site_no=02470629&Parameter_CD=00065, 30080 Currently, flows are estimated for the Tensaw River just downstream of the split from the Mobile River at about river mile 42, based on a theoretical rating developed by correlating measured flow of the Tensaw with computed flows from the index-velocity station on the Mobile River at Bucks gage. The development and maintenance of the rating is funded in cooperation with the U.S. Army Corps of Engineers, Mobile District. In order to better quantify surface-water flows in the Mobile Delta, USGS proposes to construct an index-velocity streamflow station on the Tensaw River near Perkins Landing at Hurricane, Alabama (approximately river mile 14). A reconnaissance survey will identify a suitable structure to mount the index-velocity sensor (side-looker acoustic Doppler current meter) and gage house. If no suitable structure exists, pilings or other structure will be installed in the channel for mounting and housing the instrumentation. If the Hurricane site is deemed unacceptable, sites upstream or downstream (Cliffs) Landing and at Upper Hall Landing will be considered for the gage location. After the gaging station is installed, numerous discharge measurements using a boat-mounted acoustic Doppler current profiler (ADCP) will be made over a two- to three-year period and wide range of flow conditions and tide cycles to develop ratings needed to compute real-time discharge from measured stage and index velocity. Additional flow measurements will be made on the Mobile River at approximately river mile 14 to develop a theoretical rating to estimate flows at this site based on hard data collected at the Mobile River at Bucks gage at river mile 31 and the new index velocity station on the Tensaw River at river mile 14 at Hurricane. Also, during flooding events, flow measurements will be made on the canal that transverses the delta and the Mobile
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/ Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental friendly alternatives to bulkheads for protecting shorelines: evaluation and implementation of two living shoreline designs</td>
<td>13847</td>
<td>Just, Cebrian</td>
<td>Mobile Bay</td>
<td>200000</td>
<td>Coastal erosion is a serious problem in the Gulf of Mexico and many other coastal areas in the US. The most conventional way to protect shorelines from erosion is the placement of hard walls, such as bulkheads. About 40% of the shoreline in Mobile Bay is armored. However, bulkheads have a number of drawbacks, such as erosion of adjacent bottom, degradation over time and failure to protect the coastline, and removal of habitat for commercially important fishes. These problems have motivated substantial debate on the adoption of more environmentally friendly strategies for coastal protection against erosion (i.e. &quot;Living Shorelines&quot; designs), such as marsh construction. Recognizing this, the US Army Corps of Engineers (USACE) conducted a review of their general permits and created a new category for &quot;Living Shorelines&quot; initiatives. This general permit (ALGP-30 — &quot;Living Shorelines&quot;) was adopted in Alabama in October 2011 and allows for waterfront homeowners and communities, including businesses, to obtain permits for living shorelines as easily as receiving a permit for a hardened shoreline. Our main objective is to implement the USACE Living Shorelines General Permit ALGP-30 for private owners by enhancing the cost-effectiveness of marsh construction practices. To do that we will compare the cost and effectiveness of various marsh construction designs in stabilizing the shoreline in comparison with bulkheads and eroding sediment slopes (&quot;no action&quot; option). We will also quantify additional benefits of the constructed marshes such as enhanced habitat for commercial fish species and filtration of nutrient pollution. Throughout the project we will work with a Project Advisory Panel, composed of various state and federal agencies, to ensure the information generated can be used to implement the general permit ALGP-30 with recommendations of cost-effective marsh construction designs. The results of this project are transferable to other US coastal regions because (1) similar cost-effective marsh designs can be adopted everywhere; and (2) we will develop a framework for collaboration between researchers and federal and state managers as well as for implementation of environmental regulatory policies based on research results, a framework that can also be used in other parts of the country.</td>
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</tbody>
</table>
| Reducing runoff pollution in coastal waters through marsh restoration: a decision support tool for stakeholders | 13849 | Just-Cebrian | coastal AL | 269289 | The main goal of this project is to carry out a cost-effectiveness analysis of how various marsh restoration designs ranging in plant density, platform slope and sediment grain size perform in terms of reducing runoff pollution under current and elevated sea level. With this information we will build a decision support tool to help managers maximize the reduction of runoff nutrient pollution through marsh restoration given their specific time and budget constraints. This project will provide science-based information important to the development of ordinances and regulations sought by coastal wetlands projects and efforts throughout the State of Alabama, encouraging implementation of federal- and state-approved wetlands | Trustee Portal | Y Y Y N N N N Y Y

### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Restoration Types Addressed</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Migratory Birds (Y/N)</td>
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<td></td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
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<td></td>
<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
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<td>Sea Turtles (Y/N)</td>
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<td>Marine Mammals (Y/N)</td>
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<td>Recreational Use (Y/N)</td>
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<td>Habitat on Federal Lands (Y/N)</td>
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<td>Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)</td>
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<td>Coastal and Oceanic Trustee</td>
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<td>Project meets Trustees' goals (+ / 0 / -)</td>
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<td>Project is consistent with programmatic goals (+ / 0 / -)</td>
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<td>Project is consistent with criteria identified in the public trust (Y/N)</td>
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<td>Project is not already required by existing regulations (Y/N)</td>
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### Additional Criteria

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<td>Reducing runoff pollution in coastal waters through marsh restoration: a decision support tool for stakeholders</td>
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### Project Information

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<td>Presence, Potential Sources, Behavior and Fate of Endocrine Disrupting Chemicals in Northern Gulf of Mexico Estuarine Systems</td>
<td>Joel Hayworth</td>
<td>Gulf of Mexico</td>
<td>$200,000</td>
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### Project Description

This project will conduct the first detailed sediment, surface water, suspended organic matter, and sediment pore water assessment of northern Gulf of Mexico estuarine systems to identify the presence, potential sources, and physicochemical mechanisms controlling the behavior and fate of complex mixtures of known or suspected endocrine disrupting chemicals (EDCs) in these systems. EDCs are natural or synthetic compounds which, even at trace exposure levels, can alter early development in vertebrates and invertebrates and cause serious effects later in life or in successive generations. Known or suspected EDCs include many compounds used in or produced during oil and gas exploration/exploration; production of some of the more recalcitrant compounds associated with raw crude oil are known/suspected EDCs. EDCs can easily pass into ecological systems and are often persistent; moreover, the consequences of exposure are markedly different from how we usually think of exposure to environmental contaminants. At the levels found in natural systems, EDCs do not destroy cells or attack DNA. Rather, they target a developing organism’s chemical messengers (hormones) and the messaging network (endocrine system). Organisms living in estuaries are particularly vulnerable to the effects of EDCs, mainly because estuaries are natural sinks for contaminants transitioning from terrestrial to marine ecosystems. Estuaries are among the most productive biomes on earth; nearly 50% of the world’s population lives or works in close proximity to estuaries. Consequently, estuaries are under increasing threat from both natural and anthropogenic stressors (including EDCs). Little is known about the types, behavior, and ultimate fate of the vast number of potential EDCs entering estuaries, although it is known that some EDCs are present in these systems and that some estuaries contain signs of EDC exposure. Few field-based studies have considered EDC behavior and fate in estuaries. Of these, most have considered a limited number of sampling locations, a single sampling event, or both. Moreover, most did not consider mixtures of EDCs likely to be encountered in estuaries, nor were they methods of chemical analysis capable of detecting or quantifying EDCs at trace levels. Also, none considered sediment pore water as a partitioning phase, and none attempted to quantitatively link EDC partitioning behavior to spatiotemporal distributions of multiple EDCs within real estuarine systems. The proposed project will significantly advance our abilities to detect and quantify mixtures of EDCs at trace levels in complex estuarine samples and will provide the first quantitative mechanistic evidence linking the behavior of EDC mixtures (transport and partitioning) to their fate (spatiotemporal)
acaccumulation, erosion, and remobilization as a function of dynamic estuarine system conditions (hydrodynamics, water quality parameters, physicochemical conditions of partitioning phases). The results of this project will provide the first detailed, data-driven assessment of the scope of EDC contamination in northern Gulf of Mexico estuarine systems, provide a basis for examining ecological and human risks posed by EDCs in these ecosystems, and inform potential restoration actions to address these risks.

This project establishes a program to provide science-based assessment and quantification of ecosystem benefits of restoration actions in the Perdido River and Bay watersheds. Although this project focuses on restoration actions in the Perdido River/Bay watersheds, the methodologies developed can be implemented in other northern Gulf of Mexico coastal watersheds. The Perdido River/Bay watersheds cover about 1200 square miles, with portions in both Alabama and Florida. They drain a variety of land use and cover types, including upland forests, wetlands, agricultural areas, and urban development. Water and sediment quality impairment and degradation of biological resources consistent with excess sediment deposition, nutrient imbalances, and other point and non-point source pollution from residential, agricultural, and industrial sources is widespread throughout the area. Evidence of ecological degradation includes imbalances in natural plant/invertebrate populations, benthic and fish communities, and adverse changes in trophic dynamics and the loss of aquatic habitat. This program will substantially reduce uncertainties and increase effectiveness in identification and prioritization of potential restoration actions, quantify ecosystem benefits from current and future restoration actions, and improve decision-making in adaptive management of restoration actions. These goals will be accomplished by (1) characterizing existing environmental/ecological watershed conditions by establishing a science-based, integrated monitoring network for water and sediment quality, physical/physiographic characteristics, and benthic invertebrates, plankton, and fish community structure; (2) creating a dynamic, robust GIS spatiotemporal database of chemical, biochemical, and biological indicators necessary for predicting and quantifying environmental and ecosystem benefits of restoration activities; (3) linking chemical, biochemical, and biological indicators of ecosystem degradation to defined stressor(s) of degradation; and (4) developing and implementing data interpretation and modeling protocols, employing the evolving database for prediction, confirmation, and long-term surveillance of restoration activities. This project will provide a science-based means for those funding, regulating, and implementing restoration actions to prioritize future restoration activities, assess ecosystem benefits of ongoing restoration actions, and predict the outcomes of adaptive management decisions for ongoing restoration actions. This will be a collaborative project between Auburn University’s Environmental Engineering program, the Dauphin Island Sea Lab, Escambia County, Florida, and Baldwin County, Alabama.
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<th>Project Name</th>
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<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<td>Gulf State Park Romar Beach Public Restroom Facility</td>
<td>12874</td>
<td>Phillip West</td>
<td>Gulf State Park</td>
<td>$375000</td>
<td>The City of Orange Beach proposes to construct and maintain a public restroom at the current Gulf State Park Romar Beach Public Beach Access in Orange Beach, Alabama. The public beach access currently has paved parking and a dune walkover, but no sanitary facilities. These beach accesses have always been popular destinations for the day-tripping public, and competition for full-service facilities is increasingly intense. Therefore, it is imperative that beach facilities be improved to maximize their usability and to provide sanitary facilities to the public.</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<td>Bigg Point Boat Launch Public Restroom</td>
<td>12873</td>
<td>Phillip West</td>
<td>Orange Beach</td>
<td>$375000</td>
<td>The City of Orange Beach proposes to construct and maintain a public restroom at the Bigg Point Boat Launch, in Orange Beach, Alabama. The area is in dire need of sanitary facilities accessible by vessel, and the Bigg Point Boat Public Launch is in a convenient location to serve the boating public. This will greatly enhance the boating experience for the lower Perdido basin, as well as have beneficial effects on local water quality.</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<tr>
<td>Water quality dynamics and flux in hydrologically complex systems in Alabama</td>
<td>12870</td>
<td>Ana Maria Garcia</td>
<td>Mobile Bay</td>
<td>$75000</td>
<td>We propose to design and develop a process-oriented study based on a system of 3 to 5 water quality sensors (including nitrate, specific conductance, carbon, temperature and dissolved oxygen) at select gaging stations in the Mobile Bay and for direct discharges to the Gulf of Mexico located in Alabama. Potential project locations would be coincident with stream gage monitoring locations and in what we are terming hydrologically complex regimes. These could be study sites and</td>
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locations along coastal wetlands with significant groundwater and surface water interactions, hypoxia flow and tidal influences. An example is the Mobile River at the causeway and the recently installed monitoring station on O’Dell Creek near Daphne, AL. The transport of nutrients such as nitrogen, phosphorus, and carbon to the Gulf of Mexico is of particular interest because these nutrients affect productivity, which in turn causes hypoxia in Gulf waters. Past investigations have utilized hydrologic data and nutrient concentrations to identify key aspects of temporal and spatial variation in river loads and their links to the magnitude and seasonal variation of hypoxic water in the Gulf. The addition of high-frequency sensors that measure nitrate concentrations, chromophoric dissolved organic carbon, and other constituents have improved the accuracy of these loads and have additionally identified previously unrecognized patterns of variation that may indicate heretofore unknown processes, sources and/or nutrients to the Mississippi and its principal tributaries (Pellerin et al., 2014). The Integrated Watershed Studies (IWS) team of the USGS National Water Quality Assessment Program has successfully developed new approaches for using data collected from high-frequency nutrient sensors in streams and groundwater chemistry data to inform and improve understanding of: (1) the relative roles of groundwater and stormwater on nutrient loads (Miller et al., 2015; Kronholm and Capel, 2015), (2) the magnitude of dissolved nutrient concentration patterns and links to uptake and other biogeochemical processes (Burns et al., 2016), and (3) where nitrate losses through denitrification in groundwater are likely to be greatest (Tesoriero et al., 2015). The development of these and other models can help identify the tidal cycles and distribution of water sources between the river and estuary, turbidity to help interpret nitrogen uptake process. Measurements of chlorophyll-a will be used to estimate changes in algae biomass with hydrodynamic conditions to evaluate nutrient and hypoxia. Measurements can be analyzed for absorption and fluorescence properties of chromophoric dissolved organic matter to characterize the saltwater-freshwater interface.

Coffee Island is owned by the state of Alabama (ACNR). The island serves as a valuable bird nesting habitat and currently supports nesting for several bird species injured by the DWH spill. These species include a breeding colony of wading birds including snowy egrets, little blue herons, cattle egrets and similar colonial nesting wading bird species, as well as beach nesting black skimmers and several tern species. Habitat acreages created by the proposed design include approximately: 5 acres of shrubby wading bird nesting habitat (covering a containment berm approximately 0.880 feet in length), 7.5 acres of shorebird beach nesting area.
The longleaf pine ecosystem once dominated the Gulf’s coastal plain, providing extensive habitat and abundant clean water feeding the Gulf. Restoration of the longleaf pine ecosystem is key to Gulf-wide resiliency and water quality enhancement to the scale and degree needed to revitalize the Gulf of Mexico. The USDA proposes activities which will protect and improve water quantity and quality enhancement to the scale and degree needed to revitalize the Gulf of Mexico. The longleaf pine ecosystem is key to Gulf-wide conservation and resiliency because the injury caused by the DWH oil spill is far reaching and the true ecological scope is simply unknown. As part of a larger long-term conservation plan for longleaf pine, this comprehensive, multi-state ecological restoration proposal encompasses federal lands administered by the Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Department of Defense (DoD), as well as, state-owned and private lands in proximity to Significant Ecological Areas and in proximity to the Coastal Management Zone and buffer. And nesting habitat, and 45 acres of salt marsh to help restore injuries to Wetlands, Coastal, and Nearshore Habitats in Alabama. The project is designed to maximize the longevity of the island based on historic erosion rates and patterns. Wading bird nesting habitat and salt marsh buffer will be created through the dredging and placement of silty and/or sand sediments from a target borrow area, either adjacent to the Bayou la Batre navigation project or from sand resources managed by USACE. Sediments will be contained during construction via a system of sediment berms constructed of in-situ stiff clays and sands. Sediment berms would be capped with shell hash to enhance longevity and provide nesting substrate for beach nesting birds. Habitat will be planted with native salt marsh species (Baccharis sp. and Hva sp.) and marsh grass species (Spartina sp. and Juncus roemerianus) as needed. Additionally, predator control will be conducted to reduce and/or eliminate the presence of raccoons, opossums and/or other mammalian predators on the island in order to maximize services to target bird species. Project success monitoring is proposed for 5 years, and will include parameters such as marsh extent, plant density and species composition and topographic and bathymetric profiles as well as use of created habitat by target bird species (nest density, species composition, etc.). Alabama DOCRR and the USFWS are co-proponents of this project proposal. Direct collaboration among agencies will help streamline project design and implementation and adherence to environmental compliance. Proponents have already discussed the project concept and design with representatives from The Nature Conservancy (TNC), US Army Core of Engineers (USACE) (Mobile District) and the Dauphin Island Sea Lab, who are all in support of the project. Proponents will coordinate during design and implementation with TNC, who worked previously to construct a living shoreline on the east coast of the island. ADOCR continues to work collaboratively with partners to evaluate additional actions in that area. Finally, USACE is looking to dispose of dredge material (sand) in their upriver disposal area. Depending on cost, the project may be able to use that material, partnering with USACE to benefit both parties in an efficient and environmentally sound manner.
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<td>Gulf of Mexico Riparian Forest Buffer Program</td>
<td>12840</td>
<td>Homer Wilkes</td>
<td>Gulf of Mexico</td>
<td>2500000</td>
<td>FISDA funding will be used to create and implement a comprehensive and enduring Forest Buffer Program in and around the Conecuh National Forest. This Program will address policy and funding gaps; while taking advantage of existing federal, State, and partnership resources. It will use existing authorities to target financial and technical assistance, secure easements, and monitor progress. USDA funding will help address policy gaps (i.e., federal limitations regarding adjusted gross income and/or corporate designations); support additional technical assistance for outreach, education, and monitoring; provide additional financial incentives to encourage landowner participation (e.g., when existing programs are inadequate or critical riparian area requires an additional investment); provide matching funds to leverage other funding opportunities, and assist with the administrative costs. Utilizing the proposed Gulf of Mexico Riparian Forest Buffer Program, the USDA will establish, manage, and preserve critical forested riparian buffers adjacent to priority streams, rivers, lakes, and bays and their adjacent saline channels, flood plains, and wetlands. Riparian areas are landscapes with high economic and ecological values. Many acres have been and continue to be converted to agricultural, residential, commercial, industrial, and infrastructure land uses. In their natural forested state, they provide crucial fish and wildlife habitat while helping to control and improve stream stability and flow; reduce sediment and nutrient loads; and cool water temperatures. In fact, in a recent analysis of USDA conservation practices, riparian forest buffers were consistently ranked among the top 5 most effective options for addressing the challenges within the Gulf of Mexico. This proposal recognizes the significant value of forested buffers and designs a program to encourage their proper design, installation, preservation, and management. To help direct funding toward Resto ration priorities, high-level criteria (e.g., nexus to injuries, effectiveness, long-term resilience, geographic priority, linkage to a State’s Comprehensive Plan, and budget) will be established within the Program’s guiding documents. State Foresters will provide state-level leadership and utilize existing partnerships to further refine the Program’s goals and priorities; establish criteria for project funding; identify, design, and install elements to assure success (additional partners, joint training, landowner recognition), coordinate financial and sustainability/long-term benefit of project (+ / 0 / -)</td>
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The Conecuh National Forest located in South Alabama contains headwaters and main-stem sections of the Yellow and Blackwater Rivers. The rivers flow into the Northwest panhandle of Florida to Blackwater Bay, an arm of Pensacola Bay. The Yellow River and Blackwater River provide critical habitat for many aquatic species including segments of U.S. Fish and Wildlife designated critical habitat for the federally threatened Gulf Sturgeon. Spawning areas for the sturgeon have been documented in the Yellow River within the Conecuh National Forest. Projects to restore historical hydrologic conditions which are favorable for Sturgeon species have been affected in developing new management techniques to help restore or preserve the environment. Natural vegetation buffers along streams, rivers and estuaries are one of the most practical and effective management tools available to protect water quality and aquatic habitat. This proposed project seeks to reduce sediment transported to the Yellow River and Blackwater River systems which are unfavorable for sturgeon and enhance recreational and economic opportunities.

USDA proposes the following activities in an effort to restore historical hydrologic conditions and reduce sediment loading: 1. Improve or decommission roads and road crossings currently contributing undesirable sediment to the Yellow and Blackwater River systems. These roads would include both Forest Service and county roads, where many of the issues occur. Work would be done in partnership with County Engineering Departments and NRCS, which has capacity for providing road assessment and design support. There is potential to involve Florida Forest Service on Blackwater River State Forest. 2. Install conservation practices to control erosion on private agricultural and forest land. The USDA will work with private landowners to reduce erosion and improve waters designated as Gulf Sturgeon Critical Habitat. The implemented conservation practices will reduce sediment and attached pesticides, nutrients, and fecal coliform entering the watershed. This project will include structures for sediment and erosion control; livestock stream exclusion; stream restoration — such as replanting hardwoods and expanding buffers; forestland erosion control on forest roads and landings; and cropland erosion control such as sub-basins rotations, cover crops and residue management. 3. Improve and develop recreational river access points to reduce water quality impacts and improve visitor experience and safety. Develop associated visitor information materials. 4. Assess and pursue opportunities to consolidate into public ownership key inholdings along river corridors and headwaters through land exchanges and acquisition.

This project will permanently protect lands identified by the U.S. Fish and Wildlife Service (USFWS) as the highest priority for acquisition and long-term management by the Bon Secour National Wildlife Refuge (NWR). It will add two separate tracts within the approved acquisition boundary, which are currently under agreement for purchase by The Conservation Fund, totaling approximately 488 acres of sensitive coastal lands to the Little Point Clear Unit at this refuge. These lands include significant frontage along St. Andrews Bay, Bon Secour Bay and greater than 200 acres of salt and freshwater wetlands, as well as numerous tidal sloughs, and
An evaluation of the Eastern Mobile Bay Location

Project Name: Project Name

No./Proj ID: 12848

Submitted By: Mobile Bay

Submitted Via: No./Proj ID

Project Description: Project Description

adjacent upland areas. These areas share several property borders with the USFWS, and will immediately be managed for improved coastal habitat. The refuge is home to the endangered Alabama beach mouse, which is associated with the sand dunes and sea oats. Refuge beaches serve as nesting sites for loggerhead, and Kemp's Ridley sea turtles. Habitat types include beaches and sand dunes, scrub forest, fresh and saltwater marshes, fresh water swamps, and uplands. More than 170 species of birds have been identified on the refuge during migratory seasons, with many shorebirds and wetland-dependent species utilizing the habitats present for resting, wintering and nesting needs. The Conservation Fund has secured contracts for purchase of these lands, which would allow the project to proceed immediately pending availability of funds. In referencing the "Deepwater Horizon Bird Impact Data from the DOI-ERDC NRDA Database 12 May 2011," at the following link (http://www.fws.gov/home/dthspoil/pdf/Bird%20Data%20Species%20Spreadsh eet%205122011.pdf), there are numerous bird species impacted through the incident, which occur on the Bon Secour National Wildlife Refuge. Of the 104 bird species specifically identified within the Deepwater Horizon Bird Impact Data list, 90 have been documented to occur on the Bon Secour NWR, or 87%. Of these, 80 species are known, or suspected, to nest on the refuge, or 58% of the impacted species from the Deepwater Horizon spill. The habitats provided under this project would be representative of a cross sample of habitats included within the currently protected land base at the refuge. As a result, this project is expected to support approximately 87% of the impacted bird species from the spill. Importantly, this project benefits from documented public support. Letters of support are included with this submission, as an attached PDF. In addition to the letters of support, Mobile Bay NWF has just finalized the Bon Secour River, Oyster Bay, Skunk Bayou Watershed Management Plan (http://www.mobilebaynwf.com/assets/landing/Final_Bon_Secour_WMP_January_2017.pdf). Under Section 7.1.3, the plan specifically calls for increased habitat protection, and cites five individual land protection projects as the top priority. Of these five projects, the National Fish & Wildlife Foundation has just announced (November 2016) funding for two, and the Little Point Clear project outlined here comprises two of the remaining three projects that have been identified as the top priority within this watershed. The threat to these lands is very real. It should be noted that one of these tracts was approved as a PUD by Baldwin County, on June 30, 2007. This approval (Case 41-07065 MNL LLC) allows for the development of more than 700 residential units on one of the two tracts. The other tract is zoned for commercial use, and therefore could be heavily impacted by development. Such impacts would clearly impact water quality within Mobile Bay and result in the loss of substantial habitat, as well as having negative implications to the already protected lands adjoining these two tracts. This project has also been submitted through the Alabama Coastal Restoration website, as two individual tracts, with identification numbers 67 & 113.

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<tr>
<td>An evaluation of the Eastern Mobile Bay</td>
<td>Mobile Bay</td>
<td>These areas are ecologically, economically, and recreationally important; however, in some areas in the Gulf of Mexico (GOM) such as the Mobile Bay area, it has been...</td>
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Ecological health following Barrier Impacts to the surrogate for hydrological, invertebrate, community threatened relations to of Alabama shoreline potential variables in physical aquatic systems including the Eastern oyster (Crassostrea virginica), a keystone species. Oyster beds have declined in some areas over the last century, piquing interest in the ecological conditions leading to their demise. Because of its relations to estuarine conditions (hydrology and salinity, in particular), the oyster, and the biological assemblages that are associated to oyster beds, have potential for being strong indicators for ecological health of GOM estuaries. The natural biological, chemical, and physical factors in an estuary, as well as those brought on by unnatural human activity, influence the overall system or what scientists often refer to as the ecological condition. The ecological condition in an estuary or any waterbody can be measured and is most often assessed using biological indicators. This project will collect data that will be used to determine biological relations for different assemblages (macroinvertebrates, periphyton, nekton, and phytoplankton) to hydrology (i.e. direction and velocity of water currents), chemical (e.g. nutrient, dissolved oxygen, and salinity concentrations in water, and metal concentrations in sediment), and physical variables (e.g. substrate particle size) in areas where oysters are successful (i.e. Mobile Bay or Port Huron Bay) compared to areas where oysters are less successful (i.e. Bon Secour Bay). Measures (metrics) associated with biological indicators demonstrated as having strong relations to water quality, hydrology, or habitat conditions will be combined to form a biological index for assessing estuarine condition.

**Project Description**

Oyster (Crassostrea virginica) as a biological surrogate for aquatic ecological health of Alabama estuaries: relations to hydrological, chemical, and physical variables

**Project Information**

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<td>Benthic Invertebrate Community Response and Recovery Rates Following Barrier Shoreline Restoration Projects and Potential Impacts to the Habitats of the Threatened Piping Plover and Other Wintering and Migratory Shorebirds</td>
<td>12851</td>
<td>Scott Mize</td>
<td>AL waters</td>
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**Project Description**

As part of the RESTORE efforts, barrier island restoration is important through the entire Gulf of Mexico. The goal of coastal restoration in Alabama is to restore natural habitats and coastal processes, as well as to provide storm surge protection for local infrastructure and preserve commercial and recreational fisheries to the maximum extent practicable given the effects of relative sea level rise, climate change, and human disturbance within the coastal zone. Although coastal restoration efforts are beneficial to fish and wildlife target species within the coastal zone, in the long-term, because habitat is created and/or restored, some coastal restoration efforts cause temporary disturbance to wintering shorebirds of conservation concern and their foraging habitats, especially the threatened piping plover and its designated critical habitat. This study would provide some clarification as to how the benthic community is responding to coastal restoration techniques and features within barrier shoreline habitats. The study would also determine whether a more intense study of benthic prey species is warranted in the future as coastal restoration efforts continue and recovery and management strategies are developed for migratory shorebirds of conservation concern to prevent further listings under the ESA (Endangered Species Act). Future studies may provide information to help design restoration projects that would maximize or enhance shorebird habitats, including prey resource availability, while at the same time accounting for climate change effects. The purpose of the proposed work is to assess benthic invertebrate food resources for wintering shorebirds and the piping plover prior to and after restoration projects and the potential disturbance to these habitats. The specific objectives are to characterize benthic invertebrate...
### Project Name: Gulf State Park Pier renovations

**Lead Principal Investigator:** Phillip West  
**Submitted On:** 2009-01-01  
**Location:** Gulf State Park  

**Project Description:**

Community composition and diversity (gray beard) within the intertidal zone both pre and post restoration in order to quantify differences in communities between sampling periods and determine prey base recovery rates. The proposed project will assess what is available (diversity and composition), but future efforts using isotopes could help distinguish important food resources utilized by the birds. Sampling would occur during the fall migration, winter, and spring migration periods in order to determine benthic prey availability to piping plovers and other migratory and wintering shorebirds of conservation concern.

### Environmental Restoration of Cotton Bayou and Adjacent Canals: Planning Assistance

**Lead Principal Investigator:** Phillip West  
**Submitted On:** 2009-01-01  
**Location:** Orange Beach  

**Project Description:**

The City of Orange Beach, Alabama, has identified a restoration project that will serve to remedy harm and reduce the risk of future harm to Gulf Coast natural resources that were impacted by the DWH oil spill. Cotton Bayou and its associated two canals are located in the heart of Orange Beach and are connected to the Gulf of Mexico by Perdido Pass. The canals and other shallow waters of Cotton Bayou historically served as nursery habitat for aquatic and avian wildlife. Over the years of development and redevelopment the natural canal shoreline has been replaced with seaweeds, and the bayou and canals have accumulated sediments that limit tidal circulation, contribute to long term degradation in ambient water quality, reduce dissolved oxygen concentrations and support harmful algal blooms. The City’s proposed project has the goals of preserving and increasing native habitat for aquatic and avian wildlife, enhancing circulation patterns in the bayou and canals, restoring water quality and serving as a model for similarly impacted communities along the Gulf Coast. The project approach is designed to leverage public funds to implement this restoration project and re-establish resources that will serve to restore impacted species from the Macondo oil spill such as shrimp, crab, oysters, sea grasses, wading birds and shorebirds. The project approach was developed with a long term vision composed of three phases utilizing the best available science to ensure maximum success. Phase I is a proof of concept. During this phase we will gather information, define the problems, identify potential solutions, and determine the feasibility of implementation. This first step will serve to bring the stakeholders together with the City and define the intended goals for the project(s). Phase II will develop the design and environmental permitting for the selected project(s), establish costs and prepare construction Bid Documents. Phase III will facilitate construction of the project(s). Phase IV will be the on-going operation and maintenance of the constructed facilities and monitoring of the results. Phase I, II and III will each develop documents as deliverables that support the next funding
Marine Debris and Shoreline Enhancement Program

Gateway Project

Marine Debris

And Shoreline

Enhancement

Recovery and Design Phase

Planning and Interpretive (Phase I)

Program Center:

ID

Submitted

Yael Girard

Primary

Weeks B

coastal AL

Orange

3000000

275000

350000

Cost

Point/Big the eastern side of the mouth of Weeks Bay, across the opening from Pelican property sits at the point where Weeks Bay and Mobile Bay meet. It encompasses

This project relates to the 175

of this project, we propose to complete the feasibility study, planning and sustaining, with funds becoming available from private donations and endowments, but it is doubtful these would ever cover the full cost of operation, etc.

Over 7,000 birds were impacted by the Deepwater Horizon Oil Spill, and while rescue efforts were unprecedented during the oil spill response, these worthwhile efforts have effectively been disbanded for the south Alabama region. There is a great need for a permanent, full-time wildlife rescue and rehabilitation program for the South Baldwin (Orange Beach, Gulf Shores, Gulf State Park, Foley and Fort Morgan) region. Due to our location along the northern Gulf of Mexico coastline, we

Several of the priorities of the facility and program will be: • Provide staff and personnel to respond to wildlife emergencies • Promote conservation and educational groups. The project would offer meaningful response for wildlife rescue and rehabilitation, provide significant opportunities for conservation education, and yet offer a worthwhile and unique experience for the regional visitor (i.e., ecotourist). Moreover, the project will prevent negative perceptions for those visitors and residents that encounter sick or injured wildlife, with little or no apparent effort made by any agency to offer assistance or care for the bird or animal. Several of the priorities of the facility and program will be: • Provide staff and personnel to respond to wildlife emergencies • Promote conservation and natural resource education and technical assistance • Reduce human/wildlife conflicts • Coordinate with and work closely with State and Federal resource management agencies in the interest of wildlife conservation and education; There will be no land cost associated with this project, as the facility will either be located on city-owned property. Over time, we believe the project will become largely self-sustaining, with funds becoming available from private donations and endowments but it is doubtful these would ever cover the full cost of operation, etc. For Phase I of this project, we propose to complete the feasibility study, planning and preliminary design of the facilities and overall program.

Trustee Portal

Project Name

Project ID

Submitted By/Primary Lead

Location

Cost

Project Description

request from the Restoration Council, NOAA, etc. In this way each installement of funds can be measured against the veracity of the documentation to ensure a cost effective approach is being employed at each stage of investment and to ensure maximum benefits are realized.

The City of Orange Beach has initiated a pilot program for regular trash and marine debris clean up by force account labor and equipment along the city’s shorelines and adjacent water bodies. Year One of this program proved to have a significant, positive impact on the amount of debris/trash collected during the annual “Coastal Cleanup”, and trash types, volumes and pounds were recorded during this trial program. In this program, the city proposes to better staff and equip the program for a three year period, and provide a comprehensive report and list of recommendations for other communities for this type of program.

Weeks Bay East Gateway Project

Yael Girard Weeks Bay

3000000

This project relates to the 1.75-acre "Weeks Bay East Gateway" tract. This unique property sits at the point where Weeks Bay and Middle Bay meet. It encompasses the eastern side of the mouth of Weeks Bay, across the opening from Pelican Point/Big Mouth. The property has a combined 1.5 miles of frontage on Weeks Bay.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Priority</th>
<th>Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reef Innovations Reef Ball regional Production Sites</td>
<td>11965</td>
<td>Larry Beggs</td>
<td>Gulf of Mexico</td>
<td>$340,000</td>
<td>Restoration Act’s has created a wide area multi-county combination of projects that are restoring coastal habitat, creating oyster or restoring oyster, creating new snorkeling reefs, improving coastal living shoreline and adding deep water habitats along the coast of the Gulf of Mexico. Many projects have been proposed to deploy artificial reef modules with various objectives, rather than each community, county or non-profit organization having to work out a purchasing agreement this project would provide local jobs building the Reef Ball modules for deployment. The Reef Ball Regional Production Site is designed, to create local jobs, and reduce the overall cost of production and delivery of reef modules thus becoming more cost efficient. Rather than numerous projects having to handle the purchases of product, they would be allotted a portion of the production from the RPS. If production exceeds the immediate demand, product would be stockpiled for distribution over the next...</td>
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## Channel Marker
### Trustee

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Channel Marker Reef Ball Micro-Habitats</strong></td>
<td>11987 Larry Begg Gulf of Mexico 613500 States, Counties and municipalities have channel markers they are responsible for maintaining under their USCG channel marker permit. Deployment of a Reef Ball® on each channel marker would provide increased micro habitat for finfish and invertebrate recruitment throughout the Gulf of Mexico. Production of Reef Balls is provided by Reef Innovations in Sarasota, FL or the regional production sites (RPS) proposed for the area. This project can be run through the Reef Ball Foundation which is a 501(c)3 publicly supported nonprofit and international environmental NGO working to rehabilitate marine reefs. This has proven beneficial where nonprofit organization involvement is desirable. The Reef Ball Foundation's mission</td>
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<td>Project Information</td>
<td>Restoration Types Addressed</td>
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<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
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<td>Changes in Reptiles and Birds (Y/N)</td>
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Dock and Sea Reef Ball® Habitat

- **Project Name**: Dock and Sea Reef Ball® Habitat
- **Project ID**: 11973
- **Lead**: Larry Beggs
- **Location**: Gulf of Mexico
- **Cost**: $1000000

Dock and Sea Reef Ball® Habitat has historically been viewed as an important protective response to the Gulf of Mexico. This project has been submitted for funds to set up Reef Ball Production Sites in the Panhandle and Big Bend regions in Florida as well as proposals for sites in Texas and Mississippi. This would reduce the cost of delivering modules to the various projects in the region and reduce the cost per microhabitat unit. For this project, a crew of 3 workers could work their way across the state or region installing the micro habitats over a period of 3 to 10 years, or the units and deployment training could be supplied to the individual county for implementation. Reef Innovations would provide the product and quality control of the project. Local port authorities could provide the labor with a crew normally installing markers. Reef Innovations could provide a foreman to work with locally hired crews. Reef Modules used depend upon the water depth, pile diameter and reef depth desired. As you move toward deeper water it is suggested to increase the size Reef Ball. Monitoring during the initial survey, objectives will be established for the microhabitat including expected species recruitment. Initial survey Reef Innovations Government Organization (POA) Permitting. Follow-up survey Reef Innovations has the right to make a full survey yearly, or an approved researcher appointed by Reef Innovations. Government Organization will provide survey reports to Reef Innovations on a yearly basis. Government organization will provide a 10 year survey report, and summary of project. A database of locations and observations will be established for monitoring of the project results. Presentations will be prepared for all conferences at the 5 and 10 year point. There are three protocols for placing the units: 1. Unit incorporation during marker replacement as part of the regular maintenance. 2. Lowering the Reef Ball over an existing channel marker piling 3. Placing a two piece unit around the piling of an existing marker. Environmental Benefits Reef Balls have a proven track record of increasing species diversity and abundance of fish, invertebrates, and aquatic plants when compared to surrounding natural areas. The general characteristics of seaways is a high energy zone where water continually scours the bottom restricting natural community formation, while docks have been shown to dramatically reduce the available sunlight and increase sedimentation. These types of environments are not conducive to increasing natural community structures. The addition of Reef Ball® habitat to approved docks, piers, and seaways not only provide physical protection in the event of seasonal storms but can increase the recruitment and survivability of juvenile fish species and invertebrate populations. These structures have also been...
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding the use of Fish Aggregating Devices to enhance the productivity of tunas and protected species</td>
<td>Amanda Nickson</td>
<td>Gulf of Mexico</td>
<td>400000</td>
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</tbody>
</table>

The Gulf of Mexico and Atlantic Ocean provide habitat for protected species such as sharks and the commercially and ecologically important species of bigeye and yellowfin tuna. Fish aggregating devices (FADs) are man-made floating objects consisting of a raft, synthetic netting, and plastic buoy that are deployed on the ocean to aggregate skipjack tuna for purse seine fishing vessels. FADs can be used in unlimited numbers, driving unsustainable fishing of juvenile bigeye and yellowfin tunas and contributing to fishing mortality on sharks. These species are caught accidentally when purse seine nets are set around FADs. Because most FADs are not recovered by fishing vessels, they contribute to ghost fishing and can entangle sea turtles and marine mammals before sinking in the ocean or washing ashore, adding to marine debris. FADs deployed by vessels in the Atlantic have been found washed ashore in areas that host the commercially and ecologically important species of bigeye and yellowfin tuna, and their fate (recovered, beached, and/or lost) has been correlated to increased species diversity and abundance worldwide and could constitute a significant step in the conversion of sterile manmade structures into a more natural living shoreline. Addition of these habitats could help mitigate shore loss development that would normally not be directly used by native fish and invertebrates. Starting with Phase I, Reef Innovations would provide a crew to survey public docks and piers determine suitability for the individual areas for enhancement. The criteria for suitability will be developed in conjunction with the regulatory agency ensuring compliance with local, state and federal guidelines. Reef Innovations will develop a site plan for each deployment based on the site criteria and deploy the units to maximize structural protection and species recruitment. The addition of the Reef Ball habitat units will immediately reduce water flows through these areas and provide a settlement areas for the fish and invertebrate community. The extent and makeup of the community will depend on the area.

Phase 2, expands this program to private property owners following the criteria used for public docks and seawalls. These homeowners would finance their own projects thus saving the government money and giving the homeowners vested interest in marine conservation and restoration. Science has shown a need for increased restoration efforts in estuarine habitats. Shareholder involvement is a vital component to establishing a living shoreline and helps to create sustainability along our coastline through habitat restoration. Reef Innovations and/or their approved contractors can handle all parts of Phase I and Phase II activities. Funding requests grant will be based on size of project, distance of travel, cost of modules, used, and transportation of modules to the deployment site. Additional Information, pictures and Pricing on within attached file updated Jan 2017. The project could be divided into smaller areas or combined as a larger area wide project, in the packet it identifies a 52 year progression for the project.

### Additional Criteria

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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</thead>
<tbody>
<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project prevents future and existing oil pollution (Y/N)</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
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<tr>
<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Project prevents future and existing oil pollution (Y/N)</td>
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<td>Project is not already required by other regulations (Y/N)</td>
<td>Project benefits more than one natural resource and/or service (+ / 0 / -)</td>
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<td>Birds (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
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<td>Project is not already fully funded (Y/N)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
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<td>Recreational Use (Y/N)</td>
<td>Project is consistently with criteria identified in the public notice (Y/N)</td>
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<td>Project improves existing and establishes new natural resource and/or service (+ / 0 / -)</td>
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Trustee Portal: N N N N N N Y
The Perdido River Watershed Area is approximately 920 mi² with 679.5 mi² of water, which would also be the only public boat ramp into Perdido Bay. It would have a wildlife education facility and canoekayak rental center. The Perdido Bay Boat Ramp in Heron Bayou would enhance recreational opportunities for paddlecraft, boating, snorkeling, and fishing lost during the oil spill. This project will include enhancements for the Wilson Robertson Boat Ramp. The Perdido River Paddle Trail is a collaborative effort to turn Perdido River into an exciting recreational waterway:

- Paddle Trail
- Perdido River & Perdido Bay
- Project Name
- 12799
- Proj ID
- By/Kirschenfeld
- Lead
- Chips
- Primary
- Project Description

- Escambia County
- River riparian zone is privately owned, so Alabama partners have worked to create institutional arrangements to enable the system to benefit science and management. (A brief description of the proof of concept to create a FAD tracking and data gathering system in the Pacific can be viewed at http://www.pewtrusts.org/en/research-and-analysis/factsheets/2014/09/electronic-tracking-of-fish-aggregating-devices)

- Perdido River and Perdido Bay Paddle Trail & Boating Improvements
- 12799
- Origin
- Kirschenfeld
- Location
- Perdido River and Bay
- Cost
- 6000000

- Trustees
- N
- N
- N
- N
- N
- N
- N
- N

- Project Name: Perdido River and Perdido Bay Paddle Trail & Boating Improvements
- Submitted By: Kirschenfeld
- Location: Perdido River and Bay
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<tr>
<td>Little Lagoon</td>
<td>Multiple Site</td>
<td>Living Shoreline Restoration</td>
<td>12632</td>
<td>Dennis Haffield</td>
<td>BSNWR</td>
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<tr>
<td>Rostoring one of the most important Sooty Tern colonies of the Caribbean</td>
<td>12709</td>
<td>Yolanda Leon</td>
<td>Dom. Rep.</td>
<td>3500000</td>
<td>Alto Velo is a small (1.5 km²) island off southern Hispaniola within Jaragua National Park of the Dominican Republic, hosting one of the largest nesting colonies of Sooty Terns (Onychoprion fuscatus) in the region (estimated at 25% of the total population of the West Indies; Lee &amp; Mackin 2011). Although there are no recent estimates, this colony is of great decline: from an estimate of 600,000 eggs in 1952 to just 25,000 birds in 1978 (Othenwander 1979). This is largely attributed to predation of eggs and chicks by feral cats and rats found on the island since the 1960s and also human harvesting of eggs by visiting fishers (given their local delicacy status). In 2013, we conducted 115 interviews to fishers in 4 mainland coastal communities from the Dominican Republic and Haiti nearest to Alto Velo. Despite its distance from the mainland (up to 10 hours travel by some fishers), most interviewees (79%) had visited or camped on the island, and often said to have harvested tern eggs while being there. Fishers also confirmed the ongoing predation by rats and cats and a great reduction in colony size. We propose to eradicate cats harvested tern eggs while being there. Fishers also confirmed the ongoing predation by rats and cats and a great reduction in colony size. We propose to eradicate cats and rats from Alto Velo island following an operational plan already developed by rats and cats and a great reduction in colony size. We propose to eradicate cats and rats from Alto Velo island following an operational plan already developed.</td>
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<tbody>
<tr>
<td>Restoration of globally important seabird colonies on Alto Velo island, Dominican Republic</td>
<td>Project prevents future and collateral injury to natural resources and services (+ / 0 / -)</td>
</tr>
</tbody>
</table>

### Additional Criteria

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration of globally important seabird colonies on Alto Velo island, Dominican Republic</td>
<td>Project is supported by criteria identified in the public notice (Y/N)</td>
</tr>
<tr>
<td>Project Name</td>
<td>Little Lagoon</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>Stephen Kichler</td>
</tr>
</tbody>
</table>
The project is intended to prevent large spread of spill oil before an offshore accident. In the project, the equipment has been designed that all together make a system protecting, actually, it limits the spill oil to spread over large surface area around an accident place. We have started from point of view that offshore accidents are always possible to occur. More or less we are witnesses after an accident occurs that impacts to environments are inevitable and restoration projects cost very much and take long time. Here we have designed and composed a system that do limit on oil spread, then make it possible to pick up all oil.

There will not be so much impact as it was. If the rig were surrounded by sufficient long booms of this system there would be oil spread. The description of the system is available from beginning of the accident by sufficient long booms of this system there would be oil spread. The design of the Lagoon Pass is insufficient. I would like to see this money used to extend the jetties beyond the beach so the Lagoon will maintain itself and stop wasting tax payer dollars.

I think that the health of this waterway is far more important than weather or not someone has a little more or less sand in front of their house. Please consider using these funds to correct this problem and keep the state from wasting tax payer dollars.
Trustee
Portal

174

N

Project offers opportunities for external funding &
collaboration (+ / 0 / - )

Project is time critical (+ / 0 / - )

Sustainability/Long-term Benefit of project (+ / 0 / - )

Project readiness (+ / 0 / - )

Project is technically feasible (+ / 0 / - )

Project is not already fully funded (Y/N)

Project supports existing regional or local conservation plan
or restoration effort (Y/N)

Project complies with applicable laws and regulations (Y/N)

Project is not already required by existing regulations (Y/N)

Additional Criteria
The effect of the project alternative on public health and
safety (+ / 0 / - )

Project benefits more than one natural resource and/or
service (+ / 0 / - )

Project has reasonable probability of success (+ / 0 / - )

Project prevents future and collateral injury to natural
resources and services (+ / 0 / - )

Oil Pollution Act
(OPA) Criteria
(15 CFR 990.54)

Public
Notice

Project meets Trustees' goals (+ / 0 / - )

Project delivers benefits cost-effectively (+ / 0 / - )

N N Y N

Project is consistent with criteria identified in the public
notice (Y/N)

N

Project is considerate of strategic frameworks (Y/N/NA)

N

Project is consistent with programmatic restoration goals
(Y/N)

N

Monitoring, Adaptive Management, and Administrative
Oversight to Support Restoration Implementation (Y/N)

N

Sea Turtles (Y / N)
Recreational Use (Y/N)
Habitat on Federal Lands (Y/N)

Birds (Y / N)

Project Description

you, or some other institution show an interest for it. System description Part one 1
Bordering devices, the booms (Very special design) 2 Anchor 3 Buoy and inflation
device 4 Floating Pump 5 Hoses 6 Wet oil processing (separate oil and water) 7
Hunter Boat 8 Oil Boat 9 Spilit Oil Part two 1. Strategy and realization 2. Information
about an accident 3. Monitoring and getting start 4. Crew Part three 1. Scope of
supply 2. Know-How The system is very interesting for use in many other
purposes: clearing of harbors, wet oil processing ... Due to the System is subject of a
patent protection procedure we do not give any more written details in this
suggestion. But we are very ready to do in live our fully presentation on request.
You are kindly asked to give us an opportunity to do the presentation. We are
confident that after such one presentation we'll do a deal. We are looking forward
for your response, Sincerelly yours Marko Kljaic Please open the following link!
https://www.dropbox.com/s/glveqksvlnpbmec/SOPS%20%201115%20r1%202.pdf?dl=0
13608750 The Gulf Coast Marine Life Center a Florida 501(c)(3) company, in collaboration with
experts from the University of Florida, the University of Miami, Louisiana State
University, Texas A&M, the University of Maryland, the University of North Carolina
Wilmington, and the University of New Hampshirethe city of Gulf Shores, AL. is
dedicated to restoring the economic and environmental health of the Gulf Coast in
the wake of the Deepwater Horizon Oil Spillaims to develop a world-class
educational center and aquarium focused on native Gulf marine species. Adults and
children of all ages will have the opportunity to tour a 15,000 sqft. aquarium
displaying the various ecosystems of the Gulf coast. The Center will also provide
Gulf Shore's tourists with a very unique experience while exploring the importance
of marine resources, the seafood industry, and the Gulf. The GCMLC in Gulf Shores
will host several field trips throughout the year exposing children to the importance
of our marine resources, wet lab exercises and encourage environmental
stewardship. Aquaculture and fisheries seminars/workshops will be held in
conjunction with the Alabama DNR’s Claude Peteet Mariculture Center. The center
will also focus its efforts towards public outreach in an effort to raise awareness and
responsible stewardship towards the Gulf’s marine environment and resources. A
suitable site location for the facility has been determined and is under negotiation.
Design plans and layouts for the center are in progress. This project will bring many
ecological and economic benefits to both the state of Alabama and the Gulf region
as a whole, as well as numerous educational opportunities for students of all
ages.This project is bringing together some of the best minds the U.S. has to offer in
the fields of hatchery technology, sustainable aquaculture, fisheries science, and
habitat restoration to bolster the Gulf Coast ecosystem’s ability to provide viable
ecological services for decades to come. Bo th the economies of the region, and the
nation as a whole, depend greatly on a healthy and productive Gulf of Mexico. The
region’s multi-billion dollar tourism industry is largely driven by access to beautiful
Gulf beaches and world-class sport fishing. Much of our nation’s shipping and oil
production infrastructure is located in the Gulf. This infrastructure depends on
healthy coastlines that have the resilience to withstand hurricanes and flooding.
Approximately 40% of domestic seafood production comes from Gulf waters, thus

Oyster Reef (Y / N)

Gulf Sores

Cost

Wetland, Coastal, and Nearshore Habitat (Y / N)

12497 Patrick Barcus

Location

Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)

Gulf Coast
Marine Life
Center in Gulf
Shores, AL.

Submitted
By/ Primary
Lead

Marine Mammals (Y/N)

Project Name

Proj
No./
ID

Restoration Types Addressed

Submitted via

Project Information

Programmatic
Damage Assessment
and Restoration Plan
(PDARP) Criteria


### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Coastal Wildlife Rescue and Research Center Project *construct and maintain the first waterfowl and sea/shore birds implementing the Coastal natural history/ habitat</td>
<td>12462</td>
<td>Joseph Ferguson</td>
<td>Gulf of Mexico</td>
<td>Fishermen catch tar ball in there nets , they rake this tar balls back into water . Instead of them doing so , we provide them with a kind of storage container to put the tar balls in . To give them an incentive to do this pay them by the pound or container . This how we feel some of oil can be removed from gulf .</td>
<td>Trustee Portal</td>
</tr>
<tr>
<td>A Coastal Wildlife Rescue and Research Center Project *implementing the Coastal natural history/ habitat</td>
<td>12461</td>
<td>Janet De La O</td>
<td>Oliva-Ripp</td>
<td>coastal AL</td>
<td>1500000</td>
</tr>
</tbody>
</table>
### Project Description

The project will augment resources available to the Marine Mammal Health and Stranding Response Program (MMHSRP) network members in the Gulf, helping them respond to and learn from future marine mammal strandings and thus increase the survival of rescued animals and the recovery of populations impacted by the Deepwater Horizon (DWH) oil spill. Added benefits from this project are the ability to augment the resources and response capability across networks that serve other impacted marine wildlife species, such as sea turtles and sea birds. Link to Injury: Marine mammals (whales, dolphins, and manatees) inhabit the northern Gulf and likely were exposed to petroleum hydrocarbons and impacted by cleanup activities resulting from the DWH oil spill. Aerial surveys conducted under the Natural Resource Damage Assessment observed 6 species of whales or dolphins swimming in surface oil in offshore waters. Two dolphins were rescued after being trapped behind oil booms in Alabama during the spill event. Live dolphin health assessments conducted in Barataria Bay in 2011 showed that animals in this highly impacted region were exhibiting signs of severely compromised immune systems — symptoms consistent with those seen in other mammals exposed to oil. Approximately 930 marine mammal strandings (almost entirely bottlenose dolphins) have been reported as of 7 April 2013 as part of an ongoing Unusual Mortality Event that began in February 2010 in the northern Gulf. Strandings in 2010-2012 far exceeded the historical average (Figure 1). The majority of the strandings occurred in Louisiana, followed by Mississippi, Alabama, and the Florida panhandle (Figure 2). Scientists are still investigating the cause of the strandings. The potential for long-term impacts exists for marine mammals that were exposed to contaminants, but may take many years to be realised. Benefit and Rationale: The collection of biological information from stranded marine mammals is critical to understanding more clearly the long-term impacts of the DWH oil spill and to ensuring the recovery of affected populations. Prior to the spill, stranding response efforts were patchy and inconsistent in many portions of the region, especially Louisiana and Alabama. Response capabilities increased in certain areas during the spill with funding from the Natural Resource Damage Assessment; however, long-term funding is needed across the Gulf because it is not known where or when delayed strandings related to the DWH spill may arise in the future. Institutional funding is variable but generally inadequate to provide the level of response needed for ongoing injury assessment. Limited global expertise in marine mammal veterinary care and disease underscores the need to recruit and retain properly trained specialists in the impacted region. MMHSRP network members are often the first and only responders to marine mammal strandings in the Gulf region. Rapid response to live- and dead-stranded animals is key to collecting the high quality samples necessary to determine cause of death and to monitor the health status of wild populations. The availability of trained and qualified stranding responders, technicians, and veterinarians is essential in

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Chris Robbins</th>
<th>Gulf of Mexico</th>
<th>93000000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project ID</td>
<td>Submitted By Lead</td>
<td>Location</td>
<td>Cost</td>
</tr>
<tr>
<td>11966</td>
<td>Proposed Restoration Project: The project will augment resources available to the Marine Mammal Health and Stranding Response Program (MMHSRP) network members in the Gulf, helping them respond to and learn from future marine mammal strandings and thus increase the survival of rescued animals and the recovery of populations impacted by the Deepwater Horizon (DWH) oil spill. Added benefits from this project are the ability to augment the resources and response capability across networks that serve other impacted marine wildlife species, such as sea turtles and sea birds. Link to Injury: Marine mammals (whales, dolphins, and manatees) inhabit the northern Gulf and likely were exposed to petroleum hydrocarbons and impacted by cleanup activities resulting from the DWH oil spill. Aerial surveys conducted under the Natural Resource Damage Assessment observed 6 species of whales or dolphins swimming in surface oil in offshore waters. Two dolphins were rescued after being trapped behind oil booms in Alabama during the spill event. Live dolphin health assessments conducted in Barataria Bay in 2011 showed that animals in this highly impacted region were exhibiting signs of severely compromised immune systems — symptoms consistent with those seen in other mammals exposed to oil. Approximately 930 marine mammal strandings (almost entirely bottlenose dolphins) have been reported as of 7 April 2013 as part of an ongoing Unusual Mortality Event that began in February 2010 in the northern Gulf. Strandings in 2010-2012 far exceeded the historical average (Figure 1). The majority of the strandings occurred in Louisiana, followed by Mississippi, Alabama, and the Florida panhandle (Figure 2). Scientists are still investigating the cause of the strandings. The potential for long-term impacts exists for marine mammals that were exposed to contaminants, but may take many years to be realised. Benefit and Rationale: The collection of biological information from stranded marine mammals is critical to understanding more clearly the long-term impacts of the DWH oil spill and to ensuring the recovery of affected populations. Prior to the spill, stranding response efforts were patchy and inconsistent in many portions of the region, especially Louisiana and Alabama. Response capabilities increased in certain areas during the spill with funding from the Natural Resource Damage Assessment; however, long-term funding is needed across the Gulf because it is not known where or when delayed strandings related to the DWH spill may arise in the future. Institutional funding is variable but generally inadequate to provide the level of response needed for ongoing injury assessment. Limited global expertise in marine mammal veterinary care and disease underscores the need to recruit and retain properly trained specialists in the impacted region. MMHSRP network members are often the first and only responders to marine mammal strandings in the Gulf region. Rapid response to live- and dead-stranded animals is key to collecting the high quality samples necessary to determine cause of death and to monitor the health status of wild populations. The availability of trained and qualified stranding responders, technicians, and veterinarians is essential in...</td>
<td></td>
<td></td>
</tr>
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</table>
Providing effective medical and forensic responses. The unusually high number of sick and dead marine mammals recovered in the northern Gulf since the DWH oil spill underscores the importance of network members in responding to, rescuing, and rehabilitating stranded marine mammals. Often, MMHSRP network members participate also in response efforts for other injured or dead marine wildlife, including sea turtles and seabirds. Although none of the marine mammals rescued during the DWH event could be released back into the wild, other live-stranded marine animals (e.g., seabirds and sea turtles) were rescued and rehabilitated by network members and typically were released. There is an ongoing need to treat and successfully release stranded dolphins, whales, and manatees back to the Gulf. Released animals are then able to reproduce and contribute to the recovery of the wild population. Follow-up monitoring of released animals via tagging and sightings will provide data on the success of rehabilitation efforts and assist in adaptive management of rehabilitation and release techniques. Marine mammals, among other species, are the ocean’s “canaries in the coal mine,” and MMHSRP network members, through biological sampling and post-mortem examinations, collect high-value information on the condition of animals that can help scientists not only understand the cause of illness or death, but also detect subtle or significant changes in ecosystem condition and function. Stranding response complements on-water observational studies of free-swimming wild animals, which provide a means to measure population status, birth, juvenile survival, visual health indicators, and incidences of injury or harassment by human activities (e.g., vessel strikes and fisheries interactions). Description: This project would maximize the survival and recovery of marine mammals affected by the DWH oil spill by increasing the capacity of Gulf marine mammal health and stranding response program network members, with emphasis on areas affected by the spill; to 1) respond to reports or sightings of live- and dead-stranded marine animals, 2) support facilities and personnel involved in rehabilitation and release of stranded marine mammals, 3) conduct timely and thorough examinations of live- and dead-stranded animals, and 4) collect, analyze, maintain, and disseminate consistent and high-quality information from stranded animals and stranding events. Specifically, this project would increase capacity within the existing MMHSRP network across the Gulf, particularly in the areas more heavily affected by the spill, over a 10-year period. The project emphasizes investments in the following operational areas: 1) salary support for stranding coordinators, veterinarians, and technicians to respond to strandings, conduct examinations, and collect and organize samples and data; 2) equipment, supplies, and contracted services needed to locate and respond to strandings, conduct examinations, and collect and store biological samples; 3) laboratory analyses of biological samples; 4) operation and maintenance of recovery and rehabilitation facilities; and 5) training of stranding responders. Adequate resources for existing Gulf MMHSRP network members would ensure that information collected from stranded marine mammals is consistent throughout the Gulf and with other U.S. regions. This vital work is integrated with other health assessment studies and contributes to a better understanding of the impacts of the DWH oil spill on Gulf marine mammals to inform marine mammal recovery.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Project Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluefin Tuna</td>
<td>James Chambers</td>
<td>Gulf of Mexico</td>
<td>$45 million over 10 years</td>
</tr>
</tbody>
</table>

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- Consistent with programmatic criteria (Y/N)
- Consistent with public notice (Y/N)
- Consistent with criteria identified in the public notice (Y/N)
- Prevents future and collateral injury to natural resources and service (+ / 0 / -)
- Benefits more than one natural resource and/or service (+ / 0 / -)
- Complies with applicable laws and regulations (Y/N)
- Fully funded (Y/N)
- Technically feasible (+ / 0 / -)
- Time critical (+ / 0 / -)
- Collaborative (+ / 0 / -)
- Grounded in science (+ / 0 / -)
- Cost-effectively (+ / 0 / -)
- Grounded in science (+ / 0 / -)
- Cost-effectively (+ / 0 / -)

**Oil Pollution Act (OPA) Criteria (15 CFR 990.54)**

- Grounded in science (+ / 0 / -)
- Cost-effectively (+ / 0 / -)
- The effect of the project is not already required by existing regulations (Y/N)
- The project is not already required by other regulations (Y/N)
- The project is not already required by existing regulations (Y/N)
- The project is not already required by other regulations (Y/N)
- The project benefits more than one natural resource and/or service (+ / 0 / -)
- Prevents future and collateral injury to natural resources and service (+ / 0 / -)
- Benefits more than one natural resource and/or service (+ / 0 / -)
- Complies with applicable laws and regulations (Y/N)
- Fully funded (Y/N)
- Technically feasible (+ / 0 / -)
- Time critical (+ / 0 / -)
- Collaborative (+ / 0 / -)
- Grounded in science (+ / 0 / -)
- Cost-effectively (+ / 0 / -)

**Additional Criteria**

- Restoration Types Addressed
  - Sea Turtles (Y / N)
  - Oyster Reef (Y / N)
  - Recreational Use (Y/N)
  - Monitoring, Adaptive Management, and Administrative Costs

Strategies going forward: Enhancing capacity and long-term consistency of the MMSHP network in the Gulf region will also augment response efforts that focus on other impacted species of wildlife. Location of Project: The project would increase capacity for MMSHP network members throughout the Gulf, emphasizing investments in areas most heavily affected by the spill (Louisiana, Mississippi, Alabama, and the western edge of the Florida panhandle). Funding Source/ Mechanism: Funding for this project would come primarily from funds awarded by the court or an out-of-court settlement under the Oil Pollution Act (OPA) and Natural Resource Damage Assessment to restore injured natural resources and services to pre-spill conditions. Other sources of funds could include funds from state trustee agencies, the National Fish and Wildlife Foundation, and/or the Gulf Coast Ecosystem Restoration Council. NOAA, as the lead Trustee for marine resources, is in the best position to administer and coordinate the distribution of funds for this project. Designated network members (see list below and in the attached map) would work in close partnership with the project administrator to determine the type of enhancements needed at their facilities. NOAA and other state and federal trustees, as appropriate, would determine the amount of funds for each network member based on restoration scaling; that is, the level of funding would be based on nexus to injury and the number and type of strandings (i.e., injuries) that occurred or are likely to occur in each network member’s area of responsibility (see attached map). Network members in the primary DWH oil spill impact zone: Audubon Aquarium of the Americas (New Orleans, LA; Suzanne Smith) - Louisiana Department of Wildlife and Fisheries (Grand Isle, LA; Mandy Tumlin) - Institute for Marine Mammal Studies (Gulfport, MS; Andy Garrett) - Marine Mammal Conservation Commission Marine Mammal Pathobiology Laboratory (Saint Petersburg, FL; Heidi Tumlin) - Florida Aquarius (Tampa, FL; Kristen Anenue) - Mote Marine Laboratory (Sarasota, FL; Gretchen Lowell) - Clearwater Aquarium (Clearwater, FL; Mike Hurst) Cost Estimate: Approximately $45 million over 10 years. The following cost estimates are for planning purposes only; the actual resource needs for each network member organization will vary considerably on both an initial and annual basis, based on each organization’s existing capabilities and facilities as well as actual marine mammal data.
Spawning Season

Commercial fishing for highly migratory species (HMS) during the period when adult western North Atlantic bluefin are using the area for spawning (late April through early June of each year) and to pay commercial vessels not to fish in the closed area each year for 10 years until a full recovery of the population to a healthy level can be demonstrated. The amount to be disbursed to each vessel with a demonstrated history of recent landings of HMS species during April through June at ports in the Gulf of Mexico (including Miami) could be based on average net revenue of the fleet during the closure period plus an annual inflation adjustment. The annual allocation of funds (following each year’s closed season) could be made as a lump sum to the Blue Water Fisherman’s Association, which represents all the involved fishing vessel operators. Violators could be sanctioned by suspension of their HMS permits for an appropriate period of time. North Atlantic bluefin tuna spawn only in the Mediterranean Sea and in the Gulf of Mexico. They are two separate and distinct populations. The South Atlantic bluefin tuna population was exterminated by commercial fishing in just 10 years (1960-1970) once its spawning area off Brazil was discovered. The western North Atlantic population spawns each May in the north central Gulf of Mexico. Many of its eggs and larvae would thus have been carried by the Loop Current directly into the Deepwater Horizon’s plume of toxic petroleum and toxic dispersants where they would die. Because of overfishing on this fish, the western North Atlantic population - "our" bluefin tuna - has declined in abundance by about 98% since 1980 (for the details, see my website, www.BlrMarineFish.org/bluefin.html). As a result, on May 24, 2010, the Center for Biological Diversity petitioned the U.S. federal government to "list" the North Atlantic bluefin as "threatened" or as "endangered" and to protect it under authority of the Endangered Species Act. If the adult bluefin can be protected where they are concentrated in a relatively small area for spawning, we should be able to reverse the recent succession of poor year class formation thus allowing the population to recover and providing much greater value in increased catch through time for both recreational and commercial fishing interests. The closure would also reduce mortality of severely depleted Atlantic blue marlin, white marlin, a variety of sea turtles and the great number of other non-targeted marine life which are caught and die particularly during this season on longlines set for the "money fish" (swordfish and yellowfin tuna). Accordingly, such a program should have the support of Bluewater (HMS) commercial fishermen, commercial fisheries businesses, chefs, offshore sport fishermen, conservationists and the public. Economic benefits to both the commercial and sport fishing industries of increased survival of populations of not only bluefin tuna but also other premier big game fish (e.g., blue marlin, swordfish, white marlin, sailfish, etc.) would be many times the annual cost to fund the proposed longliners’ buyout.

Gulf Access- Land Formation

Are there to many gulf accesses or openings? Over many years accesses were made to the gulf that might slow down the land build-up processes. Should several of these openings be closed off allowing sediment to be kept from being distributed into the Gulf? How was the land extorsions islands formed 50 or 100 years ago? Did several openings exist? Also, are fresh water diversions operated properly? Are salinity levels monitored? The diversions should be opened and closed with spring salinity levels monitored? The diversions should be opened and closed with spring
presented in this document.

**Project Name:**

**Project Description:**

Managing the Mississippi River with fluctuations of flow rates. Creation of more recycled oyster shell reefs will help trap sediment and create land with the ebb and flow of tides and fresh water diversions. Monitored salinity levels will keep existing oyster reefs alive. In other words, the system must be closely balanced. Created portable bulkheads with tidal openings can be built and encroised certain land areas, as sediment is trapped and land is built, the bulwarks lifted and moved. Recycled oyster shells could then be placed closer to shore up new land formation and prevent new land from eroding away again.

**GulfCoastRestaurants.com Website**

**Project Name:**

**Project Description:**

**Promote tourism in the Gulf Coast Region on GulfCoastRestaurants.com through featured content-rich restaurants and chef profiles of the restaurants along the Gulf Coast that prepare and serve fresh Gulf Seafood.** The Restaurant profiles will include details of the Gulf seafood dishes they serve and the origin of the seafood used to prepare it.

**iSnapper electronic logbook reporting system**

**Project Name:**

**Project Description:**

This project would provide labor, equipment, and funding to expand the collection, processing, analysis and dissemination capacity of recreational fishing data by Texas Parks and Wildlife's Coastal Fisheries Division. Texas primarily collects and analyzes recreational fishing data according to methods designed to optimize resources during high and low use periods. Different methods of capture and transmission of fishing data for federally managed species (like red snapper and greater amberjack) will help the Gulf transition to more real time science and management of these popular species. These Gulf fisheries improvements will support sustainable fishing opportunities for popular reef fish species and sustain the coastal economies that rely on fishing. The estimated project cost is $1.5m over a 5 year period.

**Ecosystems and The Gulf Coastal States**

**Project Name:**

**Project Description:**

The Objective is to collect economical data for the Gulf Coast fishermen, Anglers, processors, charter for hire and businesses that rely on our Nations marine resource to provide food and jobs for our Nation. This project will attempt to capture the true value of our Gulf of Mexico States marine resources and seafood to the Nation as a whole. Activities include the collection of economic data which will include mail out surveys, email surveys, phone calls to various users of our resources to validate the data collected from the mail out surveys. We will also meet face to face with many of our businesses. We will collect economic data from the products harvested throughout the entire seafood supply chain. We have never collect the true value to regional businesses benefitting from Gulf seafood. In most surveys they only show...
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Educational Outreach Program (CEOP)</td>
<td>The Soft Skills Training Institute of Florida and its strategic partners will develop a program involving cooperative efforts in cultural and natural resource conservation training and education program or projects related to trail development and maintenance, historic, cultural and native habitat restoration and rehabilitation. CEOP is a hands-on, environmental education program that teaches young people valuable lessons about wildlife management, conservation, leadership, team-building, citizenship, and communication. As a participant in CEOP, you will gain a greater understanding of the value of land and how it can be managed to benefit much wildlife and fish species. Participants will use their skills and knowledge to create better habitats for wildlife now and in the future, and be open to perhaps a career as a wildlife professional, a landowner, or an active volunteer in their community to help teach others to become good stewards of their natural resource environment. The team will promote and stimulate public purposes such as education, job training, development of responsible citizenship, productive community involvement and furthering the understanding and appreciation of natural and cultural resources through the involvement of youth and young adults in the care and enhancement of public resources. SSTI will enhance the longstanding efforts of state parks to provide opportunities for public service, youth education and training programs for minority and underrepresented youth and young adults development and participation in accomplishing conservation-related opportunities to learn and be stewards of natural resources. Youth and young adults will learn: 1. About different kinds of wildlife, what they eat, and where they live. 2. Wildlife terms and ideas. 3. How to attract different wildlife species. 4. How to judge the quality of wildlife habitat. Other CEOP activities include: Wildlife Identification – Participants are tested on their ability to identify pre-determined wildlife species. Twenty photographs of wildlife species, which clearly show a juvenile, adult, male, or female of the species is presented to the participants. General Wildlife Knowledge – Participants are tested on their knowledge of topics ranging from wildlife habitat for select species to management practices that benefit wildlife. Wildlife Management Practices – Participants compete to take an outdoor site with defined boundaries and are asked to evaluate the quality of habitat for select wildlife species. Based on each participant’s site evaluation, he or she is asked to...</td>
</tr>
</tbody>
</table>
Training
platforms in the lighting on oil Environment Preservation Education (R.E.E.P.) Program

Wildlife
11605
12280
No./Proj ID

Jessica Griffen Chris Robbins
Submitted Lead Primary
Gulf states Mexico Gulf of 3000000
Cost

recovery of species affected by the oil disaster. Replace white (tube lights) and reducing bird Gulf due to changes in flying behavior influenced in part by platform lighting and mortalities that can result from direct collisions with those platforms. An estimated 200,000 bird platform lighting and vulnerable to the lighting generated by oil and gas platforms. In particular, implementation and application of the curriculum and resources.

Sustain participation from 85% of targeted communities. • Ongoing coordination; development of facilities; facilities and services for conducting a hunter education and safety programs; and public use of wildlife resources. The Wildlife Education and Safe Program will include education and training in the safe handling of archery equipment; restoration, hunter responsibilities and ethics; survival; construction, operation, and maintenance of public shooting ranges; and basic wildlife management and identification. Hunter Education and Safety Programs will include the development and implementation of a programmed course of instruction leading toward the achievement of the hunter safety training goals and objectives in the state of Florida and specifically Escambia and santa Rosa Counties. In general, the course is designed to train adults and students to be safe and responsible in restoration and assist Escambia and Santa Rosa County in preserving its wildlife. Facilitates training and supports educators in working together through collaboration and partnership to engage youth and adults in an online place-based approach to teaching and learning using natural resources as a context for learning. Students become environmentally literate citizens equipped to make informed decisions, exhibit responsible behavior, and take constructive actions to ensure a sustainable future for the state’s natural resources. Provide 15-30 hours of education and training development to youth and adults and any appropriate community members and student grade levels. Design and provide technology driven education and training platforms based on the needs of the state and communities. Provide materials, resources, tools, and strategies. Establish support and collaboration with the community agency actors. Stewardship Commitment: • Sustain participation from 85-100% of targeted communities. • Ongoing implementation and application of the curriculum and resources.

Bird-Friendly lighting on oil and gas platforms in the Gulf

11605
Chris Robbins
Gulf of Mexico
Bird species impacted by the BP oil disaster are also among those that are vulnerable to the lighting generated by oil and gas platforms. In particular, shorebirds (e.g., petrels, shearwaters) and migratory birds are susceptible to platform lighting and mortalities that can result from direct collisions with these platforms. An estimated 200,000 bird-collision deaths may occur each year in the Gulf due to changes in flying behavior influenced in part by platform lighting. Reducing bird-platform collisions by replacing existing lighting with bird-friendly lighting could have an immediate effect in reducing mortalities and help the recovery of species affected by the oil disaster. Replace white (tube lights) and...
Mobile Bay Park
Project Name
Project ID
Submitted By
Project Description
Mobile Bay
Byrne
3/30/14
Dear Senator Richard Shelby, Senator Jeff Sessions, Congressman Bradley
Humphrey and USAFoundation Director Maxine Roberts. Please consider our project
that we desperately need your support on. I've written you before but I want to try
one more time. Everybody loves going to visit the beach and this is what our
proposal is all about. We want you to support turning the Brookley Field (Aero-
space) property that Univ. An. Foundation owns into a public waterfront park.
Hopefully the entire 300 acres. Using the oil spill " restore funds " or any other
funds available from any source. This would be a permanent and very appropriate
rededication to all citizens of the entire city, county and beyond. The Brookley
(funding name only) park would cost less than the proposed Gulf Shores/Orange
Shore really, Fairhope and Daphne's

- black

- white

- rich and poor. You know 99%

- recreational use (Y/N)

- project is not privately funded (Y/N)

- project is consistent with programmatic restoration goals (Y/N)

- project is consistent with criteria identified in the public

- notice (Y/N)

- project is consistent with programmatic restoration goals (Y/N)

- project is considerate of strategic frameworks (Y/N/NA)

- project meets Trustees' goals (+ / 0 /

- project offers opportunities for external funding &

- collaboration (+ / 0 /

- sustainability/long-term benefit of project (+ / 0 /

- coastal development associated w/Airbus and its' suppliers. They should NOT

- attract many commercial interests. There is plenty room enough else where for

- LARGE BE

- project is consistent with criteria identified in the public

- notice (Y/N)

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<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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</thead>
<tbody>
<tr>
<td>BP The Blue Print for Restoring the Gulf's Fisheries</td>
<td>12134</td>
<td>Harolyn Williams</td>
<td>Gulf of Mexico</td>
<td>8000000</td>
<td>This program will allow fishermen and NMFS to test and address some of the possible management strategies that the fishing industry has recommended to Gulf of Mexico Fishery Management Council since the Oil Spill. It will contain the basic blue print of those recommendations. It will help to address the needs of the commercial reef fish fishermen in the Gulf of Mexico with their catch of regulatory discards. This will benefit the fishery by having those fish available to the market place instead of being thrown back into the Gulf Waters. This provides benefit to the fishermen, the consumer of the resource, the coastal communities and the living marine resource. This program will allow the fishermen a way to participate at a cost that may not be available to them now. Plus it would help distribute the fishery resource among the coastal states and the profit from the product to the local community. This program will lease fish from Red Snapper and Grouper Allocation holders and make them available at a reduced price to those that presently have a commercial reef fish permit and do not presently hold adequate allocation to address their by catch. There will be the necessary safe guards build into the lease so that those purchasing the leased fish will have to fish them. The second phase will have a working group meet to discuss the successes they have had with a fish tagging system and various ways to administer the program in a such a way that there may be additional benefits to such a program. Their are methods the states could use to administer the program so that there are no added cost for the states should such a program be done as management in the future. This second phase of the program will help to also address the needs of the charter for hire and special tournament needs for the private angler and the private angler that has not been able to fish due to close seasons and disasters. This program would be done through a fish tagging program and will require the fishermen, the states, the science center and NMFS coming on board. This would be done at a extra cost to the program for the second phase. This program would help to address the regulatory discards in the recreational community and will benefit the coastal communities through tourism. The charter for hire could use their fish tags when it was beneficial to their business and community and the Tournament caught fish will allow the private angler the opportunity to fish out of season when their season is closed, as well as the private angler that has not had the opportunity to fish during closed seasons and disasters. These programs will help the managers with the recommendation they make for management in the future. These programs will be protecting the fishery by reducing by catch while producing income and food for the Nation. This “Blue Print for Restoring the Gulf Fisheries brings Opportunities” that will be lost if not funded!</td>
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<tr>
<td>Africatown Historical Restoration</td>
<td>12275</td>
<td>Womack, Joe Sr.</td>
<td>Mobile County</td>
<td>1000000</td>
<td>Africatown is a Historical Community established along the Mobile River in north Mobile County in 1865. It was recently put on the National Registry of Historic Places by the Federal Government and recognized as the last place slaves were brought into this country in 1859. The Africatown CDC is a non-profit organization</td>
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<tr>
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The Western Shore Mobile Bay/Fowl River Nature & Education Center project has several components as described below: 1. Land Acquisition: Purchase of the approximately 186 acre tract would place this site in public ownership and control. This property contains one of the last remaining mesic woodlands found along Mobile Bay, as well as highly productive brackish tidal marsh. The property had never been part of a planned residential community development but that plan has not yet been implemented in the tract. Given the projected economic impact of the new Airbus Plant approximately 16 miles from this site, it is realistic to project that this geographic area will again be targeted for residential and commercial development. For example, changes in water quality such as salinity and sediment load may adversely impact desired habitat conditions (e.g., oyster reefs and marsh). Ecosystem restoration projects in the northern Gulf of Mexico require a need to understand and quantify impacts on the ecosystem. Furthermore, there is risk that interactions across projects may have "unintended consequences". As multiple restoration projects are implemented in the northern Gulf of Mexico, there is a need to understand and quantify impacts on the ecosystem. Projects of like nature, if developed on a coordinated basis, could result in synergistic actions among stakeholders. The DSS will allow managers to evaluate impacts of multiple projects on the overall quality of the ecosystem in the northern Gulf of Mexico and provide science-based assessments for adaptive management as restoration projects develop over time. Enhanced assessment techniques will be used to evaluate the stability and sustainability of projects during construction and cost construction. The project will be a collaborative effort with engineers and scientists from Mississippi State University (MSU) and the University of Southern Mississippi (USM) and will be coordinated with state and federal agencies conducting restoration in the northern Gulf of Mexico. Emphasis will be placed on projects in the Mississippi Sound and Lower Mississippi River. More detailed proposal is available upon request.

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Development in the next few years. This site is also approximately 20 miles from Interstate 10, approximately 13 miles from Interstate 65, and approximately 20 miles to downtown Mobile, Alabama. The subject property is located just off of Dauphin Island Parkway (State Hwy. 231) which is a well traveled Highway which ends at City of Dauphin Island, Alabama. Area visitor attractions close to the subject property include Dauphin Island Beaches, Dauphin Island Sea Lab, Dauphin Island Ferry to Fort Morgan (all approx. 16 miles) and Bellingrath Gardens (approx. 6.8 miles). The Acquisition and protection of this site will preclude clearing and construction within the woodlands and will allow public access to and enjoyment of the important biological resources contained within the tract. 2. Shoreline Stabilization: Various long shoreline measures would be evaluated (e.g. installation of subaqueous breakwaters, placement of pocket beach structures in eroded areas; planting of marsh/shoreline vegetation for sediment stabilization, etc.). Measures determined to be optimal for this site would be implemented. It is anticipated that approximately 10 acres of eroded marsh would be restored, and the existing 75 acres of marsh would be protected from further erosional loss. 3. Marsh Restoration: As noted above, shoreline protection measures will be selected to facilitate restoration of eroded marshlands as well as to protect the shoreline from further erosional loss. In addition to the potential benefits of restoration of approximately 10 acres of marsh along the shoreline, certain other areas could be restored; these include some of the canals that had been excavated during the 1950’s and the area between Goat Island and the mainland. One particular canal that could be removed occurs in the southernmost part of the tract. It extends for about 800 feet from near Old Fowl River to the open water area that separates Goat Island from the mainland marsh. This canal is approximately 66 feet wide including spoil berms and represents roughly 1 acre of restoration potential. Placement of suitable sediment between Goat Island and the mainland marsh could form an additional 5 acres of marsh. Some of the canals within the tract were excavated in parallel form; the potential for eliminating some of these double canals will be addressed, but restoration of such areas could comprise 2 to 3 acres of marsh restoration. 4. Recreational Access: The subject property can provide excellent opportunities for public to observe wildlife and access a wide variety of natural habitats. Access to these areas will be enhanced through installation of small docks designed for canoes and kayaks. The numerous canals, Old Fowl River, and nearshore Mobile Bay waters are ideal for such watercraft. Nature trails and boardwalks will be constructed to allow visitors to view mesic woodlands, marshes, and estuaries; one or more bird/nature observation platforms will be built in or adjacent to the tidal marsh. The boardwalks and observation platforms will be built in or adjacent to the tidal marsh. The boardwalks and observation platforms will support outdoor classroom activities that could be made available to area schools and the public at large. 5. Educational and Administration: A rice approximately 4,000 square foot office building is located on the subject property and is fully heated and cooled and handicap accessible. The office building is ideal between two large oak trees and contains three restrooms, exception area, conference room, copy/technology rooms, multiple furnished...
## Project Information

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<tbody>
<tr>
<td>Capacity Building, Disaster Preparedness, and Sustaining Fishing Communities in the Gulf after the BP Oil Spill</td>
<td>Christopher Moreno</td>
<td>Mexico</td>
<td>$500,000</td>
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## Project Description

In the wake of the inter-connected cultural, socio-economic, and environmental effects of the BP Oil Spill, Gulf fishing communities are facing unprecedented short-and long-term challenges in sustaining their traditional lifeways. Our two years of ethnographic research investigating traditional cultural communities and properties in the Gulf during the BP Oil Spill and response efforts has demonstrated the intimate and vulnerable cultural relationships these communities have with their surrounding environments. This research also illustrated the need for more inclusivity of fishing community traditional ecological knowledge (TEK) in implementing innovative capacity building strategies and the development of effective conservation and sustainability plans. McGoode (2001) has importantly pointed out that over the course of its development, much of fisheries-management science, both in theory and in practice, has had a misplaced emphasis. Whereas its first concerns should have been the human beings who utilize fisheries resources, its cornerstones were instead the conservation of important marine-biological species...[and] elevating fisheries resources and maximizing the economic benefits from them. The aftermath of the BP Oil Spill has particularly elucidated the need to emphasize and better understand the human aspects of fisheries and the roles fishing communities play in producing and promoting sustainable fisheries environments. In this context and in conjunction with mandates presented by the Magnuson-Stevens Act and National Standards it is critical for fishing community consideration in fishery conservation and management decision making. This proposed project seeks to establish capacity building strategies inclusive of fishing community perspectives, values, beliefs, and TEK in: (1b) the development of community sustainability and management plans; (2) the creation of fishery conservation networks; (3a) the development of inter-generational and entry-level access to fisheries. The process of working in partnership with fishing communities to develop inclusive, feasible,
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Measurable, and sustainable programs will contribute to innovative capacity building strategies that can aid the short- and long-term interests and needs of these communities in confronting the conservation and sustainability management challenges as well as the social and cultural impacts of the BP Oil Spill. Project Outcome(s): Anticipated short-term outcomes of the PLA workshops include: 1) wider community participation in capacity building activities; 2) community specific fishing TEK exchanges that can help strengthen capacities of communities to identify local fishing community needs, build community consensus, and develop appropriate strategies to meet those needs; 3) the development of culturally informed fishing community sustainability plans, and 4) establishment of Fishing Community Sustainability Planning Committees. Each of these steps will help initiate community ownership of sustainable and conservation planning processes and help build local accountability. Long term utility of this project will help integrate local fishing community needs and perspectives into management and conservation strategies related to the BP Oil Spill and response and will help meet goals established by the Magnuson-Stevens Act and National Standards 8: mandating consideration for the impacts of conservation and management practices on fishing communities. It will also provide baseline data of the management challenges related to the BP Oil Spill as well as present a path forward for future research needs regarding the integration and use of fishing community perspectives and TEK into conservation and sustainability strategies outlined in the Magnuson-Stevens Act and National Standards 8: Proposed Activities: The project team has two years of working experience directly with the fishing communities listed above. The tasks necessary for identifying community stakeholders, building trust, and developing working relationships have already been established. The following are the steps the project team will take to successfully organize and implement PLA workshops with the identified fishing communities: 1) Follow-up with community leaders and government representatives to ensure community participation; 2) Work with community leaders and government representatives to establish PLA workshop logistics and participant recruitment strategies; 3) Directly engage and recruit fishing community members on the ground in coordination with community leaders and representatives; 4) Hold PLA workshops with participating fishing community members and stakeholders; 5) Analyze results from PLA workshops; 6) Present PLA workshop results back to participating fishing communities; 7) Select members for Fishing Community Sustainability Planning Committees in coordination with community leaders and representatives; 8) Work with Fishing Community Sustainability Planning Committees in using PLA workshop results to draft Fishery Conservation and Sustainability Plans inclusive of fishing community values, beliefs, and TEK; 9) Provide Fishing Community Sustainability Planning Committees with Fishery Conservation and Sustainability Plan drafts for review; 10) Author final Fishery Conservation and Sustainability Plan Report and submit to Fishing Community Sustainability Planning Committees, NWF, and other agencies overseeing NFWA. Measure of Success: We will measure progress and success of the PLA workshops through the percent of the participating target populations, including the active participation of multigenerations, support agencies, and...
Institutions (e.g., educational, governmental, NGOs) as well as those seeking entry level access to fisheries. We will measure progress and success of the Fishery Conservation and Sustainability Plan through a recording and accounting for identified management challenges related to the BP Oil spill and response, how TEA can assist in sustaining fishing community livelihoods while abiding by the parameters of the Magnuson-Stevens Act and National Standards II, and development of an action plan that can be implemented by individual fishing communities as well as through fishing community networks and partnerships in the context of these events and regulatory requirements. All progress and success, as well as new challenges and obstacles, of Fishery Conservation and Sustainability Plans will be monitored in conjunction with Fishing Community Sustainability Planning Committees. Funding for future research and program implementation will assist effective monitoring of progress and success of Fishery Conservation and Sustainability Plans and will be sought by the project team.

**The Masterwork Proposal**

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<tr>
<td>11985</td>
<td>Joseph (Wauke) Ferguson</td>
<td>Gulf of Mexico</td>
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**Coastal Ecosystem Health: American Oystercatcher as an indicator of exposure and effects of pollutants on breeding birds on the Gulf Coast**

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<tr>
<td>12035</td>
<td>Felipe Chavez-Ramirez</td>
<td>Coastal Gulf of Mexico</td>
</tr>
</tbody>
</table>
The American Oystercatcher (Haematopus palliatus) is the most widely distributed of the four oystercatcher species found in the Western Hemisphere with a range stretching from the northern U.S. Atlantic Coast to the tip of South America. The total population is estimated to be 45,000 with the subspecies found in the U.S. (H.p. palliatus) making up 20,000 of that total. The U.S. population is estimated to be 11,000. American Oystercatchers are restricted to the narrow band of the coastal zone throughout their range where they feed mostly on oyster and other bivalves. The threats to their survival are many and include a low overall population size, low reproductive success, and delayed breeding (5-7 years of age). Productivity rates from the Atlantic Coast range from .30 to .50. Nests are subject to a whole host of natural threats. Sea level rise is major threat to oystercatcher survival. The U.S. Shorebird Conservation Plan lists the American Oystercatcher as a species of high concern, it is a National Fish and Wildlife Foundation (NFWF) priority species, and it is included on the list of Texas Parks and Wildlife Department's priority species. The majority of projects associated with the American Oystercatcher have been along the Atlantic seaboard with limited focus on Gulf Coast populations. In 2011, the Gulf Coast Bird Observatory embarked on a multi-year study to fill information gaps on Gulf Coast oystercatchers. We have learned much from our work so far but there are still many unknowns. We have only begun to scratch the surface of understanding of oystercatcher conservation however as there remain many unanswered questions. Our primary focus would be to determine how and why eggs go missing from nests and how vegetation aids in chick survival. It appears the vegetation provides chicks with critical refugia from egg predation but we do not have a complete picture of what type of vegetation works best. We propose to expand oystercatcher nest monitoring throughout the Gulf to determine which type of vegetation provides the best chick refugia. Without this information we cannot successfully create more oystercatcher nesting habitat.

This proposal requests support for continuation of the Fisheries Oceanography of Coastal Alabama (FOCAL) program, a research unit within the Richard C. Shelby Center for Ecosystem Based Fisheries Management at Dauphin Island Sea Lab (DISL). The FOCAL program serves as a fisheries management and restoration resource for the Alabama Department of Conservation and Natural Resources (MD) Marine Resources Division (ADCMR/MRD). FOCAL is currently funded by ADCMR/MRD through Hurricane Katrina EDRP funds, however this funding expires in November.
<p>| Project Name                                                                 | Project Description                                                                                                                                                                                                                                                                                                                                                   | Restoration Types Addressed                                                                                         | Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria                                                                 | Public Notice                                                                                     | Oil Pollution Act (OPA) Criteria (15 CFR 990.54)                                                                 | Additional Criteria                                                                                     |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Pay Dirt Mitigation Bank                                                      | To create a wetlands mitigation bank from the portion of the Pay Dirt LLC properties currently designated as forested wetlands.                                                                                                                                                                                                                                        | Wetland, Coastal, and Nearshore Habitat (Y/N)                                                                           | Project meets Trustees' goals (+ / 0 / -)                                                                                   | Project has reasonable probability of success (+ / 0 / -)                                                                                  | Project prevented or reduced furthering of natural resources or services (+ / 0 / -)                                                                 | Project benefits other coastal marine ecosystems and wildlife (+ / 0 / -) |
| WV 11943                                                                   | Dana Cleland                                                                                                          | (N)                                                                                                                   | (N)                                                                                                                  | (N)                                                                                                                             | (N)                                                                                                  | (N)                                                                                           |
| BP Deepwater Horizon Oil Spill Restoration Evaluation and Monitoring Program  | The Natural Resource Damage Assessment regulations make clear that final Restoration Plans should include a monitoring component so that the effectiveness of restoration measures can be evaluated. Given that BP is providing $1 billion for early restoration projects before completion of a Deepwater Horizon Restoration Plan, some of these funds should be used to establish a restoration evaluation and monitoring program. There is precedent for funding monitoring activities before an oil spill restoration plan is final. Before a restoration plan is complete, the Exxon Valdez Oil Spill Trustees Council invested funds in tracking injury and recovery at the species level, as well as research and monitoring at the ecosystem scale, to identify restoration opportunities, understand factors limiting recovery, and evaluate the effectiveness of restoration measures. An early and steady flow of information on the recovery status of specific natural resources and ecosystem services generated through this program would help managers make responsive management decisions. Without this information, less effective restoration may result, potentially requiring managers to restrict human uses of these resources. Specifically, a restoration evaluation and monitoring program is needed to: 1) evaluate the effectiveness of early restoration projects; 2) track the recovery of specific injured natural resources or lost or reduced services; and 3) report to the public on the success of ongoing restoration activities. | Wetland, Coastal, and Nearshore Habitat (Y/N)                                                                           | Project meets Trustees' goals (+ / 0 / -)                                                                                   | Project has reasonable probability of success (+ / 0 / -)                                                                                  | Project prevented or reduced furthering of natural resources or services (+ / 0 / -)                                                                 | Project benefits other coastal marine ecosystems and wildlife (+ / 0 / -) |
| 739                                                                        | Chris Robbins                                                                  | (N)                                                                                                                   | (N)                                                                                                                  | (N)                                                                                                                             | (N)                                                                                                  | (N)                                                                                           |</p>
<table>
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<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>WorldWide Consortium For Any Dangerous Manufacturing Processes</td>
<td>Status of injured resources, lost services, and progress toward restoration. Establishing a restoration evaluation and monitoring program for early restoration can be adapted as restoration needs change and transition into a longer-term program. On behalf of the Deepwater Horizon Oil Spill Trustee Council, NOAA, in cooperation with the Department of Interior (USFWS), is in the best position to establish and administer a Deepwater Horizon Oil Spill restoration evaluation and monitoring program. Together, NOAA and USFWS have the experience and existing infrastructure to coordinate monitoring across state-federal boundaries. Both agencies would serve as joint custodians of this program. This structure will facilitate the efficient gathering of data that will allow comprehensive monitoring of the full range of restoration activities. Regardless of the entity implementing monitoring, this program will require coordination among trustee agencies and possibly some new data gathering. Each year NOAA and USFWS would produce a report on the results of restoration measures, recovery of injured species, and newly discovered injuries.</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>N</td>
<td>Project meets Trustees goals (+ / 0 / -)</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
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<tr>
<td>John Jenkins</td>
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<td>Project meets Trustees goals (+ / 0 / -)</td>
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A Gulf-wide multi-year project to determine best practices for minimizing barotrauma effects on red snapper following capture and release | status of injured resources, lost services, and progress toward restoration. Establishing a restoration evaluation and monitoring program for early restoration can be adapted as restoration needs change and transition into a longer-term program. On behalf of the Deepwater Horizon Oil Spill Trustee Council, NOAA, in cooperation with the Department of Interior (USFWS), is in the best position to establish and administer a Deepwater Horizon Oil Spill restoration evaluation and monitoring program. Together, NOAA and USFWS have the experience and existing infrastructure to coordinate monitoring across state-federal boundaries. Both agencies would serve as joint custodians of this program. This structure will facilitate the efficient gathering of data that will allow comprehensive monitoring of the full range of restoration activities. Regardless of the entity implementing monitoring, this program will require coordination among trustee agencies and possibly some new data gathering. Each year NOAA and USFWS would produce a report on the results of restoration measures, recovery of injured species, and newly discovered injuries. | Water Quality/Nonpoint Source Nutrient Reduction (Y/N) | Project is consistent with criteria identified in the public notice (Y/N) | N              | Project meets Trustees goals (+ / 0 / -) | Project is consistent with programmatic restoration goals (Y/N) |
**Project Name**: Supplement and expand fishery

**Lead**: Chris Robbins

**Submitted Via**: Marine Mammals (Y/N)

**Location of Project**: To be determined, but likely in multiple Gulf of Mexico locations (depending on fishermen interest)

**Cost**: $15,000,000

**Project Description**:

Injuries may not allow the fish to return to depth upon release or cause behavioral effects that can increase the risk for predation. Mortality caused by barotrauma hinders rebuilding of overfished populations of red snapper and could deter recovery from DWH impacts. Overall, fishery managers lack data on the post-release mortality of many reef fish species, including red snapper. This prevents accurate prediction of discard mortality in commercial and recreational fishery harvest estimates and stock assessments. Lack of confidence in release mortality may lead to increased management uncertainty. Accurate prediction of post-release survival is integral to setting appropriate annual catch limits of affected species in order to meet conservation goals. This project barotrauma would follow the established protocols (e.g., Jarvis and Lowe), modified as necessary for red snapper, for both field (e.g., cages, release devices, etc.) and laboratory procedures (e.g., hyperbaric chambers and underwater acoustic tags). In general, these protocols focus on and characterize internal/external signs of barotrauma, physiological status, and short/long term post-release mortality of the species. Stakeholder participation will define their needs and will assist in development of best release practices for this species. Preliminary studies have demonstrated recompression devices have great potential to increase fish survival from barotrauma related injuries. Through promising new methods are available to fishermen, including recompression devices (e.g., Seaquilizer, Shelton Fish Descender, etc.), information of their real world applicability has yet to be determined in great detail. Identifying recompression devices most effective at reducing post release mortality and determining the ones best suited to anglers through active involvement of stakeholders will guide outreach efforts to increase their acceptance and use among fishermen. This is especially important for those species affected by the DWH disaster, potentially offsetting DWH impacts by allowing these populations to recover at a faster rate than if these devices went untested and unused. Results of this research project will add to the state of knowledge regarding methods of survivability for reef fish species. Data derived from this pilot study will help managers determine tools that are most effective at reducing post release mortality and determining the ones best suited to anglers through active involvement of stakeholders will guide outreach efforts to increase their acceptance and use among fishermen.

**Project Information**

- **Submitted via**: Marine Mammals (Y/N)
- **Water Quality/Transport/Decision Support/Information (Y/N)
- **Waste, Garb. Control, and Sanitation (Y/N)
- **Biosolids (Y/N)
- **Sea Turtles (Y/N)
- **Oyster Reef (Y/N)
- **Habitat on Federal Lands (Y/N)
- **Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)
- **Project is consistent with programmatic restoration goals (Y/N)
- **Project is consistent with criteria specified in the public notice (Y/N)
- **Project meets Trustees' goals (+ / 0 / -)
- **Project has reasonable probability of success (+ / 0 / -)
- **Project is not already fully funded (Y/N)
- **Project readiness (+ / 0 / -)
- **Sustainability/Long-term benefit of project (+ / 0 / -)
- **Project is time critical (+ / 0 / -)
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)
- **Project is not already required by existing regulations (Y/N)
- **Project is not already required by existing regulations & not consistent with programmatic criteria (Y/N)
- **Project has reas...
Hydrographic/oceanographic, predation-prey relationships, habitat, and genetic data from fishery-independent surveys are a vital input in stock assessments which are used to assess the status of managed species in the Gulf and allow managers to make management decisions that will achieve the legally mandated goals of preventing overfishing and allowing the fishery to take optimum yield. Stock assessments can be and are performed without reliable long-term fishery-independent indices of abundance, but results from those assessments are often more uncertain from the ones that do use good fishery-independent (FI) survey data. Existing FI surveys in the Gulf, while providing essential information for management, suffer from several limitations. Low sample sizes, year-to-year variation in sampling effort, and inadequate spatial coverage result in high sampling variance for many surveys, which limits our ability to detect population biomass trends even for commonly targeted species. For many less common species there is no suitable FI index of abundance at all, and as a consequence, the status of those species is currently unknown, and catch quotas have been set based on recent landings. The DWH oil disaster added an additional component of uncertainty to Gulf fisheries management. This uncertainty stems from acute oil and dispersant-related mortality of adults and spawning products, long-term population-level impacts, and food web and habitat impacts. When unknown to management, the negative effect of these impacts can be magnified, as exemplified by the 2006 episodic mortality event that reduced the gag grouper spawning stock biomass by 18 percent. This population reduction was not detected until three years later, and consequently, projected allowable catch limits in the meantime were too high, and the gag population ended up in a severely overfished situation. In addition to short-term impacts, the unknown long-term effect of the disaster on population trends and food web dynamics may modulate some assumptions made in previous models to predict the future condition of the resource, and it may undermine the assumptions on which current catch control rules for unassessed species are based. Expanded and additional fishery-independent surveys will help reduce uncertainty about current stock status and likely future condition of living marine resources and the ecosystem in response to human activities. They will enable scientists to track impacts and recovery of Gulf species and their environment, allowing managers to set management measures to aid species recovery, not unnecessarily undermine it. Description: A number of different FI data collection programs exist in the Gulf, led by federal and state management agencies as well as universities. Many of these existing surveys could benefit from spatial and temporal expansion in sampling as well as increased sample sizes and expansion of the kinds of data collected to improve survey precision and support an ecosystem approach to management. This project would expand existing SEAMAP, NOAA Fisheries, and select university surveys to attain adequate sampling coverage (CVs of 20% or less for the dominant species) in all collect and analyze additional data such as reproduction and gut content, age and growth, genetic, habitat, and hydrographic data. Preference would be given to surveys that provide information which has been identified by stock assessment panels and scientific advisers as being critical to Gulf fishery assessments. In addition, this project would fund new surveys in the Gulf of Mexico, such as the...
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/ Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase amount of assessments for potentially impacted finfish species</td>
<td>11863</td>
<td>Chris Robbins</td>
<td>Gulf of Mexico</td>
<td>$118,631</td>
</tr>
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</table>

**Proposed Restoration Project:** Conduct more frequent stock assessment updates for overfished or near overfished Gulf finfish species and first-time stock assessments for lesser known, unassessed finfish species that were potentially impacted by the Deepwater Horizon (DWH) oil disaster. The information will be used to inform adaptive management of fisheries and promote recovery of populations impacted by DWH. Link to injury: Many commercially and recreationally fished species in the Gulf of Mexico were exposed to oil or dispersants during the DWH disaster. As a result, potentially injured reef fishes, highly migratory pelagics, and sharks require closer monitoring for the next several years in order to help managers better track population status and trends and set catch quotas consistent with recovery from the DWH disaster. Benefit and Rationale: Finfish contribute to regional seafood sales totaling $17 billion and support a thriving recreational fishing industry, which generates nearly $10 billion in economic activity and supports 92,000 jobs in the Gulf of Mexico. Therefore, knowing the status of finfish populations through assessments is critical for effective management of fisheries and maintaining the health of the ecosystem and the fishing-related industries that depend on it. The 2010 DWH disaster may have affected the year-class strength of exposed Gulf fish species by reducing survival of eggs and larvae, or it could have reduced the spawning population itself through lethal or sublethal impacts. Sublethal exposure to oil and dispersants could, for instance, compromise the immune system of affected fish, and signs of compromised immunity in the form of external lesions and abnormal markings on fish (e.g., red snapper) have been documented by researchers at LSU and USF. The population status of Gulf species is assessed through the Southeast Data, Assessment and Review (SEDAR) process, which is the stock assessment process established by the South Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils. These three Councils are all served by the Southeast Fisheries Science Center within NOAA Fisheries. All three Councils rely heavily on SEDAR assessments for generating science-based management advice for NOAA Fisheries. However, due to the large volume of managed species in the Southeastern U.S., only a small fraction of managed species are assessed in any given year, and many have never been assessed. Assessed species are managed through multi-year population projections in years between assessments, but episodic events such as hurricanes, red tides, or oil spills can affect the population in ways that can reduce the usefulness of the population size projections, potentially leading to inappropriate management decisions. For species that are nearing an overfished condition or are overfished, the DWH disaster may have further negatively affected population health. More frequent status updates are needed to ensure that these species do not become overfished or if a species is already overfished that rebuilding is on track. There are currently four species in the Gulf that are in rebuilding plans: red snapper, gag grouper, greater amberjack, and gray triggerfish. More frequent assessment updates for gag grouper may have been able...
### Project Information

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<tr>
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<th>Cost</th>
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</table>

### Project Description

In 2005, the population of a species that has not been assessed present a unique challenge to fishery managers because less is known about their population status and how DWH might have affected populations. Managers need accurate population size estimates to detect changes in abundance that might be influenced by sub-lethal effects resulting from DWH. This information will facilitate adaptive management and recovery and help managers prevent overfishing while achieving optimum yield. Specifically, an evaluation of available data poor assessment methods and application of the most suitable ones to unassessed, undermanaged Gulf species is needed. An additional need is a method for annually setting catch limits for these species that is based on feedback control to adjust for errors in our perception of population status and changes in abundance trends. Alternative catch setting methods, based either on results from simple assessment methods or empirical data, can be tested using simulations through the management procedure approach. Employing this approach would enable managers to choose the method that is expected to best meet management goals and to respond appropriately to any changes in population trends that may arise from DWH impacts. Description: Annual or biennial update assessments would be performed for previously assessed, managed Gulf species that have been determined to be overfished or are nearing an overfished condition. These updates would be done in house by the Southeast Fisheries Science Center or responsible state management agency without the physical, public workshop required by the more involved "standard" or "benchmark" assessment. Doing more frequent update assessments will require additional stock assessment expertise as well as additional data processors and analysts. For species requiring more frequent update assessments for data-limited fisheries to prevent the population from deteriorating from a near overfished condition in 2005 to severely overfished in 2009 (due to a 2006 epizootic mortality event that reduced the spawning stock biomass by 18 percent). More frequent status updates may have also been able to detect the lack of progress in greater amberjack rebuilding and prevent missing the rebuilding deadline. Species impacted by DWH that have not been assessed present a unique challenge to fishery managers because less is known about their population status and how DWH might have affected populations. Managers need accurate population size estimates to detect changes in abundance that might be influenced by sub-lethal effects resulting from DWH. This information will facilitate adaptive management and recovery and help managers prevent overfishing while achieving optimum yield. Specifically, an evaluation of available data poor assessment methods and application of the most suitable ones to unassessed, undermanaged Gulf species is needed. An additional need is a method for annually setting catch limits for these species that is based on feedback control to adjust for errors in our perception of population status and changes in abundance trends. Alternative catch setting methods, based either on results from simple assessment methods or empirical data, can be tested using simulations through the management procedure approach. Employing this approach would enable managers to choose the method that is expected to best meet management goals and to respond appropriately to any changes in population trends that may arise from DWH impacts. Description: Annual or biennial update assessments would be performed for previously assessed, managed Gulf species that have been determined to be overfished or are nearing an overfished condition. These updates would be done in house by the Southeast Fisheries Science Center or responsible state management agency without the physical, public workshop required by the more involved "standard" or "benchmark" assessment. Doing more frequent update assessments will require additional stock assessment expertise as well as additional data processors and analysts. For species requiring more frequent update assessments, updating the data time series that go into the model would become a routine annual process that is performed by the responsible data curators. For minor, unassessed species, a series of workshops modeled after the SEDAR process would be held to evaluate current assessment methods for data-limited fisheries and apply the appropriate ones to Gulf fish species with unknown status. This project would consist of a workshop for assembling available data, a series of webinars for applying and evaluating alternative assessment methods, a series of webinars for constructing and testing alternate management procedures (empirical and model-based), and another workshop for review of the process. To produce the best results, these workshops would incorporate many of SEDAR's characteristics such as transparency, openness to public participation and independent review and would involve the Center for Independent Experts (CIE). A university with relevant expertise and capacity would lead this project, with the involvement of federal, state, university, and NGO scientists, fishery managers and local fishery representatives. Every five years over a 10-year period, webinars and a workshop will be held to review and, if necessary, adjust management procedures.
## Project Name: Gulf of Mexico Fishery Management Restoration Priorities
### Project Information
<table>
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<td>Gulf of Mexico Fishery Management Restoration Priorities</td>
<td>11591</td>
<td>Froeschke</td>
<td>Gulf of Mexico</td>
<td>$5 million</td>
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### Project Description:
At the October 29 - November 1, 2012 Gulf Council Meeting in Gulfport Mississippi, the Gulf of Mexico Fishery Management Council (hereafter: Council) discussed data needs to priorities for restoration activities in response to the Deepwater Horizon oil spill. The Council discussed potential impacts to important stocks, critical habitat, and humans due to lost fishing opportunities etc. The Council recommends that upon settlement or through early restoration the following activities are given the highest priority: • Increase and fund frequency and number of stock assessments. • Enhance and fund fishery-independent surveys, both federal and state. • Work with MRP to decrease the frequency to two week waves for high profile species. • Develop and fund a more robust observer program. • Enhance/create and fund vessel restoration projects and coastal reef fish habitat. • Development of and funding for data collections programs for the headboat and for offshore projects. A short-term emphasis on shared and diversification of baited and un-baited data collection system. • Research and fund projects on substrate recovery to improve mortality. Each of these activities are critical to improving conservation and management efforts of federally managed fish species and associated habitat necessary to provide maximum benefit to the nation as required by the Magnuson-Stevens Fishery Conservation and Management Act.

## Project Name: Northern Gulf of Mexico Super Project
### Project Information
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<th>Project Name</th>
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<td>Northern Gulf of Mexico Super Project</td>
<td>11591</td>
<td>Paul E. Petros</td>
<td>Gulf of Mexico</td>
<td>$5 million</td>
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### Project Description:
The goal of the project is to enhance habitat and augment wild stocks through an aquaculture base project. To bring together all of the current educational resources of the Gulf Coast to create an educational mecca for ocean studies programs. To create a large consortium of stake holders in the Gulf to share resources that can be accessed through the restoration efforts and BP funding to super utilize and maximize the restorative process. Currently, there are near 700 projects requesting funding from the BP settlement grants that have been allocated. Many of these projects are redundant, not in the materials or siting, but in the logistical requirements needed to complete them. I believe that in combining asset requirements, and through proper scheduling and project resources, that it will be possible to greatly reduce cost, while increasing efficiency and longevity of the selected projects. Working in unison will also encourage communication and cooperation between all the separate entities involved. Example: after reading through the project lists, there are no less than 100 separate projects that either stipulate the acquisition of a vessel through purchase, or leasing a vessel for a specified period of time. Some of these are purely scientific research endeavors, others are involved in delivery or deployment of reef materials. Vessels are an expensive proposition for any project, in most cases they are the most important and expensive line item, in any project. To let them sit idle is to still incur the cost, while representing a loss of valuable production time. Leasing a vessel gains that expensive proposition for any project, in most cases they are the most important and expensive line item, in any project. To let them sit idle is to still incur the cost, while representing a loss of valuable production time. Leasing a vessel gains that
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<td>Advancing Estuarine Research and Education at the Weeks Bay Reserve</td>
<td>Walter C. Ernest, IV</td>
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</table>

### Project Description

...are kept to a minimum, crew familiarity with the vessel is at a maximum, and in turn operating and maintenance cost are reduced as well, substantially. The funding not duplicated on respective vessels would mean the amount of separate projects could be quadrupled with the same amount of funding. This would ensure that the restorative effort gains the most from each dollar put forth, and would also give the larger amount of projects the longest they need to be accomplished. Using the network of sharing the vessels would create, different projects and groups would also be exposed to each other and be able to share both data and expertise garnered through the entire restoration projects course. Extending the beneficial cycle of the restorative effort indefinitely will aide in the education of the coming generations most affected by this spill...
significant damage to the waters of the Gulf of Mexico. In order to effectively assess the long-term effects of this event, there needs to be a coordinated regional approach in monitoring the status and health of the marine resources in the Gulf of Mexico. The Gulf States Marine Fisheries Commission (GSFMC) is uniquely poised to provide such an approach. Established by both state and federal statutes in July 1949, the GSFMC is an organization of the five states (Texas, Louisiana, Mississippi, Alabama, and Florida) whose coastal waters are the Gulf of Mexico. It has as its principal objective the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico to provide food, employment, income, and recreation to the people of the United States. One of the most important functions of the GSFMC is to serve as a forum for the discussion of various challenges and programs of marine resources management, industry, research, etc. and to develop a coordinated approach among state and federal partners to address those issues for the betterment of the resource for all who are concerned. The GSFMC has a long history of successfully coordinating and administering cooperative, regional programs such as the Southeast Area Monitoring and Assessment Program (SEAMAP), Interjurisdictional Fisheries Program (IJF), Sportfish Restoration Program (SFRP), Fisheries Information Network (FIN), Economics Program (EP) and the Marketing, Traceability and Sustainability components of the Oil Disaster Recovery Program (ODRP). One of the reasons the GSFMC has been so successful is that it is a vertically-integrated organization that provides products and services that satisfy a common need to both its state and federal partners throughout the Gulf of Mexico. In addition, the GSFMC has sole-source authority, under the Magnuson Fishery Conservation and Management Act, Title IV, Sec 402(d), which will expedite the distribution of funds and quickly allow these important activities to commence. Outlined below are the various activities, by GSFMC program, that can be accomplished if the requested funding is provided. It is important to note that these activities will augment the existing long-term work (totaling $5,530,000) already being conducted and funded through the GSFMC. The total annual cost for all of the proposed GSFMC activities is $2,418,000. The duration of this proposed project is 10 years. With inflationary increases over a ten-year time period, the total cost of this project is $27,578,000. With inflationary increases over a ten-year time period, the total cost of this project is $27,578,000. EXISTING & PROPOSED ANNUAL FUNDING

<table>
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<tr>
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<td>Monitoring Project</td>
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<td>Significant damage to the waters of the Gulf of Mexico. In order to effectively assess the long-term effects of this event, there needs to be a coordinated regional approach in monitoring the status and health of the marine resources in the Gulf of Mexico. The Gulf States Marine Fisheries Commission (GSFMC) is uniquely poised to provide such an approach. Established by both state and federal statutes in July 1949, the GSFMC is an organization of the five states (Texas, Louisiana, Mississippi, Alabama, and Florida) whose coastal waters are the Gulf of Mexico. It has as its principal objective the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico to provide food, employment, income, and recreation to the people of the United States. One of the most important functions of the GSFMC is to serve as a forum for the discussion of various challenges and programs of marine resources management, industry, research, etc. and to develop a coordinated approach among state and federal partners to address those issues for the betterment of the resource for all who are concerned. The GSFMC has a long history of successfully coordinating and administering cooperative, regional programs such as the Southeast Area Monitoring and Assessment Program (SEAMAP), Interjurisdictional Fisheries Program (IJF), Sportfish Restoration Program (SFRP), Fisheries Information Network (FIN), Economics Program (EP) and the Marketing, Traceability and Sustainability components of the Oil Disaster Recovery Program (ODRP). One of the reasons the GSFMC has been so successful is that it is a vertically-integrated organization that provides products and services that satisfy a common need to both its state and federal partners throughout the Gulf of Mexico. In addition, the GSFMC has sole-source authority, under the Magnuson Fishery Conservation and Management Act, Title IV, Sec 402(d), which will expedite the distribution of funds and quickly allow these important activities to commence. Outlined below are the various activities, by GSFMC program, that can be accomplished if the requested funding is provided. It is important to note that these activities will augment the existing long-term work (totaling $5,530,000) already being conducted and funded through the GSFMC. The total annual cost for all of the proposed GSFMC activities is $2,418,000. The duration of this proposed project is 10 years. With inflationary increases over a ten-year time period, the total cost of this project is $27,578,000.</td>
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years, it has provided for regional planning efforts. By states, to manage nearshore resources similar to the Magnuson Fishery Conservation and Management Act of 1976. In essence, the IFA is to the states what the Magnuson Act is to the nation and the benefits of sound management under these acts do not accrue separately. The IFA is probably the single most important Congressional act to professionalize the states’ scientific staff within the marine resource agencies. Proposed Activities: Activity 1: Expand Existing Management Plan Development: Task 1 - Creation of Management Plan Specialist Position. The GSMFC's IJF program must hold technical task force meetings to complete its current FMP workload in a timely fashion. At any point in time, the IJF staff is either developing or revising three or four FMPs simultaneously. FMPs initiated in a given year are carried over and completed in subsequent years; thus more than one management planning effort is ongoing in each year of the program. There currently is not adequate staff to maintain all the FMPs that are out-of-date and begin development for those species identified by the states not yet under regional management. A Management Plan Specialist position is needed to assist in the development of additional FMPs, profiles and revisions. Task 2 - Support Task Forces and Subcommittees. Following completion of the FMPs, task forces and subcommittees need to be maintained and kept active to ensure new and relevant issues in each IJF fishery are identified, review the status of the fisheries on a regular basis as required in the FMP process, and to coordinate regional management strategies that match the dynamics of these Fisheries. Task 3 - Coordination of Fish "Age-and-Growth" Activities. The GSMFC continues the coordination of fish "age-and-growth" activities in the region through the Otolith Workgroup, in support of the Fisheries Information Network (FIN). The biological sampling activities under FIN are in direct support of both state and federal stock assessments which are in the FMP development process. There is a need to develop additional methodologies and standardized techniques for species common to the five Gulf States. Task 4 - Support of Law Enforcement Committee. The GSMFC's IJF program has always supported its Law Enforcement Committee as funds have permitted. These activities continue with only administrative support and include participation with the Gulf of Mexico Fishery Management Council. The ability to provide financial support for GSMFC enforcement-related activities is severely limited. Task 5 - Support of Habitat Activities. The Habitat Program, which directly contributes to the development of FMPs under IJF, links the states' habitat components with fishing activities. The Habitat Program also coordinates and provides input to local and regional development activities that have an impact on important fisheries habitats. With additional funding, this program would provide distinct habitat descriptions and GIS output on the distribution of Life History stages associated with specific life history requirements and habitat components of fisheries under current and future IJF management. Activity 2: Creation of a Stock Assessment Program (GDAR): Task 1 - Implementation of the GDAR Program. The Gulf Data, Assessment, and Review (GDAR) is intended to support the development of online, regional assessments required in the Commission’s fishery management plans (FMPs). The GDAR is designed to mirror the federal assessment process (SEDAR - SouthEast Data, Assessment, and Review) to develop reliable fishery stock
assessments for the Gulf of Mexico has not evaluated through the federal SEADAR program. GDAR relies on the expertise available in the state marine agencies to develop an assessment through a transparent, open process. The completed stock assessments and recommendations by the TFs and various species subcommittees in the FMP. Each assessment requires three meeting components which include the associated TF and state marine agency analysts. Assessments are completed using three workshops: 1) the Data Workshop (DW) where datasets are documented, analyzed, and reviewed and the data required for conducting assessment analyses are compiled and standardized. 2) The Assessment Workshop (AW) where quantitative population analyses are developed and refined and population parameters are estimated. 3) The Review Workshop (RW) where a panel of independent experts reviews the data and final assessment model and recommendations. The completed stock assessments are documented, analyzed, and reviewed and the data required for conducting assessment analyses are compiled and standardized. The completed stock assessments are documented, analyzed, and reviewed and the data required for conducting assessment analyses are compiled and standardized.

Task 2 - Support for GDAR/Creation of Stock Assessment Scientist Position. The GSFMC has created a program through IJF that mirrors the federal SEADAR (Southeast Data Assessment and Review) program in an effort to complete regional assessments of state managed species. The IJF Program is presently combining the GDAR (Gulf Data, Assessment, and Review) with the TF meetings, but as more assessments are needed, the ability to continue funding GDAR is questionable. To assist with assessments and the GDAR Program, the GSFMC needs to create a Stock Assessment Scientist position to develop the regional stock assessments and assist the states with their analytical activities. This individual would coordinate and process the state’s fishery data and work with the Stock Assessment Team to develop and integrate new models for stock assessment in the Gulf. Task 3 - Support of Stock Assessment Team. The GSFMC’s Stock Assessment Team currently has no funding for regional stock assessments in support of FMP development. In addition, there is not a way to pro

The IJF Program is presently combining the GDAR (Gulf Data, Assessment, and Review) with the TF meetings, but as more assessments are needed, the ability to continue funding GDAR is questionable. To assist with assessments and the GDAR Program, the GSFMC needs to create a Stock Assessment Scientist position to develop the regional stock assessments and assist the states with their analytical activities. This individual would coordinate and process the state’s fishery data and work with the Stock Assessment Team to develop and integrate new models for stock assessment in the Gulf. Task 3 - Support of Stock Assessment Team. The GSFMC’s Stock Assessment Team currently has no funding for regional stock assessments in support of FMP development. In addition, there is not a way to pro
Determination of where and when this fishery interacts with sea turtle and red fleet will generate a wealth of fine scale spatial data. These data will allow inshore shrimp fishery. About 150 inshore shrimp fishery. NOAA has been making the ELBs available to members of the Researchers have found that these devices to be a reliable method for estimating sea turtle/shrimp fishery interactions that could result also underscore the importance of offshore shrimp fishing effort and potentially higher number of sea turtle strandings in the Gulf of Mexico. The recent increase in abundance and possible relationships between areas of low catch and oiled estuarine habitats. Expanding ELBs to the entire offshore fleet and making them available on a voluntary basis to a greater portion of the inshore fleet will improve the precision of sea turtle bycatch estimates needed to facilitate and track recovery of impacted sea turtle populations in the Gulf of Mexico. The recent increase in offshore shrimp fishing effort and potentially higher number of sea turtle interactions that could result also underscore the importance of ELBs in estimating sea turtle bycatch for developing mitigation and recovery strategies going forward. Description: Implemented through a joint reef fish/shrimp management plan, a statistically valid sample of shrimp vessel permits are randomly selected and must report shrimp fishing effort via an ELB. A additional third of the federally permitted offshore shrimp fleet. shrimp fishing effort data recorded by ELBs are also a proxy for estimating red snapper bycatch mortality in the offshore shrimp fishery. Bycatch mortality estimates are important for determining whether management measures are needed to help red snapper populations exposed to oil recover from potential injury. The long-term effects of oil and chemical dispersants on shrimp species or their habitat remain unknown. Tracking the location and catch per unit of effort of shrimp can help scientists and fishery managers better understand trends between areas of low catch and oiled estuarine habitats. Expanding ELBs to the entire offshore fleet and making them available on a voluntary basis to a greater portion of the inshore fleet will improve the precision of sea turtle bycatch estimates needed to facilitate and track recovery of impacted sea turtle populations in the Gulf of Mexico. The recent increase in offshore shrimp fishing effort and potentially higher number of sea turtle interactions that could result also underscore the importance of ELBs in estimating sea turtle bycatch for developing mitigation and recovery strategies going forward.

Description: Implemented through a joint reef fish/shrimp management plan amendment in February 2008, a statistically valid sample of shrimp vessel permit holders are randomly selected and must report shrimp fishing effort via an ELB. A simple ELB that records spatio-temporal fishing effort is currently used by approximately see-third of the federally permitted offshore shrimp fleet. Researchers have found these devices to be a reliable method for estimating sea turtle interaction and red snapper bycatch mortality in the Gulf of Mexico offshore shrimp fishery. NOAA has been making the ELBs available to members of the inshore shrimp fleet. A bout 150 inshore shrimp vessels use ELBs on a voluntarily basis. Upgrading this program to expand coverage in the offshore and inshore fleets will generate a wealth of fine scale spatial data. These data will allow scientists to better characterize the shrimp fishery’s effort and classify overlapping areas of fishing effort in regards to sea turtle and juvenile red snapper habitat areas. Determination of where and when this fishery interacts with sea turtle and red

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Project Name: Lead By Example – Use Non-Petroleum Motor Fuels to Prevent Future Oil Spills

**Project Description:**

Every ship, boat, truck, car and aircraft engaged in the response to this oil spill and all restoration activities to date have used vehicles powered by a liquid petroleum-based motor fuel. This fact is not only ironic, but symbolic of the fundamental challenge faced by Florida citizens who would prefer to not be a party to future oil spills. This restoration effort can, and should, demonstrate how the risk of future leaks, spills and releases of petroleum-hydrocarbons can be minimized, if not completely eliminated, by the use of commercially available natural gas and electric motor fuels in all types of vehicles. This action is relevant because, under current federal policy and industry practices, boaters and drivers in Florida have no choice but to purchase and use a liquid petroleum-based motor fuel to power all of their motor vehicles. Non-petroleum motor fuels, such as methane and electricity, are cheaper, cleaner and widely available, but are not easily used to power motor vehicles or boats. This means that restoration activities will contribute to the risk of a future oil spill and will do nothing to mitigate the risk of future spills. In effect, this contradicts Administration policy that instructs federal agencies to take action, where possible, to reduce petroleum consumption and to support administrative and adaptive management efforts to scale management while reducing bycatch mortality, natural gas and electricity are both technologically feasible and economically available throughout the Gulf Region. Given sufficient demand, natural gas and electric motor fuels can be supplied to land or marine vehicles used to support administrative and restoration work. Many types of land vehicles powered by electricity or natural gas are commercially available; some of these vehicles operate in the Florida Panhandle today. Suppliers are standing by, waiting, for the opportunity to make these vehicles fuels available to help restore Gulf resources. Marine engines can be modified to operate on natural gas; natural gas motor fuels can be stored on boats in either compressed or liquid form. There are no technical barriers to using natural gas to power boats; only perception. Natural gas retails at prices that are 50% to 75% cheaper than the price of gasoline or diesel fuel. Natural gas is now the fuel of choice for waste trucks, transit buses and other high-fuel consuming vehicles. In the marine sector, natural gas has become the fuel of choice for a variety of work boats, including harbor craft and ocean going ferry boats. Tampa Bay Watch operated a natural gas outboard 15;...
An ecosystem assessment is needed to better understand the role and productivity of menhaden in the Gulf of Mexico and to what extent that DWH oil may affect the future health and ecological role of its population. Gulf menhaden is a significant component of a multi trophic level food web in the Gulf of Mexico. Brown pelicans, a top predator in the Gulf of Mexico, feed on menhaden. Brown pelicans, as well as other species whose diets include menhaden were injured. Benefit and Rationale: The Exxon Valdez oil spill injured Pacific herring and pink salmon in Prince William Sound. Multiple models were developed that contributed to the long term collapse of the herring population in that region. As a result, the Sound Ecosystem Assessment (SEA) project was designed to determine the root causes of their decline and elucidate the factors that drove their productivity. Between 1994 and 1999, the SEA program yielded an ecosystem level understanding of factors influencing juvenile pink salmon and Pacific herring survival in Prince William Sound. Multiple models were developed that better explained the relationships between such elements as the environment, predation and the associated food web.

Description: This multi-year, interdisciplinary research project would aim to clarify questions about the role of Gulf menhaden in the ecosystem and whether and how its population and ecosystem were affected by BP Deepwater Horizon oil. The resulting models and information could improve estimates of menhaden productivity and guide fisheries management decisions that bear on recovery of menhaden from any oil-related injuries. Link to injury: Menhaden’s offshore spawning and subsequent egg/larval drift into the estuaries in the northern Gulf coincided with the DWH oil disaster. Juvenile menhaden and oil would have been in the estuary at the same time. Therefore, it is likely that menhaden in one or more life history stage was exposed to the oil or chemical dispersants. Brown pelican and other species whose diets include menhaden were injured. Benefit and Rationale: An ecosystem assessment is needed to better understand the role and productivity of menhaden in the Gulf of Mexico and to what extent that DWH oil may affect the future health and ecological role of its population. Gulf menhaden is a significant part of Gulf of Mexico’s base food web. Menhaden eggs, larvae, and young of the year are a major forage source for many economically important fish species. Upwards of 15 percent of the brown pelican’s diet can be Gulf menhaden. The revenue generated by this fishery is of great economic importance to the Gulf of Mexico, especially to Louisiana. Recommendations made in an October 2011 stock assessment for Gulf menhaden provide an excellent starting point for the types of research needed for an ecosystem assessment. For example, the stock assessment recommends research to examine menhaden reproductive biology, predator/prey relations, genetics, and natural mortality through tagging studies. These studies are important components of an ecosystem assessment. Other: 1 The Exxon Valdez oil spill injured Pacific herring and pink salmon in Prince William Sound and by likely contributed to the long-term collapse of the herring population in that region. As a result, the Sound Ecosystem Assessment (SEA) project was designed to determine the root causes of their decline and elucidate the factors that drove their productivity. Between 1994 and 1999, the SEA program yielded an ecosystem level understanding of factors influencing juvenile pink salmon and Pacific herring survival in Prince William Sound. Multiple models were developed that better explained the relationships between such elements as the environment, predation and the associated food web. Don’t know the details at all, but it would be easy to find out. There has been some research on migrating birds hitting the lights on oil rigs. Ben Raines had a story in the Mobile Register (Gulflive.com online) about the fish that hung around.
Project Information

Project Name: FishSmart - Building Sustainability in the Snapper and Grouper Recreational Fisheries and Associated Industry in the Gulf of Mexico

Submitted By/Primary Lead:

Location:
Gulf of Mexico

Cost:
1000000

Project Description:

Justification: The Deepwater Horizon Oil Spill substantially impacted recreational fisheries and their supporting industry in the Gulf of Mexico. Responses to a questionnaire following the spill indicated that nearly all surveyed fishing equipment retailers experienced reductions in their monthly sales, with the majority reporting losses of greater than 50%. Bookings for charter fishing trips and other associated recreational businesses plummeted. Even though some fish stocks such as red snapper are now showing signs of rebounding, NOAA Fisheries noted that as the population grows and the fish get bigger, recreational fishermen are likely to catch their quota faster, resulting in even shorter fishing seasons. This will translate into reduced recreational fishing trips, further reductions in tackle and equipment sales, fewer bookings for charter business, and generally lower economic viability for many recreational fishery-related businesses still trying to recover from the oil spill. Mandatory catch and release due to regulations will result in a slower stock rebuilding process and a continuing drag on the recreational industry. Anglers are not engaged to adopt “Best Practices” (tools and techniques to avoid catching fish that must be released combined with tools and techniques to improve the survival of recreationally caught and released fish). Objective: To increase angler adoption of “Best Practices” (tools and techniques to avoid catching fish that must be released combined with tools and techniques to improve survival of recreationally caught and released fish).

Vision: To stop the birds from being attracted to the lights. These oil companies are not going to do anything that is bird-friendly without being forced to. If some of the restoration money could be used to buy and install the correct lights, that would make a huge difference.
with and handle the fish. Approach: This project will consist of four primary aspects to educate anglers to implement Best Practices, measure results, and potentially increase fishing seasons and the economic returns to coastal communities:  
1. A survey of anglers in the Gulf states to develop a baseline for awareness of Best Practices. To accomplish this, 8-10 focus groups will be conducted across the Gulf states to assess the knowledge of and attitudes toward Best Practices. These focus groups will allow baseline information to be gathered on responses of anglers to test messages in each region of the Gulf community. Following this, a telephone survey to anglers will be conducted to ascertain the general knowledge across the regional angler base before the multi-media campaign is initiated.  
2. A 3 year multi-media awareness/education campaign to inform anglers of the need for implementing Best Practices and drive them to online information sources. The TV/Radio and Digital Media communications will be conducted in segmented markets of Alabama, western Florida, Louisiana, Mississippi, and Texas coordinated through the Recreational Boating and Fishing Foundation (RBFF). RBFF was established for the sole purpose of communicating messages to anglers to effect behavior and fishing participation rates. A Development and delivery of online content on Best Practices and gear. Information gained from the 2012 FishSmart Gulf of Mexico/South Atlantic workshop on Best Practices and messaging will provide the basis for a communications and media campaign. This information will be assembled into on-line delivery mechanisms for anglers. A Effectiveness Evaluation: A follow up survey of anglers in the Gulf states to determine effectiveness of and response to the multi-media awareness campaign and online education material. Cost: Approximately $20 - $20.5 million ($15 million of this for creative ad campaign development, media buys, and ad placements covering 5 states). Expected Results: Measurement of success will be the adoption of Best Practices and tools by anglers reached through the multimedia campaign. Statistics will be available on extent of reach and demographic characteristics, increases in web traffic to information sources, and effectiveness of the campaign in changing angler behavior. Ultimately, increased survival of fish will translate into enhanced fishing opportunities, increases in angler opportunities, and increases in retail traffic to stores to purchase appropriate gear. A similar effort in Australia to encourage anglers to adopt “Fish Friendly” tackle (known as FishSmart tackle in the USA) and techniques had 59% recall with 35% of anglers saying that it help ed change their practices. Sales of some fish friendly tackle increased 20-50% in the outlets surveyed.  
Other Considerations: The FishAmerica Foundation is the conservation and research foundation of the American Sportfishing Association and an early supporter of the FishSmart program. FishSmart is a program driven by the angling community, not a top-down government program, to identify best release practices and communicate these to anglers. FishSmart utilizes several approaches consisting of:  
1. Expanding our knowledge and understanding of released fish survival;  
2. Developing new technologies and equipment to enhance released fish survival;  
3. Promoting the adoption of careful release techniques; and  
4. Developing an angler communication infrastructure to disseminate best practices to increase the survival of released fish.
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<th>Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<tr>
<td>Shrew Light</td>
<td>samaph</td>
<td>Gulf of Mexico</td>
<td>250000</td>
<td>The idea is based on a research article which underscores the importance of light penetration in productive lake environments. Since many lakes, water bodies suffer from limited light penetration due to pollutants, natural conditions or external factors like oil spills, we need to link about &quot;shrew-light&quot;. The idea &quot;shrew-light&quot; proposes to rectify the situation by shining light underneath the lake using a solar concentrators and optic systems. We can station floating &quot;shrew-light&quot; systems which provide pockets of light underneath the lake (like a under water light house). In addition this system can be used to aerate the water as well providing a local environment for the microorganisms to thrive and drive the natural lake ecosystem.</td>
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<td>Improving Public Access to Alabama Coastal Waters- Weeks Bay Reserve</td>
<td>Walter C. Northcutt, IV</td>
<td>Weeks Bay</td>
<td>810000</td>
<td>The Weeks Bay National Estuarine Research Reserve (Reserve) provides leadership to promote informed management of estuarine and coastal habitats through scientific understanding and encourages good stewardship practices through partnerships, public education, and outreach programs. In an effort to continue and enhance such programs it is recommended that funds be provided to provide additional public access and maintain pristine estuarine and marine environments. The proposed project site adjoins existing Weeks Bay Reserve public access property. This site was utilized as a staging area during the Deepwater Horizon oil spill incident. This project is a means of providing a source of mitigation for the environmental and economic damages that resulted from the closure of public waters and the utilization of the site as an emergency staging area. This project will support the conducting of future resource recovery activities by allowing restoration activities to be conducted on the site. This location has been selected as a future 100/1,000 restoration site by The Nature Conservancy and the 100/1,000 project partners. Accessibility to best steward public trust coastal resources is important to federal and state trustees in the resource recovery process. This project will acquire additional public lands for research, restoration and public use within the Reserve boundary and will establish the needed infrastructure to support future disaster response and recovery efforts. The mission of the Weeks Bay Foundation is to protect the natural resources of coastal Alabama and provide assistance and support to the goals and programs of the Reserve. The Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this project. The Reserve will serve as a primary partner on this proposal. This project will acquire additional property that will improve public water access to the waters of Coastal Alabama and allow future estuarine research and education to be conducted on the site. It will also connect two existing public lands owned by the State of AL. The estimated cost of this project is $810,000. Partners include the Y Weeks Property Owners Association, Weeks Bay Foundation, Weeks Bay Reserve and the ADCNR Marine Resources Division.</td>
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<td>Coastal Land Acquisition in Alabama</td>
<td>Steve Northcutt</td>
<td>coastal AL</td>
<td>151199</td>
<td>Consistent with Section 1005 of the Oil Pollution Act, this project will: Contribute to making the environment and the public whole by acquiring lands that provide coastal habitat protection for the Gulf of Mexico’s critically important bays, estuaries, barrier islands, and coastal rivers. Such acquisitions ultimately provide habitat to animals, plants and wetlands, improve water quality, protect and restore coastal fisheries, and support heritage-based tourism and recreational opportunities for people. Address habitat protection and provide new recreational opportunities.</td>
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## Project Description

Additional protected lands may become part of national wildlife refuges, state parks, nature preserves, or recreational areas. Alabama ranks last in percentage of protected lands in the southeast with approximately 4% of state land area in protected status. To compensate for loss of coastal wetlands and other important habitats, degradation of water quality, loss and impairment of oyster reefs, seagrass beds and other submersed habitats, apply land acquisition and management in a consistent manner at several landscape-scale sites in Coastal Alabama, including Perdido River, Fort Morgan Peninsula (Baldwin County), the Mobile Delta, and Grand Bay Savannas, Dauphin Island (Mobile County). Acquisition efforts are underway for several high-priority tracts that are currently available in these areas.

### Project Scope

The landscape of coastal Alabama is dominated by several striking geographic features, notably the major estuary of Mobile Bay and its vast wetland delta formed by the confluence of the Alabama and Tombigbee Rivers with the Perdido River, the Escatawpa River and, to the south, a well-developed chain of barrier islands along the Gulf of Mexico coastline that protect Mississippi Sound and other smaller estuaries. A series of overlapping terrestrial, freshwater aquatic, and unique marine sites fit together to form a complex and diverse landscape. The primary threats to this project area include altered hydrologic regime and degraded water quality, altered fire regimes, incompatible forestry practices, and urbanization/development. Conservation partners have worked over the last several decades to protect over 100,000 acres in Alabama's coastal counties. This project would add to these efforts to preserve and protect water quality and provide habitat for the vast array of wildlife on the Gulf Coast. Protection of our parks, forests, local recreation areas, refuges and other lands is a strong, permanent commitment of the Alabama Chapter of The Nature Conservancy and an important step in the ongoing effort to preserve and protect these valuable resources.

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The landscape of coastal Alabama is dominated by several striking geographic features, notably the major estuary of Mobile Bay and its vast wetland delta formed by the confluence of the Alabama and Tombigbee Rivers with the Perdido River, the Escatawpa River and, to the south, a well-developed chain of barrier islands along the Gulf of Mexico coastline that protect Mississippi Sound and other smaller estuaries. A series of overlapping terrestrial, freshwater aquatic, and unique marine sites fit together to form a complex and diverse landscape. The primary threats to this project area include altered hydrologic regime and degraded water quality, altered fire regimes, incompatible forestry practices, and urbanization/development. Conservation partners have worked over the last several decades to protect over 100,000 acres in Alabama's coastal counties. This project would add to these efforts to preserve and protect water quality and provide habitat for the vast array of wildlife on the Gulf Coast. Protection of our parks, forests, local recreation areas, refuges and other lands is a strong, permanent commitment of the Alabama Chapter of The Nature Conservancy and an important step in the ongoing effort to preserve and protect these valuable resources.

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Alabama Oyster Shell Recycling Program

Project Description

The Nature Conservancy recommends $6.4M to initiate and sustain a restaurant and public oyster shell recycling program in Mobile and Baldwin Counties, Alabama. Globally, oyster reefs are the single most impacted marine habitat (85% loss). The Gulf of Mexico supports the only remaining significant wild oyster harvest in the world and has some of the best examples of the few remaining reefs. Even with 10% -30% loss of oyster reefs, the Gulf of Mexico likely represents the last place in the world where large scale oyster reef conservation and sustainable fisheries may be possible (Beck et al. 2011). Across the Gulf, the Conservancy is currently compiling known current and historic oyster reef information to identify key areas for large-scale restoration. Information gained through this project will help to inform the Conservancy’s National and Regional (Gulf of Mexico) shellfish strategies, decision support tools and plans. Despite significant loss of oyster reefs, Mobile Bay, with the fifth largest drainage basin in the US, represents one of the largest potential areas for outright restoration, replacement and enhancement of this lost habitat due to the size of the estuary, historic distribution of oysters in the Bay, high natural oyster spat sets and warm water for fast growth. The Nature Conservancy proposes engaging local businesses and the public in this restoration through an oyster shell recycling program. This program will engage restaurants and the general public and will serve as a nexus between education and restoration to create direct, tangible linkages between oyster restoration and local communities, while addressing impacts from the oil spill. Consistent with Section 1006 of the Oil Pollution Act, this project will: 1.Contribute to making the environment and the public whole by recycling oyster shells discarded by the public for restoration projects to restore the natural resources used by people, wildlife and fisheries. -Address impacts to oyster reefs and associated ecosystem services by engaging businesses and the public; -Compensate for impacted oyster reefs, by recycling, rather than discarding, this limited resource, which can then be used for restoration projects. -Apply in a consistent manner to restore fish and shellfish stocks and the livelihoods intimately linked with them, as well as enhance the resiliency of coastal Alabama and its communities. -Currently, oyster shells from restaurants and private consumption are discarded and sent to landfills. This is a cost-effective way to secure a crucial resource that is currently being thrown away, while educating and engaging businesses and the public about the connection between their food and the natural resources needed to support them. Examples of how the proposed Living Shorelines/Oyster Breakwater Reef Project will help recover the NRDA Resources: note: The shells from this project will be used to enhance and restore oyster reefs. Thus, the comments below reflect the final use of the shells in the restoration project, rather than the actual collection. 1. Water Column and invertebrates -Healthy living shorelines/oyster reef breakwaters contribute larvae as...
### Project Information

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### Project Description

A free-swimming plankton feed, in turn, serve as a food source for other larger nekton and benthic organisms such as crabs and adult oysters. Living shorelines/oyster reef breakwaters provide habitat for estuarine nekton such as fish and benthic organisms such as crabs and adult oysters. 2. Marine Fish-Living shorelines/oyster reef breakwaters increase fishery species abundance by providing nursery and structural habitat for the health and recovery of recreational and commercial estuarine species (redfish, snapper, blue crab, stone crab, shrimp) 3. Marine Mammals - The diversity of fish species using living shorelines/oyster reef breakwaters are prey species for estuarine bottlenose dolphin populations - Living shorelines/oyster reef breakwaters can improve water clarity for seagrasses habitat that is essential for the survival of the West Indian manatee and economically important fishery species 4. Sea Turtles - Living shorelines/oyster reef breakwaters can improve water clarity for seagrass habitat that is essential for the survival of many species of sea turtles and economically important fishery species 5. Nearshore Sediment and Resources - Living shorelines/oyster reef breakwaters increase habitat and available food sources for health and recovery of crabs, shrimp, fish, birds and terrestrial wildlife 6. Submerged Aquatic Vegetation - Living shorelines/oyster reef breakwaters can improve water clarity through filtration (ex. one adult oyster can filter up to 50 gallons of water a day) - Living shorelines/oyster reef breakwaters stabilize sediments and enhance seagrass recruitment 7. Oysters - Living shorelines/oyster reef breakwaters can improve water clarity through filtration (ex. one adult oyster can filter up to 50 gallons of water a day) - All stages of the oyster (larvae, spat and adult) are a critical base of the food chain for the health and recovery of valuable commercial and recreational fish, crab and shrimp species, sea turtles and shorebirds, bottlenose dolphin, pelagic fish - Living shorelines/oyster reef breakwaters serve as a source of oyster larvae to benefit establishment and maintenance of nonharvestable and harvestable oysters reefs in the system, 8. Shorelines - Living shorelines/oyster reef breakwaters are a natural line of defense, protecting developed and natural shorelines such as salt marsh, uplands and coastal communities from erosion, storm surges and other coastal hazards. 9. Birds - Living shorelines/oyster reef breakwaters provide food for the health and recovery of oysters, clams, birds and species. 10. Terrestrial Species - Living shorelines/oyster reef breakwaters are a critical base of the food chain for health and recovery of terrestrial based species such as deer, alligators, crabs, birds and other species. 11. Human Use - Living shorelines/oyster reef breakwaters can improve water quality for recreational activities including fishing, boating and swimming. Living shorelines/oyster reef breakwaters serve as a source of oyster larva to maintain or establish other reef areas such as harvestable oysters reefs, Living shorelines/oyster reef breakwaters enhance watchable wildlife opportunities for birds, bottlenose dolphins and other estuarine life - Living shorelines/oyster reef breakwaters minimize shoreline erosion, protecting personal property and its associated value (1) Contribute to making the environment and the public whole by restoring, rehabilitating, replacing, or acquiring the
### Project Description

The proposed project will replace a severely damaged seawall along Perdido Pass, at Alabama Point in Orange Beach, Alabama. The seawall and attendant parking area serves as a landmark fishing access and sightseeing location. Access to the Pass from this location is currently closed, due to the unstable asphalt surface of the parking lot. The project will consist of installing new seawall immediately behind the existing. The existing tiebacks will be reused. Once the new seawall is installed the existing sheets will be removed to some depth that is yet to be finalized. A new concrete cap will be placed on top of the new wall. The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.

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<td>11772</td>
<td>Don C. Powell</td>
<td>Orange Beach</td>
<td>$650,000</td>
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<tr>
<td>Fowl River Shore and Island</td>
<td>11771</td>
<td>Casi Callaway</td>
<td>Fowl River</td>
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### Project Description

- **Replacement of new wall.** The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.
- **Seawall and attendant parking area.** The seawall and attendant parking area serves as a landmark fishing access and sightseeing location. Access to the Pass from this location is currently closed, due to the unstable asphalt surface of the parking lot. The project will consist of installing new seawall immediately behind the existing. The existing tiebacks will be reused. Once the new seawall is installed the existing sheets will be removed to some depth that is yet to be finalized. A new concrete cap will be placed on top of the new wall. The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.

### Project Information

- **Project Name:** Perdido Pass Seawall Replacement
- **Submitter/Lead:** Don C. Powell
- **Location:** Orange Beach
- **Cost:** $650,000

### Project Description

- **Replacement of new wall.** The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.
- **Seawall and attendant parking area.** The seawall and attendant parking area serves as a landmark fishing access and sightseeing location. Access to the Pass from this location is currently closed, due to the unstable asphalt surface of the parking lot. The project will consist of installing new seawall immediately behind the existing. The existing tiebacks will be reused. Once the new seawall is installed the existing sheets will be removed to some depth that is yet to be finalized. A new concrete cap will be placed on top of the new wall. The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.

### Project Information

- **Project Name:** Fowl River Shore and Island
- **Submitter/Lead:** Casi Callaway
- **Location:** Fowl River
- **Cost:** $6,500,000

### Project Description

- **Replacement of new wall.** The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.
- **Seawall and attendant parking area.** The seawall and attendant parking area serves as a landmark fishing access and sightseeing location. Access to the Pass from this location is currently closed, due to the unstable asphalt surface of the parking lot. The project will consist of installing new seawall immediately behind the existing. The existing tiebacks will be reused. Once the new seawall is installed the existing sheets will be removed to some depth that is yet to be finalized. A new concrete cap will be placed on top of the new wall. The areas of the parking lot that were disturbed during construction will be repaved. The existing lighting will be upgraded.
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<td>Alabama Coastal Forest Restoration Project</td>
<td>Keith Tassin</td>
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**Project Description**

- **Restoration and Stabilization**:s, seqouia and norhern pines are among the most significant forest types in the world. They are an essential component of the world's ecosystems and provide critical habitat for many species. The main cause of this loss is significant increase in boat traffic, especially since the BP Oil Disaster in April of 2010. In order to prevent further erosion and restore the damage that has occurred, a combination of shoreline stabilization, breakwaters, and wetland restoration is essential. We have consulted with coastal engineers and the Dauphin Island Sea Lab to get advice as to the best actions to take to address the problem. It is estimated that around 50% of project cost will go towards engineering and design. Even though the wetlands and islands are unhabited, they are all privately owned. Project managers are currently in the process of researching and contacting property owners for permission to do the work. Short-term project plan: Get permission from landowners to work. Secure money for project. Prioritize the shoreline projects. Secure permits and begin work. Long-term project goal: Restoration and stabilization of degraded shoreline on river and islands as well as restoration of wetlands. Economic impact: Project will include design engineering firms, waterfront construction. Will provide continued recreational use of river by all Mobile County residents and fishermen.

*UPDATE: CURRENTLY WORKING WITH 10 PRIVATE LANDOWNERS REGARDING 4,000 ACRES The fire-maintained, longleaf pine dominated forests of the Southeast U.S. were once so expansive they covered some 90 million acres from Virginia to Texas. Today, however, less than 4% of that forest remains. Much of the landscape within Alabama's coastal watersheds has been lost to fire and, over the last 100 years, has been converted to industrialized pine plantations. During this time, ditches have been dug to drain wetlands, thousands of forest roads have been created, thousands of acres have been bedded, non-native invasive species have been introduced, and natural fires have been excluded. All of these activities have had a significant impact on the natural fine and water quality that drains from these headwaters, providing vital freshwater inflows to the Gulf States. This project will work with selected private landowners/managers and public partners on longleaf pine conservation and restoration strategies within the Perdido, Escatawpa, and Mobile/Tensaw River basins. It will proactively seek large private forest ownerships with high biological diversity and watershed protection in mind. The results of this project will be improved natural function in the habitats surrounding the headwaters of streams and rivers critical to the survival of healthy estuarine and marine systems. The Nature Conservancy has long worked with partners, such as the U.S. Fish and Wildlife Service, the Alabama Department of Conservation and Natural Resources, and others to preserve over 100,000 acres in Mobile and Baldwin Counties in areas including the Mobile/Tensaw Delta, Perdido River WMA, and Mobile/Western NWR, Lillian Swamp, and Splinter Hill Bog. Currently, the Conservancy, in partnership with the US Fish and Wildlife Service, is working with numerous private forest landowners in Baldwin, Escambia, Mobile, Monroe, and Washington Counties focusing on longleaf pine conservation and restoration. A particular focus has been on reintroduction of prescribed fire to longleaf pine forests and a gradual movement toward application of prescribed fire in the growing season. Benefits to injured natural resources: The Perdido and Escatawpa River watersheds cover more than 220,000 acres and are Alabama’s largest and...
**Project Name:** Mobile-Tensaw Delta  
**Project Description:** The Mobile-Tensaw Delta encompasses more than 370,000 acres of tidal freshwater marshes, cypress-tupelo swamps, and bottomland hardwood forests. All of these rivers provide freshwater to very significant estuarine and marine areas in Alabama and Mississippi on the Gulf Coast that were impacted by the oil spill. The adjoining uplands and tributaries of these streams contain only remnants of a once vast longleaf pine forest, Atlantic white cedar swamps, and pitcher plant bogs. These watersheds are home to numerous globally imperiled or rare species of animals and plants. The mosaic created by these interlaced habitats serves as shelter, nesting and foraging areas for waterfowl, neotropical migrants and wading birds. Job Creation and Economic Value: This project will support 3-3 full time positions, 4-4 seasonal positions, and 5-5 full time positions, 6-6 seasonal positions, and will employ a number of contractors to conduct offshore species removal, invasive species control, tree planting, and site preparation burning and spraying. Local businesses will directly benefit from this project, too. Thirty-five percent of the nation’s seafood comes from the Gulf of Mexico, including 50% of the shrimp and 95% of the oysters. The coastal waters in and around Mississippi Sound and Mobile Bay historically contained some of the most productive oyster reefs, saltmarshes, and seagrass beds along the northern Gulf coast. This project seeks to preserve and enhance water quality to allow these industries to continue. Examples of how the proposed Forest Restoration Project will help recover the NRDA Resources: 1. Coastal Forests - Restoration of severely altered forest habitats will restore native flora and fauna to valuable multi-family wildlife habitats is critical to maintaining the high level biodiversity known to occur in the longleaf pine ecosystem. 2. Coastal Forests - Restoration of severely altered forest habitats will result in the return of native flora and fauna to valuable multi-family wildlife habitats is critical to maintaining the high level biodiversity known to occur in the longleaf pine ecosystem. 3. Coastal Forests - Coastal forests provide freshwater to very significant estuarine and marine areas in Alabama and Mississippi on the Gulf Coast that were impacted by the oil spill. Adjoining uplands and tributaries of these streams contain only remnants of a once vast longleaf pine forest ecosystem. These watersheds are home to many rare animals and plants. 4. Birds - Forest restoration will increase habitat for migratory and neotropical birds, waterfowl, and other important species such as bobwhite quail and red-cockaded woodpecker. 5. Terrestrial species - Forest restoration will enhance species habitat for numerous terrestrial species including gopher tortoise, dusky gopher frog, eastern indigo snake, eastern diamondback rattlesnake, black bear and many others. 6. Human Use - Forest restoration can improve forest quality for recreational activities including hiking, birding, hunting, cycling, etc. - Forest restoration will support job development in local communities by increasing demand for forest vendors and consultants.  
**Public Notice:**  
**Project is consistent with criteria identified in the public notice (Y/N):**  
**Project meets Trustees' goals (+ / 0 / -):**  
**Project has reasonable probability of success (+ / 0 / -):**  
**Project is technically feasible (+ / 0 / -):**  
**Project readiness (+ / 0 / -):**  
**Project offers opportunities for external funding & collaboration (+ / 0 / -):**  

**Other Criteria:**  
- The project is not already required by existing regulations (Y/N)  
- The project is not already fully funded (Y/N)  
- The effect of the project alternative on public health and safety (+ / 0 / -)  
- Project supports existing regional or local conservation plan or restoration effort (Y/N)  
- Project is consistent with programmatic restoration goals (Y/N)  
- Project is consistent with programmatic restoration Plan (PDARP) Criteria (Y/N)  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project prevents future and continuing losses of natural resources and services (+ / 0 / -)  
- Project is consistent with category or type of federal agency’s oil spill plan, or restoration effort (Y/N)  
- Project is not already required by existing regulations (Y/N)  
- Project benefits more than one natural resource and/or service (+ / 0 / -)  
- Project meets trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  
- Project is not already required by existing regulations (Y/N)  
- The effect of the project alternative on public health and safety (+ / 0 / -)  
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- Project is consistent with programmatic restoration Plan (PDARP) Criteria (Y/N)  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project prevents future and continuing losses of natural resources and services (+ / 0 / -)  
- Project is consistent with category or type of federal agency’s oil spill plan, or restoration effort (Y/N)  
- Project is not already required by existing regulations (Y/N)  
- Project benefits more than one natural resource and/or service (+ / 0 / -)  
- Project meets trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria:**  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project meets Trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

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**Restoration Types Addressed**  
- Water Quality/Nonpoint Source Nutrient Reduction (Y/N)  
- Wetland, Coastal, and Nearshore Habitat (Y/N)  
- Oyster Reef (Y/N)  
- Birds (Y/N)  
- Sea Turtles (Y/N)  
- Recreational Use (Y/N)  
- Habitat on Federal Lands (Y/N)  
- Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project meets Trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

**Public Notice**  
- Project is consistent with programmatic restoration goals (Y/N)  
- Project is consistent with programmatic restoration Plan (PDARP) Criteria (Y/N)  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project meets Trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

**Oil Pollution Act (OPA) Criteria**  
- Project is not already required by existing regulations (Y/N)  
- Project benefits more than one natural resource and/or service (+ / 0 / -)  
- Project meets trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

**Additional Criteria**  
- Project is consistent with programmatic restoration goals (Y/N)  
- Project is consistent with programmatic restoration Plan (PDARP) Criteria (Y/N)  
- Project is consistent with criteria identified in the public notice (Y/N)  
- Project meets Trustees' goals (+ / 0 / -)  
- Project has reasonable probability of success (+ / 0 / -)  
- Project is technically feasible (+ / 0 / -)  
- Project readiness (+ / 0 / -)  
- Project offers opportunities for external funding & collaboration (+ / 0 / -)  

**Project Description**  
- Most ecologically significant blackwater rivers. The Mobile-Tensaw Delta encompasses more than 300,000 acres of tidal freshwater marshes, cypress-tupelo swamps, and bottomland hardwood forests. All of these rivers provide freshwater to very significant estuarine and marine areas in Alabama and Mississippi on the Gulf Coast that were impacted by the oil spill. The adjoining uplands and tributaries of all these streams contain only remnants of a once vast longleaf pine forest, Atlantic white cedar swamps, and pitcher plant bogs. These watersheds are home to numerous globally imperiled or rare species of animals and plants. The mosaic created by these interlaced habitats serves as shelter, nesting and foraging areas for waterfowl, neotropical migrants and wading birds. Job Creation and Economic Value: This project will support 3-3 full time positions, 4-4 seasonal positions, and will employ a number of contractors to conduct offshore species removal, invasive species control, tree planting, and site preparation burning and spraying. Local businesses will directly benefit from this project, too. Thirty-five percent of the nation’s seafood comes from the Gulf of Mexico, including 50% of the shrimp and 95% of the oysters. The coastal waters in and around Mississippi Sound and Mobile Bay historically contained some of the most productive oyster reefs, saltmarshes, and seagrass beds along the northern Gulf coast. This project seeks to preserve and enhance water quality to allow these industries to continue. Examples of how the proposed Forest Restoration Project will help recover the NRDA Resources: 1. Coastal Forests - Restoration of severely altered forest habitats will restore native flora and fauna to valuable multi-family wildlife habitats is critical to maintaining the high level biodiversity known to occur in the longleaf pine ecosystem. 2. Coastal Forests - Restoration of severely altered forest habitats will result in the return of native flora and fauna to valuable multi-family wildlife habitats is critical to maintaining the high level biodiversity known to occur in the longleaf pine ecosystem. 3. Coastal Forests - Coastal forests provide freshwater to very significant estuarine and marine areas in Alabama and Mississippi on the Gulf Coast that were impacted by the oil spill. Adjoining uplands and tributaries of these streams contain only remnants of a once vast longleaf pine forest ecosystem. These watersheds are home to many rare animals and plants. 4. Birds - Forest restoration will increase habitat for migratory and neotropical birds, waterfowl, and other important species such as bobwhite quail and red-cockaded woodpecker. 5. Terrestrial species - Forest restoration will enhance species habitat for numerous terrestrial species including gopher tortoise, dusky gopher frog, eastern indigo snake, eastern diamondback rattlesnake, black bear and many others. 6. Human Use - Forest restoration can improve forest quality for recreational activities including hiking, birding, hunting, cycling, etc. - Forest restoration will support job development in local communities by increasing demand for forest vendors and consultants.  

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## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Proj ID</th>
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<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Habitat Restoration in Upper Mobile Bay</td>
<td>11768</td>
<td>Judy Haner</td>
<td>coastal AL</td>
<td>60000000</td>
</tr>
</tbody>
</table>

**Project Description**

Creating GI to encompasses more than 300,000 acres of tidal freshwater marshes, bayous, tupelo swamps, and bottomland hardwood forests. All of these rivers provide freshwater to very significant estuarine and marine areas in Alabama and Mississippi on the Gulf coast that were impacted by the oil spill. 2. Address one or more specific injuries to natural resources or services associated with the incident: The forest restoration project addresses more than one specific injury to natural resources and services associated with the incident by enhancing wetlands (including coastal marsh), water quality and benefiting multiple habitats, their respective services and the numerous wildlife resources dependent upon them. 3. Seek to restore natural resources, habitats or natural resource services of the same type, quality, and of comparable ecological and/or human use value to compensate for identified resource and service losses resulting from the incident: The forest restoration project seeks to restore natural resources, habitats or natural resource services of the same type, quality, and of comparable ecological and/or human use value to compensate for identified resource and service losses resulting from the incident by reducing flooding between the river and bay systems, thus enhancing water quality and coastal habitats. 4. Are not inconsistent with anticipated long-term restoration needs and anticipated final restoration plan: This project is consistent with long-term restoration needs for the area and is anticipated to be consistent with the final restoration plan. 5. Are feasible and cost-effective: The project costs are estimates based on past similar projects. If necessary, the project could be phased: environmental assessment and permitting; design and engineering; and construction.

## Restoration Types Addressed

- Wetland, Coastal, and Nearshore Habitat (Y / N)
- Oyster Reef (Y / N)
- Birds (Y / N)
- Sea Turtles (Y / N)
- Recreational Use (Y / N)
- Trustee
- Marine Mammals (Y / N)
- Water Quality/ Nonpoint Source Nutrient Reduction (Y / N)

## Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

- Project is consistent with criteria identified in the public notice (Y / N)
- Project is consistent with criteria identified in the final restoration plan: This project is consistent with the final restoration plan (Y / N)
- Project is consistent with criteria identified in the public notice (Y / N)

## Public Notice

- Oil Pollution Act (OPA) Criteria
- Project prevents future and continuing injury to natural resources or services (+ / 0 / -)
- Project reduces continuing injury to natural resources or services (+ / 0 / -)
- Project benefits more than one natural resource and/or service (+ / 0 / -)
- The effect of the project alternative on existing regulations (Y / N)
- Project complies with applicable laws and regulations (+ / 0 / -)
- Project is not already fully funded (Y / N)
- Project readiness (+ / 0 / -)
- Sustainability/Long term Benefit of project (+ / 0 / -)
- Project is technically feasible (+ / 0 / -)
- Project offers opportunities for external funding & collaboration (+ / 0 / -)
- Project is time critical (+ / 0 / -)
- Project supports existing regional or local conservation plan or restoration effort (Y / N)
- Project is consistent with programmatic restoration goals (Y / N)
- Project is considerate of strategic frameworks (Y / N/NA)
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U.S. Army Corps of Engineers disposed of dredged material from the Mobile Harbor Ship Channel in open water on the west side of the ship channel. The dredged material created mounds along the slip channel which hinged to protect marsh and submerged aquatic vegetation (SAV) along the western shore of Mobile Bay from erosion. These mounds have eroded since open water disposal of dredged material was discontinued in Upper Mobile Bay. Dredged material is now taken offshore for disposal, bypassing any marsh creation and removing it from the system. This project will provide a beneficial use for that dredged material that will help the impacted species (brown shrimp, redfish, brown pelicans and double-crested cormorants), restore impacted and lost habitats and increase the resiliency of coastal Alabama. Creation of these wetlands will restore the habitat that would likely have formed in the absence of the causeway. Using a combination of dredge material bounded by living shorelines, this project will also enhance the condition of surrounding area, potentially providing areas for SAV recruitment. The restored wetlands will have the capacity to buffer the adjacent natural areas that lead to the Delta, as well as nearby communities and infrastructure from erosion, storm surges and other coastal hazards. The creation of wetlands at the northern end of Mobile Bay where the rivers form a large delta of marshes and mud flats will help expand these important habitats and greatly benefit the endangered Alabama red-bellied turtle by providing additional nesting and forage habitat. The proposed project will create approximately 500 acres of marsh and 3 miles of reef habitat. Fill material will come from channel dredging projects or from existing dredged material disposal areas. In addition, this project will also incorporate the construction of a parking area and public fishing pier off of the Mobile Causeway for public safety and access. Currently, residents and visitors often park on the roadslide and fish from the roadslide, creating a dangerous situation. The parking area and pier will provide a safe area to access the Upper Bay for land-based fishing, wildlife watching and public enjoyment. The project is feasible and cost effective utilizing techniques that have already been applied at other restoration sites in coastal Alabama. The project specifically contributes to making the environment and the public whole through habitat restoration and shoreline protection. Habitat restoration and water quality improvement components of this project could compensate for resource losses resulting from the Deepwater Horizon incident. The ultimate project is consistent with long-term restoration goals in Alabama and along the Gulf Coast. Examples of how the proposed Wetland Habitat Restoration Project will help recovery the NBDA Resources: 1. Water Column and Invertebrates - Wetland habitat restoration will enhance coastal habitats, such coastal marsh and reefs for estuarine finfish and shellfish - Healthy living shorelines/oyster reef breakwaters and coastal marsh - contribute larval as a free-swimming plankton that, in turn, serve as a food source for other larger nekton and benthic organisms such as crabs and adult oysters - Living shoreline/oyster reef breakwaters and coastal marsh provide habitat for estuarine nekton such as fish and benthic organisms such as crabs and adult oysters 2. Marine Fish - Living shorelines/oyster reef breakwaters and coastal marsh increase. Fishery species abundance by providing nursery and structural habitat for the health and recovery of recreational and commercial estuarine species (redfish, snapper, red drum, and others).
<table>
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<td>Wetland Habitat Restoration</td>
<td>Wetland habitat restoration will enhance coastal habitats for health and recovery of terrestrial species.</td>
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</table>
Reduced water quality, disease and storm events. Over the last several decades, populations throughout the eastern United States and many Gulf States witnessed the decline in oyster reefs, including the shallowest bays of its kind. It is also the fourth largest submergence of saltmarshes, submerged aquatic vegetation (SAV) and oyster reefs across all five states (Texas, Louisiana, Mississippi, Alabama and Florida). It is well documented that these coastal and submergence habitats serve as nursery areas for more than 90% of commercially important finfish and shellfish. In fact, 35% of the nation's seafood comes from the Gulf of Mexico: 70% of the shrimp and 35% of the oysters. The shallow coastal waters in and around Mississippi Sound and Mobile Bay in Alabama historically contained some of the most productive saltmarshes, submerged aquatic vegetation (SAV) beds and oyster reefs along the northern Gulf coast. Adding a distinctive notch to Alabama's Gulf Coast shoreline, Mobile Bay - with an average depth of 10 feet - is one of the shallowest bays of its kind. It is also the fourth largest estuary in the United States and plays an important role in sheltering and nurturing the fish, shrimp, crabs and oysters that are vital to Gulf communities. In the northern Gulf of Mexico, oyster reefs form living breakwaters that help protect the soft coastal marsh shorelines from erosion and storm damage. In addition, the protected areas of marsh and seagrass landward of the reefs serve as critical foraging areas for waiting birds, shorebirds and coastal waterfowl. The Eastern oyster, Crassostrea virginica, is an integral component of coastal ecosystems and local economies along the Gulf and Atlantic coasts of the United States. Globally, 85 percent of reefs have been lost, making oyster reefs the most severely impacted marine habitat on the planet (Beck et al. 2009). The northern Gulf of Mexico is one of the few remaining locations where oysters have the potential to regain their foothold. As architects of the coast, oyster reefs in the northern Gulf of Mexico can form expansive vertical structures that provide high quality habitat for numerous species of fishes and invertebrates, many of which are of commercial and recreational importance (Coen et al. 1999, Peterson et al. 2003), while protecting the soft marsh shorelines. Oysters, and other encrusting organisms, also serve as filters for estuarine water and likely influence energy flow and nutrient fluxes in estuarine ecosystems in the past (Newell 1999). The dramatic decline in oyster populations throughout the eastern United States and many Gulf States has resulted from the combined effects of intensive harvesting, habitat destruction, reduced water quality, disease and storm events. Over the last several decades,
<table>
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<tr>
<td>Mobile Bay</td>
<td>Mobile Bay has experienced significant loss of oyster reefs, seagrass beds and coastal marsh habitats through dredge-and-fill activities, construction of seawalls and jetties, erosion, storm events and other causes. Despite these challenges, Mobile Bay represents one of the largest potential areas for outright restoration, replacement and enhancement of these lost habitats on the northern Gulf Coast due to the size of the estuary, historic distribution of oysters in the Bay, high natural oyster spat sets and warm water for fast growth. Engaging in restoration efforts for the oyster reef, seagrass bed and coastal marsh habitats is a perfect first step in addressing the chronic issues of coastal Alabama and the northern Gulf of Mexico, helping fisheries of importance across the Gulf both immediately and for the long-term. Previous efforts to protect shorelines in this region have involved the introduction of hardened structures, such as seawalls, rockjetties, or bulkheads to reflect wave energy. A major concern in implementing bulkheads and seawalls for coastal property protection is reflection of erosive wave energies back into the bay, instead of absorbing or dampening the wave energy. This subjects adjacent shorelines to even greater wave energy and can cause vertical erosion down the barrier with subsequent loss of intertidal habitats (Douglas and Picket 1999). Recently, protection efforts have shifted towards ‘living shorelines’, including oyster reef breakwaters (NRC 2007). The Nature Conservancy, as part of the 100-1000: Restore Coastal Alabama Partnership, proposes to build 100 miles of oyster reefs, which will in turn help to protect and promote the growth of more than 1,000 acres of coastal marsh and seagrass. The project will provide habitat for oyster larvae to settle and colonize; serve as nursery habitat for commercially and recreationally important fish and shellfish; dampen wave energy and decrease erosion; and, stabilize sediments and decrease turbidity. This project focuses on Eastern Mobile Bay and Bon Secour Bay, along approximately 11 miles of shoreline, of which 4 miles are permitted and 7 miles are in progress for permitting. Pre-restoration monitoring will include the basis parameters outlined above to establish a baseline to assess changes. Post-reef restoration monitoring will occur at semi-annual or annual intervals for a 5-year required monitoring period. In addition to directly measuring the response of marine habitats to the restoration efforts, these data will measure the change in available habitat and food resources for birds and other marine animals that may use this habitat. Monitoring results will be evaluated annually to determine any obvious positive or negative trends. Those trends will be examined in annual reports and used as points of discussion for any needed adaptive strategies. Rigorous analyses will be completed for the following accomplishment targets: o Oyster counts: Species richness and abundance of shellfish and finfish; Species richness and abundance of seagrass beds; Density, percent cover and mapping of seagrass bed dynamics; Shoreline profile and change over time o Marshes: Species richness and abundance of oyster beds; Marsh and jetties, erosion, storm events and other causes. Should high water and turbidity hinder quadrat sampling, volumetric sampling will be used to treatmants involving oyster shell and a total surface count will be performed for artificial structures. Abundance of</td>
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### Project Description

The project aims to stabilize eroding shorelines and enhance community knowledge of living shorelines through the construction of oyster breakwaters. These breakwaters will serve as nursery habitats for larval and juvenile shellfish and forage grounds for adult finfish. The complex structure of the oyster breakwaters will provide diverse habitat for marine life in shallow waters.

### Methodology

- **Vegetation Sampling**: Vegetation will be quantified within 1 meter of the breakwaters. Quadrat samples will be taken for grain size analysis once per year near the shoreline. The vertical accuracy is 3 cm, allowing portrayal of changes in shoreline sediment.
- **Marshes**: The abundance, diversity, and morphological characteristics (number of leaves per shoot, leaf length and width) of the seagrass at those stations will be measured. Additional current submerged scanning technology will be used to measure the shape (i.e., accrual or erosion) with unprecedented sensitivity.
- **Seagrass Beds**: The presence of seagrass will be monitored at each station, and the morphology (number of leaves per shoot, leaf length and width) will be measured along the transects extending from the upland marsh into the water. All stations located at the breakwater control edge will be sampled with a 20 cm-diameter core. The abundance (number of shoots per m²) and morphological characteristics (number of leaves per shoot, leaf length and width) of the seagrass at those stations will be measured. Additionally, using submerged scanning technology, the bottom between the breakwaters or control edge and shoreline will be scanned for seagrass presence during the summer. Shoreline dynamics: Shoreline elevation and slope will be measured along three transects extending from the upland marsh into 0.5 m mean water depth using a Radio Telemetry-GPS. The horizontal accuracy of this technology is 5 cm and the vertical accuracy is 3 cm, thus allowing portrayal of changes in shoreline shape (i.e., accretion or erosion) with unprecedented sensitivity. In addition, current meters, to determine the impact of breakwaters on water flow and direction, and water level loggers, to determine the impact on wave height, will be deployed seaward of the breakwaters and control edge. Sediment Composition: Sediment samples will be taken for grain-size analysis once per year to determine the ratio of silt to sand and to determine the concentration of organic matter in the sediment. Marshes: The abundance, diversity, and morphological characteristics of marsh plants will be measured along the same transects used for shoreline dynamics. Marshes: The abundance, diversity, and morphological characteristics of marsh plants will be measured along the same transects used for shoreline dynamics. Two stations (high and low marsh) will be monitored per transect. Marsh vegetation will be quantified within 1-m² quadrats. Beginning at the shoreline edge, quadrat samples will be collected at 0.5 m and 2.0 m (defined as low marsh and high marsh, respectively) along a transect perpendicular to the shoreline. All vegetation will be quantified, classified and characterized by growth state (e.g., live, dormant, and dead). Short Term Goals: Once deployed, the oyster breakwaters will immediately begin to abate wave energy, thereby stabilizing the shoreline. In addition, the oyster breakwaters will be readily colonized by oyster spat or other recruiting organisms. The complex structure of the oyster breakwaters will provide nursery habitat for larval and juvenile and forage grounds for adult finfish and shellfish. The primary short-term goals associated with this project include: (1) Stabilization of eroding shorelines; (2) Restoration of reef habitat and associated ecosystem services; and (3) Enhanced community knowledge of living shorelines and estuarine ecosystems. Long Term Goals: Over time, each breakwater will evolve into a self-sustaining oyster reef breakwater / living shoreline. As the breakwaters mature, the resulting ecological services will provide long-term benefits to the ecosystem.
### Project Name

Eulonia Mobile Bay and Portersville Bay
Coastal Resiliency and Habitat Restoration

### Location

Coastal AL

### Cost

1,000,000

### Project Description

UPDATE: 6 MILES HAVE BEEN PERMITTED. 4 MILES ARE IN PROGRESS FOR PERMITTING Coastal habitats of the northern Gulf of Mexico have declined substantially since 1950, with significant losses of saltmarsh, submerged aquatic vegetation (SAV) and oyster reefs across all five states (Texas, Louisiana, Mississippi, Alabama and Florida). It is well documented that these coastal and submerged habitats serve as nursery areas for more than 80% of commercially and recreationally important finfish and shellfish. In fact, 35% of the nation’s seafood comes from the Gulf of Mexico: 70% of the shrimp and 35% of the oysters. The coastal waters in and around Mississippi Sound and Mobile Bay in Alabama historically contained some of the most productive saltmarshes, submerged aquatic vegetation (SAV) beds and oyster reefs along the northern Gulf coast. Adding a distinctive notch to Alabama’s Gulf Coast shoreline, Mobile Bay - with an average depth of 10 feet - is one of the shallowest bays of its kind. It is also the fourth largest estuary in the United States and plays an important role in sheltering and nurturing the finfish, crabs, and oysters that are vital to Gulf communities. In the northern Gulf of Mexico, oyster reefs form living breakwaters that help protect the soft coastal marsh shorelines from erosion and storm damage. In addition, the protected areas of marsh and seagrass landward of the reefs serve as critical foraging areas for wading birds, shorebirds and coastal waterfowl. The Eastern oyster, Crassostrea virginica, is an integral component of coastal ecosystems and local economies along the Gulf and Atlantic coasts of the United States. Globally, 85 percent of reefs have been lost, making oyster reefs the most severely impacted marine habitat on the planet (Beck et al. 2009). The northern Gulf of Mexico is one of the few remaining locations where oysters have the potential to regain their foothold. As architects of the coast, oyster reefs in the northern Gulf of Mexico can form expansive vertical structures that provide high quality habitat for numerous species of fishes and invertebrates, many of which are of commercial and recreational importance (Coen et al. 1999, Peterson et al. 2003). While protecting the soft marsh shorelines, Oysters, and other encrusting organisms, also serve as filters for estuarine water and likely influenced energy flow and nutrient fluxes in estuarine ecosystems in the past (Newell 1999). The dramatic decline in oyster populations throughout the eastern United States and many Gulf States has resulted from the combined effects of intensive harvesting, habitat destruction, reduced water quality, disease and storm events. Over the last several decades, Mobile Bay has experienced significant loss of oyster reefs, seagrass beds and coastal marsh habitats through dredge-and-fill activities, construction of seawalls and jetties, erosion, storm events and other causes. Despite these challenges, Mobile Bay represents one of the largest potential areas for oyster restoration, replacement and enhancement of these lost habitats on the northern Gulf Coast due to the size of the estuary, historic distribution of oysters in the Bay, high natural oyster spat sets and warm water for fast growth. Engaging in restoration efforts for the oyster reef, seagrass bed and coastal marsh habitats is a perfect first step in addressing the chronic issues of coastal Alabama and the northern Gulf of Mexico, helping fisheries of importance across the Gulf both immediately and for the long-term. Previous efforts to protect shorelines in this region have involved the...
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### Project Description

Sampling data and the benthos community sampled with a 20-cm-diameter cover. The abundance (number of species per m²) and morphological characteristics (number of leaves per shoot, leaf length and width) of the seagrass at those stations will be measured. In addition, using submersed scanning technology (Cintel2), the bottom between the breakwater or control edge and shoreline will be scoured for seagrass presence during the summer. Shoreline dynamics: Shoreline elevation and slope will be measured along three transects extending from the upland marsh into 0.5 m mean water depth using a Radel Tele-Kinematic GPS. The horizontal accuracy of this technology is ±5 cm and the vertical accuracy is ±3 cm, thus allowing portrayal of changes in shoreline shape (i.e. accrual or erosion) with unprecedented sensitivity. In addition, current meters, to determine the impact of breakwaters on water flow and direction, and water level loggers, to determine the impact on wave height, will be deployed leeward of the breakwaters and control edges. Sediment Composition: Sediment samples will be taken for grain-size analysis once per year to determine the ratio of silt-clay to sand and to determine the concentration of organic matter in the sediment.  

Marshes: The abundance, diversity and morphological characteristics of marsh plants will be measured along the same transects used for shoreline dynamics. Two stations (high and low marsh) will be monitored per transect. Marsh vegetation will be quantified within 1 m² quadrats. Beginning at the shoreline edge, quadrat samples will be collected at 0.5 m and 2.0 m (defined as low marsh and high marsh respectively) along a transect perpendicular to the shoreline. All vegetation will be quantified, classified and characterized by growth state (e.g., live, dormant, and dead). Short-Term Goals: Once deployed, the oyster breakwaters will immediately begin to abate wave energy, thereby stabilizing the shorelines. In addition, the oyster breakwaters will be readily colonized by oyster spat or other encrusting organisms. The complex structure of the oyster breakwaters will provide nursery habitat for larval and juvenile larval and juvenile forage grounds for adult finfish and shellfish. The primary short-term goals associated with this project include: (1) Stabilization of eroding shorelines; (2) restoration of reef habitat and associated ecosystem services; and (3) enhanced community knowledge of living shorelines and estuarine ecosystems. Long-Term Goals: Over time, each breakwater will evolve into a self-sustaining oyster reef breakwater / living shoreline. As the breakwaters mature, the resulting ecological services

### Monitoring

- In addition, current meters, to determine the impact of breakwaters on water flow and direction, and water level loggers, to determine the impact on wave height, will be deployed leeward of the breakwaters and control edges.
- Sediment Composition: Sediment samples will be taken for grain-size analysis once per year to determine the ratio of silt-clay to sand and to determine the concentration of organic matter in the sediment.
- Marshes: The abundance, diversity and morphological characteristics of marsh plants will be measured along the same transects used for shoreline dynamics. Two stations (high and low marsh) will be monitored per transect. Marsh vegetation will be quantified within 1 m² quadrats. Beginning at the shoreline edge, quadrat samples will be collected at 0.5 m and 2.0 m (defined as low marsh and high marsh respectively) along a transect perpendicular to the shoreline. All vegetation will be quantified, classified and characterized by growth state (e.g., live, dormant, and dead).
- Short-Term Goals: Once deployed, the oyster breakwaters will immediately begin to abate wave energy, thereby stabilizing the shorelines. In addition, the oyster breakwaters will be readily colonized by oyster spat or other encrusting organisms. The complex structure of the oyster breakwaters will provide nursery habitat for larval and juvenile forage grounds for adult finfish and shellfish. The primary short-term goals associated with this project include: (1) Stabilization of eroding shorelines; (2) restoration of reef habitat and associated ecosystem services; and (3) enhanced community knowledge of living shorelines and estuarine ecosystems. Long-Term Goals: Over time, each breakwater will evolve into a self-sustaining oyster reef breakwater / living shoreline. As the breakwaters mature, the resulting ecological services

### Project Information

- **Project Name**: Grand Bay Coastal Resilient and Inlet Restoration
- **Submitted By**: Judy Hamer
- **Location**: Grand Bay
- **Cost**: 7500000
- **Project Description**: UPDATE: 5 MILES ARE IN PROGRESS FOR PERMITTING Coastal habitats of the northern Gulf of Mexico have declined substantially since 1950, with significant losses of saltmarsh, submersed aquatic vegetation (SAV) and oyster reefs across all five states (Texas, Louisiana, Mississippi, Alabama, and Florida). It is well documented that these coastal and submersed habitats serve as nursery areas for more than 90% of commercially and recreationally important finfish and shellfish. In fact, 35% of the nation’s seafood comes from the Gulf of Mexico. 70% of the shrimp and 35% of the oysters. The coastal waters in and around Mississippi Sound and Mobile Bay in Alabama historically contained some of the most productive saltmarshes, submersed aquatic vegetation (SAV) beds and oyster reefs along the northern Gulf coast. Adding a distinctive notch to Alabama’s Gulf Coast shoreline,
The eastern oyster, Crassostrea virginica, is an integral component of coastal ecosystems and local economies along the Gulf and Atlantic coasts of the United States. Globally, 85 percent of reefs have been lost, making oyster reefs the most severely impacted marine habitat on the planet (Beck et al. 2009). The northern Gulf of Mexico is one of the few remaining locations where oysters have the potential to regain their foothold. As architects of the coast, oyster reefs in the northern Gulf of Mexico can form extensive vertical structures that provide high quality habitat for numerous species of fishes and invertebrates, many of which are of commercial and recreational importance (Coen et al. 1999; Peterson et al. 2003), while protecting the soft coastal marsh shorelines. Oysters, and other encrusting organisms, also serve as filters for estuarine water and likely influence energy flow and nutrient fluxes in estuarine ecosystems in the past (Newell 1999). The dramatic decline in oyster populations throughout the eastern United States and many Gulf States has resulted from the combined effects of intensive harvesting, habitat destruction, reduced water quality, disease and storm events. Over the last several decades, Mobile Bay has experienced significant loss of oyster reefs, seagrass beds and coastal marsh habitats through dredge-and-fill activities, construction of seawalls and jetties, erosion, storm events and other causes. Despite these challenges, Mobile Bay represents one of the largest potential areas for oyster restoration, replacement and enhancement of these lost habitats on the northern Gulf Coast due to the size of the estuary, historic distribution of species in the Bay, high natural oyster spat sets and warm water for fast growth. Engaging in restoration efforts for the oyster reef, seagrass bed and coastal marsh habitats is a perfect first step in addressing the chronic issues of coastal Alabama and the northern Gulf of Mexico, helping fisheries of importance across the Gulf both immediately and for the long term. Previous efforts to protect shorelines in this region have involved the introduction of hardened structures, such as seawalls, rock jetties, or bulkheads to reflect wave energy. A major concern in implementing bulkheads and seawalls for coastal property protection is reflection of erosive wave energies back into the bay, instead of absorbing or dampening the wave energy. This subjects adjacent shorelines to even greater wave energy and can cause local erosion down the barrier with subsequent loss of intertidal habitats (Douglas and Pickett 1999). Recently, restoration efforts have shifted towards ‘living shorelines’, including oyster reef breakwaters (MRC 2007). The Nature Conservancy, as part of the 100-1000: Restore Coastal Alabama Partnership, proposes to build 100 miles of oyster reefs, which will in turn help to protect and promote the growth of more than 1,000 acres of coastal marsh and seagrass. The project will provide substrate for oyster larvae to settle and colonize, serve as
Data collection and monitoring for the following accomplishment targets:

- Oyster counts: Species richness and abundance of shellfish and finfish; Abundance of shellfish and finfish: Species richness and abundance of shellfish and finfish.
- Seagrass beds: Density, percent cover and mapping of shoreline dynamics; Shoreline profile and change over time; Marshes: Species richness and abundance of marsh vegetation; Oyster beds: Juvenile and adult oysters, as well as other shellfish (e.g. clams), and dead oysters will be counted using a 0.25 m^2 quadrat placed on the reef. TriPLICATE measurements will be taken on each reef at each sampling time. Should high water and turbidity hinder quadrat sampling, volumetric sampling will be used for treatments involving oyster shell as a substrate.
- Coral reefs: Abundance of live and dead oysters will be counted using a 0.25 m^2 quadrat placed on the reef. TriPLICATE measurements will be taken on each reef at each sampling time. Should high water and turbidity hinder quadrat sampling, volumetric sampling will be used for treatments involving oyster shell as a substrate.
- In addition, current meters, to determine the impact of breakwaters on shoreline vegetation and may have a positive effect on SAV near the reef, Seagrass beds: Because the presence of the reef is expected to have a positive effect on seagrass vegetation and may have a positive effect on SAV near the reef, we will monitor the density (shoots m^-2) and cover (% of bottom area covered) of SAV before and after restoration efforts. Stations located at equidistant intervals between the breakwaters or control edge and the shoreline will be visited on each sampling date. The abundance (number of shoots per m^2) and morphological characteristics (number of leaves per shoot, leaf length and width) of the seagrass at those stations will be measured. In addition, using submersed scanning technology (Ceeducer), the bottom between the breakwater or control edge and shoreline will be scanned for seagrass presence during the summer. Shoreline dynamics: Shoreline elevation and slope will be measured along three transects extending from the upland marsh into 0.5 m mean water depth using a Radio Tele-Kinematic GPS. The horizontal accuracy of this technology is 5 cm and the vertical accuracy is 3 cm, thus allowing portrayal of changes in shoreline shape (i.e. accrual or erosion) with unprecedented sensitivity. In addition, current meters, to determine the impact of breakwaters on...
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<td>Judy Haner</td>
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**Project Description**

Updated: All 3.5 MILES PERMITTED Coastal habitats of the northern Gulf of Mexico have declined substantially since 1950, with significant losses of saltmarsh, submerged aquatic vegetation (SAV) and oyster reefs across all five states (Texas, Louisiana, Mississippi, Alabama and Florida). It is well documented that these coastal and submerged habitats serve as nursery areas for more than 90% of commercially and recreationally important finfish and shellfish. In fact, 35% of the nation’s seafood comes from the Gulf of Mexico: 70% of the shrimp and 55% of the oyster. The coastal waters and around Mississippi Sound and Mobile Bay in Alabama historically contained some of the most productive saltmarshes, submerged aquatic vegetation (SAV) beds and oyster reefs along the northern Gulf Coast. Adding a distinctive notch to Alabama’s Gulf Coast shoreline, Mobile Bay - with an average depth of 10 feet - is one of the shallowest bays of its kind. It is also the fourth largest estuary in the United States and plays an important role in sheltering and nurturing the fish, shrimp, crabs and oysters that are vital to Gulf communities. In the northern Gulf of Mexico, oyster reefs form living breakwaters that help protect the soft coastal marsh shorelines from erosion and storm damage. In addition, the protected areas of marsh and seagrass landward of the reefs serve as critical foraging areas for wading birds, shorebirds and coastal waterfowl. The eastern oyster, Crassostrea virginica, is an integral component of coastal ecosystems and local economies along the Gulf and Atlantic coasts of the United States. Globally, 85 percent of reefs have been lost, making oyster reefs the most severely impacted marine habitat on the planet (Beck et al. 2009). The northern Gulf of Mexico is one of the few remaining locations where systems have the potential to...
expansive vertical structures that provide high quality habitat for numerous species of fishes and invertebrates, many of which are commercial and recreational importance (Cuen et al. 1999; Peterson et al. 2003), while protecting the soft marsh shorelines. Oysters, and other recruiting organisms, also serve as filters for estuarine water and likely influenced energy flow and nutrient fluxes in estuarine ecosystems in the past (Newell 1999). The dramatic decline in oyster populations throughout the eastern United States and many Gulf States has resulted from the combined effects of intensive harvesting, habitat destruction, reduced water quality, disease and storm events. Over the last several decades, Mobile Bay has experienced significant loss of oyster reefs, seagrass beds and coastal marsh habitats through dredging and fill activities, construction of seawalls and jetties, erosion, storm events and other causes. Despite these challenges, Mobile Bay represents one of the largest potential areas for successful restoration, replacement and enhancement of these lost habitats on the northern Gulf Coast due to the size of the estuary, historic distribution of oysters in the Bay, high natural oyster spat sets and water availability for fast growth. Engaging in restoration efforts for the oyster reef, seagrass bed and coastal marsh habitats is a perfect first step in addressing the chronic issues of coastal Alabama and the northern Gulf of Mexico, helping fisheries of importance across the Gulf both immediately and for the long-term. Previous efforts to protect shorelines in this region have involved the introduction of hardened structures, such as seawalls, rock jetties, or bulkheads to reflect wave energy. A major concern in implementing bulkheads and seawalls for coastal property protection is reflection of wave energies back into the bay, instead of absorbing or dampening the wave energy. This subjects adjacent coastal property to even greater wave energy and can cause vertical erosion down the barrier with subsequent loss of intertidal habitats (Douglas and Pickel 1999). Recently, protection efforts have shifted towards ‘living shorelines’, including oyster reef breakwaters (NRC 2007). The Nature Conservancy, as part of the 100-1000: Restore Coastal Alabama Partnership, proposes to build 100 miles of oyster reefs, which will in turn help to protect and promote the growth of more than 1,000 acres of coastal marsh and seagrass. The project will provide substrate for oyster larvae to settle and colonize; serve as nursery habitat for commercially and recreationally important finfish and shellfish; dampen wave energy and decrease erosion; and, stabilize sediments and decrease turbidity. This project focuses on Eastern Mobile Bay and Bon Secour Bay, along approximately 3.5 miles of shoreline, all of which is permitted. Pre-restoration monitoring will include the basic parameters outlined above to establish a baseline to assess changes. Post-reef restoration monitoring will occur at semi-annual or annual intervals for a 5-year required monitoring period. In addition to directly measuring the response of marine habitats to the restoration efforts, these data will measure the change in available habitat and food resources for birds and other marine animals that may use this habitat. Monitoring results will be evaluated annually to determine any obvious positive or negative trends. Those trends will be examined in annual reports and used as points of discussion for any needed adaptive strategies. Rigorous analyses will be completed...
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**Project Description**

- **Wave Energy**
  - Stabilizes shorelines.

**Restoration Types Addressed**

- **Marine Mammals (Y/N)**
- **Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)**
- **Oyster Reef (Y / N)**
- **Birds (Y / N)**
- **Sea Turtles (Y / N)**
- **Recreational Use (Y/N)**
- **Habitat on Federal Lands (Y/N)**
- **Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)**
- **Programmatic Restoration Goals (PDARP) Criteria**
  - **Project is consistent with programmatic restoration goals (+ / 0 / -)**
  - **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
  - **Project meets Trustees’ goals (+ / 0 / -)**
  - **Project offers opportunities for external funding (+ / 0 / -)**
  - **Project is time critical (+ / 0 / -)**
  - **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
  - **Project offers opportunities for external funding (+ / 0 / -)**
  - **Project is time critical (+ / 0 / -)**

**Additional Criteria**

- **Data Assessment**
  - **The effect of the project on the environment (+ / 0 / -)**
  - **The effect of the project on public health and safety (+ / 0 / -)**
  - **The effect of the project on existing regulations (Y/N)**
  - **The effect of the project on public health and safety (+ / 0 / -)**
  - **The effect of the project on existing regulations (Y/N)**
  - **The effect of the project on existing regulations (Y/N)**

**Oversight Criteria**

- **Project readiness (+ / 0 / -)**
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**
- **Reasonable probability of success (+ / 0 / -)**
- **Project is considered of strategic frameworks (Y/N)**
- **Project benefits more than one natural resource and/or restoration effort (Y/N)**
- **Project is considered of strategic frameworks (Y/N)**
- **The effect of the project on public health and safety (+ / 0 / -)**
- **Project offers opportunities for external funding (+ / 0 / -)**
- **Project is time critical (+ / 0 / -)**

**Public Notice**

- **Oil Pollution Act (OPA) Criteria**
  - **Project prevents future and collateral injury to natural resources and properties (+ / 0 / -)**
  - **Project prevents future and collateral injury to natural resources and properties (+ / 0 / -)**
  - **Project prevents future and collateral injury to natural resources and properties (+ / 0 / -)**

- **Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)**
- **Programmatic Restoration Goals (PDARP) Criteria**
  - **Project is consistent with programmatic restoration goals (+ / 0 / -)**
  - **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
  - **Project meets Trustees’ goals (+ / 0 / -)**
  - **Project offers opportunities for external funding (+ / 0 / -)**
  - **Project is time critical (+ / 0 / -)**
  - **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
  - **Project offers opportunities for external funding (+ / 0 / -)**
  - **Project is time critical (+ / 0 / -)**

**Programmatic Restoration Goals (PDARP) Criteria**

- **Project is consistent with programmatic restoration goals (+ / 0 / -)**
- **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
- **Project meets Trustees’ goals (+ / 0 / -)**
- **Project offers opportunities for external funding (+ / 0 / -)**
- **Project is time critical (+ / 0 / -)**
- **Project is consistent with criteria identified in the public notice (+ / 0 / -)**
- **Project offers opportunities for external funding (+ / 0 / -)**
- **Project is time critical (+ / 0 / -)**
Mobile Causway Hydrologic Restoration Project, Mobile and Baldwin Counties, AL

Project Description: The Nature Conservancy recommends $70M to restore hydrologic connectivity between the Mobile/Tensaw Delta and Mobile Bay in Mobile and Baldwin Counties, Alabama. The Mobile/Tensaw Delta is the terminus of the fourth largest watershed in the continental United States in terms of water volume, receiving 20% of our nation’s freshwater supply. The Mobile/Tensaw Delta in turn empties into Mobile Bay built in the late 1920s has sealed off a number of once open bays from immediate contact with the Gulf. By altering the seasonal variation and volume of flows, these hydrological modifications have altered the ecological function and biodiversity of one of North America’s largest, most productive and diverse estuaries, on a local and system-wide basis. All of these activities have had a significant impact on the natural flow and water quality that drains from these headwaters, providing vital importance freshwater inflows to the Gulf’s estuaries. This project will involve reconnecting tidal exchange in the Mobile/Tensaw Delta by bridging Justin’s Bay and Chocolatta Bay to address upstream and downstream modifications that have altered ecological productivity. The existing roadway has altered saltwater and freshwater exchange, impacting coastal marsh and seagrass habitats north and south of the causeway and thus, the fish, shellfish and wildlife that depend on them. The Delta’s importance lies in the connection between the riverine and coastal ecosystems. The causeway has reduced the Delta’s critical ecosystems services, including habitat function, productivity, and species and habitat diversity. Examples of how the proposed Hydrologic Restoration Project will help recover the NRDA Resources: 1. Water volume and investigations - Hydrologic restoration will restore water exchange between the freshwater Mobile Delta and saltwater Mobile Bay, allowing free-flowing marine, as well as coastal fish, shellfish access to critical coastal nursery areas. Hydrologic restoration will enhance coastal habitats such as submerged aquatic vegetation and marshes for estuarine fish and shellfish. 2. Marine fish - hydrologic restoration will remove in-stream barriers to coastal fish and shellfish migration, as well as migration by anadromous and diadromous species - hydrologic restoration will increase fishery species abundance by providing access to nursery habitat for the health and recovery of recreational and commercial estuarine species (redfish, snapper, blue crab, stone crab, shrimp). 3. Marine Mammals - the diversity of finfish and shellfish species that will benefit from the hydrologic restoration are prey species for estuarine bottlenose dolphin populations. Hydrologic restoration will enhance water clarity for seagrass habitat that is will be readily colonized by oyster spat or other encrusting organisms. The complex structure of the oyster breakwaters will provide nursery habitat for larval and juvenile fish, foraging grounds for adult finfish and shellfish. The primary short-term goals associated with this project include: (1) Stabilization of eroding shorelines; (2) Restoration of reef habitat and associated ecosystem services; and (3) Enhanced community knowledge of living shorelines and estuarine ecosystems. Long Term Goals Over time, each breakwater will evolve into a self-sustaining oyster reef breakwater / living shoreline. As the breakwaters mature, the resulting ecological services provided will be compounded. The synergistic effects of reduced wave energy and improved water clarity...
### Project Information

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### Project Description

- Essential for the survival of the West Indian manatee and economically important fishery species.
- Hydrologic restoration will be implemented to provide safe and suitable rearing habitats for the West Indian manatee and economically important fishery species.
- Submerged aquatic vegetation: Hydrologic restoration will be implemented to provide safe and suitable rearing habitats for the West Indian manatee and economically important fishery species.
- Coastal habitats: Hydrologic restoration will be implemented to provide safe and suitable rearing habitats for the West Indian manatee and economically important fishery species.
- Nearshore sediments and habitats: Hydrologic restoration will increase habitat and available food sources for health and recovery of crabs, shrimp, fish, birds and terrestrial wildlife.
- Hydrologic restoration will restore severed sediment transport pathways and enhance coastal wetlands.
- Submerged aquatic vegetation: Hydrologic restoration will improve water quality which may benefit estuarine submerged aquatic vegetation.
- Oysters: Hydrologic restoration will provide access for oyster larvae establishment in the system.
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- Oysters: Hydrologic restoration will provide access for oyster larvae establishment in the system.
- Submerged aquatic vegetation: Hydrologic restoration will restore severhed sediment transport pathways and enhance coastal wetlands, which protect developed and natural shorelines such as salt marsh, uplands and coastal communities from erosion, storm surges and other coastal hazards.
- Birds: Hydrologic restoration will increase fishery species abundance, providing food for the health and recovery of wading, shore, foraging seabirds, and migratory bird species.
- Terrestrial species: Hydrologic restoration will enhance habitat for health and recovery of terrestrial based species such as turtles, alligators, birds and other species.
- Human use: Hydrologic restoration can improve water quality for recreational activities including fishing and swimming.
- Hydrologic restoration will enhance habitat for economically important fish species such as blue crab, spotted seatrout, red drum, an shrimp. Hydrologic restoration will provide access for oyster larvae establishement in the system.
- Hydrologic restoration will improve water quality which may benefit estuarine submerged aquatic vegetation.
- Oysters: Hydrologic restoration will provide access for oyster larvae establishment in the system.
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- Oysters: Hydrologic restoration will provide access for oyster larvae establishment in the system.
- Submerged aquatic vegetation: Hydrologic restoration will restore severed sediment transport pathways and enhance coastal wetlands, which protect developed and natural shorelines such as salt marsh, uplands and coastal communities from erosion, storm surges and other coastal hazards.
- Birds: Hydrologic restoration will increase fishery species abundance, providing food for the health and recovery of wading, shore, foraging seabirds, and migratory bird species.
- Terrestrial species: Hydrologic restoration will enhance habitat for health and recovery of terrestrial based species such as turtles, alligators, birds and other species.
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- Hydrologic restoration will enhance habitat for economically important fish species such as blue crab, spotted seatrout, red drum, an shrimp. Hydrologic restoration will provide access for oyster larvae establishement in the system.
- Hydrologic restoration will improve water quality which may benefit estuarine submerged aquatic vegetation.
- Oysters: Hydrologic restoration will provide access for oyster larvae establishment in the system.
and of comparable ecological and/or human value to compensate for identified resource and service losses resulting from the incident by restoring flushing between the river and bay systems, thus enhancing water quality and coastal habitats. It will also restore public access (by boat) to the associated bays and rivers. The quantity of oyster larvae needed for this project can be readily produced through the development of off-bottom oyster farming in Alabama and other Gulf of Mexico states. The core partners listed have formed a coalition to assist with and supplement any oyster restoration projects planned throughout the coastal waters of Alabama. Here we propose to contribute significant numbers of live oysters (both larval and post-set) to restoration projects throughout the coastal waters of Alabama, increasing the likelihood of success of restoration efforts, jump-starting oyster populations in these areas, and increasing the return on investment of restoration dollars. A secondary benefit of this NRDA restoration project will be the creation of environmentally, economically and socially sustainable jobs for coastal residents pursuing off-bottom oyster farming in Alabama, as well as provide outstanding educational opportunities at an area high school. Additionally, the oyster farming jobs will relieve fishing pressure on natural reefs. Public oyster reef restoration projects will be supplemented by seeding with larval and/or juvenile oysters spawned by the Auburn University Shellfish Laboratory (AUSL), raised by local oyster farmers, and in partnership with alma Bryant High School’s aquaculture program. Within 5 years, up to 52 billion oyster larvae and 150 million juvenile oysters could be added to public oyster restoration sites in the region. This supplemental restoration program will increase the likelihood of successful reef restoration by ensuring that oyster reefs are initially seeded with hatchery-reared oysters and then supplemented with juvenile oysters at each restoration site. While wild oyster set is expected and hoped for, successful oyster set is not guaranteed. Supplemental planting will provide two benefits. It ensures that the site has an initial population of oysters before competing species (e.g., barnacles, mussels) become established and preempt oyster settlement and decreases the time for oysters to reach sexual maturity. Additionally, supplemental stocking will help oysters become established in areas where larval supply may be limited (e.g., Bon Secour Bay) and will decrease the time to see a return on investment of restoration dollars. The enhancement of natural oyster reef structure and oyster abundance as early as possible will also provide critical ecosystem services through improved water quality, increased biodiversity and creation of more diverse habitat. In addition to assisting with the restoration of public oyster reefs, this project will provide an important boost to the development of off-bottom oyster farming in Alabama and other Gulf of Mexico states. The quantity of oyster larvae needed for this project can be readily produced at the Auburn University Shellfish Lab located on the campus of the Dauphin Island Sea Lab with upgrades in infrastructure (as was done with the Louisiana Sea Grant.
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| Shellfish hatchery as one of (seven) key restoration projects. Production of juvenile oysters, however, requires the establishment of environmentally-friendly oyster farms. We propose to establish 2,100 10-acre oyster aquaculture parks (or 45 20-acre parks) in coastal Alabama, where watermen are paid to produce juvenile oysters to supplement oyster reef restoration. Over the long-term and when the restoration project ends we expect to see these farms continue and shift to producing adult oysters for the food market as an additional sustainable source of income through the operation of environmentally-friendly family farms. For this project the parks will support 40 independently operated 5-acre oyster farms each capable of producing 50,000 juvenile oysters per year for farm restoration efforts. Combined the cooperative project with local famers would produce up to 20 million oysters per year for supplementation of restoration efforts. Additionally, 40 farms, once established, could raise oysters for premium half-shell markets, generating at least $5 million per year of combined income within 5 years through sales of premium oysters. Single choice oysters command higher prices than those system traditionally produced from the oyster reefs in Alabama thereby providing greater income for the oyster producers and also reducing pressure on natural oyster resources by creating additional sources of income. Additional research in Alabama suggests a 5-acre operation would allow an oyster farmer to raise 400,000 oysters per year; potentially yielding a gross annual income (with a conservative 50% survival) of over $80,000. This would be a significant increase in annual income for the typical oyster catcher who might currently earn $20,000/year. This project will also develop and implement an aquatic environmental education program for high school students throughout Mobile County. COASTAL Academy (Coastal Ocean Aquatic Science Technology And Learning Academy) will be centered around the aquaculture and marine biology programs located on the campus of Alma Bryant High School. Although the academy will involve all aspects of aquatic environmental sciences and coastal issues, the primary program focus will be on Shellfish High School), a program that will educate students and community members through the hands-on management and operation of an oyster farm, including restoration and biology projects, and the development of a curriculum that can serve as a model for the region. This combination of opportunities is a powerful means of engaging students, improving student knowledge, and, ultimately, student achievement and decision-making abilities. The emphasis on science, technology, engineering, and math education (STEM) and a hands-on, project-based learning system will be the core of COASTAL Academy. STEM education will lead to students being able to pursue occupations that require similar skills that have been acquired in the Academy and prepare students for success in technical schools, and two- and four-year colleges. Total project budget of $13 million over 5 years broken into the following categories: - juvenile oysters for restoration projects, $20 million on shell/yr for 5 years @ $40,000/yr or $2 million total - Assistance with initial permitting and surveying of oyster parks, for $1 million total - sold spat on shell (larvae that are ready to set) for restoration projects, $2 billion annually for 5 years @ $1/yr, $400,000/yr or $2 million total - Expansion of capacity and increase in storm-preparedness (building addition, larval tanks, etc.)
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<tr>
<td>Salt Creek Marsh Restoration</td>
<td>The primary objective of the Salt Creek Marsh Restoration Project is to mitigate for historic losses of salt marsh on Dauphin Island. Dauphin Island today is the result of an intense island-wide development project undertaken in the 1950s and 1960s. The development resulted in the destruction of large areas of native salt marsh habitat. The project area is located in Graveline Bay, an embayment of Mississippi Sound on the north side Dauphin Island. The bay is bordered to the east, south, and west by land, and open to Sound on the north. This results in Graveline Bay being protected from wind generated waves from most points on the compass, creating a physical environment conducive for the establishment of marsh. The project consists of three elements: (1) deepening the existing Bayou Heron Canal to 5.0 feet; (2) construction of a new 5.0-foot channel into Graveline Bay; and (3) use of the dredged material to provide habitat on which marsh would be restored. The dredging work would produce 52,000 cubic yards of primarily silty sand and sand. The dredged material would be deposited in an area located between the two dredged channels. The material would be deposited to produce a sloping elevation of no more than +1.5 feet. The existing marsh to the south would serve to contain the dredged material within the deposition area. The remaining perimeter would be ringed with either burlap bags containing oyster shells or metal gabions containing oyster shells. Intermittent openings would be provided to allow the exchange of tidal flows. Plugs of black needlerush (Juncus roemerianus) and saltmarsh cordgrass (Spartina alterniflora) from existing marsh areas within the project area would be used to establish approximately 32 acres of marsh on the dredged material.</td>
<td>N Y N N N N N</td>
</tr>
</tbody>
</table>

**Project Information**

- **Project Name**: Salt Creek Marsh Restoration
- **Project ID**: 11741
- **Submitted By**: Glendon Coffee
- **Location**: coastal AL
- **Cost**: $100,000/yr for 5 years or $0.5 million total
- **SubmittedVia**: N
- **Trustee**: N
- **Submitted Date**: 232
- **Program Name**: Salt Creek Marsh Restoration Project
- **Lead**: Glendon Coffee
- **Location**: coastal AL
- **Cost**: $100,000/yr for 5 years or $0.5 million total
- **Submitted Via**: N
- **Trustee**: N
- **Submitted Date**: 232

**Programmatic Damage Assessment and Restoration Plan (PDAAP) Criteria**

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project is not already required by other regulations (Y/N)</td>
</tr>
<tr>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td>Project benefits more than one natural resource and/or service (+ / 0 / -)</td>
</tr>
<tr>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
</tr>
<tr>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
</tr>
<tr>
<td>Project readiness (+ / 0 / -)</td>
<td>Project readiness (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
</tr>
<tr>
<td>Sustainability/Long term Benefit of project (+ / 0 / -)</td>
<td>Sustainability/Long term Benefit of project (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
</tr>
<tr>
<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
</tr>
</tbody>
</table>

**Project is consistent with the environmental benefits of the project as described in the public notice (Y/N)**

- **Public Notice**: 11 MILES HAVE BEEN PERMITTED. 15 MILES ARE IN PROGRESS FOR PERMITTING Coastal habitats of the northern Gulf of Mexico have declined substantially since 1950, with significant losses of saltmarsh, submerged aquatic
vegetation (SAV) and oyster reefs across all five states (Texas, Louisiana, Mississippi, Alabama and Florida). It is well documented that these coastal and submerged habitats serve as nursery areas for more than 90% of commercially and recreationally important fish and shellfish. In fact, 35% of the nation's seafood comes from the Gulf of Mexico: 70% of the shrimp and 35% of the oysters. The coastal waters in and around Mississippi Sound and Mobile Bay in Alabama historically contained some of the most productive saltmarshes, submerged aquatic vegetation (SAV) beds and oyster reefs along the northern Gulf coast. Adding a distinctive notch to Alabama's Gulf Coast shoreline, Mobile Bay - with an average depth of 10 feet - is one of the shallowest bays of its kind. It is also the fourth largest estuary in the United States and plays an important role in sheltering and nurturing the fish, shrimp, crabs and oysters that are vital to Gulf communities. In the northern Gulf of Mexico, oyster reefs form living breakwaters that help protect the soft coastal marsh shorelines from erosion and storm damage. In addition, the protected areas of marsh and seagrass landward of the reefs serve as critical foraging areas for wading birds, shorebirds and coastal waterfowl. The Eastern oyster, Crassostrea virginica, is an integral component of coastal ecosystems and local economies along the Gulf and Atlantic coasts of the United States. Globally, 85 percent of reefs have been lost, making oyster reefs the most severely impacted marine habitat on the planet. The northern Gulf of Mexico is one of the few remaining locations where oysters have the potential to regain their foothold. Over the last several decades, Mobile Bay has experienced significant loss of oyster reefs, seagrass beds and coastal-marsh habitats through dredge-and-fill activities, construction of seawalls and jetties, erosion, storm events and other causes. Despite these challenges, Mobile Bay represents one of the largest potential areas for oyster reef restoration and enhancement of these lost habitats on the northern Gulf Coast due to the size of the estuary, historic distribution of oysters in the Bay, high natural oyster spat sets and warm water for fast growth. Engaging in restoration efforts for the oyster reef, seagrass bed and coastal marsh habitats is a first step in addressing the chronic issues of coastal Alabama and the northern Gulf of Mexico, helping fisheries of importance across the Gulf both immediately and for the long-term. Previous efforts to protect shorelines in this region have involved the introduction of hardened structures, such as seawalls, rock jetties, or bulkheads to reflect wave energy. A major concern in implementing bulkheads and seawalls for coastal property protection is reflection of erosive wave energy back into the bay, instead of absorbing or dampening the wave energy. This subjects adjacent shorelines to even greater wave energy and can cause vertical erosion down the barrier with subsequent loss of intertidal habitats (Douglas and Pickel 1999). Recently, protection efforts have shifted towards 'living shorelines', including oyster reef breakwaters (MRC 2007). The Nature Conservancy, as part of the 100-1000: Restore Coastal Alabama Partnership, proposes to build 100 miles of oyster reefs, which will in turn help to protect and promote the growth of more than 1,000 acres of coastal marsh and seagrass. The project will provide substrate for oyster larvae to settle and colonize, serve as nursery habitat for commercially and recreationally important fish and shellfish, dampen wave energy back into the bay, instead of absorbing or dampening the wave energy.
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

### Project Description

Energy and decrease eutrophication and sediments and decrease turbidity. Currently 11 miles have been permitted while 15 additional miles are in progress for permitting. Pre-restoration monitoring will include the basic parameters outlined above to establish a baseline to assess changes. Post-reef restoration monitoring will occur at semi-annual or annual intervals for a 5-year required monitoring period. In addition to directly measuring the response of marine habitats to the restoration efforts, these data will measure the change in available habitat and food resources for birds and other marine animals that may use this habitat. Monitoring results will be evaluated annually to determine any obvious positive or negative trends. Those trends will be examined in annual reports and used as points of discussion for any needed adaptive strategies. Rigorous analyses will be completed for the following accomplishment targets:

1. **Oyster counts**: Species richness and abundance
2. **Oyster depth**: Abundance of shellfish and finfish: Species richness and abundance
3. **Oyster density**: Shoreline profile and change over time
4. **Mudflats**: Species richness and abundance
5. **Oyster abundance**: Oyster counts near the shoreline will be visited and samples will be collected to determine the density of oysters. Animals retained will be placed in plastic bags, put on ice and returned to the lab where enumerations of species will be performed. Seagrass beds: Because the presence of the reef is expected to have a positive effect on seagrass vegetation and may have a positive effect on SAV near the reef, we will monitor the density of shoots (m²) and cover (%) of bottom area covered of SAV before and after restoration efforts. Stations located at equidistant intervals between the breakwaters or control edge and the shoreline will be visited on each sampling date and the benthic community sampled with a 20 cm-diameter corer. The abundance (number of shoots per m²) and morphological characteristics (number of leaves per shoot, leaf length and width) of the seagrass at those stations will be measured. In addition, using submersed scanning technology (Seacat), the bottom between the breakwater or control edge and shoreline will be scanned for seagrass presence during the summer. Shoreline dynamics:

- **Shoreline elevation and slope**: Will be measured along three transects extending from the upland marsh into 0.5 m mean water depth using a Radio Telemetry Kinematic (RTK) Survey. The horizontal accuracy of this technology is 5 cm and the vertical accuracy is 3 cm, thus allowing portrayal of changes in shoreline shape (i.e. accretion or erosion) with unprecedented sensitivity. In addition, current meters, to determine the impact of breakwaters on water flow and direction, and water level loggers, to determine the impact on wave height, will be deployed leeward of the breakwaters and control edges. Sediment Composition: Sediment samples will be taken for grain...
Diadromous Fish

Lower Alabama River

Project Name
Co-Submitted by
Lead
Cost
Project Description

The analysis once per year to determine the ratio of silt-clay to sand and to determine the concentration of organic matter in the sediment. Marshes: The abundance, diversity and morphological characteristics of marsh plants will be measured along the same transects used for shoreline dynamics. Two stations (high and low marsh) will be monitored per transect. Marsh vegetation will be quantified within 1 m x 12 m quadrats. Beginning at the shoreline edge, quadrat samples will be collected at 0.5 m and 2.0 m (defined as low marsh and high marsh respectively) along a transect perpendicular to the shoreline. All vegetation will be quantified, classified and characterised by growth stage (e.g. live, dormant, and dead). Short Term Goals Once deployed, the oyster breakwaters will immediately begin to abate wave energy, thereby stabilizing the shorelines. In addition, the oyster breakwaters will be readily colonized by oyster spat or other encrusting organisms. The complex structure of the oyster breakwaters will provide nursery habitat for larval and juvenile and forage grounds for adult finfish and shellfish. The primary short term goals associated with this project include: (1) Stabilization of eroding shorelines; (2) Restoration of reef habitat and associated ecosystem services; and (3) Enhanced community knowledge of living shorelines and estuarine ecosystems. Long Term Goals Deer time, each breakwater will evolve into a self-sustaining oyster reef breakwater / living shoreline. As the breakwaters mature, the resulting ecological services provided will be compounded. The synergistic effects of reduced wave energy and improved water clarity are expected to contribute to the facilitation or expansion of submerged aquatic vegetation and emergent salt marsh. In addition to the short-term goals, one long-term goal associated with this project is to establish an aquatic migratory corridor for sessile and encrusting organisms, as well as other finfish and shellfish, to adapt or migrate in response to climate change impacts. Examples of how the proposed "Living Shoreline/Oyster Breakwater Reef Project" will help recover the NRDA Resources: 1. Water Column and Invertebrates - Healthy living shorelines/oyster reef breakwaters contribute larvae as a free-swimming plankton that, in turn, serve as a food source for other larger nekton and benthic organisms such as crabs and adult oysters - Living shorelines/oysters

Lower Alabama River Diadromous Fish Passage, Multiple Counties, Alabama

Paul Freeman

Submitted via

Projected Final Start

8 Waters

1500000

At a time when the fisheries and marine habitats in the Gulf of Mexico have been impacted, it is imperative to implement feasible restoration of key ecological processes of freshwater habitats that are interwoven with the whole marine, estuarine, and freshwater system. Many species of fish move from coastal habitats into the freshwater rivers to complete their life cycle or take refuge when conditions in the Gulf are not appropriate. Dams are well known to impede movements of diadromous fish across river systems including those that flow to the Northern Gulf of Mexico. The Nature Conservancy, working in collaboration with the U.S. Army Corps of Engineers and several other agencies and partners, will modify lock operations on the two lowwater dams on the Alabama River, which were installed around 1970, and measure the effectiveness these changes have at improving the passage of migratory fish across approximately 400 river miles. Structural and operational modifications at Claborne Lock and Dam and Millers Ferry Lock and Dam have the potential to benefit over 50 species of fish, numerous mussel species and the overall ecosystem stretching from the Gulf of Mexico, across Mobile Bay.
### Project Description

The key restoration activities include installation and operation of water pumps inside the navigation locks to provide attraction flows for fish and then opening and closing of the lock gates to allow fish the opportunity to swim through and past the dams on their upstream and downstream journeys. To measure the effectiveness, subsets of fish need to be tagged with transmitters to allow researchers to track their movements over the next five years or more. The Mobile District of the U.S. Army Corps of Engineers has recently allowed the installation of water pumps to aid in restoration activities at their facilities and has agreed to implement lockages for fish movement. The Nature Conservancy is poised to expand the fish passage efforts to maximize benefits for a suite of valuable fish species by maintaining the attraction flow pumps and expanding the monitoring and assessment phase of this project over the next five years to include additional diadromous fish or their surrogates. Consistent with Section 1006 of the Oil Pollution Act, this project will:

- Contribute to making the environment and the public whole by restoring and rehabilitating connectivity between marine habitats and estuarine habitats used by wildlife and fisheries as nursery and foraging habitat, especially for diadromous fish.
- Address impediments to migration, reproduction and feeding for multiple species of fish including Gulf sturgeon, striped bass, American eel, and Alabama shad.
- Compensate for impacted, degraded and loss of riverine habitat, estuarine and freshwater fisheries and impacts to the federally threatened Gulf Sturgeon.
- Apply in a consistent manner to the long-term restoration needs of high priority riverine and estuarine habitats as described in Alabama’s State Wildlife Action Plan.

The project provides feasible and cost-effective restoration of fish and wildlife, especially for diadromous species including Gulf sturgeon, striped bass, American eel, and Alabama shad. The project is consistent with criteria identified in the public notice (15 CFR 990.54).

### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Priority</th>
<th>Lead</th>
<th>Cost</th>
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<tbody>
<tr>
<td>[Project Name]</td>
<td>[ID]</td>
<td>[Submission Source]</td>
<td>[Priority]</td>
<td>[Lead]</td>
<td>[Cost]</td>
</tr>
</tbody>
</table>

### Project Description

The project proposes to expand the fish passage and attraction flow pumps and expanding the monitoring and assessment phase of this project over the next five years to include additional diadromous fish or their surrogates. Consistent with Section 1006 of the Oil Pollution Act, this project will:

- Contribute to making the environment and the public whole by restoring and rehabilitating connectivity between marine habitats and estuarine habitats used by wildlife and fisheries as nursery and foraging habitat, especially for diadromous fish.
- Address impediments to migration, reproduction and feeding for multiple species of fish including Gulf sturgeon, striped bass, American eel, and Alabama shad.
- Compensate for impacted, degraded and loss of riverine habitat, estuarine and freshwater fisheries and impacts to the federally threatened Gulf Sturgeon.
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The project provides feasible and cost-effective restoration of fish and wildlife, especially for diadromous species including Gulf sturgeon, striped bass, American eel, and Alabama shad. The project is consistent with criteria identified in the public notice (15 CFR 990.54).
As south Mobile County continues to recover, it grows and becomes more viable, intercostal water way and the gulf. Prevent exfiltration of wastewater into the groundwater, surrounding bays, the SSO’s within the collection system and at the waste water treatment plant, and sewer service. The project will provide service to the restored areas of the island that currently have no service to restore the lost beaches on the west end of the Island. The new gravity sewer would save time and money over conventional digging and replacing. Dauphin Island’s sewer collection system infrastructure is nearing project costs are estimates based on past similar projects.

Sanitary Sewer Collection System Rehabilitation

11715 Vaile Feemster Dauphin Island

The majority of Dauphin Island’s sewer collection system infrastructure is nearing the end of its design life. Hurricanes and tropical storms have helped to increase the wear and tear on the collection system. The gravity sewer is predominately comprised of vitrified clay pipe which has a tendency to settle and break over time; and pipe joints lose their ability to remain water tight. The breaks and loose pipe joints allow increased infiltration of sand and ground water into the system and exfiltration of wastewater into the environment. Similarly, the pumping stations that move wastewater to the treatment facility are aged and in need of upgrades to stop Sanitary Sewer Overflows (SSO) and sewer exfiltration. Ground water infiltration increases pumping cost, increases treatment plant operating cost and decreases the systems overall capacity. Reduction in hydraulic capacity lost in the system due to infiltration increases the occurrence of SSO’s. The sand infiltration increases wear on pumps, pipes, screens and other mechanical equipment. This project will be an effort to rehabilitate the existing collection system by means of trenchless pipe and manhole lining. Replacing the system by trenchless methods will save time and money over conventional digging and replacing. Dauphin Island has plans to restore the public beach and private property lost from past hurricanes and tropical storms. For the restored property to be utilized for residential or commercial development, this project would be required to coincide with the plan to restore the lost beaches on the west end of the Island. The new gravity sewer would provide service to the restored areas of the island that currently have no sewer service. The project objectives will be to restore system capacity and reduce SSO’s within the collection system and at the waste water treatment plant, and prevent exfiltration of wastewater into the ground water, surrounding bays, the interstitial water way and through the gulf.

Water Supply and Distribution Improvements

11716 Vaile Feemster Mobile County

As south Mobile County continues to recover, as it grows and becomes more viable with each passing day, so must the water infrastructure to support such prosperity. The planned improvements will provide reliable pressure and fire flow improvements to areas that currently experience problems during peak water demand.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (33 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dauphin Island Emergency Response Personnel Storm Shelter</td>
<td>Dauphin Island seeks to create a &quot;base of operations&quot; that will be protected during storm events. In the past, equipment and materials stored in the weather had to be relocated off the island for protection during the threat of tropical storms or hurricanes. The proposed building would have the ability to house generators, back-up equipment and other equipment necessary to carry out storm damage relief operations. The reinforced building will be constructed above the 500 year flood plain to protect equipment and personnel from wind and rising storm surges. The shelter would allow for a faster response to emergencies, human and environmental, that have a tendency to occur after a storm.</td>
<td>- Developed shelter on Federal Lands (Y/N)</td>
<td>- Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Federal Trustee Portal</td>
<td>- Project is not already fully funded (Y/N)</td>
<td>- Project readiness (+ / 0 / -)</td>
</tr>
<tr>
<td>Wastewater Treatment Facility Rehabilitation</td>
<td>The Dauphin Island wastewater treatment plant discharges directly into the waters of Aloe Bay and the Mississippi Sound. Providing adequate treatment involves maintaining the facilities and treatment processes. The improvements will allow Dauphin Island to continue meeting its existing wastewater process tanks. The rehabilitation will stop partially treated wastewater from leaking and possibly contaminating the bay.  - Develop a &quot;base of operations&quot; that will be protected during storm events.  - Increase capacity of existing wastewater treatment facility.  - Provide more efficient treatment process.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Develop a &quot;base of operations&quot; that will be protected during storm events.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.  - Improve facility monitoring and communication will include remote alarms to notify operators of mechanical failures and help to prevent overflow events.  - Structural improvements.</td>
<td>- Oyster Reef (Y / N)</td>
<td>- Project prevents future and collateral injury to natural resources and services (+ / 0 / -)</td>
<td>Federal Trustee Portal</td>
<td>- Project is technically feasible (+ / 0 / -)</td>
<td>- Project readiness (+ / 0 / -)</td>
</tr>
</tbody>
</table>
Little Lagoon of an Electronic Project Name Shrimp Fishing Laguna Cove, in the Gulf of Mexico

The acquisition of coastal wetland property is a means of providing a source of mitigation for the environmental and economic damages that resulted from the Deepwater Horizon incident. This project consists of the fee simple acquisition of the two Laguna Cove tracts located on Little Lagoon. These two tracts total 53 acres and 6971.251 linear feet of shoreline on Little Lagoon. These parcels are in close proximity to the USFWS Bon Secour National Wildlife Refuge. There is also 2880.193 of road frontage on West Beach Boulevard (Al Hwy. 182). This land acquisition project will allow future resource recovery activities to be conducted on these sites. The activity of land acquisition has been identified as an important factor in the resource recovery process by the Malus Report and federal and state resource trustees. The Land Trust Alliance Southeast Program’s Gulf Coast Partnership for Land Conservation (GCPLC) has also identified protection of ecologically sensitive properties gulf wide as a high conservation priority. The Erie Meyer Foundation owns both of these parcels. The owner has been identified as a willing seller. The property has high development potential. A 69 acre marine and 69 upscale lot subdivision has previously been permitted for development by the owners. Little Lagoon has been nominated by the State of Alabama’s Coastal Resource Advisory Committee as a Geographic Area of Particular Concern designation candidate. The Little Lagoon Pass was closed off during the Deepwater Horizon Oil Spill. Little Lagoon is culturally valuable for its serene beauty which provides a natural recreation area with white sand beaches, nature walks, bird watching, and guided wildlife tours. The acquisition of these two tracts would provide additional public access to Little Lagoon and mitigate for any natural events that may have occurred while the lagoon pass was closed off during the Deepwater Horizon oil spill. The site would be an ideal location for a City of Gulf Shores nature preserve or a future addition to the Bon Secour National Wildlife Refuge. The Weeks Bay Foundation is a nationally accredited land trust by the Land Trust Accreditation Commission. The Foundation has the ability to provide technical assistance for this fee simple transaction. The Little Lagoon Preservation Society and the Erie Hall Meyer Charitable Fund will also serve as a conservation partner.

Shrimp Fishing Data Collection Through the Use of an Electronic Logbook System in the Gulf of Mexico

5000

Because the red snapper stock of the Gulf of Mexico is classified as overfished, the National Marine Fisheries Service has regulated the directed commercial (IFQ) and recreational (size and trip limits and closed seasons) red snapper fisheries to reduce mortality of large juvenile and adult fish. To reduce the fishing mortality of small juvenile fish, the NMFS has also regulated the shrimp trawl fishery, a fishery that is thought to bottleneck adult populations. Disagreement has existed regarding the magnitude, age composition, and monthly distribution of shrimp trawl red snapper bycatch in time and space. The Foundation completed a research study that augmented the collection of electronic logbook (ELB) data through the use of observers in the fishery. The goal was to enable the fishing industry to evaluate and address fishery management issues, including the estimation of shrimp fishing effort and bycatch. The ELB was developed by G3 Ecological Research Associates, Inc., to directly measure shrimp fishing effort, thereby reducing the dependence on modeling to provide better estimates of effort and red snapper bycatch. Over the course of a 2 year pilot study, ELB systems were
**Introduction and Evaluation of New Designs of Propellers and Nozzles in the Gulf Shrimp Fishery for Enhanced Efficiency and Fuel Economy**

**Project Name:** Introduction and Evaluation of New Designs of Propellers and Nozzles in the Gulf Shrimp Fishery for Enhanced Efficiency and Fuel Economy

**Project ID:** 11688

**Submitted By Primary Lead:** Judy Jamison

**Location:** Gulf states

**Cost:** 750000

**Project Description:** A combination of increased operating expenses and reduced ex-vessel prices for shrimp has created a perfect storm of economic hardship in the Gulf Shrimping Fishery. The fishing industry has worked to reduce costs of operation, but unfortunately, few new avenues for this exist. One major cost to the shrimp industry is fuel and there are potential avenues to reduce fuel consumption aboard vessels. One of these is improved propellers and nozzles for propulsion. A recent collaborative evaluation aboard one vessel by Texas A&M Sea Grant researchers and a shrimp company showed that fuel consumption was reduced by approximately 28% when replacing a traditional Kaplan propeller with a Rice Speed Propeller and match Speed Nozzle. These results closely resembled that of a similar study performed in Australia where a combination of increased operating expenses and reduced ex-vessel prices for shrimp-trawl red snapper bycatch, and conduct a formal cohort analysis (VPA) on all observer collected red snapper data. The ELB program is vital to managing the shrimp and red snapper fishery in the Gulf and needs to be continuously funded, especially as the impacts of the Deepwater Horizon oil spill become better understood.

**Trustee Portal:** N N N N N N N N

**Public Notice:** N

**Additional Criteria:**

**Project Information**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Function Vessel – Aquatic Weed Harvester, Marine Trash</td>
<td>11676</td>
<td>Louis E. Brennan</td>
<td>coastal Gulf of Mexico</td>
<td>750000</td>
</tr>
</tbody>
</table>

**Detailed Features - Proposed Multi-Function Vessel** The multi-function vessel design for applications in the Gulf Coast Wetlands will be basically that of Alpha Boats Unlimited (ABU) Aquatic Weed Harvester(s) and/orTrash Skimmer(s) (refer to ABU’s website: http://www.alphaboats.com... modified to contain the following features:

**Trustee Portal:** N N N N N N N N
Oil/Muck Dredge

**Project Name:** Oil/Muck Dredge

**Project Description:**

1. The HULs will be a "Mono Hull", either the traditional & conventional hull/ pontoon units previously designed and built for Aquatic Weed Harvesters & Trash Skimmers. Considering the added weight of larger engines, added fuel capacity & specially designed operating features necessary to deal with a wide variety of debris & materials anticipated to be found in the wetlands, they will be larger, more effective and able to be deployed in shallow wetland waters. 2. Rather than using paddle wheels for propulsion and steering, this unit would be equipped with a set of lightweight individual rubber "twin tracks" (much like those used on "tanks"), each equipped with tracks and each positioned along and outside of each side of the Mono Hull. We feel that traditional paddle wheels and propellers (which could cause "blowholes") are too restrictive to be as versatile as we wish, for this concept. Each "track" could be individually (and independently) raised and lowered (hydraulically) to enable these shallow-draft vessels to continue operating in "mud flats" when floating or when the hull bottoms out as the tide "goes out". The modifications to ABU's standard Aquatic Weed Harvester (and Trash Skimmer) would basically entail enlarging the Mono Hull to deal with the added weight of tracks, a larger higher horsepower engine (w/ sufficient HP to operate all systems), sufficient hydraulic pumping systems (to operate all systems), additional fuel capacity, increased debris load, the addition of an all-weather, 2-man cab (operator + 2nd person for safety reasons) w/ heating & air conditioning (able to operate in all seasons & under all weather conditions), etc., plus fabricating the Mono Hull: pontoons of stainless steel (instead of a conventional steel hull with zinc anodes as an option) to deal with the salinity of the tidal water. Obviously, when the tide goes out, the tracks, which would be individually reversible and have variable speed in both directions, would take over both precise steering and propulsion when the hull bottoms out. 3. The "multi-function" unit will be equipped with INTERCHANGEABLE/COMPATIBLE "HEADS" with "universal" mechanical connections to the main lift/lowering conveyor + quick-connect hydraulic connections to supply power to these systems, and with the capability of: a) harvesting aquatic vegetation and recovering floating trash & debris, plus b) the ability to mechanically & hydraulically dredge "oily muck" in the weed infested wetland areas designed with a horizontally hydraulically powered auger-cutter (w/ left & right auger) to move materials from sides to the center head mounted slurry pump...to move the material to a barge or shore disposal site, the auger will be shrouded to confine turbidity and equipped with cutting bars to chop vegetation into pieces small enough for pumping; c) accumulate "oily water" liquids (both drainage and/or disposal) that will undoubtedly drain through the on-board storage areas on both the weed harvester(s), trash skimmers and/or the transport barges during operations. d) high pressure hosing systems to enable clearing of mud, weeds & debris from under permanently rooted vegetation and/or trees or plants. 4. OTHER CONSIDERATIONS: There is also the possibility of equipping the vessels with a twin propeller, hydrostatically-driven system for moving quickly back and forth from work sights to offloading sites. The prop systems would operate independently of the side mounted "track" systems and be able to be raised & lowered in order to get them out of the water when pulling...
Project Name: Dauphin Island Project Space Mop

Location: On north side of Dauphin Island, Alabama.

Holes were dredged in May 2010 in response to the BP oil spill to build small sand piles and dunes as a defense against the surface oil slicks. The barrier island will likely breach at these areas in the next major hurricane if they are not filled. Such a breach will sever the developed portion of the island in their path as they migrate around. These plumes are vast in size, and should not be underestimated as to their continuing devastating effect on Gulf wild life ecosystems. The remaining oil in the gulf needs to be completely accurately mapped using NASA satellite imaging and environmental deflecting technology. With precise (horizontal & vertical) cutting and/or removal of materials, SUPPORT EQUIPMENT: Both the Harvesters & Trash Skimmers will have compatibility sized support equipment ("slick") on the photos on ABU’s homepage: http://www.alphaboats.com) to enhanced performance: a) Shore or Pier Conveyors - for offloading weeds at shorelines (down embankments or over a pier). b) Transport Shuttle Barges - to transfer weeds (or debris) from multiple Harvester(s) or Trash Skimmers while out in the water, thus eliminating non-productive round trip down time, should these vessels have to go back & forth to shore to offload recovered materials. c) Transport Till-Deck Trailers - to launch & retrieve Harvesters & Trash Skimmers, & haul them over the highway from site to site. It is anticipated that the final design, even with an enlarged Mono Hull, will still enable the vessels to be easily launched and recovered (from a ramp or at shorelines) and transported over the highways, which will be advantageous in flexibly designating its usage to high priority locations. With 100’s of pieces of these types of equipment in operation worldwide, modification of the special Weed Harvester (or Trash Skimmer) units with interchangeable “heads”, modified hulls, the addition of tracks and a larger diesel engine, etc., will not be a major undertaking.

Project Information

Project Name: Dauphin Island Project Space Mop

Location: On north side of Dauphin Island, Alabama.

Holes were dredged in May 2010 in response to the BP oil spill to build small sand piles and dunes as a defense against the surface oil slicks. The barrier island will likely breach at these areas in the next major hurricane if they are not filled. Such a breach will sever the developed portion of the island in their path as they migrate around. These plumes are vast in size, and should not be underestimated as to their continuing devastating effect on Gulf wild life ecosystems. The remaining oil in the gulf needs to be completely accurately mapped using NASA satellite imaging and environmental deflecting technology. With precise (horizontal & vertical) cutting and/or removal of materials, SUPPORT EQUIPMENT: Both the Harvesters & Trash Skimmers will have compatibility sized support equipment ("slick") on the photos on ABU’s homepage: http://www.alphaboats.com) to enhanced performance: a) Shore or Pier Conveyors - for offloading weeds at shorelines (down embankments or over a pier). b) Transport Shuttle Barges - to transfer weeds (or debris) from multiple Harvester(s) or Trash Skimmers while out in the water, thus eliminating non-productive round trip down time, should these vessels have to go back & forth to shore to offload recovered materials. c) Transport Till-Deck Trailers - to launch & retrieve Harvesters & Trash Skimmers, & haul them over the highway from site to site. It is anticipated that the final design, even with an enlarged Mono Hull, will still enable the vessels to be easily launched and recovered (from a ramp or at shorelines) and transported over the highways, which will be advantageous in flexibly designating its usage to high priority locations. With 100’s of pieces of these types of equipment in operation worldwide, modification of the special Weed Harvester (or Trash Skimmer) units with interchangeable “heads”, modified hulls, the addition of tracks and a larger diesel engine, etc., will not be a major undertaking.
Improving Public Access to Alabama Coastal Waters 11659 Walter C. Ervin, IV Weeks Bay 902232 The Weeks Bay National Estuarine Research Reserve (Reserve) provides leadership to promote informed management of estuarine and coastal habitats through scientific understanding and encourages good stewardship practices through partnerships, public education, and outreach programs. In an effort to continue and enhance such programs it is recommended that funds be provided to construct a new public boat launch facility on the east side of Fish River and adjacent to the US Hwy. 98 Fish River bridge. This project is a means of providing a source of mitigation for the environmental and economic damages that resulted from public waters and public access boat ramps being closed during the Deepwater Horizon incident. There were limited public access boat ramps that could be utilized in Baldwin County, AL during the Deepwater Horizon disaster. This project will support the conducting of future resource recovery activities. Accessibility to best steward public trust coastal resources is important to federal and state trustees in the resource recovery process. Construction of a boat launch facility in the Reserve boundary will establish the needed infrastructure to support future disaster response and recovery efforts. This facility would be sited on Alabama Department of Transportation property. A recent Facility Master Plan Study and Design

Project Name: Improving Public Access to Alabama Coastal Waters

Project Description: In contain oil on the beachface under typical conditions. A portion of the sand for these barriers was mined from 20 privately owned lots on the north side of island’s west end. Sand from the 20 lots was dug using backhoes up to within 40 feet of Mississippi Sound, creating “ponds” at those locations. Some of these “ponds” are now (April 2012) part of Mississippi Sound because of the rapid erosion of the north shore of the island typical after major overwashing events. It should be noted that the emergency sand barriers were successful. They prevented oil from depositing on a wide expanse of the beach and they have successfully prevented all island overwashes to date. Dauphin Island did not experience the wide deposits of oil across the beach that other towns experienced. Later in 2010, the first sand barrier was kept and vegetated to establish a dune feature. The second, smaller sand barrier was sited and redistributed in a flatter, more naturally-shaped beach berm. The condition of the ponds was not readdressed following the contamination of the oil spill. These dredged holes have weakened the barrier island in these locations by narrowing the width of the island significantly. The island will likely breach through these areas in the next major storm. Such a breach will destroy the road and all the infrastructure to the houses on the western portion of the island. A quasi-permanent inlet could develop (like “Katrina Cut”) at the hole/pond locations. The Town of Dauphin Island has identified a source of good quality sand already

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Project Name</td>
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<td>Project Description</td>
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<td>Additional Criteria</td>
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The natural littoral movement of sand is from the area of the ship channel to the economically vital Port of Mobile. Sediment is periodically dredged from this outer bar to maintain the tidal system includes all of the shoals around Mobile Pass: the Dixie Bar area, then moved into the ship channel. Some portion of the dredged sand has probably moved up into the beach system but a report (Morton 2008) indicates that much of it is still offshore. The US Army Engineers Mobile District used $16 million in federal funding following the BP oil spill to place 3.4 million cubic yards of clean sand around the Sand Island Lighthouse instead of (the federal) in the areas currently used for disposal of beach quality sand around the lighthouse. In 2011 dollars. The mission of the Weeks Bay Foundation is to protect the natural resources of coastal Alabama and provide assistance and support to the goals and programs of the Reserve. The Foundation has the capacity to provide technical assistance for this project. The Reserve will serve as a primary partner on this proposal. This project will construct a new public boat launch facility and will improve public water access to the waters of Coastal Alabama.

A Mobile/Baldwin county media campaign designed to inform the citizens of the Mobile Bay watershed of the imminent and serious threats of stormwater runoff. Project intends to use radio, television, and other marketing techniques to reach a very broad general population from the Mobile Bay Watershed area. The impacts from stormwater are relatively unknown to the general population, but the effects are very dangerous and could greatly impact the important work of restoration. This project will send the incremental cost of improved sand bypassing at Mobile Pass. Specifically, this is the additional cost of disposal of beach quality sand around Sand Island Lighthouse, instead of (of the federal) in the areas currently used for disposal. Dauphin Island, Alabama is located northeast of the ebb-tidal delta of Mobile Pass. The ebb-tidal system includes all of the shoals around Mobile Pass: the Dixie Bar shoals to the east and the Sand/Pelican shoal complex to the west. The ebb-tidal delta (the outer bar) is bisected by the southern end of the Mobile Ship Channel. Sediment is periodically dredged from this outer bar and placed in designated disposal areas along the channel in unconfined open-water. Placement dredged sediment in deep water areas permanently removes large volumes of sand from the littoral system (Morton 2008). About 20 million cubic yards have been dredged from the ship channel to maintain the channel since 1960 (total historical dredging including new widening work exceeds 43 million cubic yards). The natural littoral movement of sand from the area of the ship channel to the beaches of the west end of Dauphin Island. Most of the dredged maintenance material is sand and much of it apparently has been disposed of offshore where it has not effectively rejoined the littoral system of the state. It is predominately beach quality sand that was on the beaches of Fort Morgan Peninsula, moved to the Sable Bar area, then moved into the ship channel. Some portion of the dredged sand has probably moved up into the beach system but a report (Morton 2008) indicates that much of it is still offshore. The US Army Engineers Mobile District used $16 million in federal funding following the BP oil spill to place 3.4 million cubic yards of clean sand around the Sand Island Lighthouse between October and December 2011. Sand was dr edged from the designated disposal areas along the Mobile Ship Channel. This project was a “one-time effort, requiring special dredging equipment to deliver sand to the shallower waters around the lighthouse.” In
### Quantitative Fish and Habitat Assessment and Monitoring Using Scientific Acoustics

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<tr>
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<tbody>
<tr>
<td>Gulf States</td>
<td>Bob McClimon</td>
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<td>45000</td>
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"Sand Island resurrected: Island is open to the public and turfed free," the Corps estimates the annual cost to dredge the ship channel with the type of dredge used to create the island is roughly $1 million. The Town of Dauphin Island is committed to working hand-in-hand with the Corps of Engineers in the future to continue placing beach quality sands dredged from the ship channel around the Sand Island Lighthouse to address the long-term problem of removing sand from the littoral system. This project proposes disposal of beach quality sand around Sand Island Lighthouse using sand dredged from the Mobile Ship Channel during the next 5 dredging cycles, or time between filling operations, at an estimated cost of $5,000,000. Dauphin Island is important not only for the residents but for the entire coastal system as it is the sand source for the Mississippi/Alabama barrier island chain. Dauphin Island protects south Mobile County from hurricane storm surge and waves as well as defines and protects the extremely productive estuary of the eastern Mississippi Sound.

### Gulf of Mexico Hatchery and Fisheries Restoration Consortium

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<tr>
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<tbody>
<tr>
<td>Gulf of Mexico</td>
<td>Lee A. Fuiman</td>
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<td>6960000</td>
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Problem: The Deepwater Horizon Oil Release (DWH) caused environmental and economic damage to fisheries in the north Gulf of Mexico. America must employ novel and effective approaches to restore both economic and environmental well-being of the affected fisheries. In addition, habitat destruction caused by hurricanes and other man-made causes (overfishing, erosion and spills) have led to a significant decrease in Gulf fish populations during the last decade. Solution: Marine aquaculture of key species can be employed to restore fisheries through restocking and to restore economic viability through technology transfer and stimulation of small businesses resulting in job creation. This effort should be highly collaborative working institutions in all five Gulf States as well as other national and international institutions, public and private, with significant hatchery technologies. Implementation Team: Gulf of Mexico Hatchery and Fisheries Restoration Consortium. Gulf Coast Research Laboratory/University of Southern Mississippi (GCL; lead institution), University of Texas Marine Science Institute (UTMSI), University of Southern Mississippi (USM), University of Alabama (UA), Auburn University (AU), Mote Marine Laboratory (MML), University of Maryland - Baltimore (UMD) These institutions are leaders in marine aquaculture and stock enhancement research, implementation, and technology transfer for the northern GOM. The consortium is built on established relationships and will employ the highest quality science and...
### Project Information

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<thead>
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</thead>
<tbody>
<tr>
<td>New Marketing Tool for BP to Generate Sales For Local Merchants and Consumers Along Gulf Coast</td>
<td>We have a new viral marketing platform to submit to your PR/Marketing Department for review. The program will help the merchants realize a tool that will help them generate sales and is cost effective for your firm. The merchant will offer a discount for their business on behalf of BP! This Platform developed for The New Economy, works in conjunction with a client’s website or Facebook page, handles mobile marketing (free mobile app), provides tools for print publications (auto generates QR Codes), videos commercial indexed on search engines and social media broadcasting. 9P will be able to regulate a discount offer the merchant can promote.  This is a microbe that turns into water and carbon dioxide. Will not harm animal life not human life. I've heard nothing about BP finishing the job of cleaning all the oil off the bottom of the Gulf, but that is still a billion dollar task. The gulf is still dying due to oil seeping into the gulf. If we don't clean it up, we will be left with a disaster of a lifetime.</td>
<td>Gulf states</td>
</tr>
<tr>
<td>Finish the Cleanup underground</td>
<td>We heard nothing about BP finishing the job of cleaning all the oil off the bottom of the gulf - there is still an oil slick out there lying on the bottom of the Gulf at least 5 miles square - when are they going to clean that up?</td>
<td>Gulf of Mexico</td>
</tr>
<tr>
<td>Oil Re Mediation</td>
<td>We have a Product called Oil Digester that was approved to be used under the Marine Protection Research and Safety Act.</td>
<td>Gulf of Mexico</td>
</tr>
<tr>
<td>Leasing Commercial Red Snapper IFQ</td>
<td>For 40 years, I Russell Underwood have been a commercial Snapper Fisherman. My livelihood depends on a healthy and abundant gulf, full of red snapper and many other species of fish. As we are all aware the BP oil spill has done much environmental damage to the gulf and no telling what adverse things</td>
<td>Gulf states</td>
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</table>
we could see down the road. We have seen that hatchery programs are not the
t best route to go as they do not seem to work. Being on many fisheries advisory
s councils and committees over the years I have learned that there must be a
 certain amount of the snapper left in the water to spawn and reproduce, to ensure
 a healthy and abundant snapper population. I have not heard of any positive
 recovery plan for the reef fish in the gulf, therefore I propose that ep/nda consider
 leasing a percentage of red snapper allocation IFQ shares that will remain unfished
 for five years to give the snapper time to spawn and reproduce abundantly. It is my
 belief that this would be to everyone’s advantage, commercial and recreational, to
 protect both resources and our livelihoods. This would ensure a healthy red snapper
 population for future generations and a viable Gulf of Mexico. As a IFQ shareholder
 I am willing to lease a percentage of my allocation to aid the gulf restoration
 project. Thank You, Russell Underwood

Restoration Barrier Island 11619 Richard Schmohl Dauphin Island

Feb. 8, 2012 We properly owners of Dauphin Island are pleading with you to allocate monies for the restoration of
the south west beaches of the island. Since the early 1950’s we have watched the
erosion cause lose of natural habitate to all wildlife. We planted sea oats and
various different vegetation over the years to protect the beaches for the wildlife
inhabitants while of course, protecting our investment. I don’t pretend to know as
much about the ecology of the coast, the sound and the wet lands but I have
seen many changes for the worse of it all because of the damage to the barrier
(Dauphin Island). Some benefis listed below should be the concern of all people
because of the amount of square miles this island protects; Strengthen Alabama’s
coastline. Help to re-
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various different vegetation over the years to protect the beaches for the wildlife
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because of the amount of square miles this island protects; Strengthen Alabama’s
coastline. Help to re-

Mississippi Sound Protect the oyster reefs that have gone into being brought back to
life Protect the

Richard Schmohl
Reef Fish Restoration

Wayne Vennex
Gulf of Mexico

Fishermen along the Louisiana coast are seeing far less juvenile red snapper, as well as fewer juveniles in the grouper fishery since the BP oil spill of 2010. Because of the increased incidence of lesions and other problems we are seeing in the Gulf of Mexico I feel the NRDA program should have a policy to ensure the health of these fish stocks. Considering the issues of hatchery programs and other issues which seem to have produced no positive results, some fishermen along the Gulf coast propose that NRDA lease a percentage of reef fish for a five year period. The current IFQ system allows leasing allocation of these fish to participants who are not commercial fishermen. Not harvesting these fish would allow them time to reproduce. This would be very conducive to restoring the health of our fishery in the Gulf of Mexico for the future of the United States.

Reef Fish

Donald Waters
Gulf of Mexico

Believe the BP/NRDA process should explore the option of leasing commercial red snapper shares that will remain in the water to help ensure a healthy and vibrant red snapper fishery for years to come. By leasing a certain percentage of the fish in the water to spawn and reproduce will help ensure any damage to the red snapper fishery will be mitigated through a long-term leasing option. However, you would not want to lease too many fish as this will disrupt the processor/wholesaler industry and would negate any gains made by leasing spawning fish in the water to aggregate. I feel that this was imperative and will create a win-win situation for both the BP/NRDA process and the stakeholders as a whole.

Boat ramp

C.D. Alexander
Wolf Bay

We need boat ramps on the north side of orange beach. there is a lot of boating in the bay, the ferry cove ramps are a long way from Wolf Bay, the bp spill stopped us from using those. alot of fuel could be saved, the benefit list could go on and on.

Shoreline, Marsh Restoration and Recovery

Gary Closs
Mississippi

Install RZHO filled TECH Units with grass and trees Includes all labor, equipment, insurance and management. Completed Projects: Project Location: Pass a Loutre MS

Project is consistent with programmatic restoration goals (+ / 0 / -)
Project is consistent with criteria identified in the public notice (Y / N)
Project is not already required by existing regulations (Y / N)
Project is time critical (+ / 0 / -)
Project offers opportunities for external funding & collaboration (+ / 0 / -)
Project is not already fully funded (Y / N)

Sustainability/Long term benefits cost-effective (+ / 0 / -)
Project has reasonable probability of success (+ / 0 / -)
Project offers economic benefits with social, economic & environmental benefits (+ / 0 / -)
Project prevents future and collateral injury to natural resources and services (+ / 0 / -)
Project is not already required by existing regulations (Y / N)
Project is time critical (+ / 0 / -)
Project offers opportunities for external funding & collaboration (+ / 0 / -)
Project is not already fully funded (Y / N)
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<tbody>
<tr>
<td>Weeks Bay boat</td>
<td>11598</td>
<td>Jula O’Neal</td>
<td>Gulf of Mexico</td>
<td>Clean up bays and estuaries by paying fishermen to bring in garbage. This is a Brazilian architect who has been a mayor and a governor in Brazil and has won awards for his “green” activities and ideas.</td>
<td>N</td>
</tr>
<tr>
<td>Fish River and Weeks Bay boat launches and parking access</td>
<td>11602</td>
<td>San Valentin</td>
<td>Weeks Bay</td>
<td>Directly and indirectly related to the BP/DWH spill: 1. The boat launch facility at the end of Baldwin County Road 1; (entrance to Weeks Bay from Mobile Bay), sustained damage as a result of response activities. During response, several vessels along with various types of booms were put in place in an attempt to prevent spill contaminants from making their way into the Weeks Bay and Magnolia River water systems. As a result, some sections of the seawall, (where the booms and vessels were anchored), became damaged by those anchors. There has been a temporary repair made to the seawall but a proper repair is what is needed. Otherwise, the entire seawall and adjoining parking lot will be in danger of complete collapse, most likely during the next tropical system. In addition, the high use of the ramp and associated pier resulted in damage with the use of the V.O.D program. The pier is in dire need of repair. 2. The boat launch facility at the US Highway 98 bridge and entrance to Fish River is also in need of repair. The ramp is still in fairly good shape however, the launching pier is in need of repair. But the single most important repair to this facility MUST be the parking lot. Numerous attempts have been made in the past to fill in the potholes. This is losing battle as repairs never last. Again, a more lasting solution is what is required. I would suggest paving the parking lot with a good grade of asphalt, (like the Weeks Bay launches). And because so much of the available parking space was lost with the construction of the Weeks Bay I would suggest paving all of the land under the US 98 bridge as well. Many users are forced to park in this area, (under the bridge), simply because there is no space to park in the launch parking lot. This results in numerous stuck vehicles because it’s on muddy unimproved ground. In general, these two ramps are dealing with far more traffic than they were designed to.</td>
<td>N</td>
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<tr>
<td>South Baldwin Wildlife Rescue and Rehabilitation Facility</td>
<td>568</td>
<td>Phillip West</td>
<td>Baldwin County</td>
<td>During the height of the Deepwater Horizon Oil Spill (DWH), some of the most disturbing and lasting images were those of oil-covered wildlife, primarily sea birds. Even though over 7,000 birds were counted as impacted by the oil spill, this estimate is believed to represent only a portion of the total birds affected by the spill. Although wildlife rescue efforts were unprecedented for this region during the DWH, these worthwhile efforts have effectively been disband for the south Alabama region. There is a great need for a permanent, full-time wildlife rescue and rehabilitation program for the South Baldwin (Orange Beach, Gulf Shores, Gulf State Park, Foley and Fort Morgan) region. Due to our location along the northern</td>
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<td>Priority Lead</td>
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<td>Cost</td>
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<tr>
<td>Replacement for the Research Vessel Tom McIlwain</td>
<td>11541</td>
<td>Jeffrey M Lotz</td>
<td>Gulf states</td>
<td>1500000</td>
<td>$1.5 M</td>
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**Project Description**

Gulf of Mexico coastline, we play a significant role for both seasonal migratory birds and for shorebirds, seabirds and waterfowl. We routinely witness injuries, entanglements, fatigue and illness among these and other species. When coupled with interactions with tourists, these unfortunate situations lead to negative perceptions about the communities in which they occur. Our goal with this project is to create a bona-fide, effective wildlife rescue and rehabilitation facility that will be (partly) open to the public and for educational groups. The project would offer meaningful response for wildlife emergencies and rehabilitation, provide significant opportunities for conservation education, and yet offer a worthwhile and unique experience for the regional visitor (i.e., ecotourist). Moreover, the project will prevent negative perceptions for those visitors and residents that encounter sick or injured wildlife, with little or no apparent effort made by any agency to offer assistance or care for the bird or animal. Several of the priorities of the facility and program will be: 1) Provide staff and personnel to respond to wildlife emergencies, 2) Promote conservation and natural resource education and technical assistance, 3) Reduce human/wildlife conflicts, 4) Coordinate with and work closely with State and Federal resource management agencies in the interest of wildlife conservation and education. There will be no land cost associated with this project, as the facility will either be located on city-owned property or will be donated by private interests. We do request this project be fully funded and maintained. Over time, we believe the project will become largely self-sustaining, with funds becoming available from private donations and endowments, but it is doubtful these would ever cover the full cost of operation, etc. PROJECT COST (ESTIMATE): $1.5 million for initial construction, staffing and equipment.

**Project Information**

- **Submitted By**: Jeffrey M Lotz
- **Priority Lead**: Gulf states
- **Location**: Gulf of Mexico coastline
- **Cost**: $1.5 M

**Restoration Types Addressed**

- Water Quality/Nonpoint Source Nutrient Reduction (Y/N): N
- Wetland, Coastal, and Nearshore Habitat (Y/N): N
- Oyster Reef (Y/N): N
- Birds (Y/N): N
- Sea Turtles (Y/N): N
- Recreational Use (Y/N): N
- Habitats on Federal Lands (Y/N): N
- Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N): N
- Project is consistent with programmatic restoration goals (+/0/-): +
- Project has reasonable probability of success (+/0/-): +
- Project meets Trustees’ goals (+/0/-): +
- Project delivers benefits cost-effectively (+/0/-): +
- Project supports existing regional or local conservation plan or restoration effort (Y/N): Y
- Project is time critical (+/0/-): +
- Project is technically feasible (+/0/-): +
- Project readiness (+/0/-): +
- Sustainability/Long-term Benefit of project (+/0/-): +
- Project offers opportunities for external funding & collaboration (+/0/-): +
- Project is consistent with criteria identified in the public notice (Y/N): N
- Project is consistent with criteria identified in the PDARP (Y/N): N
- Project is considered for eligibility under the Oil Pollution Act (OPA) criteria (+/0/-): +
- Project benefits more than one natural resource and/or service (+/0/-): +
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<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<td>Project ID</td>
<td>Submitted By/On Lead</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
</tr>
<tr>
<td>BP Funded Coastal Restoration Project - Cat Island, Alabama</td>
<td>11582</td>
<td>Dr. John Dindo</td>
<td>Mobile County</td>
<td></td>
<td>This island along with Ixie aux Marais, Raccoon Island and Lady Island, constitute a network of habitats that provide a buffering for the mainland during hurricanes. Even more critical Cat Island has been the site of the largest nesting colony of herons, egrets and ibis in Alabama. Documented as a nesting site for over a hundred years, this island is the only one in Porterville Bay that maintains an area within the island above high tide. These areas support vegetation like Baccharis halimifolia (Groundsel tree) and Iva frutescens (Marsh elder) that maintain predominate on Cat Island. Alabama listed species are found nesting on this island the Reddish egret (Dichromanassa rufescens) and Little Blue Heron (Egretta caerulea). This island listed in the U.S. Coast Guard Rapid Response protocol as a site to be protected in the event of any type of spill because of this nesting colony. As a result of repeated hurricane this island has eroded from it original size back in the 1970's and 80's when I was studying the nesting populations out there. Please consider this island restoration project in the next cycle of NOSA-funded projects.</td>
</tr>
<tr>
<td>Increase the pace, quality and permanence of voluntary land and water conservation through the</td>
<td>11546</td>
<td>Julia Weaver</td>
<td>Gulf states</td>
<td></td>
<td>The Partnership for Gulf Coast Land Conservation Project (PGLCP) is a new coalition of local, regional state and national land conservation organizations devoted to advancing land and water conservation in the Gulf of Mexico region. This initiative is under the auspices of the non-profit Land Trust Alliance (Alliance) and is patterned after other successful land trust coalitions across the country. Today our membership consists of 25 national, regional and local land trusts operating in the Gulf States. The Trustee</td>
</tr>
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</table>
**Project Information**

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<td>Salmon Restoration</td>
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</tr>
<tr>
<td>Salmon Restoration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Description**

Partnership’s mission is to work together across the five Gulf of Mexico states to increase the pace, quality and permanence of voluntary land and water conservation in the coastal region. Land trusts are community-based non-profit organizations that work with landowners to permanently conserve forests, rivers, farms, ranches and other natural areas critical to a sustainable environment and healthy, thriving communities. Through this project, the Partnership proposes to:

1. Increase the effectiveness and efficiency of land trusts in the Gulf Region.
2. Develop and promote a public policy agenda which will reduce the barriers to private sector conservation efforts and increase funding for acquisition and restoration.
3. Develop collaborative projects that will enable the land trust community and supporters to implement landscape scale conservation measures in the region. Collaborative projects may be built around water quality, critical habitat, or other criteria. 4. Participate in landscape-scale conservation planning in collaboration with other conservation partners (resource agencies and other non-government organizations) that prioritizes habitat for endangered and threatened species, improvements to water quality, connectivity to other protected lands, trust resources and important cultural and recreational features. 5. Participate in and coordinate our efforts with other ongoing conservation planning and implementation activities through entities such as the Gulf of Mexico Alliance and the Gulf of Mexico Foundation and others.

**Project Name** 11331

**Submitted By/Primary Lead** David Brockwell

**Gulf states**

**We believe we have a very unique hatchery. We have been in the R&D stage for three years and believe we are the only commercial hatchery in the U.S. that has had success raising domestic shrimp at the hatchery level. As a Florida company, Scientific Associates is very concerned about the health of the gulf seafood industry including the fishermen, the processing plants, restaurants, and all those local businesses that depend on a thriving shrimp industry. Given the recent devastation caused by wild shrimp catch in the Gulf of Mexico, (which may or may not be related to the effects of the BP oil spill), there is a need to replenish the wild stocks in time for the 2012 harvest. Scientific Associates of Florida has perfected hatchery techniques so that they can produce hundreds of millions of post larval shrimp (PLs) i.e. baby shrimp) typically transported at the 10 days into the larval phase (PL0-10). They have been raised in a closed, fully recirculating system that has now been in continuous operation for three years. There are no antibiotics used. The shrimp are free of disease. The PLs are first generation offspring coming from brood stock (mom and dad) taken directly from the Gulf of Mexico waters. With this technique, the shrimp can be raised in appropriate water conditions for the locations where they would be released, i.e. similar pH and salinity to maximize survival rates. This is an opportunity to restock the estuaries with hundreds of millions of viable larval shrimp and bring the Gulf shrimp industry back to health. This restocking program can be for a short duration or on-going. The available species are Litopenaeus setiferus (gulf white shrimp) and Farfantepenaeus duorarum (gulf pink shrimp). In order to change production to produce this product for Spring 2012, arrangements would need to be agreed fairly soon. Please feel free to contact me with any questions or suggestions and please feel free to pass this e-mail along to:

**Submitted via**

**Type of Aquaculture (# Aquaculture) 100%**

**Water Quality/Nonpoint Source Nutrient Reduction (Y/N) N**

**Wetland, Coastal, and Nearshore Habitat (Y/N) N**

**Oyster Reef (Y/N) N**

**Birds (Y/N) N**

**Sea Turtles (Y/N) N**

**Recreational Use (Y/N) N**

**On Federal Lands (Y/N) N**

**Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N) N**

**Project is consistent with criteria identified in the Programmatic Restoration Plan (PDARP) Criteria**

**Project is consistent with criteria identified in the public notice (Y/N) N**

**Project is technically feasible (+/0/-)**

**Project readiness (+/0/-)**

**Sustainability/Long-term Benefit of project (+/0/-)**

**Project is time critical (+/0/-)**

**Project offers opportunities for external funding & collaboration (+/0/-)**

**Project is not already fully funded (Y/N) N**

**Project complies with applicable laws and regulations (+/0/-)**

**Project is not already required by other regulatory efforts (+/0/-)**

**Project delivers benefits cost-effectively (+/-)**

**Project is not already required by other regulatory efforts (+/0/-)**

**Project benefits more than one natural resource and/or community and supporters to implement land and water restoration. 3. Develop collaborative projects that will enable the land trust community and supporters to implement landscape scale conservation measures in the region. Collaborative projects may be built around water quality, critical habitat, or other criteria. 4. Participate in landscape-scale conservation planning in collaboration with other conservation partners (resource agencies and other non-government organizations) that prioritizes habitat for endangered and threatened species, improvements to water quality, connectivity to other protected lands, trust resources and important cultural and recreational features. 5. Participate in and coordinate our efforts with other ongoing conservation planning and implementation activities through entities such as the Gulf of Mexico Alliance and the Gulf of Mexico Foundation and others.**
### Alligator Bayou Bridge Project

**Project Name:** Alligator Bayou Bridge Project  
**Project ID:** 11519  
**Submitted By:** Daniel Dyas  
**Primary Lead:** Baldwin County

Let me begin by saying: Thank you all for your service to our State. I appreciate you sending the information about Restoration Project suggestions. I have one that I believe would meet the criteria and really benefit the Weeks Bay Watershed and Ecosystem. Along the Eastern Shore of Weeks Bay is a bayou that has historically (if not officially) been referred to as Alligator Bayou. I believe it got its name from the alligator(s) that used to dwell there and feed occasionally on the Roh family’s dogs. Forgive me, I digress. Inshore from Alligator Bayou is a large tidal marsh. I don’t know its size, but it encompasses several acres of tidal wetlands. Sometime in the past, what was then referred to as Vermont Park Rd (now Baldwin County Road 26) was extended across Alligator Bayou, effectively cutting off much of the flow in and out of this wetland. The wetland (a large part of which is East of County Road 26) is now stagnant and in poor health as a result. The suggestion I would like to make is that we design and build a small bridge over Alligator Bayou and restore it to health. It would be necessary to remove the earthen bridge and culvert that was built across the bayou years ago. Obviously, it would be ideal to remove the invasive species which have begun to proliferate in the wetland and restore it to its native state by bringing in native species. The bridge would allow the natural tidal flow and watershed drainage to the bayou to be restored and thus restore it to natural health, benefitting Weeks Bay and all affected water bodies. As you know, the State of Alabama and the residents of Weeks Bay have been very diligent in working to protect this precious resource. I believe this project would help advance that cause and continue to improve Weeks Bay’s health and beauty for future generations. Please let me know if this is something that will be considered or approved. We have restored a tidal wetland on our family property just north of this proposed project and I would certainly like to be involved in this proposed project.

**Project Description**

Trustee Portal: N | Y | N | N | N | N | N

### Dog River Scenic Bluffway

**Project Name:** Dog River Scenic Bluffway  
**Project ID:** 11515  
**Submitted By:** BJ Smith  
**Primary Lead:** Mobile County

**Project Description**

Trustee Portal: N | N | N | H | N | N | N

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**Project Information**

- **Project Name:** Alligator Bayou Bridge Project  
- **Project ID:** 11519  
- **Submitted By:** Daniel Dyas  
- **Primary Lead:** Baldwin County

**Location:** Baldwin County

**Cost:** $0

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Creek Litter River: Secondary
Clean, Healthy, Resilient Dog River: Secondary Litter Traps

This project will address the need to prevent litter from entering Dog River from City storm sewers and roads via Dog River tributaries. The Bandalong Litter Trap and Deflection Boom will collect litter and debris in Moore Creek before it can be carried downstream to Dog River, Mobile Bay and the Gulf of Mexico. Litter and debris from the Dog River and its tributaries is a major source of pollution for the Dog River. The ZBKR Keep It Clean Committee and the City of Mobile have worked with litter barriers for several years effectively trapping litter and debris in the shallows upstream where it is easier to remove. Alabama Department of Environmental Management (ADEM) finds that litter is the number one source of pollution in the headwaters of Dog River. Trapping the litter for removal is expected to reduce the amount of litter entering from Moore Creek and its tributaries by 80%. A clean river is a sign of a healthy ecosystem. Keeping the river clean by trapping litter may help residents see their impact on this important urban resource and change our view from drainage ditch to natural resource and may help on a larger scale by preventing trash from flowing into the ocean. Litter traps will be emptied by the City of Mobile 10-12 times per year.

This project is being developed with assistance from the National Park Service, Rivers, Trails and Conservation Program. The project is in its second year and has participants from City, County, State and Federal agencies as well as businesses and nonprofits. This project complements green way developments (trails). It links to Alabama Scenic River Trails. The project could leverage funds from City, County, State, Federal, Foundations, and Corporations. Cost of land acquisition is not included above since the City of Mobile owns the land for blueway access sites. One parcel is owned by the Mobile Area Water and Sewer Service. User fees would be unwieldy. Other funding could be available as the project progresses. Early funding from the CRF would be critical to move the planning along and develop the branding and signage. Maintenance by City and County as with other parks in the community. Also funding campaigns would be mounted by community groups active in blueway recreation.

This project is consistent with programmatic restoration goals (+ / 0 / -)
This project is technically feasible (+ / -)
This project has a reasonable probability of success (+ / 0 / -)
This project is not already required by existing regulations (Y/N) Y
This project meets Trustees' goals (+ / 0 / -)
This project delivers benefits cost-effectively (+ / 0 / -)
This project is time critical (+ / 0 / -)
This project offers opportunities for external funding & collaboration (+ / 0 / -)
This project offers opportunities to improve the watershed, which encompasses 60% of Mobile County. This project is being developed with assistance from the National Park Service's Rivers, Trails and Conservation Program. The project is in its second year and has participants from City, County, State and Federal agencies as well as businesses and nonprofits. This project complements green way developments (trails). It links to Alabama Scenic River Trails. The project could leverage funds from City, County, State, Federal, Foundations, and Corporations. Cost of land acquisition is not included above since the City of Mobile owns the land for blueway access sites. One parcel is owned by the Mobile Area Water and Sewer Service. User fees would be unwieldy. Other funding could be available as the project progresses. Early funding from the CRF would be critical to move the planning along and develop the branding and signage. Maintenance by City and County as with other parks in the community. Also funding campaigns would be mounted by community groups active in blueway recreation.

Clean, Healthy, Resilient Dog River: Secondary Litter Trap

Claire Wilson
Mobile County
800000
This project will help prevent litter from entering Dog River from City storm sewers and roads via Montmorent Canal and Moore Creek. The Bandalong Litter Trap and Deflection Boom will collect litter and debris in Moore Creek before it can be carried downstream to Dog River, Mobile Bay and the Gulf of Mexico. Litter and debris from the Dog River and its tributaries is a major source of pollution for the Dog River. The ZBKR Keep It Clean Committee and the City of Mobile have worked with litter barriers for several years effectively trapping litter and debris in the shallows upstream where it is easier to remove. Alabama Department of Environmental Management (ADEM) finds that litter is the number one source of pollution in the headwaters of Dog River. Trapping the litter for removal is expected to reduce the amount of litter entering from Moore Creek and its tributaries by 80%. A clean river is a sign of a healthy ecosystem. A community can connect with a healthy ecosystem. Keeping the river clean by trapping litter may help residents see their impact on this important urban resource and change our view from drainage ditch to natural resource and may help on a larger scale by preventing trash from flowing into the ocean. Litter traps will be emptied by the City of Mobile 10-12 times per year.

This project is consistent with criteria identified in the public notice (Y/N) Y
Project is consistent with criteria specified in the public notice (Y/N) Y
This project delivers benefits cost-effectively (+ / 0 / -)
This project has a reasonable probability of success (+ / 0 / -)
This project is technically feasible (+ / -)
This project readiness (+ / 0 / -)
Sustainability/Long-term Benefit of project (+ / 0 / -)
The effect of the project alternates risk to natural resources and services (+ / 0 / -)
Project supports existing regional or local conservation plans (+ / 0 / -)
Project is consistent with regional, state, federal, and other plans and programs (Y/N) Y
Project is consistent with federal or state restoration plans and programs (+ / 0 / -)
Project is consistent with regional or local goals and criteria (Y/N) Y
Project is consistent with criteria identified in the public notice (Y/N) Y
Project meets Trustees' goals (+ / 0 / -)
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This project is consistent with programmatic restoration goals (+ / 0 / -)
This project is technically feasible (+ / -)
This project has a reasonable probability of success (+ / 0 / -)
This project is not already required by existing regulations (Y/N) Y
This project meets Trustees' goals (+ / 0 / -)
This project delivers benefits cost-effectively (+ / 0 / -)
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Project Name: Orange Beach/Gulf State Park/Gulf Shores Beach Restoration
Project Description: The cities of Orange Beach and Gulf Shores, along with Gulf State Park (ADCNR) currently maintain an "engineered beach" along 16.2 miles of shoreline. In 2005, the project originally placed approximately six (6) million cubic yards of dredged, beach-quality sand along 18.2 miles of shoreline. Additionally, nearly 1.5 million sea oats and panic grass were planted in the project's dune feature, and 80,000 linear feet of sand fencing were installed at the base of the dune. The project later received 2006's "Top Restored Beach" award from the American Shore and Beach Preservation Association. Since its construction, the OB/GS/GSP beach restoration project has withstood damage from eight (8) named tropical storms or hurricanes, but has prevented any significant damage to Gulf structures during this time period beginning in 2006, the project has been impacted from Tropical Storms Gustav, Ike and Ida, with the damage having been collected and summarized in FEMA Category 5 project worksheets for each project owner. Currently, the two cities and Gulf State Park are working toward completing a permit application to repair the project worksheets for each project owner. Beginning in 2008, the project has been impacted from Tropical Storms Gustav, Ike and Ida, with the damage having been collected and summarized in FEMA Category 5 project worksheets for each project owner. Currently, the two cities and Gulf State Park are working toward completing a permit application to repair the project. This project, moreover, is shovel ready and needs to be expedited in order to meet federal deadlines. The investment for the future is a good one at this location in habitat and ecosystem restoration, the building needs $3M constructed during the cold war. In order to properly support the State's capabilities its principal research facility, a 60-year old partially renovated military building needs a modernizing retrofit. The project offers the following reasons: 1. Providing additional, valuable storm protection for our residents and tourism industry, 2. Meeting FEMA deadlines and maintaining "eligibility" for Federal disaster assistance following Presidentially-declared storm events, 3. Facilitates the search for compatible beach-quality materials in Federal waters, 4. The project is currently being designed and permitted, and should be considered "shovel ready". The project could have a significant, positive impact on the public's perception of area beaches. The beach restoration project is a vital component to maintaining the recreational viability of the area's beaches, and continuing to afford the protection to coastal structures and public infrastructure that prevents costly business interruption. This project, moreover, is shovel-ready and needs to be expedited in order to meet federal deadlines.

Project Name: Ecosystem restoration research upgrades
Project Description: Restoration projects will be largely dependent on knowing the characteristics of the ecosystem prior to the disturbance. The analytical and assessment capacity of the Dauphin Island Sea Lab is currently seriously hindered by the inherent limitations of its principal research facility, a 60-year old partially renovated military building constructed during the cold war. In order to properly support the State's capabilities, in habitat and ecosystem restoration, the building needs $3M for a thorough modernizing retrofit. The investment for the future is a good one at this location because the building was constructed to be atomic bomb proof and is therefore completely hurricane proof.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By / Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
<th>Submitted To</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulf Shores Oil Removal</td>
<td>Donnie Germain</td>
<td>Gulf shores</td>
<td>11507/11508</td>
<td>While monitoring the Gulf Shores beach cleanup, it came to our attention that significantly large mats of oil still. submerged along our shoreline. The enclosed map defines these areas. It is imperative that the ongoing strategy be put into place to ensure these concentrations of oil do not threaten the progress that has been made to date and our future environmental and economic stability. BP is actually trying to remove the deposits on a daily basis. Based on the information from the GCIMT, it is our opinion that technology does not exist at this time to properly and totally remove this material. Oil under sand, under water, on our beach is no different than oil in the marshes of Louisiana. The following information outlines an example of the quantity of oil we believe to be an imminent threat. Between map point 008 and 009 July 1 thru July 31, 400 linear feet of oiled area extending up to 65 feet from the waters edge, over 10,000 pounds of oiled material was removed in 9 days during this time frame. We believe this to be only a small portion of the oiled material. Therefore, please consider this letter a request from the City of Gulf Shores to place this project on the list for consideration of NRDA funding as soon as it becomes available.</td>
<td>Trustee Portal</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>City of Fairhope-Fly Creek Restoration (Project #3)</td>
<td>Jennifer Fidler</td>
<td>Fairhope</td>
<td>11502</td>
<td>The City of Fairhope (Baldwin County, Alabama) is aware that the State of Alabama stands to receive 1.0 million dollars in early restoration funds provided by BP. Fairhope is one of the waterfront communities in Alabama that took a direct hit from the oil spill. The City is respectfully requesting $1.0 million in BP early restoration funds to restore the Fly Creek watershed. Fly Creek in northern Fairhope is an important watershed that drains most of northern Fairhope east to State Highway 141. This creek channel has changed over the years as a result of an accumulation of impacts. There is a large tract of property 104 acres under private ownership that is undeveloped and borders the creek. This project includes restoring the creek to its historic functioning capacity and acquiring the 104 acres and developing it into a stormwater quality and quantity treatment facility. A City park, and an arboretum. The design and implementation of the project will provide long-term water quality protection. Thank you very much for your consideration of this project.</td>
<td>Trustee Portal</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>City of Fairhope-Public Beach's Water Quality Treatment (Project #1)</td>
<td>Jennifer Fidler</td>
<td>Fairhope</td>
<td>11502</td>
<td>The City of Fairhope (Baldwin County, Alabama) is aware that the State of Alabama stands to receive 1.0 million dollars in early restoration funds provided by BP. Fairhope is one of the waterfront communities in Alabama that took a direct hit from the oil spill. The City is respectfully requesting $4.5 million in BP early restoration funds to restore and protect our public beach and North Bayview Park area along the Eastern Shore of Mobile Bay. The project includes waterfront property, a bluff, and park property that is elevated approximately 300 feet above the Bay. All stormwater in the approximately 58 acre watershed drains to Mobile Bay. This drainage area receives stormwater from the existing duck pond, N. Bayview Park where many animals are walked, and an existing residential neighborhood. All of these factors work together to impair water quality at the park swimming beach. The proposed project includes the relocation of the park road to create a larger natural stormwater treatment, and quality in the form of constructed wetlands. It includes the routing and control, and treatment of stormwater from the N. Bayview Park. The City of Fairhope also owns a public park and beach from the</td>
<td>Trustee Portal</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
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</table>
Per Street boat ramp south to the American Legion near Lucky A Avenue. There is nearly 200 acres in the watershed that drains through the park area. The park is also used by walkers, joggers, and citizens walking their dogs. As a result the water quality of the Bay is impacted. This phase of the project includes the construction of water quantity treatment, quality, and treatment. The stormwater quality will be treated through constructed wetlands. The implementation of this project will provide long-term water quality protection, and environmental protection of the public beach and park area. Preliminary cost estimates provided by professional engineers indicate this project will cost approximately $4.5 million. Therefore, the City of Fairhope requests consideration of this matter to be granted to the City for implementation of the proposed project. Thank you very much for your consideration of this project.

Titi Swamp Wetland and Preserve (Project #2) 11504 Timothy Kant
A.C.M.O 500000

Fairhope

The City of Fairhope (Baldwin County, Alabama) is aware that the State of Alabama stands to receive 100 million dollars in early restoration funds provided by BP. Fairhope is one of the waterfront communities in Alabama that took a direct hit from the oil spill. The City is respectfully requesting $500,000 million in BP early restoration funds to acquire Titi Swamp located in south Fairhope east of Scenic 98 and south of Nelson Road on 62 acres of natural wetland. The project will include the purchase of the property from the private owner and the creation of a nature preserve and local wetland mitigation bank to restore it to full function. The swamp drains to Mobile Bay and acts as a large stormwater attenuation and treatment facility. The implementation of this project will provide long-term water quality protection for Mobile Bay. Thank you very much for your consideration of this project. Please feel free to contact our Public Works Director, Ms. Jennifer Fisher, with questions or if you need additional information. She can be reached at (251) 928-8003.

Town of Dauphin Island Beach and Barrier Island Restoration Project Alternative 3 11503 Jeff Collier
Dauphin Island

28006000

This is an engineered shoreline restoration project for the approximate seven (7) miles of Gulf fronting beach on Dauphin Island. The Town contracted with South Coast Engineering, Inc. to develop templates to rehabilitate and strengthen Dauphin Island as a natural barrier and provide a "first line of defense" to protect critical economic and environmental resources in Mobile County. This particular project represents the initial phase of a more substantial project that will provide an increased level of protection for years to come. The Town of Dauphin Island will continue to work through all possible funding sources to secure the remaining $40 million +/- needed to accomplish that goal. Shoreline restoration and nourishment of barrier islands is critical to the overall health of the coastal Alabama environment and economy. Serving as a "first line of defense", barrier islands provide a physical barrier that protects coastal mainland infrastructure, salt marshes that serve as havens for juvenile fish, crab, and shrimp, oyster reefs, that provide job opportunities for local residents and much more. The Town of Dauphin Island recently completed a comprehensive shoreline restoration project, complete with engineering design and sand source locations identified, that is "shovel ready". Serious consideration should be given to provide necessary funding. For such efforts as the entire Alabama coastline is critical to our overall environmental and economic stability. In addition, better coordination with the Corps for improved use of quality dredge materials.
## Project Name: GulfQuest - National Maritime Museum of the Gulf of Mexico

**Tony Zodrow**

**Mobile**

**700,000**

As we discussed, GulfQuest/National Maritime Museum of the Gulf of Mexico will be the first maritime museum in the U.S. to focus on the Gulf of Mexico and its coastal region - a museum that aspires to raise the profile of the Gulf of Mexico nationally and internationally through its exhibits, programs and events. To do so, GulfQuest will feature interactive exhibits and experiences, complemented by maritime artform, designed to encourage visitors to embark on their own quest to explore the Gulf of Mexico. This $64 million project stems from a public/private partnership between the City of Mobile and a private, nonprofit organization that is responsible for funding and producing the exhibits. The City of Mobile has entered into a design-build contract with an experienced design team to develop the exhibits and infrastructure (e.g. interactive exhibits, simulators and theaters). The City of Mobile has also engaged a range of known exhibit design and fabrication firms (LyonsZaremba, 1220 Exhibits, Monarch Media) to produce the interactive exhibits, simulators and theaters. GulfQuest is set to open in September 2012, and will attract an estimated 350,000 visitors annually. For the City of Mobile, GulfQuest ranks as the top priority for receiving economic assistance from Natural Resource Damage Assessment (NRDA) funds. We would like to investigate the possibility of this funding coming from a combination of the $100 million being managed by the State of Alabama and the $300 million overseen collectively by the five Gulf Coast states. In particular, the project partners are seeking $7 million in NRDA funds to help underwrite one-third of the museum's $20 million in exhibits and infrastructure costs. GulfQuest features:

- 20,000 square feet of exhibits
- 1,000 square feet of theater
- 1,500 square feet of interactive simulators
- 1,200 square feet of marine conservation center
- 1,000 square feet of gift shop
- 7,000 square feet of visual art gallery
- 9,000 square feet of temporary exhibition gallery
- 10,000 square feet of community engagement center
- 10,000 square feet of administrative offices
- 10,000 square feet of event space

GulfQuest is set to open in September 2012, and will attract an estimated 350,000 visitors annually.
Interactive exhibits, especially those that provide information on the Gulf's vast natural environment, will include features such as the Pinnacles off Alabama and Flower Garden Banks, a National Marine Sanctuary off Texas/Louisiana. In this simulator, visitors will pilot a submersible to explore underwater habitats (bays, rivers and bayous). "Ocean Planet" through this computer animated visualization of our planet, visitors will engage in an interactive program that will highlight the Gulf of Mexico’s relationship to the world’s oceans. Extreme Storms - A massive hurricane is entering the Gulf, calling visitors to serve as "emergency response managers" and make decisions that will affect the lives and livelihoods of Gulf Coast residents. Offshore Rigs - Visitors will explore the technology of offshore oil/gas rigs and their relationship to the natural environment in the Gulf of Mexico, including the ongoing effects of the BP oil spill. Deep Explorer - In this simulator, visitors will pilot a submersible to explore underwater features such as the Pinnacles off Alabama and Flower Garden Banks, a National Marine Sanctuary off Texas/Louisiana. "Great Gulf Challenge - Two teams of visitors will learn about environmental challenges that affect the Gulf, and compete to balance the various needs and interests impacting the Gulf Coast's environment. In addition to exhibits, GulfQuest will offer a wide range of educational programs for schools and groups, including classes that address environmental issues stemming from the BP oil spill and other topics related to the restoration and preservation of the Gulf Coast’s natural resources and habitats. Also, GulfQuest will host workshops, seminars and special events for the public that will focus on the continued recovery of the Gulf region in the years following the oil spill. One of our goals is to educate youth and encourage them to consider pursuing educational and careers in maritime science and industry, including environmental efforts. As an educational attraction, GulfQuest will help ecotourism along the northern Gulf Coast rebound from recent declines. The effects of the BP oil spill on the City of Mobile have been both environmental and economic. Tourism is the #1 employer in the Mobile area, and most of the economic impacts of the oil spill has been realized in this sector. Apart from Gulf Shores and Orange Beach, Mobile Bay hosts 2.5 million visitors and generates tourism revenues of $829 million annually. Tourism supports 16,000 jobs - the largest single employer in the Mobile area. The city has lost significant revenues from tourism since the April2010 spill. An economic study prepared by Dr. Semoon Chang of the University of South Alabama shows that GulfQuest will have an immediate and long-term economic impact in Mobile, the State of Alabama, and the Gulf region. The construction of GulfQuest will have an estimated $37.5 million impact in Mobile, generating $27.9 million in earnings and supporting 419 jobs over two years. So far, eight out of nine of the construction contracts have gone to companies in Alabama and Mississippi. Once it opens, GulfQuest will have an estimated $19.2 million annual impact, generating $9.1 million in earnings and supporting 413 tourism-related jobs annually. At this time, we are seeking your advice and counsel as a trustee representing the State of Alabama and the five Gulf Coast states in regard to the process of submitting a proposal for NRDA funding that can help underwrite GulfQuest in 2011 and 2012. Our request will be based on the significant educational impact of the museum’s interactive exhibits, especially those that provide information on the Gulf’s vast...
Project Name: Oyster Reef Rebuilding in Grand Bay
Priority: 1
Submitted By: Al Howes, Dauphin Island

Project Description: Oyster Reef Rebuilding in Grand Bay: Restoring the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. This project will be an asset to improvement of Alabama’s marine wetlands, including any Oil damages that may have occurred. Over 90 percent of all marine life depend on marine wetlands at some stage in their life cycles. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Alabama Conservation Commissioner Mr. Gunter Guy, Avery Bates and B.G. Thompson, Mr. G recommended that a separate recommendation for each oyster reef rebuilding be submitted by priority.

Project Name: Oyster Reef Rebuilding off east and west of Cedar Point - priority five
Submitted By: Organized Seafood Association of Alabama

Project Description: Oyster Reef Rebuilding off east and west of Cedar Point: Restoring the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. Rebuilding the reef off east and west of Cedar Point is ranked fifth in priority because these waters are more vulnerable to pollution but oyster reef predation oystering days are reduced by wave height. This project will be an asset to improvement of Alabama’s marine wetlands, including any Oil damages that may have occurred. Over 90 percent of all marine life depend on marine wetlands at some stage in their life cycles. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Mr. Guy, Avery Bates and B.G. Thompson, Mr. G recommended that a separate recommendation for each oyster reef rebuilding be submitted by priority. This is the fifth submission.

Project Name: Oyster Reef Rebuilding in Bon Secour Bay (on the eastern)
Submitted By: Organized Seafood Association of Alabama

Project Description: Oyster Reef Rebuilding in Bon Secour Bay: Restoring the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. Rebuilding the reef in Bon
Oyster Reef Rebuilding off north and south of the mouth of east and west East Fowl River - priority four

Oyster Reef Rebuilding off east and west Heron Bay - priority three

Project Name: Oyster Reef

Project Description:

Restoration and rebuilding the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. Rebuilding the reef off the mouth of East Fowl River is ranked fourth in priority because these waters are more vulnerable to pollution but the risk for oyster conch predation is less. Oystering days are reduced by wave height. This project will be an asset to improvement of Alabama’s marine wetlands, including any OIl damages that may have occurred. Over 90 percent of all marine life depend on marine wetlands at some stage in their life cycles. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster reef projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Mr. Guy, Avery Bates and B.G. Thompson, Mr. Guy requested that a separate recommendation for each oyster reef rebuilding be submitted by priority. This is the fifth submission.

Restoration and rebuilding the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. Rebuilding the reef off the mouth of East Fowl River is ranked fourth in priority because these waters are more vulnerable to pollution but the risk for oyster conch predation is less. Oystering days are reduced by wave height. This project will be an asset to improvement of Alabama’s marine wetlands, including any OIl damages that may have occurred. Over 90 percent of all marine life depend on marine wetlands at some stage in their life cycles. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster reef projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Mr. Guy, Avery Bates and B.G. Thompson, Mr. Guy requested that a separate recommendation for each oyster reef rebuilding be submitted by priority. This is the fourth submission.

Oyster Reef Rebuilding off east and west Heron Bay - priority three

Oyster Reef Rebuilding off north and south of the mouth of east and west East Fowl River - priority four

Project Name: Oyster Reef

Project Description:

Restoration and rebuilding the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. Heron Bay is ranked third in priority because of the small number of oystermen who oyster there. This project will be an asset to improvement of Alabama’s marine wetlands, including any OIl damages that may have occurred. Over 90 percent of all marine life depend on marine wetlands at some stage in their life cycles. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Mr. Guy, Avery Bates and B.G. Thompson, Mr. Guy requested that a separate recommendation for each oyster reef rebuilding be submitted by priority. This is the fourth submission.
Upgrades To The Portersville Bay Project

**Project Information**

- **Project Name:** Rebuilding in priority two Fowl River Oyster Reef
- **Consortium:** Marine Environmental and Science Consortium
- **Association:** Academic
- **By:** University of Alabama
- **Submitted:** April 2011
- **Cost:** $3 million

**Project Description**

The Sea Lab responded immediately to pollution that has affected the Disl Oil Spill. The vessels also need to support ongoing research and educational efforts that were initiated prior to the spill. The R/V E.O. Wilson and the R/V Alabama Discovery were already scheduled for education and research activities before the spill and continued to be used to collect data related to the event. The vessels also need to support ongoing research and educational efforts that were initiated pre-spill. However useful our existing ships were, we needed as demonstrated by the recent oil spill. Preliminary estimates have been developed for reconfiguring the Marine Science Hall, increasing research capacity and energy efficiency. These efforts indicate that $3 million is needed to bring the capabilities of the Laboratory to a level that will allow continued support of the State’s economy on those ecosystem values than ever before! The DISL was able to provide the services that have been requested by the ecosystems that were affected by the Deepwater Horizon Oil Spill.

**Restoration Types Addressed**

- **Wetland, Coastal, and Nearshore Habitat (Y/N):** Y
- **Sea Turtles (Y/N):** N
- **Birds (Y/N):** N
- **Recreational Use (Y/N):** N
- **Habitat on Federal Lands (Y/N):** N
- **Oversight to Support Restoration Implementation (Y/N):** N
- **Project is consistent with programmatic restoration goals (Y/N):** Y
- **Project is consistent with criteria identified in the public notice (Y/N):** Y
- **Project delivers benefits cost-effectively (+ / 0 / -):** +
- **Project meets Trustees' goals (+ / 0 / -):** +
- **Project has reasonable probability of success (+ / 0 / -):** +
- **Project supports existing regional or local conservation plan (+ / 0 / -):** +
- **Project is not already fully funded (Y/N):** Y
- **Project readiness (+ / 0 / -):** +
- **Sustainability/Long-term viability (+ / 0 / -):** +
- **Project offers opportunities for external funding & collaboration (+ / 0 / -):** +
- **Project prevents future and collateral injury to natural resources and services (+ / 0 / -):** +
- **Project benefits more than one natural resource and/or service (+ / 0 / -):** +
- **Project is consistent with criteria identified in the public notice (Y/N):** Y
- **Project is consistent with programmatic restoration goals (Y/N):** Y
- **Project delivers benefits cost-effectively (+ / 0 / -):** +
- **Project meets Trustees' goals (+ / 0 / -):** +
- **Project has reasonable probability of success (+ / 0 / -):** +
- **Project supports existing regional or local conservation plan (+ / 0 / -):** +
- **Project is not already fully funded (Y/N):** Y
- **Project readiness (+ / 0 / -):** +
- **Sustainability/Long-term viability (+ / 0 / -):** +
- **Project offers opportunities for external funding & collaboration (+ / 0 / -):** +

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Public Notice:** (15 CFR 990.54)
- **Oil Pollution Act (OPA) Criteria:** (15 CFR 990.54)

**Additional Criteria**

- **Trustee Portal:** N
- **Project is consistent with programmatic restoration goals (Y/N):** Y
- **Project is consistent with criteria identified in the public notice (Y/N):** Y
- **Project delivers benefits cost-effectively (+ / 0 / -):** +
- **Project meets Trustees' goals (+ / 0 / -):** +
- **Project has reasonable probability of success (+ / 0 / -):** +
- **Project supports existing regional or local conservation plan (+ / 0 / -):** +
- **Project is not already fully funded (Y/N):** Y
- **Project readiness (+ / 0 / -):** +
- **Sustainability/Long-term viability (+ / 0 / -):** +
- **Project offers opportunities for external funding & collaboration (+ / 0 / -):** +

**Project Information**

- **Project ID:** 11488
- **Submitted By:** Primary Lead: Oyster Reef
  - **Project Name:** 11488 Organized Oyster Reef Project
  - **Location:** Mobile County
  - **Cost:** $3 million

**Project Description**

Restoring the oyster reefs in Alabama waters will have multiple advantages including improving the marine environment, increasing seafood supply and employment and improving local and state economies. Having more reefs will also help increase marine life and improve water quality. The reason for giving Portersville Bay the second priority is because while these waters are less vulnerable to pollution the risk for oyster conch predation is greater. This project will be an asset to improvement of Alabama’s marine waters, including any oil damages that may have occurred. Over 50 percent of all marine life depend on marine wetlands at some stage in their life cycle. Restoration of the oyster reefs will provide long term benefits to local oystermen, processing plants (shucking houses), distributors, restaurants, etc. There is a long history of successful oyster reef rebuilding. Costs are recovered over a three to four year period. This is one of several oyster projects that were discussed at the June 8, 2011 public meeting at Five Rivers by Avery Bates. In a discussion at the end of meeting with Alabama Conservation Commissioner Mr. Gunter Guy. Avery Bates and R.G. Thompson, Mr. Guy requested that a separate recommendation for each oyster reef rebuilding be submitted by priority. This is the second submission.

**Project Information**

- **Project ID:** 11484
- **Submitted By:** Primary Lead: Upgrades To The Marine Science Hall
  - **Project Name:** 11484 Dauphin Island Sea Lab
  - **Location:** Dauphin Island
  - **Cost:** $3 million

**Project Description**

The capacity to restore the natural components of the coastal Alabama ecosystem impacted by the Deepwater Horizon Oil Spill is completely dependent on our understanding and quantification of those ecosystem services and values that existed prior to the perturbation. The DISL has been providing those very parameters for the better part of three decades and is one of the few institutions within the State that has that capability. The incident has more clearly established the dependence of the State’s economy on those ecosystem values than ever before! The DISL physical plant is a 1950’s era military base which has reached the limitations of its original design. The principal research center is the Marine Science Hall which originally housed the computer facilities of a Strategic Air Command radar tower. The building was partially renovated using National Science Foundation funding about 20 years ago but those upgrades are themselves aging and the facility needs dramatic modernization if the Laboratory is to be able to provide the services needed as demonstrated by the recent oil spill. Preliminary estimates have been developed for reconceiving the Marine Science Hall, increasing research capacity and energy efficiency. These efforts indicate that $3 million is needed to bring the capabilities of the Laboratory to a level that will allow continued support of the State’s needs.

**Project Information**

- **Project ID:** 11482
- **Submitted By:** Primary Lead: Marine Environmental and Science Consortium
  - **Project Name:** 11482 Geoduck Croaker
  - **Location:** Dauphin Island
  - **Cost:** $3 million
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-owned and operated public boat-launch facility on Old River</td>
<td>Phillip West</td>
<td>Orange Beach</td>
<td>$2.2 million</td>
</tr>
<tr>
<td>Fisheries Oceanography of Coastal Alabama: Restoration and Sustainability</td>
<td>George Crozier</td>
<td>Dauphin Island</td>
<td>$3.5M</td>
</tr>
</tbody>
</table>

- **Project Description**: have discovered many shortcomings in the use of our fiberglas-decked/hulled vessels with regards to heavy equipment use and deployment. Also, there are multiple requests by state-wide scientists asking for costs and dates to utilize our vessels in response to the RFP's related to the immediate and long-term sampling near and offshore of Alabama. Currently at the rate of these requests the sea lab cannot meet the demands or specialized use of these research efforts with the existing vessels. In addition, many of these missions require the ability to stay offshore for extended periods of time (2-5 days) and neither of the vessels currently operated by the sea lab can meet this need. Many of the requests coming in require equipment, and power generation that does not exist on our current vessels and would be simplified by a steel constructed vessel. With these concerns a vessel of seventy feet with full berthing for scientific party and crew is needed. A vessel of this class would support a larger generator, winches, computer linkage, and sample storage to meet the demands of researchers within the state of Alabama. Previous estimates for a fully equipped steel hulled research vessel have ranged between $3-$5MM.

- **Trustee Portal**: N N N N N Y N

- **Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Public Notice**

- **Oil Pollution Act (OPA) Criteria (33 CFR 990.54)**

- **Additional Criteria**
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By</th>
<th>Priority</th>
<th>Lead</th>
<th>Location</th>
<th>Cost</th>
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</table>

- **Project Description**: To assess acute and chronic effects of the Deepwater Horizon (DWH) oil spill on plankton communities, including the early life stages (eggs and larvae) of critical fishery resources. This program is essential to restoring Alabama’s Gulf Coast to pre-DWH conditions. FOCAL provides a road map and waypoints for managing Alabama’s coastal fisheries thus restoring recreational and economic use of our nearshore waters. Below, we address each of the criteria that are required of NRDA restoration projects. 1. Suggested projects should contribute to making the environment and the public whole by restoring, rehabilitating, replacing, or acquiring the equivalent of natural resources or services injured as a result of the Deepwater Horizon Oil Spill or response (collectively, “Incident”), or compensating for interim losses resulting from the incident. Without clear metrics for success, restoration efforts often result in uncertainty. It is important to note that the valuable herring fisheries of Prince William Sound did not collapse until 4 years after the Exxon Valdez accident (http://www.exvostic.state.ak.us/recovey/status_herring.cfm). Gulf menhaden occupy a similar niche in the northern Gulf of Mexico in that they are an important prey species for recreationally sought species (e.g., king mackerel and cobia) and represent the second largest fishery (by weight) in the United States. Through identification of fish eggs and larvae, FOCAL scientists ascertain information about the recruitment and resilience of prey species such as Gulf menhaden, longnose song, Atlantic croaker and spot, as well as commercially and recreationally important species such as red snapper, red drum, Spanish mackerel, and cobia. Separating “real change” resulting from the DWH spill from the routine variability of the coastal ecosystem is a complex task. FOCAL scientists have 6 years of experience in interpreting the effects of physical factors (salinity, temperature, freshwater inflow) on the marine fisheries resources of Alabama. As Alabama’s coastal fisheries recover from the post-DWH food web collapse, FOCAL provides certainty regarding rehabilitating and restoring fisheries commodities. 1. Proposed projects should address one or more specific injuries to natural resources or services associated with the DWH incident. FOCAL was in a unique position to respond immediately to the DWH oil spill due to an established 6 year sampling schedule designed to address ADDN/RMDI fisheries management goals. FOCAL responded to the DWH spill by doubling the sampling effort both during and after the spill (from May through December 2010). Because of its geographic proximity and the ongoing research program, FOCAL was able to mobilize quickly and capture impacts of the DWH spill that might otherwise have been missed. Data collected in the days, weeks, and months post-DWH point to a number of relevant findings: Oi and the Food Web - FOCAL researchers confirmed that carbon from the DWH spill entered the marine food web in amounts equivalent to that of one to two months of photosynthetic production from phytoplankton. - Bacteria dominated the food web after the spill causing a collapse of the classical marine food web and the dominance of the microbial food web. This is significant because it represents a xkr in the normal food available to zooplankton, which in turn serve as food for larval fish. Post-DWH Hypoxia - Hypoxic (low oxygen) zones also were observed during summer 2010 in the FOCAL sampling area (Alabama coastal waters) where they had... |
recognizes the FOCAL program fisheries production and sustainability. It is important to note that NOAA/NRDA overarching goal of FOCAL has always been and will continue to be maximizing restoration health and sustainability. Meeting these goals also provides a benefit to other management goals in mind. Those goals are synonymous with long term fisheries plan. The FOCAL work plan has been designed and structured with MRD Alabama's Artificial Reef Permit Areas. Proposed projects are not inconsistent with prior FOCAL larval fish survey comparisons of larval fish abundances and distribution, which can be used to assess the efficacy of ADDW/MMD's habitat enhancement programs, such as Alabama's Artificial Reef Permit Areas. Proposed projects are not inconsistent with the anticipated long-term restoration needs and anticipated final restoration plan. The FOCAL work plan has been designed and structured with MMD management goals in mind. Those goals are synonymous with long term fisheries health and sustainability. Meeting those goals also provides a benefit to other restoration projects in that it provides juvenile species for recruitment. The overarching goal of FOCAL has always been and will continue to be maximizing fisheries production and sustainability. It is important to note that NOAA/NRDA recognizes the FOCAL program as a valuable resource. As a result, FOCAL...
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restored Type Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave and Currents Flume for Gulf Coast Marine Processes Research</td>
<td>Project is consistent with the FOCAL’s project work plan and operating budget.</td>
<td>Project is consistent with the FOCAL’s project work plan and operating budget.</td>
<td>1. Projects are consistent with programmatic restoration goals (+ / 0 / -) Project delivers benefits cost-effectively (+ / 0 / -) Project meets Trustees’ goals (+ / 0 / -) Project has a reasonable probability of success (+ / 0 / -) The effects of the project alternative on public health and safety (+ / 0 / -) Project is not already required by existing regulations (Y/N) Project complies with applicable laws and regulations (Y/N) Project offers opportunities for external funding &amp; collaboration (+ / 0 / -) Project readiness (+ / 0 / -) Sustainability/Long-term benefit of project (+ / 0 / -) Project is time critical (+ / 0 / -) Performed in a manner consistent with the project alternative's impact on public health and safety (+ / 0 / -) Project is not already fully funded (Y/N)</td>
<td>Project is consistent with the FOCAL’s project work plan and operating budget.</td>
<td>Project is consistent with the FOCAL’s project work plan and operating budget.</td>
<td>Project is consistent with the FOCAL’s project work plan and operating budget.</td>
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</tbody>
</table>
### Demonstration of Natural Processes

Demonstrations of natural processes and the opportunity to perform interdisciplinary laboratory experiments. The proposed equipment is a long, two-dimensional wave flume with closed-loop recirculation and sediment transport capabilities. The flume section will be 28 m in length, 1 m in depth, and have a width of 1.1 m. A suite of complementary instrumentation will also be purchased to collect data during experiments: gages for measuring wave heights, sensors for measuring water velocity, sonar units for mapping sediment contours (bathymetry), and high-speed cameras for imaging and particle tracking. Additional controls and infrastructure will be purchased to develop the web portal integration. A general location sketch is provided below. The proposed instrumentation and equipment will enable cutting-edge research in the areas of civil engineering, coastal engineering, environmental engineering, electrical engineering, and marine science. The single-element flume will allow simulation of two-dimensional fluid dynamics and fluid-sediment processes including wave transformation (breaking), cross-shore sediment transport (erosion and accretion), and biological transport. The proposed facility would provide opportunities for interdisciplinary, multi-institution, and institution-industry research. This new facility complements the existing wave basin, providing very different capabilities, particularly those associated with verifying the mathematical models of transport of solid or liquid contaminants with the water currents. Another important capability for the new facility is the ability to use the internet for collaborative research at the new wave flume. The controls and instrumentation will include robust web interfaces allowing students and faculty at other Alabama institutions to use the facility to conduct their experiments. This feature, sometimes called a “co-laboratory” is patterned after the similar capability provided by the Pacific Northwest National Laboratory where unique microscopes and environmental instrumentation can be operated by researchers from around the world, once they have been trained on the instrument and microscopes and environmental instrumentation can be operated by researchers. From around the world, once they have been trained on the instrument and their physical samples have been provided to PNNL. This will provide new opportunities for Alabama universities as well as encouraging new and productive collaborations with our colleagues. The University of South Alabama’s Department of Civil Engineering and CTEREC currently have demonstrated expertise in coastal engineering that is unique to the state of Alabama, as well as the Northern Gulf Coast. The proposed equipment and resulting facilities will have a profound impact on the ability of USA to serve as a leader in coastal engineering infrastructure research, and will constitute a unique research facility both regionally and nationally. Such a facility will promote state-of-the-art training for undergraduate and graduate students in civil, coastal, and environmental engineering, as well as other related disciplines. Furthermore, K-12 curriculum units could be developed that will utilize the proposed instrumentation and equipment for educational purposes and outreach service. These units will make use of an integrated web-based internet portal allowing K-12 teachers and students, as well as other academic institutions throughout the state of Alabama, to perform experiments and collect data via the web interface. The estimated cost of the flume, equipment, instrumentation, and control systems is $1.5 million.
Project Name: Restoration on Ft. Morgan Peninsula and Pine Public Access Boat Ramp

Location: Baldwin County

Cost: $14.7

Project Description: Dixie Graves Highway (County Road 381) in Baldwin County in the northern coastal road along the Ft. Morgan Peninsula in Baldwin County Alabama. For much of the distance of this road the northern shoreline is sufficiently wide that there is housing along the shoreline of Bon Secour Bay. In the vicinity of the boat ramp that is labeled Pine Public Access, near the intersection with Plantation Road the roadway is very close to the waters of the Bay. Comparison of aerial photography from 1992 and present conditions clearly show shoreline erosion from the end of the housing development to the completely undeveloped shoreline to the west. Existing conditions are actually less than the most recent aerial photography which shows a shoreline more than 110 feet in 1992 and approximately 50 feet in 2010. The 1992 photograph also shows nearshore sand bars along the shoreline indicating a sand source for feeding the beaches along the coast line. A current view from the roadway illustrates the issue more clearly with the road approximately 50 feet from the shoreline and a small pull off area for vehicle parking directly adjacent to the roadway. Boat launching clearly impinges smooth and safe traffic flow. This presents a public danger. Continued shoreline erosion will eventually cause roadway failure. Further to the west in the undeveloped lands, the shoreline beaches completely disappear and tree stumps can be found in the nearshore waters. The proposed project includes shoreline supplemental to include the restoration of marsh habitat and sand beach. Additionally, as a protection measure against continued shoreline erosion, the placement of specifically designed wave attenuation devices to reduce wave action on the shoreline is expected to provide some stabilization to the shoreline in the vicinity of the boat ramp. Public access improvements may provide a means to correct the existing safety concerns by allowing for safer launch and parking for public users. The undeveloped shoreline is in the ownership of the Alabama Department of Conservation and Natural Resources (ADCNR) from the end of the shoreline development to the point associated with the Bon Secour refuge to the east. The project proposes supplementing the shoreline from the end of the housing development to the peninsula east of the boat ramp. Total project length is approximately 8,500 feet. With the addition of approximately 150 feet of marsh habitat and 50 more feet of sandy beach, the total restoration would entail the creation of approximately 30 acres of marsh habitat and add 50 acres of beach habitat to the existing shoreline. The total new width of replenished shoreline would amount to 200 feet with an additional 100 feet between the shoreline and the WAD (approx. 20 acres for shellfish and sea grass restoration). A total of 992,000 yd³ of additional material would need to be placed. This is proposed to be recovered from the regular dredge material storage locations found in nearby Mobile Bay. There is no requirement for land acquisition. The project would reset the shoreline to the conditions present prior to development of the Ft. Morgan peninsula. In the vicinity of the boat ramp, the additional land will provide a small protected embayment for launch and retrieval of boats during stormy conditions. The WAD placement and new shoreline location will provide protection from continuing erosion in the undeveloped lands to the east. The created habitat and the calm waters between...
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Plantation Park</td>
<td>Jaime Podratz</td>
<td>Mobile County</td>
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</tbody>
</table>

Puerto Rico and the U.S. Virgin Islands.

The new shoreline and the reduced dish golf tournament would also provide excellent 
habitat for the restoration of seagrass habitat and the potential for 
establishments of oysters on the WAD structures and the adjacent waters. Essential 
Fish Habitat provided by the calm waters could help in increasing the availability of 
seagrass nursery habitat and thus assist in the recovery of the Mobile Bay commom 
rat and recreational fisheries. The project is feasible and cost effective utilizing 
techniques that are already in place at other restoration sites in similar settings 
along coastal Alabama. The project specifically contributes to making the 
environment and the public whole through habitat restoration and shoreline 
protection. Habitat restoration and water quality improvement components of this 
project could compensate for resource losses resulting from the Deepwater Horizon 
incident. The ultimate project is consistent with long-term restoration goals in 
Alabama and along the Gulf Coast.

<table>
<thead>
<tr>
<th>Restoration Types Addressed</th>
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</thead>
</table>
| Wetland Habitat            | Foxes are an important part of our community. It provides a place for children to play in the woods, on playground equipment, walk your pets, exercise, sit under a shady tree and enjoy a picnic. It's a place for wild life to reside, and a place to relax amongst friends in a game of disc golf. It is always a healthy place to spend the day. As a business if run right it can be a very profitable with little overhead and low start up cost. Old Plantation Park would be the first and only park in Tillman’s Corner located on the corner of Old Pascagoula and Carol Plantation. It would be in the heart of Tillman’s Corner, a populated community ten miles from Mobile but still in city limits. Old Plantation Park is two blocks from an elementary school, surrounded by businesses, apartment complexes and neighborhoods we would cater to everyone looking to relax and have fun. Old Plantation Park will also provide long term RV camping for a monthly fee of $ 500.00 which would include all utilities including cable and internet access. Old Plantation Park will have full facilities including restrooms with hot and cold showers and a laundry mat for our camping customers convenience. The park will have a Thirty six hole disc golf course which will be the only double course in Mobile which will enable us to host professional disc golf tournaments that require thirty six holes. All Disc Golf tournaments are currently being played at two different Parks to fulfill the requirements. Old Plantation Park will be able to accommodate these large tournaments our Park Office will take care of the rest of their needs as far as disc golf equipment sales like discs, golf bags, stickers, and snack foods. An Admission fee will be collected to enter the park to help maintain the facilities the admission fee will be $1.00 per adult or twelve years old and up and $.50 per child five to twelve years old and senior citizens or children under five years of age would get in free. Old Plantation Park will be a pen seven days a week three hundred sixty five days a year with an experienced committed to the goal of customer service. Our staff will consist of four Park Rangers and two Office Personnel, who will work a split shift based on four ten hour days the first shift will work from Sunday to Wednesday and the second shift would work from Wednesday to Saturday 7:00am to 5:00pm. The Park will be patrolled by a security officer from 5:00pm to 11:00pm and relieved from 11:00pm to 7:00am by another security officer, who will stay in the office until a Park Ranger relieves them at 7:00am. As our community has become more health conscious it is

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essential that there are provided with a clean, safe environment to be active. In my opinion a community park is an essential landmark in town. It sends a message of environmental awareness and helps bring a community together. Now that our beaches are in danger our community needs a place to go and feel good about where they live a place to enjoy nature. Old Plantation Park will serve that purpose for Tillman’s Corner and help people bring play time back into their day. A safe place to GO-PLAY, while making a profit for those involved. Please consider this as a project suggestion and help me get it up and running. Thank you.

University of South Alabama Medical Center

11420 Lawrence A. Gardiner Mobile 43000000 The University of South Alabama Medical Center is an acute-care University teaching hospital which offers unique programs and services for the citizens of the northern Gulf Coast region, thus enhancing the health and well-being of these residents. The Medical Center is located in a region that experiences high incidents of natural disasters. It is Alabama’s only Level One Trauma Center south of Birmingham and is certified in both the Mississippi’s and Alabama’s Trauma systems. As such, it provides a systematic response to trauma that utilizes resources from all medical specialties to meet the needs of the critically injured patient at a moment’s notice. This is accomplished with in-house trauma surgeons, anesthesiologists, and OR teams, 24/7. The hospital has a Burn Center that has earned national and international recognition for its contributions to the art and science of Burn treatment in the area of use of artificial skin. The Medical Center is a Memorandum of Agreement signature partner with the National Disaster Medical System, a part of the Department of Health and Human Services. The hospital building was constructed in the 1960’s with an 11-story tower and basement level. The tower, from floors three through eleven, is clad with a metal curtain wall and story tower and basement level. The exterior cladding has been significant decrease in Gulf fish populations during the last decade. hurricanes and other man-made events in the history of the building, portions of the exterior cladding has been blown or sucked from the building. The goal of the project is to reduce the potential for the facility to be rendered unusable due to a high wind event such as a hurricane. History has demonstrated that the facility is susceptible to damage to the exterior walls and serious water intrusion as a result of minor hurricane force winds. The objective of the project is to complete the upgrade of the tower building envelope so as to mitigate these potential pro-beds. The replacement of the wall and windows systems of the tower will bring envelope of this part of the building up to current coastal region wind codes. The upgrade of the wall system will allow the hospital to function during and after a hurricane and continue to provide needed healthcare to the region.

Gulf Of Mexico Hatchery And Fisheries Restoration Consortium

11421 Edward Chesney Gulf of Mexico 60000000 Problem: The Deepwater Horizon Oil Release (DWH) caused environmental and economic damage to fisheries in the northern Gulf of Mexico. America must employ novel and effective approaches to restore both economic and environmental wellbeing of the affected fisheries. In addition, habitat destruction caused by hurricanes and other man-made causes (over-fishing, erosion and spills) have led to significant decrease in Gulf fish populations during the last decade. Solution: Marine aquaculture of key species can be employed to restore fisheries through restocking.

Trustee Portal
**Gulf Of Mexico**

**Project Name:** Gulf of Mexico Hatchery and Fisheries Restoration Consortium - Gulf Coast Research Laboratory (GCRL; lead institution) - University of Texas Marine Science Institute (UTMSI) - Louisiana University Marine Consortium (LUMCON) - Auburn University (AU) - Mote Marine Laboratory (MML) - University of Maryland - Baltimore (UMB) These institutions are leaders in marine aquaculture and stock enhancement research, and technology transfer for the northern GOM. The consortium is based on established relationships and will employ the highest quality science and economic approaches to implement, and transfer the technology to raise significant numbers of fish for fishery restoration and to stimulate private sector small business development. In addition to the implementation team, the consortium has established scientific, governmental agency and commercial advisory teams. Implementation Plan: The technology for aquaculture and fishery restoration of marine fish varies among species. This necessitates the collaborative involvement of these 6 leading institutions that have contacted research on over 60 of the most economically and ecologically important Gulf fish species. Among the species are those for which the technology to implement stocking, technology transfer, and business stimulation already exists. The species targeted for immediate implementation of stocking and technology transfer include Red Drum, Spotted Seatrout, Red Snapper, White Shrimp, Bull Minnows, Croaker, Florida Pompano, Cobia, Greater Amberjack and Southern Flounder. Projected Results: The work of the consortium will result in advanced technologies for use by Gulf States fishery agencies and private industry. Similar efforts in the Mediterranean Sea led to a $1 billion industry in 10 years. The 2007 NOAA aquaculture plan projects 75,000 jobs created for every million tons of seafood produced by aquaculture. It is estimated that aquaculture of Gulf fish species would double the seafood output of the Gulf of Mexico ($700 Million in 2008). Additionally the recreational fishing industry ($12 billion in 2008) would realize expanded employment and business opportunities as natural populations are restored with hatchery produced fingerlings.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gulf Of Mexico Hatchery And Fisheries Restoration Consortium</strong></td>
<td>and to re-construct and restore fishery abundance and productivity to historical levels and to establish fisheries that have not existed in the Gulf of Mexico for over a century.</td>
<td>Northern Gulf of Mexico (Gulf of Mexico)</td>
<td>Estuarine and coastal habitat (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td>Marine mammals (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td></td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td></td>
<td>Oyster Reef (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td></td>
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<td></td>
<td>Bird (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td></td>
<td>Fish (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
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<td></td>
<td></td>
<td></td>
<td>Habitat (Y/N)</td>
<td>Project is consistent with public health and safety (Y/N)</td>
</tr>
</tbody>
</table>

**Project Information**

- **Submitted By/Submitted Via:** Phillip G. Lee
- **Primary Location:** Mexico
- **Cost:** $600,000,000
- **Implementation Team:** Gulf of Mexico Hatchery and Fisheries Restoration Consortium - Gulf Coast Research Laboratory (GCRL; lead institution) - University of Texas Marine Science Institute (UTMSI) - Louisiana University Marine Consortium (LUMCON) - Auburn University (AU) - Mote Marine Laboratory (MML) - University of Maryland - Baltimore (UMB)

**Additional Criteria**

- Project is consistent with public health and safety (Y/N)
### Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Lead Institution</th>
<th>Submitted By Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tr>
<td>Long-Term Recovery of Gulf Shorebirds and Waterbirds</td>
<td>710000002 Gulf of Mexico</td>
<td>Gulf of Mexico</td>
<td>11413</td>
<td>239</td>
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</tbody>
</table>

### Project Description

Implementation Team: Gulf of Mexico Fishery and Fisheries Restoration Consortium - Gulf Coast Research Laboratory/University of Southern Mississippi (GCRYL; lead institution) - University of Texas Marine Science Institute (UTMSI); Louisiana University Marine Consortium (LUMCON); - Auburn University (AU) - Mote Marine Laboratory (MMI) - University of Maryland- Baltimore (UMB) These institutions are leaders in marine aquaculture and stock enhancement research, implementation, and technology transfer for the northern GOM. The consortium is built on established relationships and will employ the highest-quality science and economic approaches to implement, and transfer the technology to raise significant numbers of fish for fishery restoration and to stimulate private sector small business development. In addition to the implementation team, the consortium has established scientific, governmental agency and commercial advisory teams. Implementation Plan: The technology for aquaculture and fishery restoration of marine fish varies among species. This necessitates the collaborative involvement of these 6 leading institutions that have conducted research on over 10 of the most economically and ecologically important Gulf fish species. Among the species are those for which the technology to implement stocking, technology transfer, and business stimulation already exists. The species targeted for immediate implementation of stocking and technology transfer include Red Drum, Spotted Seatrout, Red Snapper, White Shrimp, Gulf Mussels, Croaker, Florida Pompano, Cobia, Greater Amberjack and Southern Flounder. Projected Results: The work of the consortium will result in advanced technologies for use by Gulf States fishery agencies and private industry. Similar efforts in the Mediterranean Sea led to a $1.5 billion industry in 10 years. The 2007 NOAA aquaculture plan projects 75,000 jobs created for every million tons of seafood produced by aquaculture. It is estimated that aquaculture of Gulf fish species would double the seafood output of the Gulf of Mexico ($700 Million in 2008). Additionally the recreational fishing industry (+$12 Million in 2008) would realize expanded employment and business opportunities as natural populations are restocked with hatchery produced fingerlings.

### Restoration Types Addressed

| Water Quality/Seascape Dynamic Stewardship (Y/N) | Waterbird and Raptor Nesting Habitat (Y/N) | Shorebird and Shoreline Habitat (Y/N) | Bird (Y/N) | Gulf of Mexico (Y/N) | Fish (Y/N) | Sustained through long-term. Specifically, the work would: 1) Create and maintain nearly 28,000 acres of seasonal freshwater wetland habitat that completely address the habitat conservation ‘gaps’ for five important shorebird species, as well as provide demonstrable benefits to an additional 41 species of shorebirds, waterbirds, and waterfowl affected by the oil spill. 2) Increase the regional breeding populations of 37 species of beach and island nesting waterbirds and shorebirds that were directly impacted by the oil spill by 10,000-16,000 birds by improved management of critical nesting and stopover habitat along the Gulf and Atlantic coasts. 3) Ensure bird population gains are sustained through long-term stewardship of their key habitats, thereby avoiding a common shortcoming of conservation actions - that is, diminishing returns over time because of lack of resources to maintain those initial gains. The plan proposed below will ensure the long-term recovery and health of Gulf Coast shorebird and other waterbird populations affected by the Deepwater Horizon oil spill. 

### Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria

<table>
<thead>
<tr>
<th>Monitoring, Adaptive Management, and Administrative Oversight (Y/N)</th>
<th>Project is consistent with programmatic restoration goals (Y/N)</th>
<th>Project is consistent with criteria included in the public notice (Y/N)</th>
<th>Project benefits cost-effective (Y/N)</th>
<th>Project meets TNC goal (+/0/-)</th>
<th>Project meets Trustees' goal (+/0/-)</th>
<th>The project’s short-term and long-term impacts on public health and safety (+/0/-)</th>
</tr>
</thead>
</table>

### Public Notice

<table>
<thead>
<tr>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Project is consistent with programmatic restoration goals (Y/N)</th>
<th>Project meets Trustees' goal (+/0/-)</th>
<th>Project prevents future and collateral injury to natural resources and services (+/0/-)</th>
<th>Project delivers benefits cost-effective (Y/N)</th>
<th>The project's short-term and long-term impacts on public health and safety (+/0/-)</th>
</tr>
</thead>
</table>

### Additional Criteria

<table>
<thead>
<tr>
<th>Sustainability/Long-term Benefit of project (+/0/-)</th>
<th>Project readiness (+/0/-)</th>
<th>Project complies with applicable laws and regulations (Y/N)</th>
<th>Project supports existing regional or local conservation plan or restoration effort (Y/N)</th>
<th>Project is not already funded (Y/N)</th>
<th>Project is not already required by existing regulations (Y/N)</th>
</tr>
</thead>
</table>

Trustee Portal: N N Y Y N N N
The Weeks Bay National Estuarine Research Reserve (Reserve) provides leadership to promote informed management of estuarine and coastal habitats through scientific understanding and encourages good stewardship practices through partnerships, public education, and outreach programs. In an effort to continue and enhance such programs it is recommended that funds be provided to construct a laboratory to support coastal and estuarine science. The construction of an estuarine research laboratory is a means of providing a source of mitigation for the environmental and economic damages that resulted from the Deepwater Horizon incident. There were limited estuarine research laboratories that could be utilized in Baldwin County, AL during the Deepwater Horizon disaster. This project will support future resource recovery activities to be conducted. The activity of research and monitoring of coastal resources has been identified as an important factor in the resource recovery process by the Mabus Report and federal and state resource trustees. Construction of a research laboratory at the Reserve will establish the needed infrastructure to support coastal research. This facility would be sited on Reserve property. A recent Facility Master Plan Study and Design (September 2011) has determined the need for such a facility. In addition, this plan has sited the location for construction, provided designs for evaluation, and projected costs for construction and equipment at $2,084,810.00 (2011 dollars). The mission of the Weeks Bay Foundation is to protect the natural resources of coastal Alabama and provide assistance and support to the goals and programs of the Reserve. The Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this project. The reserve will serve as a primary partner on this transaction. This project will provide a research laboratory to support coastal and estuarine science. It will establish the infrastructure needed to best support research associated with restoration and monitoring activities at the Weeks Bay Reserve, a site positioned to provide a sentinel role in coastal waters of Alabama. This facility would be sited on Reserve property. A recent Facility Master Plan Study and Design (September 2011) has determined the need for such a facility. In addition, this plan has sited the location for construction, provided designs for evaluation, and projected costs for construction and equipment at $2,084,810.00 (2011 dollars). The mission of the Weeks Bay Foundation is to protect the natural resources of coastal Alabama and provide assistance and support to the goals and programs of the Reserve. The Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this project. The reserve will serve as a primary partner on this transaction. This project will provide a research laboratory to support coastal and estuarine science. It will establish the infrastructure needed to best support research associated with restoration and monitoring activities at the Weeks Bay Reserve, a site positioned to provide a sentinel role in coastal waters of Alabama.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration of Tidal Flow to Meadows Tract</td>
<td>11410</td>
<td>Walter C. Ernest, IV</td>
<td>Baldwin County</td>
<td>1000000</td>
<td>The hydrological restoration of coastal wetland property is a means of providing a source of mitigation for the environmental and economic damages that resulted from the Deepwater Horizon incident. This project consists of the installation of three 100 x 30 ft. small bridges on County Rd. 1 in Baldwin County, AL. These bridges will increase tidal flow and serve as a means of providing coastal resiliency adaptation to the occurrence of future sea level rise. This project will allow future resource recovery activities to be conducted on the Meadows project site. The mission of the Foundation is to protect the natural resources of coastal Alabama and provide assistance and support to the goals and programs of the Weeks Bay Reserve. The Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Weeks Bay Reserve and the Weeks Property Owners Association Hosted at the NOAA Disaster Response Center in Mobile, AL, and coordinated as a NOAA partnership project with the NOAA Marine Debris Program as lead coordinator, this project will coordinate and execute a two-year, intense outreach and education campaign that will result in lasting changes after the project is complete. Hosted at the NOAA Disaster Response Center in Mobile, AL, and coordinated as a NOAA partnership project with the NOAA Marine Debris Program as lead coordinator, this project will engage all five states, maintain and improve partnerships with state and local organizations, and strengthen public engagement across the Gulf. This project is specifically targeted to involve and educate Gulf Coast communities how marine mammals, sea turtles, and habitat will all directly benefit from debris prevention and removal. The project will also look to identify targeted areas for debris removal that will have the most impact to improve the ecological health of the Gulf. Key contacts associated with this project already have strong professional working relationships across the region. As has been successfully demonstrated in previous projects in the Gulf of Mexico, Sea Grant extension agents have a unique capacity to strengthen community involvement - including select communities where English is not the first language - and broaden awareness through effective beach clean-ups, fish rodeos, etc. This project will incorporate powerful Public Service Announcements, print materials, and technology to effectively raise the awareness across the Gulf States that a sustained outreach campaign focused on debris prevention and removal will benefit livelihoods in the entire region in both the short and long term.</td>
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<tr>
<td>Project Name</td>
<td>Proj ID</td>
<td>Submitted By/Primary Lead</td>
<td>Location</td>
<td>Cost</td>
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</tr>
<tr>
<td>Gallops Creek</td>
<td>11392</td>
<td>Tim Richardson</td>
<td>Mobile County</td>
<td>4000000</td>
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</tbody>
</table>

This project proposes to construct a ferry terminal in Gallops Creek with a 1,600-acre footprint that includes a ferry landing and building, a parking lot, and a park and ride area. The project will provide passenger ferry service between Mobile and Dauphin Island, Alabama.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>The project will involve the construction of a ferry terminal, including a ferry landing and building, a parking lot, and a park and ride area. The project will provide passenger ferry service between Mobile and Dauphin Island, Alabama.</td>
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<table>
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<tr>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Trustee Portal</td>
</tr>
<tr>
<td>Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N)</td>
</tr>
<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
</tr>
<tr>
<td>Project is not already fully funded (Y/N)</td>
</tr>
<tr>
<td>Project is not already required by existing regulations (Y/N)</td>
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<tr>
<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
</tr>
<tr>
<td>Project readiness (+ / 0 / -)</td>
</tr>
<tr>
<td>Sustainability/Long-term Benefit of project (+ / 0 / -)</td>
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<tr>
<td>Project is time critical (+ / 0 / -)</td>
</tr>
<tr>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
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<tr>
<td>Project is technically feasible (+ / 0 / -)</td>
</tr>
<tr>
<td>Project complies with applicable laws and regulations (Y/N)</td>
</tr>
<tr>
<td>Project has a reasonable probability of success (+ / 0 / -)</td>
</tr>
<tr>
<td>Project benefits multiple species, ecosystems and/or habitats (+ / 0 / -)</td>
</tr>
<tr>
<td>Project prevents future and collateral injury to natural resources and services (+ / 0 / -)</td>
</tr>
<tr>
<td>Project delivers benefits cost-effectively (+ / 0 / -)</td>
</tr>
<tr>
<td>Project has a reasonable probability of success (+ / 0 / -)</td>
</tr>
<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<tr>
<td>Project is not already required by existing regulations (Y/N)</td>
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<td>Project offers opportunities for external funding &amp; collaboration (+ / 0 / -)</td>
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<td>Project readiness (+ / 0 / -)</td>
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<td>Sustainability/Long-term Benefit of project (+ / 0 / -)</td>
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Financing is being used for supplemental planning and planning, route, planning and establishment, to include establishing bid-ready performance requirements for ferry services, updating environmental reviews, capital funding commitments with acquisition of two high-speed ferry passenger ferry vessels, authoring contract documents for operations and terminal equipment and staff support, fit-out and equipping of terminal facilities necessary for ready operations, fit-out and equipping for vessel operations and maintenance for two years.

Transportation Infrastructure Benefits: Currently, well over 100,000 vehicles per day travel across the Interstate 10 (I-10) four-lane bayway bridge between Mobile and the residential communities of the eastern shore of Mobile Bay and near island communities within central and south Baldwin County. This bridge segment of I-10 has a design peak load of 84,000 vehicles per day. The vast majority of this traffic being one passenger commuters from the eastern shore going to and from work in Mobile. With the advent of the ThyssenKrupp steel mill, these numbers will continue to increase. The drive times for the workforce in Mobile who live in communities along the eastern shore or along the major north-south gulf access arterial state highway 59 has increased in some cases to more than one hour for a 20 mile drive. Likewise, the tourism industry of south Baldwin County, which has grown to more than eight million visitors annually, requires a service sector workforce which could be readily supplemented by a large unskilled labor pool from Mobile County that might use the ferry service to commute. Safety Benefits: The project will reduce the number of passenger vehicle miles on an overcapacity segment of I-10 and major arterial roadways. It will provide a less stressful commute and thereby enhance personal health of the workforce.

Economic Development Benefits: The project will serve as a statement of stable growth for this region, continuing to attract businesses that require a mobile workforce between Mobile and south Baldwin County. It will increase the underserved workforce between Mobile and south Baldwin County, which has grown to more than eight million visitors annually, requires a service sector workforce which could be readily supplemented by a large unskilled labor pool from Mobile County that might use the ferry service to commute. Safety Benefits: The project will reduce the number of passenger vehicle miles on an overcapacity segment of I-10 and major arterial roadways. It will provide a less stressful commute and thereby enhance personal health of the workforce.

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Project Name: Old River Estuary Restoration and Management in Mobile and Baldwin Counties, and the State of Alabama are actively involved in recruiting economic development opportunties and in growing a stable, flexible and sustainable workforce that brings in business and employment opportunities beyond the tourism market. All these businesses require employees that can find reliable, cost effective transportation to and from their place of employment. Our community, region and State have a commitment to building a flexible, multi-modal transportation capability to service our needs to get where we need to go using safe, healthy, efficient and environmentally sustainable choices. Having this project in place provides a significant opportunity for businesses to locate and grow in our area with our commitment of support through this transit capacity. This project will help our economic development teams continue attracting businesses that require a workforce capable of being on-time and productive. It will generate job opportunities for an underserved workforce between Mobile and south Baldwin County. It will increase tourism and entertainment opportunities. A 2004 ferry service study survey estimated that start-up operations between the eastern shore and the City of Mobile may provide between 600 to 800 commuter passengers per day, noting that the survey is limited to those people who would use the service to commute to and from work. Factors such as rising fuel costs, increases in the commuting population across an already over-capacity interstate bridge between Mobile and the eastern shore, and the effects of marketing this transportation option could easily triple these commuting numbers. The study also did not factor in excursion passengers who would use the passenger ferry service to visit communities around the bay area. The community of Gulf Shores has been vocal in support of the potential for this ferry service to bring workers from the Mobile County area to the existing number of job opportunities in the beach areas. These job numbers have not been quantified. As a part of this funding request, updates to the 2004 studies are proposed in order to better quantify the greater numbers of potential passenger numbers served and jobs possibly created or filled. This project has been part of a multi-year redevelopment of the Dawton Mobile Waterfront which has as one of its final elements the implementation of the passenger ferry operations. Only this year (2010-2011) has the Waterfront Development Project reached the stage where a definite window for implementation of ferry service can be established. The proposed project consists of installing an ocean inlet pipeline across the barrier island to deliver transparent, high-salinity, low-nutrient seawater into the degraded estuary. An in-line, high-volume pump station is to be operated by remote control as determined by data collected from a variety of in-situ sensors and public data sources within the respective watershed. The objectives include active regulation of salinity, nutrient concentration and water clarity with the goal of providing optimum conditions for proliferation of seagrasses and increased aquatic species diversity. The pipeline crossing is to be located near the tidal node of the estuary. Pump operation generally will occur during the ebb tide with shut-off during the flood tide to allow for mixing of seawater and estuarine waters. Benefits accrue over time from the point of delivery to the ocean inlet. During low rainfall periods, no pumping may be required; during high rainfall periods, continuous
### Deep Seafloor Habitat Restoration

**Project Name:** Deep Seafloor Habitat Restoration  
**Project Description:** Sediments from MC252 have covered a vast area of the deep seafloor, which may have sterilized the benthic habitat. Normal sedimentation rate in this area is approx. 1 cm/yr. Assuming burrowing organisms occupy the vertical space of 60 cm into the sediments, full habitat recovery might require 60 years of sediment deposition to isolate the oiled layer from the benthos. A habitat restoration project of 25 km² is proposed to provide vertical attachment surfaces above the oiled seafloor for occupation by endemic benthos. The recommended substrate consists of a 4 m length of black iron pipe 3-inch diameter with 3-1/2-inch holes spaced 70 cm apart starting at the top of the pipe. The bottom of the pipe is flared and embedded 10 inches into a conical-shaped, concrete dive-point 6-inch diameter x 24 inch length. At a density of 1 pipe/1,000 m², 25,000 pipes are fabricated, loaded onto a barge and dropped into the Gulf using GPS coordinates for the project location grid. The force of gravity drives the descending pipe into the seafloor (>1,000 m BSL), allowing approx. 1 m of pipe to extend above the oiled layer. Monitoring of the deep seafloor habitat grid (plus 60,000 acres adjacent) is performed for 10 years by a scientific team using ROVs (e.g., detached motorized submersibles or gliders) deployed from a research vessel. Telemetry data from the ROV is analyzed for species colonization and blade density with pre-project conditions. These results will ultimately determine the quantity of environmental offsets achieved on behalf of the Deepwater Horizon Oil Spill damage assessment.

**Submitted By:** Anonymous  
**Submitted Lead:** Barry A. Vittor  
**Submitted Cost/m²:** $0.47  
**Total Project Cost:** $11,825,000  
**1st yr total:** $1,925,000  
**9 yr monitoring cost:** $9,900,000

### Project Information

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<th>Total Cost</th>
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<th>9 yr monitoring cost</th>
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<td>11242</td>
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### Restoration Types Addressed

- **Wetland, Coastal, and Nearshore Habitat (Y/N):** N
- **Birds (Y/N):** N
- **Habitat on Federal Lands (Y/N):** N
- **Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation (Y/N):** N
- **Project is consistent with prerequisites for public notice (Y/N):** N
- **Project is consistent with criteria specified in the public notice (Y/N):** N
- **Project is consistent with criteria stated in the PDRAP (Y/N):** N
- **Project is consistent with criteria described in the restoration goals (Y/N):** N
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- **Sustainability/Long-term planning (+ / 0 / -):** +
- **Project is time critical (+ / 0 / -):** +
- **Project provides net benefits (+ / 0 / -):** +
- **Project provides net costs (+ / 0 / -):** -
- **Project provides net offset (+ / 0 / -):** +
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- **Project provides net costs (+ / 0 / -):** -
- **Project provides net offset (+ / 0 / -):** +

### Public Notice

- **Response to Notice to Oppose (Y/N):** N
- **Response to Notice to Oppose (Y/N):** N
- **Public notice (Y/N):** Y
- **Project meets Trustees’ goals (+ / 0 / -):** +
- **Project prevents future and collateral injury to natural resources and properties (+ / 0 / -):** +
- **Project is consistent with programmatic restoration goals (Y/N):** Y
- **Project is considerate of strategic frameworks (Y/N/NA):** Y
- **Project is consistent with regional or local conservation plan or restoration effort (Y/N):** N
- **Project is not already fully funded (Y/N):** N
- **Project is technically feasible (+ / 0 / -):** +
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- **Project provides net costs (+ / 0 / -):** -
- **Project provides net offset (+ / 0 / -):** +

### Oil Pollution Act (OPA) Criteria

- **Project meets Trustees’ goals (+ / 0 / -):** +
- **Project prevents future and collateral injury to natural resources and properties (+ / 0 / -):** +
- **Project is consistent with programmatic restoration goals (Y/N):** Y
- **Project is considerate of strategic frameworks (Y/N/NA):** Y
- **Project is consistent with regional or local conservation plan or restoration effort (Y/N):** N
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**Trustee Portal**
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<td>Hello of West Saint River. In addition, next years had extended several thousand feet westward from Cedar Point, based on studies of buried shell deposits. The habitat variables that are most important in the distribution of oyster reefs are substrate and salinity. Oyster larvae hatched &quot;spat&quot; when they attach to the settlement. Typically Oyster larvae that attach to the settlement and grow. Typically, the hard structure most suitable for spat attachment is oyster reef substrate, but spat may successfully attach to clam shell, rock, brick, concrete, or wood. Oysters cannot colonize habitats that consist of sand or mud because they would eventually sink into the sediment. Areas that are susceptible to active sediment deposition are generally unsuitable for oyster survival because the spat are likely to be killed by burial. Although oysters are relatively tolerant of a wide range of salinity, they are most successful in waters characterized by salinities of 5 to 15 parts per thousand. Prolonged lower salinities associated with flooding (freshest/slowest) can kill oysters, while extended periods of higher salinities tend to encourage incursions of oyster drills, a predatory gastropod that can decimate an oyster reef within one season. Seafood interests in south Mobile County (individual fishermen, seafood associations, and the Seafood Division) have conducted oyster reef enhancement and maintenance projects for many years. Such programs have usually involved placement of oyster shell (&quot;cultch&quot;) in areas where oysters already occur in at least moderate numbers, or where substrates and salinities are suitable for establishment of oyster beds/reefs. At the same time, the Seafood Division has periodically allowed relocation of oysters from reefs located in areas to be affected by construction of channels (e.g., near Theodore Ship Channel). Recent oyster reef restoration and enhancement efforts in Portersville Bay and Mobile Bay provide excellent documentation of the labor and material resources necessary to re-build reefs, as well as the economic benefits of such projects. For example, local fishermen were hired to apply rock and oyster shell cultch to a 60-acre section of the restored reef. The habitats of the restored reef revealed densities of about 50 harvestable oysters per square meter (roughly 200,000 per acre). The cost to improve the reef was about $8,000 per acre, while the direct value of harvestable oysters was $40,000 per acre. With normal reef management, this return to the oyster fishermen would be an annual basis. Based on existing maps of Alabama’s oyster reefs, approximately 600 acres of habitat could be restored or reestablished in Portersville Bay and lower Mobile Bay, using existing manpower, vessels and cultch resources. The cost of this program would be approximately $4,800,000 excluding monitoring. Five years of monitoring would cost an additional $200,000 for a total project cost of $5,000,000. The most important elements of proposed oyster reef restoration in this area are: - Ability to use natural oyster shell resources; - Proven restoration methods; - Presence of suitable habitats at historic reef sites; - Employment of local citizens at a rate of about person-months per acre; - High economic benefit, with a benefit-to-cost ratio of about 5:1 to 1. Based on the direct value of harvested oysters; and - Ability to verify the success and economic benefits of reef restoration or enhancement.</td>
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Acquisition and Conservation for Neotropical Migratory Birds

Acquisition and Conservation for Neotropical Migratory Birds

Conservation for Migratory Birds

11223

No./Porter, Ph.D.

Submitted

by

Submitted

by

Project

Project Name

Dauphin Island

Project Description

Porter, Ph.D.

Project Information

Location

Cost

1036000

Dauphin Island Bird Sanctuaries, Inc. (DIBS) is a 501 (c) (3), nonprofit corporation, dedicated to preserving the island's stopover habitat for all neotropical migratory birds, to benefit birds and island residents and visitors alike. Our objectives are to: 1) Maintain a network of quality stopover habitats; 2) Work with government and other agencies to ensure a balance between human land uses and conservation; 3) Educate landowners about practices that strengthen the island's unique ecosystem; 4) Promote the economic value of ecotourism by attracting more birders to Dauphin Island. Originally founded as Friends of the Dauphin Island Audubon Bird Sanctuary, since 2000 DIBS has expanded its mission to include acquiring parcels on the island with the express intent of permanently protecting desirable habitat for resident and migratory birds. To date, DIBS has raised over $1.4M to acquire and permanently protect nearly 10 acres (28 parcels) of critical habitat, through hundreds of generous donations from individuals and through the support of the National Fish and Wildlife Foundation/Shell Marine Habitat Program, ConocoPhillips, The Moore Master Foundation, The Nature Conservancy, the Gulf Coast Bird Observatory, the Diane and Trammell Sessions Foundation, the Birmingham Audubon Society, the Alabama Ornithological Society and the Hummer/Bird Study Group. Additionally, DIBS works informally with the Alabama Department of Conservation and Natural Resources (ADCNR), the Dauphin Island Park and Beach Board (DIPBB), and the town of Dauphin Island to promote birding and other forms of ecotourism activities on the island. MIGRATION Dauphin Island is one of the top birding destinations on the northern coast of the Gulf of Mexico, and for good reason: an incredible 348 species have been reported on the island. For hundreds of species of neotropical migrants on their northbound spring migration, Dauphin Island is the first landfall following a 600-mile non-stop flight across the Gulf of Mexico from the Yucatan Peninsula. When they experience adverse weather and flying conditions, exhausted birds, sometimes numbering into the thousands and hundreds of thousands, seek shelter on the island. During these spectacular fallouts birds are stranded on the island and it is crucial that they have suitable habitat for shelter and a resting place, fresh water for drinking and bathing, and that there be enough food of the appropriate type to replenish depleted stores of fat. Once they depart from the island, these migrants continue to their breeding grounds throughout all of eastern North America. For this reason, the importance of Dauphin Island as a refueling and resting site cannot be understated. Protecting and preserving habitat on the island ensures that these birds have enough food reserves to continue their northward journey. Similarly, fall migration, which begins as early as July, can also be a very rewarding time on the island for birders as southbound migrants make one last stop before flying across the Gulf of Mexico to their wintering grounds in Central and South America. Whereas wildflower blossoms and the insects they attract are important food sources in the spring, in the fall berries become an equally vital food source. Thus, a healthy and intact ecosystem, with a full complement of native vegetation, is vital to meeting the needs of neotropical migrants during both spring and fall migration. In addition to the many permanent species that reside on the island, a variety of waterfowl, seabirds, and shorebirds are commonly observed in and around the island during the winter season. Federally endangered Piping Plovers and other shorebirds ply...
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Perdido Bay’s aquatic productivity through the restoration of highly productive ecosystems, including oyster reefs, submerged aquatic grass, emergent saltmarsh systems, and tidal channels, all which provide beneficial form and function to the overall aquatic ecosystem. The design, and implementation of the Perdido Beach living shoreline will address shoreline erosion in this lower energy environment by providing long-term shoreline protection, the project will maintain considerable ecological restoration of vegetated shoreline habitats through strategic placement of plants, stone, sand fill and other structural material such as oyster shells. In this case the design and location will be within a large shallow unvegetated/unsedimented sand flat. The development of the estuarine habitats, will enhance the natural coastal processes and maintain an interconnection between open water estuarine aquatic habitats, and the intertidal zone. This is the most effective location for living shoreline’s and this location is best suited for this habitat placement. Living shorelines increase ecological function within the coastal and marine environments. These benefits include water quality improvement, aquatic habitat, tidal water exchange, sediment movement, plant community ecosystems, and generally improved habitat for the estuarine/commercially important vertebrates and invertebrates. Specifically tidally influenced wetlands reduce the rate of surface water flow and temporarily store flood waters like a sponge. Wetlands receive stormwater runoff and release it gradually. They change sharp runoff peaks and discharge water flows over longer periods of time thus reducing the danger of flooding and also recharging groundwater supplies. Wetlands, filter and trap sediments and pollutants, increase dissolved oxygen levels and reduce nutrient levels. As water flow is slowed over the marsh, sediments and chemicals drop out of the water column, high rates of productivity lead to high rates of mineral uptake, and decomposition processes occur within wetland sediments.

The presence of wetland vegetation, and associated structures of the living shoreline provide a buffer to adjacent shoreline by reducing wave energy and reducing current velocity thereby trapping, and maintaining sediments. The most sought after benefits include habitat augmentation for resident and migratory species of fish, invertebrates, and shorebirds. In this particular location the living shoreline will provide habitat for spawning, rearing, and nursery for commercially valuable fish and shellfish. Finally, these systems provide aesthetics, and recreational values for outdoors oriented activities such as birding, kayaking and fishing opportunities. In this particular estuarine environment, the design will include a series of deeper breakwaters (below MLLW), which consist of a footprint of marine mattresses with intermittent deep channels over lain with class 2 rip rap, and covered with oyster shells. The marine mattresses act to reduce settling to maintain target elevations. This design will facilitate the oyster reef development within the outer deeper waters that are not as subject to sedimentation and tidal processes. The inner portions will again be riped by a series of shallower breakwaters that will be designed to be exposed at low tide, providing shorebird roosting opportunities, as well as quiescent environment for the establishment of the areas where the sea grasses and tidal marsh habitats will be installed. Typically, the design will include 35 percent deepwater reef/breakwater habitat, 50 percent shallow...
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<tr>
<td>100 Meadows Additions - A Resource Protection Project</td>
<td>Casi Callaway, IV</td>
<td>Baldwin County</td>
<td>750,000</td>
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<tr>
<td>200-2000: Community Education and Outreach</td>
<td>Casi Callaway, IV</td>
<td>coastal AL</td>
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</table>
**Restoration and Management in**

**Project Name**

D'Olive Creek Restoration Watershed

**Location**

Baldwin County

**Cost**

$42,000

**Project Description**

Excessive erosion and sedimentation have plagued the D'Olive Watershed since the 1970s, and ongoing urban development continues to intensify problems there. Of almost 23 miles of streams in the watershed, 2 miles are substantially degraded, 4 miles are currently being degraded, and 6 miles have potential to experience future degradation. Five D'Olive Watershed streams are listed on the ADEM's 2010 303(d) impaired waters list for siltation (habitat alteration). Surveys of coastal Alabama show that only 35% of areas with SAV coverage in 1940, 1955, and 1966 had retained coverage by 2002, with an additional loss of 1,300 acres by 2008-09. Situation is a primary stressor to this important fisheries habitat, limiting necessary light penetration through the water column. In 2010, a broad-based coalition of federal, state, and local stakeholders facilitated by the Mobile Bay National Estuary Program completed a comprehensive Watershed Management Plan. Three classes of proposed management measures, restoration of streams, wetlands, and Lake Forest Lake, provide site-specific solutions that address historical and ongoing problems requiring immediate attention to prevent future stream and wetland degradation, reduce sediment transport downstream, and restore habitat. Stabilization of 20,000 linear feet of priority stream reaches is necessary to minimize further head-cutting, channel incision, and bank erosion processes contributing substantial sediment loads. Restoration techniques including guide control, flood deflection/concentration, and bank protection will reduce sediment loads transported downstream and restore aquatic habitats. Several areas within the watershed have been identified for wetland restoration or enhancement. Proposed restoration techniques include mechanical sediment removal, removal of invasive species, excavation to restore width to riparian areas, and planting of native plants. Several areas within the watershed have been identified for wetland restoration or enhancement. Proposed restoration techniques include mechanical sediment removal, removal of invasive species, excavation to restore width to riparian areas, and planting of native plants. Seagrasses contribute to water quality and estuarine habitats by serving as nursery habitat for juvenile fish and invertebrates. In addition, seagrass meadows provide habitat for a diversity of marine organisms including crustaceans, mollusks, echinoderms, and fishes. The proposed project consists of installing an ocean inlet pipeline across the barrier island to deliver transparent, high-salinity, low-nutrient sea water into the degraded estuary and to supply sea water at the west end of two "dead-end" canals immediately north of Cotton Bayou; all three are embayments connected to Perdido Bay. An in-line, high-volume pump station is to be operated by remote control as determined by data collected from a variety of in-situ sensors and public data sources within the respective watershed. The objectives include active regulation of residence time, salinity, nutrient concentration and water clarity with the goal of providing optimum conditions for proliferation of seagrasses and increased aquatic species diversity. The pipeline crossing is to be located near the southwest end of the Cotton Bayou. Pump operation generally will occur during the ebb tide with shut-off during the flood tide to allow for mixing of seawater and estuarine waters. Benefits accrue over time from the point of delivery to the ocean inlet. During low

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<td>Roberta Swann</td>
<td>Baldwin County</td>
<td>$42,000</td>
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<td>SeaGrass Restoration and WIQ Management in Cotton Bayou</td>
<td>Philip Wood</td>
<td>Mobile Bay</td>
<td>$115,000</td>
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<tr>
<td>Wolf Bay Wetland Nature Preserve A Coastal Resource Recovery Land Acquisition Project</td>
<td>1238</td>
<td>Dan Dumont</td>
<td>Baldwin County</td>
<td>3000000</td>
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This project is a fee simple resource recovery land acquisition project. The acquisition of properties with a high conservation value has been identified by the Mabus Report and the Land Trust Alliance's Gulf of Mexico Land Trust which are members of the Partnership for Gulf Coast Land Conservation. The 569 acre Wolf Bay Nature Preserve Tract is within the Alabama Coastal Area. The Wolf Bay Coastal Area has been designated as a Geographic Area of Particular Concern (GAPC) in the Alabama Coastal Area Management Plan (ACAMP). This tract is recognized as a Gulf Ecological Management Site (Gulf of Mexico Program). In 2007 Wolf Bay was designated as an Outstanding Alabama Water (OAW) by ADEM and the EPA. The parcel consists of 458 acres of wetlands and 111 acres of upland property. It has 147 species that have been documented in September of 2010 by Troy University. The natural communities exhibited on the parcel are East Gulf Coastal Plain Wetlands, forested and scrub. There is a large threat of development to the property. The tract has been nominated to Forever Wild. In a recent paper, these results will ultimately determine the quantity of environmental offsets achieved on behalf of the Deepwater Horizon Oil Spill damage assessment. Additional information is attached.

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<th>Trustee Portal</th>
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**Project Information**

- **Project Name**: Gulf of Mexico
- **Project Lead**: Chris Robbins
- **Submitted**: 2144
- **Location**: Gulf states
- **Cost**: $1094

**Project Description**

I propose that low coastal uplands surrounding the Gulf of Mexico be protected now so that 1. Tidal wetlands damaged by the spill but that cannot recover can be recompensed by future wetlands. 2. Tidal wetlands for which mitigation is attempted but fails can likewise be recompensed, and 3. Total tidal wetland area along the Gulf coast is maintained as closed to existing area in the face of subsidence and sea-level rise. Tidal wetlands in the Gulf of Mexico are being lost to subsidence caused in part by oil and gas exploration and development. Additionally, tidal wetlands will probably be lost due to sea-level rise resulting from climate change, for which the consumption of fossil fuels including oil and gas is responsible. Even at present low rates of sea-level rise, substantial coastal landscape evolution is occurring as coastal forests retreat, wetlands migrate up-slope, and open water replaces tidal wetlands. These effects will become more significant as the rate of sea-level rise accelerates. At present, low coastal uplands provide a destination for migrating wetlands but in decades to come these uplands will be developed, deforested, and otherwise unavailable to tidal wetlands. The benefit of protecting such low uplands now is high because developed lands will not be undeveloped for the sake of wetland migration. The economy provides an opportunity to protect low coastal uplands at a considerable savings. I suggest that a planning horizon of 50 years guide the protection of low coastal uplands. Five simple purchases and conservation easements could suffice if the rate of sea-level rise observed by then, or predicted with very high confidence by expert models, are found within the natural adaptive range of tidal wetlands to maintain themselves in place.

**Restoration Types Addressed**

- **Wetland, Coastal, and Nearshore Habitat (Y/N)**: N
- **Oyster Reef (Y/N)**: N
- **Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)**: N
- **Birds (Y / N)**: N
- **Sea Turtles (Y / N)**: N
- **Recreational Use (Y/N)**: N

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Project follows OPA regulations (Y/N)**: N
- **Project meets Trustees' goals (+ / 0 / -)**: -
- **Project is considered for Biological Opinion (Y/N)**: N
- **Project is consistent with pristine water quality and safe use (Y/N)**: N
- **Project benefits coastal fishery resources and services (+ / 0 / -)**: -
- **Project supports existing regional or local conservation plan or restoration effort (Y/N)**: N
- **Project is not already fully funded (Y/N)**: N
- **Project readiness (+ / 0 / -)**: -
- **Project offers opportunities for external funding & collaboration (+ / 0 / -)**: -

**Additional Criteria**

- **Link to Injury: Private recreational fishing survey**
  - **Per descriptive information in documents entitled Aquatic Benthic Habitat Impact Assessment (AHA) for Emergency Restoration of Seagrass Impacts from the Deepwater Horizon Oil Spill (Response) (10 CFR 990.54)**: N
  - **Per descriptive information in documents entitled Aquatic Benthic Habitat Impact Assessment (AHA) for Emergency Restoration of Seagrass Impacts from the Deepwater Horizon Oil Spill (Response) (10 CFR 990.54)**: N
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The FOCAL program serves as a fisheries management and restoration resource for Coastal Alabama (FOCAL) program, a research unit within the Richard C. Shelby Center for Ecosystem Based Fisheries Management at Dauphin Island Sea Lab (DISL). The FOCAL program is funded by ADCNR/MRD and is currently supported by ODA (Interior), Through Hurricane Katrina EDRP funds, however this funding expires in November 2011. Without further funding, we will lose a valuable opportunity to monitor and assess the short- and long-term recovery of our marine resources in the wake of the Deepwater Horizon oil spill. Without further funding, we will lose a valuable opportunity to monitor and assess the short- and long-term recovery of our marine resources in the wake of the Deepwater Horizon oil spill.

Since 2004, the backbone of the FOCAL program is a monthly plankton survey along the Alabama shelf. This survey (and related FOCAL spill assessments) is consistent with criteria identified in the public notice (Y/N) of the proposed action. The Aquatic Weed Harvesters are basically shallow draft (under 12 inches), twin-pontoon (catamaran type) boats are propelled by twin hydraulically driven reversible variable speed paddle wheels. The weeds to be harvested are cut by reciprocating sickle knives (they can cut up to 12 ft wide and to variable depths of 6 ft.), and the weeds then land on and come up open mesh wide conveyors, then load into the vessel’s storage areas, where they can be further accumulated via storage bed conveyors. Once fully loaded, the Harvester can back up to shore areas, where they can be matched up with hydraulic powered cleats to enable the vessel to operate during periods of very shallow tide.

Projected cost systems, thus allowing them to continue to thrive and grow, but without the oil residues on the newly growing vegetation. Aquatic weed harvesting is a known technology and can be accomplished at a reasonable cost. Item 3.2.1 - Description of Proposed Action. The Aquatic Weed Harvesters are basically shallow draft (under 12 inches), twin-pontoon (catamaran type) boats are propelled by twin hydraulically driven reversible variable speed paddle wheels. The weeds to be harvested are cut by reciprocating sickle knives (they can cut up to 12 ft wide and to variable depths of 6 ft.), and the weeds then land on and come up open mesh wide conveyors, then load into the vessel’s storage areas, where they can be further accumulated via storage bed conveyors. Once fully loaded, the Harvester can back up to shore areas, where they can be matched up with hydraulic powered cleats to enable the vessel to operate during periods of very shallow tide.

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| The Development of the Advanced Real Time GNSS and Physical Atmosphere and Ocean Observing System within the Gulf of Mexico | The development of the Advanced Real Time GNSS and Physical Atmosphere and Ocean Observing System within the Gulf of Mexico Conrad Blicher Institute for Surveying and Science Texas A&M University Corpus Christi & Bump: University Corporation for Atmospheric Research Boulder, CO & Center for Space Research University of Texas at Austin Introduction: The ability to observe our environment in real time significantly increases our capacity to anticipate and respond to changing conditions that may increase the risk of injury and property damage. The installation of a network of instrumentation clusters is proposed for the Gulf of Mexico. The primary instrument of each cluster will be a geodetic quality Global Navigation Satellite System (GNSS) receiver. Observations derived from this network will promote research on ocean-atmosphere interactions, hurricane intensity forecasting; sea level and coastal subsidence monitoring; and storm surge modeling. Each of these topics was given high priority in a recent survey of the oil and gas industry operating in the Gulf. It is anticipated that equipment can be deployed on both fixed and floating platforms, significantly improving the observational capability of the region. The deployment of this instrumentation on offshore platforms would allow these research topics to be addressed and combined in a unified measurement system throughout the Gulf region. Advances in GNSS analysis techniques now enable the continuous positioning of mobile instrumentation to be less than a few centimeters. The precision of this measurement can be used for continuous monitoring of sea surface height, tides, and wave motion. The addition of both temperature thermistor strings and underwater acoustic instrumentation provides a link to sea surface temperatures and ocean bathymetry. These same analysis techniques are able to measure the delay of GNSS signals as they pass through the atmosphere. This delay can then be related to atmospheric water vapor. This establishes a link between the sea surface temperatures and the latent heat of the atmosphere that contributes to hurricane intensity changes. The recent environmental disaster following the sinking of the Deepwater Horizon offshore drilling rig has highlighted the need for more ocean observing systems to better measure the physical processes occurring in the Gulf of Mexico. Scientific measurements in this harsh offshore environment are difficult to obtain and cannot be undertaken without access to the large number of offshore platforms owned and operated by the offshore industry. This white paper proposes a partnership between the private offshore industry and the scientific community to collect critical physical data to enhance our knowledge of the atmospheric and oceanographic processes that drive the forces that interrupt our ability to manage the vast economic and natural resources of the Gulf of Mexico. Figure 1: Proposed... | 923 | Dr. Gary Jeffress | Gulf of Mexico | 16000000 | submitted via NMB | Water Quality/Nonpoint Source Pollution (Y/N) | Water, Great Salt, and Fisheries Habitat (Y/N) | Other Reef (Y/N) | Dissolved Oxygen (Y/N) | Project is consistent with criteria spelled out in the public notice (Y/N) | Project benefits coastal communities (Y/N) | Project meets National Park Service (Y/N) | Project meets Fish, Wildlife, and Plants (Y/N) | Project meets Marine Mammals (Y/N) | Project meets Oyster Reef (Y/N) | Project meets Sea Turtles (Y/N) | Project meets Birds (Y/N) | Project meets Federal Lands (Y/N) | Project meets State lands (Y/N) | Project meets Federal/State Waters (Y/N) | Project meets State Water Quality/Nonpoint Source Nutrient Reduction (Y/N) | Project meets Wetland, Coastal, and Nearshore Habitat (Y/N) | Project meets Water Quality/Nonpoint Source Pollution (Y/N) | Project meets Regional Water Quality (Y/N) | Project meets State Water Quality/Nonpoint Source 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Gulf of Mexico (Gulf). Existing GNSS stations used to estimate PW (precipitable water vapor) are shown in black and red. A collaborative research group, consisting of academic and governmental researchers, has expressed interest in the establishment of this Gulf network. The members of the group have diverse expertise and research interests, ensuring that there would be broad application of these data if available. Scientific Applications: A report by the American Geophysical Union (AGU) after the 2005 hurricane season summarized some of the fundamental research and observational capability that is relevant to the Gulf. Topics that were addressed in this report include hurricane intensity forecasting, storm surge modeling, and subsidence monitoring. A short synopsis is provided on how each of these topics would benefit from this network. Atmospheric interactions and hurricane intensity forecasting: GNSS observations can be analyzed to provide integrated precipitable water vapor (PW) estimates in the atmosphere. These measurements provide continuous monitoring of atmospheric PW and are insensitive to rain and clouds. PW estimates are now routinely being used at NOAA to improve precipitation forecasts in the continental U.S. Estimates of PW within the Gulf would provide a strong link between ocean temperatures and atmospheric water vapor. An illustration of this is shown in Figure 2 for data collected on the island of St. Maarten in the Caribbean. This figure shows the PW estimates obtained from a GNSS station on the island and the sea surface temperature (SST) around the island. It is clear from this comparison that the two fields are highly correlated. This implies that the local SST in the region has a significant influence on the total column water vapor, not just surface humidity just above the surface. Figure 2: Time series of daily PW values (blue) and sea surface temperature (red) for the region around St. Maarten. Assimilation studies for two specific hurricanes, Dean in 2007 and Gustav in 2008, have been extensively studied. Both show a positive impact of the PW data if available. Scientific Applications: A report by the American Geophysical Union (AGU) after the 2005 hurricane season summarized some of the fundamental research and observational capability that is relevant to the Gulf. Topics that were addressed in this report include hurricane intensity forecasting, storm surge modeling, and subsidence monitoring. A short synopsis is provided on how each of these topics would benefit from this network. Atmospheric interactions and hurricane intensity forecasting: GNSS observations can be analyzed to provide integrated precipitable water vapor (PW) estimates in the atmosphere. 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Artificial Neural Networks (ANN) and Statistical techniques are presently developed to take advantage of the flow of real-time data. Models based on Artificial Neural Networks (ANN) and Statistical techniques are presently implemented to provide predictions of water levels [Tissot, 2005] as well as other parameters such as water temperature. Background on ANN Modeling and Hind-casting. The concept of artificial neural networks (ANN) emerged in the late eighties with the advent of powerful computing. The late eighties of efficient training techniques scientists aimed at emulating the functioning of the brain. After the development in the late eighties of efficient training techniques ANNs have become powerful modeling tools especially for non-linear systems. The other main advantages and characteristics of ANNs for this application are their generic modeling capacity, their ability to deal with high dimensional data, their robustness to noisy data, and their ability to deal with large datasets. The range of ANN applications span a growing number of fields including transportation, environmental monitoring and weather forecasting: The concept of artificial neural networks (ANN) emerged in the sixties as a result of the work of McCulloch & Pitts, etc. [Minsky, 1969; Rosenblatt, 1958], and the work of the famous NASA scientist and engineer Hebb [Hebb, 1949, 1957]. At the beginning of the sevenies, the work of Rumelhart & McClelland and their colleagues [Rumelhart & McClelland, 1986] on backpropagation and the work of Linsker on self-organizing maps [Linsker, 1988; Hinton & Sejnowski, 1986] introduced the field of connectionist systems and as a consequence the field of neural networks. These advances were followed by the development of effective learning algorithms, and by the increasing computing power of personal computers. As a result, the application of artificial neural networks to a wide range of problems has increased significantly in the past few years. In this paper, we describe the application of ANN to the forecasting of water levels. Water levels are an important parameter for many environmental and engineering applications. The operation and management of the network is entirely based on the World Wide Web, at http://lighthouse.tamucc.edu/, and through dedicated phone lines Modems depending on the station location. The data is accessed through the World Wide Web, at http://lighthouse.tamucc.edu/, and through dedicated phone lines. The operation and management of the network is entirely based on the World Wide Web. The underlying software has been developed in real-time or near-real time the following time series: water levels, wind speeds, wind directions, barometric pressures, water and air temperatures, dissolved oxygen, salinity, water currents and wave climates depending on the station. Data transfers are completed via Freewave packet radio, GOES satellite communications, and Internet Protocol Modems depending on the station location. The data is accessed through the World Wide Web, at http://lighthouse.tamucc.edu/, and through dedicated phone lines. The operation and management of the network is entirely based on the World Wide Web. A storm surge forecast, as indicated below, for Hurricane Gustav in 2008. It should be emphasized that all aspects of the operation of this network including instrumentation, measurement procedures, maintenance, and data management follow NOS equipment and instrumentation, data quality control, maintenance and operation procedures, and standards. Principal investigator, Dr. Gary Jeannot, is the director of the TAMECC unit overseeing all aspects of the network operations. Other project participants manage the operation of the network as an design and implement associated predictive and real-time applications.
Examine the possibility of a class action civil law suit against British Petroleum.

Restoring critical habitats in the Gulf of Mexico Marine Protected Area Network

In April 2011, the Rookery Bay National Estuarine Research Reserve (RBNERR) hosted a two-day workshop in Naples, Florida, with funding support from NOAA’s Marine Protected Area (MPA) Center, that brought representatives from four key agencies managing MPAs in the Gulf together to discuss collaborative efforts. NOAA’s NERRs and NMS, and DOI’s MPA and NHPs were represented. Outcomes of the workshop included a commitment from the Gulf MPA partners to work together to build a framework for regional response to catastrophic events such as the Deepwater Horizon spill, share information and technology relating to climate science, and to seek regional opportunities to advance common stewardship goals of MPAs such as habitat restoration. A regional approach to restoring critical marine and coastal habitats within the Gulf of Mexico MPA Network has significant benefits: Gulf MPAs already have long-term monitoring and GIS capabilities that can effectively track changing environmental conditions correlating with restoration success, such as water quality. Gulf MPAs have on-the-ground programs in place designed to provide protection and increase awareness of the need to conserve resources, such as law enforcement, education, outreach and training, visitor use management, and active community-based volunteer programs. Gulf MPAs have a diverse range of critical marine and coastal habitats within their designated boundaries (e.g. coral reefs, seagrasses, oyster reefs, mangroves, saltmarshes) including offshore submerged resources, that link directly to the life cycles and migratory patterns observed in economically important marine species including various species of sportfish, shrimp, and crabs. Envisioned is a three-year regional collaborative restoration project that builds on the strengths of the newly established Gulf of Mexico MPA Network noted above. RBNERR, with support from NOAA, is currently working on developing the initial framework and communications/training support for the Gulf Network. The proposed regional habitat restoration project would have three components: [1] Year I: Gulf MPAs will work collaboratively within the Network to identify high priority habitats suitable for restoration that meet criteria for regional linkages, and develop a regional scope of work for restoring habitats within 8 - 10 MPAs. [2] Year II: Gulf MPAs initiate site restoration projects, continue monitoring efforts, and conduct targeted outreach to raise awareness of value of restored Gulf habitats.

Enhancements to marine charter for offshore fishing

Make enhancements to the charter for hire offshore fishing effort survey for improving fisheries management. Link to Injury: Members of the public who hire charter boats to fish offshore lost access to a considerable portion of federal and state waters in the northern Gulf of Mexico that were closed to fishing during the BP oil disaster. Charter boats provide access to offshore fishery resources for members.

Project Name

Trustee Portal

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of the public who do not own vessels themselves, benefit and rationalize. A telephone survey is the primary method used by fishery managers to collect charter for-hire fishing effort, which helps track quota usage. Making enhancements to the survey, such as increasing frequency and sample size, would result in more effective monitoring of fishing effort, improved management and possibly longer fishing seasons. Better data from enhanced telephone surveys would help fishery managers be more responsive and adaptive in their management of fishery species exposed to oil. Other: This project could be compensatory in nature if a reduction in fishing that anglers experienced in 2010 due to oil-related fishery closures is offset in the future by extending fishing seasons made possible through better (more accurate and precise) data on fishing effort. For example, an enhanced charter for-hire telephone survey in summer 2010 increased the precision of catch and effort estimates that allowed, in part, the red snapper fishery to reopen in the fall of 2010 after a summer closure.

Mechanically Produced Thermocline (Hurricane Barrier)

The Gulf of Mexico is expected to be Oxygen depleted for the next ten years due to the accelerated bacterial activity feeding on the oil in the deep. We propose a system to oxygenate the surface waters and increasing the available food at the bottom of the food chain by promoting phytoplankton growth. The Mechanically Produced Thermocline Based Ocean Temperature Regulatory System is a system to pump cold water from a depth sufficient enough to produce a thermocline on the surface of the ocean. The difference in temperature and salinity between the surface water and the water pumped up from the deep keeps the two from mixing. The temperature and salinity differences between the water from a depth of 2000 ft to 3000 ft and the water on the surface in most tropical and subtropical seas is sufficient to create a thermocline. The system to create the thermocline consists of a floating pump surrounded by a separation barrier, with a feed tube attached to the bottom of the pump. The pump in the system that we have designed is powered to an impeller. The impeller pumps water from the top of the column of water in the feed tube. The feed tube is open at the bottom. The water that is replacing the water that is being pumped is coming up from depths up to 2000-3000 ft. The water that is pumped off of the top of the column of water overflows the pump and is caught by the separation barrier. The feed tube is a flexible membrane that is seamed into the shape of a tube which is open on each side. The feed tube is suspended from the bottom of the pump and hangs down into the deep water. The feed tube is kept open with rings which are attached to the inside of the tube at regular intervals. The tube is hung in a vertical position by lines which are attached to the bottom of the pump, hung down the length of the tube, inside the tube, and are attached to a weighted ring, which is attached to the bottom of the feed tube. The separation barrier is a flexible membrane attached to the perimeter of the pump, above the level of the turbines. The separation barrier extends out to an inflated ring, to which it is attached. The separation barrier catches the water that is pumped up. The separation barrier prevents mixing of the pumped up water and the water below it. The barrier allows the water to flow out.
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<td>Building a better Gulf Floor</td>
<td>Tom Steber</td>
<td>The bull fish habitat of the Alabama Gulf Coast 1. To deploy 12 40’ x 60’ x 25’ reef spots of Florida Limestone in the north end of the Alabama reef zone (EZ2) 2. To deploy 80 Ecosystems in 30’ of water, from the Florida State line and the Gulf State park pier (in the newly permitted reef zone, inside 3 miles of Alabama shore) 3. To deploy 200 Ecosystems just outside Mobile Bay for juvenile fish (Habitat would provide safety and food until juvenile were large enough to move into offshore reefs) 4. To deploy 80 Ecosystems in Terry Cove to improve water quality, provide estuary, reduce damage from boat wakes. 5. To deploy 80 Ecosystems in Terry Cove to improve water quality, provide estuary, reduce damage from boat wakes.</td>
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<td>Andrew Benton Tract- Protection and Restoration of Coastal Alabama - A Coastal Resource Recovery Land Acquisition Project</td>
<td>Walter Ernest Smock</td>
<td>This project is a fee simple resource recovery land acquisition project. The acquisition of properties with a high conservation value has been identified by the Mabou Report and the Land Trust Alliance’s Gulf of Mexico Land Trust which are members of the Partnership for Gulf Coast Land Conservation. The 407 acre Andrew Benton Estate Tract is within the Weeks Bay Coastal Area as delineated in the Weeks Bay Reserve Management Plan as established under the Coastal Zone Act of 1972: “Within the Weeks Bay Coastal Area the highest priority exists for land acquisition and for resource protection activities.” The Weeks Bay Coastal Area has been designated as a Geographic Area of Particular Concern (GARC) in the Alabama Coastal Area Management Plan (ACAMP). The parcel is recognized as a Gulf Ecological Management Site (Gulf of Mexico Program). This Tract is ranked the second most favorable site in Baldwin County for potential restoration according to the criteria described in the Alabama Wetlands Program (Alabama Department of Conservation and Natural Resources, State Lands Division, Natural Heritage Program). The tract consists of 2,750 feet of water frontage on Bon Secour Bay. In a second paper, these environments were estimated to be ten times more valuable to humans than any terrestrial habitat for ecosystem services like recreation and nutrient cycling (2000, Identification of Priority Sites for Conservation in the Northern Gulf of Mexico: An Ecological Plan, TNC). According to the National Wetlands Priority Conservation Plan (USFWS) the tract incorporates three nationally decreasing Palaearctic wetland types: emergent, forested and scrub-shrub. The Southeast Regional Wetland Concept Plan (USFWS) notes that up to 50% of Alabama’s historical wetlands have been lost primarily due to development. Acquisition of the Benton Tract would further protect a wide diversity of microhabitats that serve the dual purpose of enhancing breeding habitat for smooth over the surface of the water as the pumped up water overflows the inflated ring. The thermocline is beneficial in many ways. The mass of cold water promotes phytoplankton growth, increasing food for fish. The increased growth of phytoplankton sequesters CO₂ which can then be consumed by zooplankton in the form of carbohydrates. The zooplankton sequesters the carbohydrates into calcium carbonates and calcium bicarbonates. The calcium carbonates and bicarbonates sink and are sequestered at the depths of the ocean, potentially for thousands of years. A larger scale thermocline can be created by the use of multiple pumps in strategic groupings. These large-scale created thermoclines can be positioned to work as a cold water barrier to hurricanes and tropical storms.</td>
<td>Trustee Portal</td>
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Blue Crab Trap Removal

1058 Nancy Wallace coastal Gulf of Mexico 1500000

Crab traps are a significant problem in the Gulf of Mexico, having negative impacts on habitat and species. Derelict gear such as blue crab traps can cause a number of problems since throughout the Gulf of Mexico, more than 250,000 traps are thought to be added to the derelict population each year (Guillory 2001). The most significant impact of the traps is their ability to attract and kill a variety of species, in a process referred to as ghost fishing. Crabs can also damage habitat, interact with threatened and protected species, and introduce debris into the food web. They also hinder commercial operations such as shrimp fishing and can result in damage to boats and injuries to people. Derelict gear can persist for decades once it is lost. These traps can be physically removed during winter months due to the shallow water depths at that time of year. This is a "shovel-ready" project that would involve both state partners as well as local fishery management groups to conduct the removal. Based on estimated annual trap losses, including increased loss rates due to hurricanes and storms, it is estimated that this project could retrieve 500,000 derelict crab pots if fully funded. States have derelict trap programs that are coordinated closely with the Regional Fishery Management Councils. The number of derelict traps in the Gulf of Mexico is currently unknown. There are, however, some annual estimates of trap disposal and overall trap loss; the latter also includes trap loss due to theft. Estimates of annual trap loss on a percentage basis for each Gulf state range widely: 30%-50% in Florida; 20%-50% in Alabama; 20%-30% in Mississippi; and up to 100% in Louisiana (Guillory 2001). Rolling fishery closures, coordinated closely with the most appropriate agency in each state, will allow for the physical collection of derelict or lost blue crab traps. States independently manage their own existing trap removal efforts, and this restoration project will have strong educational and outreach. Traps will be removed from the coastal environment, and recycled to avoid waste contribution to landfills. Local fishery and personnel will be consulted to determine the regions most in need of cleanup.

Fairhope Beach Shoreline Enhancement & Wildlife Habitats Project

1010 Jennifer Field Fairhope 420000

2. From American Legion Past North to Fair Street beach area beach re-nourishment and shoreline enhancement.
3. South Beach and North Beach Front Parks, beach re-nourishment and shoreline enhancement. A beach line will be created directly in front of South Beach front park. The North and South ends of the rock wall will be a living oyster reef, for the purposes of enhancing the growth of shellfish and providing fish with shellground for habitat. This living reef will also serve as a wave attenuating mechanism providing protection for existing structures and sandy shorelines. Educational signage will be installed throughout.

Trustee Portal

N N Y N N N N
Stormwater Infrastructure. Computer software and one, four-month internship for data entry. Computer software specialized for mapping stormwater infrastructure within the city watershed areas. Areas affected are city wide with a direct impact on water quality in the bay. A college intern will be hired for data entry over a four month period. 4. Repair detention pipe at Morphy Avenue (Wren Diew) site. The detention area located along Morphy Avenue is in disrepair. The repair of the outflow structure would allow additional detention and improve storm water quality downstream.

### Project Information

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Visitors Center at Bon Secour National Wildlife Refuge</td>
<td>The explosion of the Deepwater Horizon and subsequent events of 2010 clearly resulted in loss of human use of the natural resources of Alabama's Gulf Coast, including the closure of many parts of the Bon Secour National Wildlife Refuge. The primary indicator of the level of human use in this region is tourism revenue. In 2009, 4.6 million people visited Baldwin County, spending more than $2.3 billion dollars. The 2009 Visitor Profile Study conducted for Gulf Shores &amp; Orange Beach Tourism shows that more than 105,000 visitors reported visiting the refuge during their stay. Visitors report coming to the area for both active and passive recreational uses, including activities such as relaxing on the beach, fishing, boating and birding. The most influential factors in determining their decision to visit Alabama’s Gulf Coast include “white sandy beaches”, “safe destination”, and a “clean, unspoiled environment”. As a result of the Deepwater Horizon disaster, those factors were no longer perceived to be descriptive of the area and in fact, were at significant risk. The result was a massive decline in human use by tourists as well as area residents. As a result, in addition to the damage to the animals and natural habitats that are of primary concern to the Refuge System, the incident took a toll away the cultural, recreational and aesthetic values of the coastal environment as well. Use of the trails and beaches of the refuge was critically impacted resulting in near total loss of use. Because of this decrease in human use, Baldwin County experienced the most significant economic impact from the disaster of any on the Gulf and its coastal cities saw losses of $64,278,920 in lodging revenue alone. Total tourism losses and subsequent decrease in local, county and state revenues is estimated to be in excess of a billion dollars. For many years the Friends of Bon Secour National Wildlife Refuge (FBSNWR) have been lobbying the Fish &amp; Wildlife Service (FWS) to build a Visitors Education Center at the refuge. The building of such a center has the active support of Gulf Shores &amp; Orange Beach Tourism as well as all neighboring cities, chambers of commerce, the citizens of Baldwin County, and the multitude of visitors who visited the refuge. The FBSNWR, recognizing that a large number of tourists, local residents and particularly school students have little or no understanding of the underlying importance of a refuge, what types of wildlife and habitats it contains, envision the center as a means to provide an educational experience as well as to pique the interest of even more visitors. The center would not only provide visitors a place to learn more but also a place where groups of students can come on field days and have initial classroom instruction, then actually go out into the field. We believe such opportunities are the foundation for stewardship of the natural resources by future generations. Visitor Centers are becoming a significant part of the worth of the Refuge System, but with the current...</td>
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<td>Project Name</td>
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<tr>
<td>Three Mile Creek Repair/Maintenance</td>
<td>943</td>
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<tr>
<td>Informed Restoration: Assessing the uptake of Deepwater Horizon-derived heavy metals and organic contaminants</td>
<td>921</td>
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</table>
commercially important species Crassostrea virginica, since May 2010. Other species include the mussels Geukensia demissa and marsh periwinkle (small) Littoraria irrorata. Monitoring has consisted of examination of both the shells and soft tissues of specimens collected from May through August 2010, searching for reliable indicators of exposure to and incorporation of crude oil components, namely specific heavy metals such as vanadium, lead, nickel and chromium, and particular organic polycyclic aromatic hydrocarbons (PAHs). We have compared specimens of C. virginica collected in Louisiana and Alabama prior to landfall of the spill and those that were exposed during the entire spill interval, as well as specimens collected outside of direct spill impact in Florida, and outside of the GOM from off the southeastern United States. Additionally, we are examining the shells of specimens collected in the GOM from the period 1880-2000 to establish baseline levels of contamination unrelated to the Deepwater Horizon spill. We propose that any restoration efforts of the coastal ecosystem of the GOM will be aided greatly by detailed understanding of the less visible impacts of the spill and the potential for long-term effects of the spill. Our specific research goals are: 1. Determine which crude oil components, both metallic and organic, are being incorporated into shells and tissues of the three species. We will also examine soft tissues histologically to determine whether exposure to crude-oil induces tissue pathologies. 2. Model the potential distribution of these components into the broader GOM food web by examining predators of these species as well as data on predation intensity and interaction strengths. This goal will be used as a tool for further prediction of potential long-term bioaccumulation in higher trophic level marine species, including commercially important crustaceans and fish. To-date we have completed analyses of specimens of C. virginica collected in the 20th century, and May and August 2010. We have confirmed, using inductively coupled laser mass spectrometry, that specimens collected in August, 2010, after exposure to the spill, have significantly higher concentrations of vanadium, lead and chromium in their shells. Furthermore, examination of soft tissues shows that vanadium, lead and nickel are present in significantly higher concentrations in gills and muscle tissues of August 2010 specimens. We therefore propose to continue and extend this work by: 1. Conducting similar work with additional 20th century and 2010 specimens of C. virginica to test current results. 2. Extending these analyses to include PAHs (using gas chromatographic mass spectrometry) and histological analyses of the soft tissues. 3. Expand the work to include other molluscan species for which we have relevant collections, namely G. demissa and L. irrorata. 4. Continue the collection and monitoring of these three species for the next two years. This extended monitoring will allow us to cover at least three reproductive cycles for each species, and determine if there is a decline in the rates at which contaminants are being incorporated. Furthermore, we will be able to coordinate our efforts with those of other groups, working on different species in other parts of the GOM food webs.

Dauphin Island Eco-Tourism & Environment Education Area

80000000

The project is located on the north side of Dauphin Island from Eskerdos Street south to near the Alabama Deep Sea Fishing Rodeo site and east of LeMoyne Drive (Hwy 193-S). Estimated Cost: $3 million [requested from this program] Goals and Objectives of the Project: The primary goal is to acquire a total of one hundred

<table>
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<tr>
<th>Project Name</th>
<th>Project Description</th>
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<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDAAP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<th>Location</th>
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<td>Dauphin Island Eco-Tourism &amp; Environment Education Area</td>
<td>80000000</td>
<td>Jeff Collier</td>
<td>Dauphin Island</td>
<td>$3,000,000</td>
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The Black Belt Prairie (BBP) is a crescent-shaped region that stretches from Yazoo County to the eastern border between Alabama and Mississippi. The fine textured soils of this prairie were derived from calcareous clays and silt. The “blackness” of the soil as described by early explorers and writers is a result of humus of the grassland that forms dark colored thickenets. W. Roberts, writing in the Emigrant’s Guide in 1818, described the prairie as “expansive grassy plains” and “rolling prairie with scattered pine and crabapple thickets”. Early explorers to the Blackland Prairie (BLP) Region described them as “expansive illuminates gray plains” and “rolling prairie with scattered pine and crabapple thickets”. W. Roberts, writing in the Emigrant’s Guide in 1818, described the prairie as “expansive grassy plains, of a level, or gently waving land, with skirts of rich interval wood land; and exhibiting, in the month of May, rich cast, and has the appearance of great fertility. Early settlers also noted the “blackness” of the soil and its great fertility. There are two main areas that make up the BLP. The largest of the Blackland Prairies, as well as the most southeastern of the tall prairie type, is the Black Belt Prairie (BBP). The BBP is a crescent-shaped region that covers some 14,141 square km and extends some 500 km from McNairy County Tennessee, south across east-central Mississippi and east to Russell County Alabama. Development of the Black Belt was chiefly from chalk, a soft limestone, with small interbeds of clay and silt. The “blackness” of the soil as described by early explorers and writers is a result of humus of the grassland that forms dark colored topsoil. The second area of the BLP is the Jackson or Central Prairie. The Jackson Development of the Black Belt was chiefly from chalk, a soft limestone, with small interbeds of clay and silt. The “blackness” of the soil as described by early explorers and writers is a result of humus of the grassland that forms dark colored topsoil. The second area of the BLP is the Jackson or Central Prairie. The Jackson
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- **Project Description:**
  - Trees and shrubs that traverse the BBP. Restoration grazing and the exclusion of fire have also allowed the expansion of Eastern Red Cedar (Juniperus virginiana) and other noxious species. The Conservation Reserve Program has allowed much acreage to be converted to loblolly pine production. Today, the BLP has been listed as one of the critically endangered ecosystems in the nation with less than one percent of the prairie still remaining, making it the most degraded habitat type in the country. By restoring quality native grassland habitats, the project partners hope to increase and improve habitat for grassland songbirds, pollinator insects, and other terrestrial and aquatic wildlife. The project partners hope to restore/rehab 10,000 acres of native grassland within the BBP region of Mississippi and Alabama. Infrastructure is already in place to establish native grass, forb, and legume communities in Mississippi and Alabama. A bird-monitoring plan, modeled after the CRP CP38 monitoring plan, will be implemented to measure bird response to restoration practices. Butterfly communities will also be monitored in restored fields and both bird and butterfly populations will be monitored for at least 3 years after fields have been restored. Many species will benefit from the restoration of native grassland habitat and the subsequent reduction in non-point source pollution. Some of the species that would benefit include the Bower's Wren, Northern Bobwhite, Barrens Foxglove, Price's Potato Bean, Spreading Rockcress, Canada Wild Ginger, White Pigtoe, Ovate Clubshell, Heavy Pigtoe, Inflated Heelsplitter, and Tapered Pondhorn. The Natural Heritage Program (NHP) at the Mississippi Museum of Natural Science has listed many endangered and declining species that would benefit by this project. Those species include Ohio Buckeye, Earleaf False Foxglove, Shenken's False Foxglove, Green False Foxglove, Pigtoe's Potato Bean, Spreading Rockcress, Canada Wild Ginger, White Pigtoe, Ovate Clubshell, Heavy Pigtoe, Inflated Heelsplitter, and Tapered Pondhorn. The U.S Fish and Wildlife Service (USFWS) has listed many endangered and declining species that would benefit from the restoration of native grassland habitats.

### Restoration Types Addressed

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<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
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<td>Project is consistent with public interest in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
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### Additional Criteria

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<tr>
<th>Sustainability/Long-term Benefit of Project (+ / 0 / -)</th>
<th>Project Offers Opportunities for External Funding &amp; Collaboration (+ / 0 / -)</th>
<th>Project is Time Critical (+ / 0 / -)</th>
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<tbody>
<tr>
<td>Project supports existing regional or local conservation plan (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
</tr>
<tr>
<td>Project complies with applicable laws and regulations (Y/N)</td>
<td>Project delivers benefits cost-effectively (+ / 0 / -)</td>
<td>The effect of the project alternative on public health and safety (+ / 0 / -)</td>
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<td>Project meets Trustees' goals (+ / 0 / -)</td>
<td>Project Prevents Future and Collateral Injury to Natural Resources and Services (+ / 0 / -)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
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<td>Project has reasonable probability of success (+ / 0 / -)</td>
<td>The effect of the project alternative on public health and safety (+ / 0 / -)</td>
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<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>The effect of the project alternative on public health and safety (+ / 0 / -)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
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<td>Project is considerate of strategic frameworks (Y/N/NA)</td>
<td>The effect of the project alternative on public health and safety (+ / 0 / -)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
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<td>100.1000: Restore Coastal Alabama</td>
<td>B88</td>
<td>Mark Spalding</td>
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<td>Restoration and protection: Marsh Island, AL</td>
<td>B07</td>
<td>Mel Landry</td>
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<td>Restoration and protection: Swift Tract Weeks Bay NERR, AL</td>
<td>E27</td>
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<td>Buttahatchie River Restoration Project</td>
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<td>James L. Cummins</td>
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## Project Information

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| European settlement | | | | significant and at-risk in North America. Many aquatic species are endemic to a single river system and its tributaries. Thus, conservation of aquatic biodiversity in the Southeastern Plains requires conservation of most of the river systems. The restoration and perpetual protection of lands within the BRPA will benefit a myriad of terrestrial and aquatic species found within the Buttahatchie River Watershed that are listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS). Those aquatic species listed as threatened or endangered include the southern combshell (Episulceramapensia), orange-nose mucket (Lampsilisperovalis), black clubshell (Pleurobemacurtum), Southern clubshell (Pleurobema decipiens), and the orange clubshell (Pleurobema obtusum). The Natural Heritage Program at the Mississippi Museum of Natural Science has listed other aquatic species as critically imperiled and/or of special concern in the area that would also benefit from the restoration and protection of the BRPA. They include the Southern hiskonum (Obovaria jacksoniana), tapered pondmollusk (Unioresesiuckiana), flat floater (Pteroniphias dipintias), pocketbook (Arcidens confragosus), crystal darter (Crystallaria asprella), Alabama shiner (Cyprinella callistia), black clubshell (Epioblasma curta), Tombigbee rivulet crayfish (Hoblobaxus suturalis), juvenile shiner (Notropis owensii), freckled darter (Percina lucida), black-knobbed map turtle (Graptemys pseudogeographica), and the Southern combshell (Epioblasma curta). The Buttahatchie River Watershed is part of the larger Tombigbee River Drainage. Consequently, the Tombigbee and all of its tributaries are a part of the greater Mobile River Basin (MRB). In the Recovery Plan for Mobile River Basin Aquatic Ecosystem (RPMRAE) (U.S. Fish and Wildlife Service 2000), Mobile River Basin Aquatic Ecosystem Recovery Plan. Atlanta, Georgia) which was compiled by the USFWS, the MRB is described as: “… significant for its size, location, and its exceptional diversity of natural habitats. The Basin includes seven major river systems draining portions of ten physiographic provinces and subdivisions in four states, and forming the largest Gulf Coast drainage system east of the Mississippi River. &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbs...
**Project Description**

In an extinction event unparalleled in the history of the United States, many of these endemic mussels and snails have disappeared within the past few decades &nbsp;The restoration and perpetual protection of lands within the Buttahatchie River Watershed (BRRPA) will contribute to species and ecosystem restoration goals established by Mississippi’s Forest Legacy Program (Mississippi Forestry Commission. 2007). Mississippi/Mississippi’s Comprehensive Wildlife Conservation Strategy. Mississippi Department of Wildlife, Fisheries and Parks, Mississippi Museum of Natural Science, Jackson, Mississippi), the RPMRBAE and Mississippi’s Forest Legacy Program (Mississippi Forestry Commission. 2007 Mississippi/Mississippi’s Forest Legacy Program. Jackson, MS). One of the overall goals of Wildlife Mississippi and its project partners is to help restore and protect the Buttahatchie River Watershed from conversion and development. On the Southern end of the Buttahatchie River, numerous gravel mines have severely altered the natural flow of the river and have severely degraded the habitat for many terrestrial and aquatic species. Working with the U.S. Army Corps of Engineers, Mobile District, Regulatory Division and other state and federal agencies, Wildlife Mississippi hopes to protect one of the most ecologically significant river systems in the Southeast from such continued conversion. Approximately 60% or 3,048.60 acres that are targeted for acquisition under this project will need some type of restoration/enhancement work. Restoration activities will include, but are not limited to, removal of pine plantations and replanting of sites back to native bottomland hardwood species, stabilization of stream banks to prevent/stop bank erosion, restoration of riparian buffers along streams and replacement and/or removal of stream crossings. Enhancement activities will include, but are not limited to, supplemental planting of bottomland hardwood sites and riparian buffers that have inadequate stem counts and/or species composition. All lands acquired through this project will be perpetually protected with a conservation easement through the Mississippi Land Trust. Approximately 5,081 acres have been identified for acquisition for this project. These lands are owned by landowners who at the date of submittal of this proposal have expressed some willingness to sell their lands. To date, Wildlife Mississippi has purchased approximately 7,000 acres along the Buttahatchie River in Mississippi and Alabama. All lands purchased by Wildlife Mississippi will be/have been restored back to bottomland hardwoods and perpetually protected with a conservation easement with the Mississippi Land Trust. Wildlife Mississippi plans to purchase an additional 1,804 +/- acres over the next few years for this project. If awarded funding through this program, Wildlife Mississippi and its project partners will be able to purchase, restore/enhance and protect over 40 miles of the Buttahatchie River making this one of the largest and most ambitious wetland restoration projects in the country! Wildlife Mississippi will assume all responsibility (financial and other) for the long-term maintenance, monitoring and management of the project lands. A Long-term Stewardship Board will be created and will ultimately be responsible for the long-term maintenance and monitoring of the project lands and will have oversight over all long-term maintenance and monitoring activities to be conducted on the sites. Because of the nature of bottomland hardwood management, little management is anticipated.
The Gulf State Park Convention Center mission is to market the Alabama Gulf Coast as a destination, thus enhancing the area’s economy and quality of life for all residents. Each year our local tourism industry contributes more than 25 percent of the lodging revenues generated state-wide. The explosion of the Deepwater Horizon and subsequent events of 2010 clearly demonstrated that the survival of the Alabama Gulf Coast business community and the quality of life of its residents are reliant upon the health of its environment and the availability of that environment for human uses. The primary indicator of the level of human use in this region is tourism revenues. In 2009, 4.6 million people visited the Baldwin County, spending more than $2.3 billion dollars.* Ongoing Visitor Profile Studies** show that visitors come for both active and passive recreational uses, including activities such as relaxing on the beach, fishing, boating and birding. The most influential factors in determining their decision to visit Alabama’s Gulf Coast include 'white sandy beaches,' 'safe destination,' and a 'positive perception of beach conditions.'

As a result of the Deepwater Horizon disaster, these factors were no longer perceived to be descriptive of the area and in fact, were at significant risk. The result was a massive decline in human use by tourists as well as area residents. For those residents, the incident not only took away the cultural, recreational and aesthetic values of the coastal environment, it also took away the economic support that environment provides for their businesses and their communities. Because of this decrease in human use, Baldwin County experienced the most significant economic impact from the disaster of any on the Gulf and its coastal cities saw losses of $64,278,920 in lodging revenue alone.

However, the following activities will be required as perpetual management measures:§ and erosion control; and §, . As the result of the Deepwater Horizon disaster, these factors were no longer perceived to be descriptive of the area and in fact, were at significant risk. The result was a massive decline in human use by tourists as well as area residents. For those residents, the incident not only took away the cultural, recreational and aesthetic values of the coastal environment, it also took away the economic support that environment provides for their businesses and their communities. Because of this decrease in human use, Baldwin County experienced the most significant economic impact from the disaster of any on the Gulf and its coastal cities saw losses of $64,278,920 in lodging revenue alone. Total tourism losses and subsequent decrease in local, county and state revenues is estimated to be in excess of a billion dollars. The Gulf State Park was at the center of the crisis, with its accommodations, beaches, boating amenities and waters left vacant. Some of those included new modifications to the campground such as new swimming pool and camp store. These amenities were underused during the inaugural summer. The development of a convention center will be an effective and appropriate venture to offer increased access to the state’s beaches, wildlife and waters in order to mitigate the injury created by the Deepwater Horizon disaster. It has been estimated that such a facility will generate tens of millions of dollars a year for the Alabama Gulf Coast economy, producing millions each year in tax collections for schools, roads and other vital services as well as generating thousands of new jobs. Unlike the predominantly leisure tourism market the area is currently dependent upon, the new facility would attract convention and meeting markets. This would allow for additional access by these delegates on several levels. First, the facility itself will significantly increase the number and size of groups that the area can accommodate. Currently many Alabama-based associations and other groups are meeting at out of state beach destinations because they cannot be accommodated. Additionally, these groups will add more stability to the

### Project Information

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<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Principal Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Gulf State Park Convention Center</td>
<td>863</td>
<td>Herbert J. Malone, Jr.</td>
<td>GSP</td>
<td>Project Description</td>
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### Project Description

The Alabama Gulf Coast Convention and Visitor Bureau’s (dba: Gulf Shores & Orange Beach Tourism) mission is to market the Alabama Gulf Coast as a destination, thus enhancing the area’s economy and quality of life for all residents. Each year our local tourism industry contributes more than 25 percent of the lodging revenues generated state-wide. The explosion of the Deepwater Horizon and subsequent events of 2010 clearly demonstrated that the survival of the Alabama Gulf Coast business community and the quality of life of its residents are reliant upon the health of its environment and the availability of that environment for human uses. The primary indicator of the level of human use in this region is tourism revenues. In 2009, 4.6 million people visited the Baldwin County, spending more than $2.3 billion dollars.* Ongoing Visitor Profile Studies** show that visitors come for both active and passive recreational uses, including activities such as relaxing on the beach, fishing, boating and birding. The most influential factors in determining their decision to visit Alabama’s Gulf Coast include 'white sandy beaches,' 'safe destination,' and a 'positive perception of beach conditions.'

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<tr>
<th>Project Name</th>
<th>Lead Trustee</th>
<th>Project Description</th>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callaway Land Acquisition</td>
<td>Brandan Franklin</td>
<td>Purchase approximately 65 acres of land located along Little Lagoon and Oyster Bay. There is approximately 900 feet of shoreline located along Little Lagoon and approximately 350 feet of shoreline along Oyster Bay. This land has approximately 60 acres of uplands and 20 acres of wetlands. The shorelines can be utilized as restoration projects to enhance the environmental and ecological resources for the area. The wetlands can be preserved to help water quality for both Little Lagoon and Oyster Bay.</td>
<td>805</td>
<td>Baldwin County</td>
<td>48000.00</td>
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<td>Dog River Scenic Blueway: Push-in/Take-out Canoe/Kayak Launch Site</td>
<td>Bi Smith</td>
<td>Dog River Scenic Blueway: Promoting habitat revitalization through outdoor recreation while growing the economic resilience of the entire Dog River Watershed through nature-based tourism. Develop 10 kayak/canoe access points to the Dog River and its tributaries. Along with river signage and promotional pieces.</td>
<td>9054</td>
<td>Mobile County</td>
<td>41800.00</td>
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<tr>
<td>Fairhope Public Beach's Water Quality Treatment</td>
<td>Jennifer Fiddler</td>
<td>The City of Fairhope owns a public beach and park along the Eastern shore of Mobile Bay. This park includes water front property, a bluff, and park property that is elevated approximately 100 feet above the Bay. All stormwater in the approximately 56 acre watershed drains to Mobile Bay. This drainage area receives stormwater from the existing duck pond, N. Bayview Park where many animals are walked, and an existing residential neighborhood. All of these factors work together to impair water quality at the park swimming beach. The project includes the relocation of the park road to create a larger natural stormwater treatment, and quality in the form of constructed wetlands. It includes the routing and control, and treatment of stormwater from the N. Bayview Park. The City of Fairhope also owns a public park and beach from the Pier Street boat ramp south to the American Legion near Laurel Avenue. There is nearly 200 acres in the watershed that drains through the park area. The park is also used by walkers, joggers, and citizens walking their dogs.</td>
<td>776</td>
<td>Baldwin County</td>
<td>45000.00</td>
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<tr>
<td>Fly Creek Restoration</td>
<td>Fly Creek to northern Fairhope is an important waterway that drains most of northern Fairhope east to State Highway 181. This creek channel has changed over the years as a result of an accumulation of impacts. There is a large tract of property 104 acres under private ownership that is undeveloped and borders the creek. This project includes restoring the creek to its historic functioning capacity and acquiring the 104 acres and developing it into a stormwater quality and quantity treatment facility, a City park, and an arboretum.</td>
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<td>Titi Swamp Purchase and Preserve</td>
<td>Titi Swamp located in south Fairhope east of scenic SB and south of Nocowee Road is a large 62 acre natural wetland that is under private ownership. The functioning swamp drains to Mobile Bay and acts as a large stormwater attenuation and treatment facility. The City would like to purchase this property and create a nature preserve and explore the possibility of a local wetland bank in order to restore it to full function.</td>
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<td>GOM Marine Sanctuaries</td>
<td>Funds and Trustee influence should be used to promote the legislative effort to expand the marine sanctuaries in the GOM to cover all the natural reef systems as well as the bridging artificial reefs. Protecting this important habitat may help to offset some of the fisheries impacts of the oil spill.</td>
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<td>Report/ Maintenance Of Three Mile Creek</td>
<td>The project encompasses the repair, maintenance, and construction of levees, roadways, and flood control structures within the Three Mile Creek and adjacent marsh areas in Mobile County. This project is aimed at improving the quality of life in the local community, protecting the environment, and enhancing the area's ability to withstand natural disasters.</td>
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**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Project Description**
- **Project Information**
- **Restoration Types Addressed**
- **Public Notice**
- **Oil Pollution Act (OPA) Criteria**
- **Additional Criteria**

**Project Information**

- **Project Name**
- **Project ID**
- **Submitted By Primary Lead**
- **Location**
- **Cost**

**Project Description**

- **Project Description**
- **Trustee Portal**

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **PDARP**
- **Programmatic**
- **Damage Assessment**
- **PDARP**
- **Programmatic**
- **Criteria**

**Public Notice**

- **OPA**
- **Criteria**

**Oil Pollution Act (OPA) Criteria**

- **OPA**
- **Criteria**

**Additional Criteria**

- **Additional**
- **Criteria**

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</table>
| Board (Audubon Park and Beach Bird Sanctuary) | Lecaillon | LA       | 300000 | We are a Louisiana Non-Profit 501(c)(3) Corporation (pending) devoted to preservation and protection of the Louisiana Gulf Coast. We have developed and perfected the use of locally grown hay and wheat straw to mitigate, prevent, and ultimately reverse coastal erosion. Our process not only stops erosion, it also restores nesting and colonization sites for the countless species of birds that are native to the Louisiana Gulf Coast, including the Brown Pelican. When fully deployed, our process will clean and restore existing habitats while literally creating new wildlife havens to be enjoyed by future generations. Our process uses round hay bales produced by American farmers and delivered by American truckers. The environmental benefits of using hay instead of toxic chemical dispersants are plainly obvious. Hay is the only truly "green" solution available to preserve, restore and reclaim our Gulf coast. Hay has incredible natural absorption capacity and has proven ability to stop and reverse coastal soil erosion. We propose to purchase large quantities of hay and wheat straw from regional farmers, paying them a favorable price-per-ton for delivery to established distribution points along the Gulf Coast. 1000 pound round hay bales will serve as barriers along the coastal areas and wetlands around the gulf region. Our market research shows a fully adequate supply of hay is readily available. In particular, there is 200,000 to 400,000 acres of winter wheat planted in Louisiana alone each year. We would like to create a market for the farmers by buying the straw that is leftover after the wheat is harvested. This leftover straw is表达后 and release them to boost marine ecosystem recovery. Restricting can thus be achieved for a wide range of coastal fish species, and pre-release juveniles are conditioned to survive in the wild before restocking. We feed them on live food, and a patented "halfway house" is created placed in the nursery where the fish can become familiar with them. Pieces of the "halfway house" are then released in the same area as the fish, thus reducing stress and encouraging the juveniles to settle at that location. BioRestore® is a process based on the Capture and Culture of Post-Larvae (PCC) marine animals. The idea is to effectively "rescue" a small proportion of post-larval fish before predation, then rear and release them to boost marine ecosystem recovery. Restocking can thus be achieved for a wide range of coastal fish species, and pre-release juveniles are conditioned to survive in the wild before restocking. We feed them on live food, and a patented "halfway house" is created placed in the nursery where the fish can become familiar with them. Pieces of the "halfway house" are then released in the same area as the fish, thus reducing stress and encouraging the juveniles to settle at that location. BioRestore® is a 3-step "halfway house" process:
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<tr>
<td>Cedar Point</td>
<td>C33</td>
<td>Tom Granger</td>
<td>Mobile</td>
<td>Coasts</td>
<td>$10,000</td>
<td>This project will establish a low-cost, remote oil spill monitoring system with the following features: - Oil Sensor Design: There is an urgent need for inexpensive, weather-resistant oil spill sensors that can wirelessly report oil data. Existing oil spill sensing technologies have the following drawbacks: (1) Inaccuracy: Infrared thermal sensing and ultrasonic wave sensors cannot accurately detect oil existence and oil-thickness levels because the temperature, weather, and water current can greatly change their readings. (2) High cost: SAR imaging and laser fluorosensors use heavy, expensive, large-size devices, and thus are not suitable to large area monitoring. (3) Power inefficiency: Although some wireless sensors can use low-cost light array sensors to detect oil thickness, their chip designs have not emphasized low-power circuit layout. More importantly, it does not have long-distance wireless transmission capability due to its use of common, low-sensitivity antenna (to be discussed in next item). In this research, we will design a low-power, low-cost, weather-resistant oil spill sensor and its corresponding sensor operation control software (such as sampling rate adjustment and sleep/wake control) - 10 km oil sensing data transmission: The harsh sea conditions necessitate 10 km RF communication distance and 1 km oil spill sensing range (typically less than 100 m). The windy sea weather and harsh water current could make any two neighboring sensors separate from each other for a distance of &gt;100 meters (even though the proposed sensors are adhesive to the oil). In this project, we will use our unique ferrite miniature antenna technology to achieve a 10-km RF communication distance and 1-km neighbor communication range. If an oil sensor cannot use its neighbors to relay the sensing data, it can directly send signals to a wireless base station. These fixed base stations are pre-deployed sporadically on the sea surface. A sensor can communicate with its neighbors or 10 km away base stations. Oil spill boundary estimation: It is important to build an accurate oil spread boundary estimation model based on the analysis of the data from oil spill sensors. Such a boundary estimation model can be used to guide the deployment of new sensors.</td>
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| Low-cost, 10km- range Oil Spill Sensor and Predictive Sensor Deployment | 633 | Fei Zhu | Gulf of Mexico | 35,000 | $100,000 | This is a general recommendation, not tied to a specific project: Instead of habitat restoration, focus instead on constructing barriers in fire prone or in easement to protect these fragile and ecologically important areas that are threatened by future development while they still exist. As you know, land development usually causes conditions that are irreversible. By protecting these areas in perpetuity, we would permanently protect these areas and the ecological services they provide for a multitude of coastal terrestrial and aquatic species. By doing so, we not only protect habitat for many species, but also prevent future damage to human structures as a result of climate change (severe weather events such as hurricanes, sea level rise,
| Coastal Land and Marsh Protection | 705 | Alice Lawrence | Gulf of Mexico | $1,000,000 | This is a general recommendation, not tied to a specific project: Instead of habitat restoration, focus instead on constructing barriers in fire prone or in easement to protect these fragile and ecologically important areas that are threatened by future development while they still exist. As you know, land development usually causes conditions that are irreversible. By protecting these areas in perpetuity, we would permanently protect these areas and the ecological services they provide for a multitude of coastal terrestrial and aquatic species. By doing so, we not only protect habitat for many species, but also prevent future damage to human structures as a result of climate change (severe weather events such as hurricanes, sea level rise,
### Habitat Mapping for Improved Stock Assessments and Developing an Integrated Habitat Restoration Approach for Marine Habitats

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<tr>
<td>740</td>
<td>Chris Robbin</td>
<td>Gulf of Mexico</td>
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<td>Habitat mapping will facilitate comparisons of species distributions and abundances across like habitats, allowing scientists to better stratify fishery-independent sampling by habitat type and improve the quality of information used to assess the health of fish populations. Habitat mapping is critical following the BP Deepwater Horizon disaster because fishery scientists will need the maximum amount of spatial precision to detect changes in abundance of fish exposed to or injured by oil or chemical dispersants. This information would also reduce the scientific uncertainty used to define catch limits and would improve managers’ ability to aid the recovery of injured fish species through suitable measures. A better understanding of habitat types and distributions generated through habitat mapping would also help the Deepwater Horizon BP Trustee Council identify habitats for restoration that would provide services of the same type and quality and of comparable value to those lost. Results of habitat mapping could be used in an integrated Habitat Restoration Approach, which is a comprehensive plan based on restoration of key habitats that, together, will benefit the range of different resources injured by the release of Deepwater Horizon BP oil or related response efforts. This project will also lay the foundation for broader research and management applications of habitat mapping, and has the potential to be integrated with additional information systems. For example, coordination with oceanographic data (Gulf Coastal and Ocean Observing System) or the development a fishing vessel data collection system habitat maps could be incorporated into real-time management and research tools. The cost of this project is scalable, depending on the size of area and degree of resolution selected for mapping. Prioritizing habitat mapping activities can be done in consultation with the Southeast Fisheries Science Center whose stock assessment scientists would be among the primary users of this information. Time to implementation is six months to one year.</td>
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<tr>
<td>MAB pollution control, and restoring clean water</td>
<td>712</td>
<td>John Olsen</td>
<td>Gulf of Mexico</td>
<td></td>
<td></td>
<td>We have a &quot;SLOW&quot;, discharging ex-water 1 Kilo kg, which can be dropped by helicopter or by hand into any water area. The Log contains a patented formula of fertilizer, which allows the DIATOMS to bloom and become the dominant algae. We have a &quot;SLOW&quot;, dissolving investment system (DMS) or the development a fishing vessel data collection system habitat maps could be incorporated into real-time management and research tools. The cost of this project is scalable, depending on the size of area and degree of resolution selected for mapping. Prioritizing habitat mapping activities can be done in consultation with the Southeast Fisheries Science Center whose stock assessment scientists would be among the primary users of this information. Time to implementation is six months to one year.</td>
</tr>
</tbody>
</table>

| Lagoon Pass Parking | 704 | Brandan Franklin | Gulf Shores | | | The public parking area and restroom facilities located at the Little Lagoon Pass Bridge were completely occupied by BP and its contractors during the entire summer of 2010 and into the winter months of 2011. This area is typically used by families and fisherman who enjoy the water outlet and sandy beaches located along the Little Lagoon Pass. Due to the amount of equipment and personnel staged at this site, the general public was denied use of this natural resource. The City is proposing this area be developed to accommodate additional parking, pier structures and additional restroom facilities. This would allow a greater number of people to utilize this beautiful resource. |
## Project Information

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Prim. Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition of a $1.5M Wave-Current Flume for Gulf Coast Marine Processes Research</td>
<td>Brett Webb</td>
<td>Mobile County</td>
<td>1320000</td>
</tr>
<tr>
<td>John Street Beach Access</td>
<td>Brandan Franklin</td>
<td>Gulf Shores</td>
<td>1200000</td>
</tr>
</tbody>
</table>

## Project Description

- **In an effort to expedite the clean up process by BP and its contractors, the city allowed BP to utilize the public access to the beaches located along State Highway 182. The city owns a 100’ right of way located on the south side of State Highway 182. The city would like to propose the development and construction of parking and restroom facilities located at this site along with a dune walker. This would allow the general public better access to the beach. During the clean up, this site was utilized by BP for staging equipment and dumpsters for oil removal. By awarding this project, this area will be restored and enhanced to give the public a better use of the beach they were denied during the oil spill and clean up.**

- **The Department of Civil Engineering, in conjunction with USA’s Coastal Transportation Engineering Research and Education Center (CTEREC), seeks to augment its physical modeling capabilty provided by the Pacific Northwest National Laboratory where unique facilities are typically used by the general public to access the beach. The single element flume will allow faculty and students to perform dimensionally consistent scale modeling of two-dimensional fluid, fluid-sediment, and fluid-structure processes. These facilities will enable faculty and students to perform state-of-the-art research, and will enhance the educational experience of students at both the undergraduate and graduate levels through physical demonstrations of natural processes and the opportunity to perform interdisciplinary laboratory experiments. The proposed equipment and instrument is the acquisition of a two-dimensional wave and current flume, and implementation of a web-based control system. The proposed equipment and instrumentation will enable faculty and students to perform dimensionally consistent scale modeling of two-dimensional fluid, fluid-sediment, and fluid-structure processes. These facilities will enable faculty and students to perform state-of-the-art research, and will enhance the educational experience of students at both the undergraduate and graduate levels through physical demonstrations of natural processes and the opportunity to perform interdisciplinary laboratory experiments. The proposed equipment is a long, two-dimensional wave flume with closed-loop recirculation and sediment transport capabilities. The flume section will be 28 m in length, 1 m in depth, and have a width of 2 m. A suite of complimentary instrumentation will also be purchased to collect data during experiments: gauges for measuring wave height; sensors for measuring water velocity, sonar units for mapping sediment contours (bathymetry), and high-speed cameras for imaging and particle tracking. Additional controls and infrastructure will be purchased to develop the web portal integration. The proposed instrumentation and equipment will enable cutting-edge research in the areas of soil engineering, coastal engineering, environmental engineering, electrical engineering, and marine science. The single-element flume will allow simulation of two-dimensional fluid dynamics and fluid-sediment processes including wave transformation (breaking), cross-shore sediment transport (erosion and accretion), and biological transport. The proposed facility will provide opportunities for interdisciplinary, multi-institution, and institution-industry research. This new facility compliments the existing wave basin, providing very different capabilities, particularly those associated with verifying the mathematical models of transport of solid or liquid contaminants with the water currents. Another important capability for the new facility is the ability to use the internet for collaborative research at the new wave flume. The controls and instrumentation will include robust web interfaces allowing students and faculty at other Alabama research universities to use the facility to conduct their experiments. This feature, sometimes called a "digital laboratory", is patterned after the similar capability provided by the Pacific Northwest National Laboratory where unique...**
Increased Catch and Effort Reporting for Gulf of Mexico’s Marine Recreational Fishery Based on 1-month waves  

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Catch and Effort Reporting for Gulf of Mexico’s Marine Recreational Fishery Based on 1-month waves</td>
<td>648</td>
<td>Chris Robbins</td>
<td>Gulf of Mexico</td>
<td>$1.5 million</td>
</tr>
</tbody>
</table>

Microscopes and environmental instrumentation can be operated by researchers from around the world, once they have been trained on the instrument and their physical samples have been provided to PNNL. This will provide new opportunities for Alabama universities as well as encouraging new and productive collaborations with our colleagues. The University of South Alabama’s Department of Civil Engineering and CTEREC currently have demonstrated expertise in coastal engineering that is unique to the state of Alabama, as well as the Northern Gulf Coast. The proposed equipment and resulting facilities will have a profound impact on the ability of USA to serve as a leader in coastal engineering infrastructure research, and will constitute a unique research facility both regionally and nationally. Such a facility will promote state-of-the-practice and state-of-the-art training for undergraduate and graduate students in civil, coastal, and environmental engineering, as well as other related disciplines. Furthermore, K-12 curriculum units could be developed that will utilize the proposed instrumentation and equipment for educational purposes and outreach to se noice. These units will make use of an integrated web-based Internet portal allowing K-12 teachers and students, as well as other academic institutions throughout the state of Alabama, to perform experiments and collect data via the web interface. The estimated cost of the flume, equipment, instrumentation, and control systems is $1.5 million.
<table>
<thead>
<tr>
<th>Project Name</th>
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<th>Project Lead</th>
<th>Location</th>
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<th>Project Description</th>
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<tr>
<td>Shell Belt Road and Coden Belt Road Shoreline Restoration and Preservation</td>
<td>659</td>
<td>Bill Melton</td>
<td>Coden</td>
<td>$2000000</td>
<td>Example, the red snapper season, on currently defined, closes well before the estimates are produced. The current estimation methodology has inadvertently allowed the recreational fishery to overharvest red snapper in twelve of the last twenty years, and has triggered fishery accountability measures; such as shorter red snapper seasons for recreational anglers. A timely and accurate recreational data reporting system will allow fisheries managers to be proactive in the Gulf of Mexico, improving their ability to predict fishing trends and prevent overfishing.</td>
<td></td>
</tr>
<tr>
<td>Cedar Point Restoration and Enhancements Project</td>
<td>660</td>
<td>Bill Melton</td>
<td>Cedar Pt</td>
<td>$1000000</td>
<td>The Mobile County Commission proposes to restore valuable shoreline and provide protection of vital infrastructure in South Mobile County. This project is consistent with Section 1006 of the Oil Pollution Control Act because; The restoration of salt marsh habitats contributes to making the environment and public whole by restoring and rehabilitilitating natural resources to compensate for losses resulting from the Deepwater Horizon Oil Spill. Marsh restoration supports addressing specific injuries to natural resources associated with the incident, Restoring living shorelines along the Mississippi Sound is consistent with restoration of natural resources, and habitats of the same type, quality, and comparable ecological and/or human use value to compensate for losses resulting from the incident. This type of project is highly likely to be consistent with long-term restoration needs and final restoration plans, and Similar projects in the immediate area have been proven to be feasible and cost effective. Project Description Shell Belt Road and Coden Belt Road run parallel to the Mississippi Sound shoreline in south Mobile County near the Coden community. There is currently 5600 linear feet of seawall along Coden Belt Rd and 3500 linear feet of seawall along Shell Belt Rd. This is a timber seawall that has been damaged by multiple hurricanes and suffers from wave and high water impacts from higher frequency storms. Due to the continued exposure to extreme events, there are signs of advanced decay and failure along the seawalls. There has also been scour of the roadway and shoulder and area between the road and seawall. The Commission proposes to implement a multi-objective project designed to create a &quot;living&quot; shoreline and to retrofit the bulkhead in order to protect the roadway and restore marsh habitat along the Mississippi Sound. The proposed project includes the installation of breakwaters along the shoreline to dissipate wave energy and includes the planting of vegetation along the shoreline to counter erosion. The vegetation will not only protect against erosion, but will also create an environment for small fish and invertebrates to thrive. Planting sea grasses will restore coastal marsh areas and will provide a natural environment for fish, invertebrates, waterfowl, and marine mammals to thrive.</td>
<td></td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
<td>Submitted By</td>
<td>Project Lead</td>
<td>Location</td>
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</table>
| Safe Harbor Marsh Restoration | 665 | Eric Brunden | Weeks Bay | $822,375.00 | Project suggestion for the Alabama Natural Resource Trustees Safe Harbor Marsh Restoration Project Weeks Bay National Estuarine Reserve in collaboration with the Dauphin Island Sea Lab and Ecosystems, Inc. Weeks Bay National Estuarine Research Reserve (the Reserve) staff and collaborators propose the use of Deep Water Horizon restoration funds for the purpose of restoring estuarine associated marsh habitat within man-made canal structures located on the Safe Harbor Tract of the Reserve. The proposed project would directly create two acres of estuarine marsh habitat, remediating ongoing water quality issues, and test cost-effectiveness of restoration practices and methodologies applicable to similarly impaired canal structures found within coastal habitats. Estimated cost $822,375.00 Background Information Man-made canals in developed coastal watersheds often feature poor environmental quality due to restricted water flushing and elevated nutrient inputs from the surrounding land via groundwater and surface runoff. Canals are ubiquitous in many coastal environments and their frequently impaired water quality has become a problem of highest concern for environmental managers. Indeed, anoxic/hypoxic conditions, unpleasing scent, fish kills, and toxic algal blooms are a recurrent nuisance in many man-made canals. Three such impaired canals occur within the Safe Harbor property of the Weeks Bay National Estuarine Reserve. The proposed project would create two acres of estuarine marsh habitat, remediating ongoing water quality issues, and test cost-effectiveness of restoration practices and methodologies applicable to similarly impaired canal structures found within coastal habitats. Estimated cost $822,375.00 Background Information Man-made canals in developed coastal watersheds often feature poor environmental quality due to restricted water flushing and elevated nutrient inputs from the surrounding land via groundwater and surface runoff. Canals are ubiquitous in many coastal environments and their frequently impaired water quality has become a problem of highest concern for environmental managers. Indeed, anoxic/hypoxic conditions, unpleasing scent, fish kills, and toxic algal blooms are a recurrent nuisance in many man-made canals. Three such impaired canals occur within the Safe Harbor property of the Weeks Bay National Estuarine Reserve.
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<th>Primary Lead</th>
<th>Location</th>
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<tr>
<td>Safe Harbor Canal Restoration</td>
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</table>

## Project Description

Research Reserve (NERR). The Safe Harbor Canal was acquired by Weeks Bay NERR in October of 2004. In the late 1950s the tract was developed for use as a recreational vehicle and trailer park. To meet this use, massive alterations were made to the property, including the creation of canals linking the upland areas of the property with the Fish River. A natural stream connection between the property and Weeks Bay was altered with the filling of topographically low areas and the creation of three dead-end canals dredged through marsh habitat (Figure 1 below). Repeated anoxic/hypoxic events have been documented within the canals and numerous fish kills have been observed on a yearly basis since 2007. For instance, in 2007 five large fish kills were observed within the greater Weeks Bay system. A post fish kill algal survey in 2007 conducted by the Dauphin Island Sea Lab revealed persistent high levels of the toxic alga Karlodinium micrum, which was first observed within the Safe Harbor canals (personal communications, Novoveska, Brunden and Phipps). Toxins from Karlodinium micrum were found in violet goby (Bobioides broussonetti) tissue. Proposed actions Weeks Bay NERR proposes to increase flushing rates within the canals by filling and contouring portions of the canals. To alleviate increased nutrient inputs, we propose to grade the slope of the canal side banks and plant marsh vegetation on the reshaped banks and filled ends. The reshaped marsh should absorb a large fraction of the nutrient pollution that enters the canals via runoff and groundwater (Tobias 2001a,b, 2003, White and Howes 1994a,b). A brief synopsis of work to be completed is as follows - Year 1: Monitor depth, water residence time and nitrogen inputs via runoff and groundwater in the canals. A number of water quality metrics, such as oxygen concentrations, transparency, chlorophyll concentration and abundance of toxic algae will also be monitored. - Year 2: Physical modification of canal structures. Sediment filling and the reshaping of the side banks in two of the canals will be done by the environmental engineering company Eco-Systems (http://www.ecosystems.com) in consultation with the Applied Science Investigator Dr. Jim Connors. Marsh planting will be done by Dr. Just Gebrian’s group, which has successfully performed many similar restoration projects in the northern Gulf of Mexico (Sparks et al. 2010) for more information see http://ecosystemslab.disl.org. - Year 3: Continued monitoring and analysis of results. Benefits Restoration of the canals within the Safe Harbor Tract will directly address water quality issues important to the mission of the Reserve (Weeks Bay NERR Management Plan, 2007) the National Estuarine Research Reserve System (NERRS Strategic Plan 2005-2010) and the objectives of the Southeast Aquatic Habitat Plan (Southeast Aquatic Resource Partnership, 2008). The importance of these activities is also recognized by the Weeks Bay Restoration Advisory Committee, which is composed of representatives from the United States Fish and Wildlife Service, University of South Alabama, Grand Bay National Estuarine Research Reserve, Alabama Department of Environmental Management, The Nature Conservancy, Mobile Bay National Estuary Program, Alabama Department of Conservation and Natural Resources, and private environmental consulting firms. Upon request for full project proposal, Weeks Bay NERR staff and collaborators will submit a detailed narrative that includes restoration methodologies, budget narrative, implementation timeline, and letters

## Restoration Types Addressed

<table>
<thead>
<tr>
<th>Programmatic Damage Assessment and Restoration Plan (PAARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project meets Trustees’ goals (+ /0 /-)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
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<tr>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
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<td>Project readiness (+ /0 /-)</td>
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<td>Oil Pollution Act (OPA) Criteria</td>
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<td>201700000</td>
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<td><strong>Project Description</strong></td>
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<td>201900000</td>
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<td>Coastal Watershed Property Acquisition in Mobile County</td>
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<td>201700000</td>
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<td>Coastal Watershed Property Acquisition in Mobile County</td>
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<td>201700000</td>
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<tr>
<td>Dauphin Island Parkway, Bayfront Park, and Heron Bay Cut-Off Shoreline &amp; Habitat Restoration &amp; Public Access Enhancements</td>
<td>200800000</td>
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**Project Information**

- **Project Name:** Coastal Watershed Property Acquisition in Mobile County
- **Project ID:** 677
- **Submitted By/Primary Lead:** Bill Melton
- **Location:** coastal AL
- **Cost:** 50000000

**Project Description**

All support, full funding of the project would allow for an evaluation of the cost effectiveness of restoration design components with a widespread applicability for the management of environmental quality in developed watersheds and in degraded environments.

- **Restoration Types Addressed**
  - Water Quality/Nonpoint Source
  - Wetland, Coastal, and Estuarine Habitat
  - Shoreline
  - Other

- **Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**
  - Project is consistent with the National Estuarine Research Reserve (NNR) benefits of coastal ecosystem services (Y/N)
  - Project is consistent with criteria identified in the public trust (Y/N)
  - Project is consistent with criteria identified in the public trust (Y/N)
  - Project is consistent with criteria identified in the public trust (Y/N)

- **Oil Pollution Act (OPA) Criteria**
  - Project benefits more than one natural resource and/or service (+/0/-)
  - Project offers opportunities for external funding (+/-)
  - Project complies with applicable laws and regulations (Y/N)
  - Project is technically feasible (+/0/-)

- **Additional Criteria**
  - Project is not already fully funded (Y/N)
  - Project readiness (+/-)
  - Sustainability/Long-term Benefit of project (+/-)
  - Project is time critical (+/-)
  - Programmatic criteria (Y/N/NA)

**Trustee Portal**

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**Trustee Portal**

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**Trustee Portal**

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**Trustee Portal**

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<table>
<thead>
<tr>
<th>Project Name</th>
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<tbody>
<tr>
<td>Dauphin Island Parkway Shoreline Restoration</td>
<td>The Project proposes to place wave attenuators along the Causeway from Bay Front Park to the Heron Bay Cut-Off Access, a distance of approximately 1.9 miles to reduce wave energy and subsequent erosion of the shoreline. In addition, it is proposed to place fill from maintenance dredging along the shoreline and plant marsh grasses to create approximately 9 acres of low maintenance, energy absorbent salt marsh wetlands. The Project also proposes to place approximately 2,250 cubic yards of hard bottom substrate over 4 acres to enhance existing and encourage new oyster bed habitat and restore critical habitat for young shrimp, blue crab, speckled trout and red snapper, and the dozens of other species found in this area. This Project began in 2004 when the U.S. Army Corps of Engineers (USACE) conducted a study and published their findings in the report “Preliminary Restoration Plan for Dauphin Island Parkway Aquatic Ecosystem Restoration, Mobile County Alabama.” Restoring the ecosystem by creating salt marsh wetlands has the added benefit of a low maintenance erosion protection system for the Causeway. The natural filter provided by the wetlands will improve water quality along the shoreline in addition to enhancing the marine life habitat. Further, this Project provides a beneficial use of waste dredge material from maintenance dredging of the ship channel which is costly to dispose of in most cases. Bayfront Park Improvements In 2001, the Mobile County Commission constructed shoreline stabilization and park amenities along the shores of Mobile Bay in south Mobile County to minimize damage to fragile coastal environments. The Project utilized Coastal Impact Assistance Program funding to make improvements to the Mobile County Bayfront Park in the Alabama Port Community that included the construction of boardwalks and onsite sewage systems that included the construction of boardwalks and onsite sewage...</td>
</tr>
<tr>
<td>Project Name</td>
<td>Project ID</td>
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<tr>
<td>Swift Tract</td>
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</table>
The BP oil spill provides a perfect opportunity for U.S. citizens to learn how our daily lifestyle choices and common land-use activities can contribute to the health of waterways and coastal environments. Few people are aware, for example, that petroleum products leaking onto the land, carried to coastal waters by rivers and streams, have contributed more pollution to our oceans than all offshore drilling spills combined—and that reducing this kind of non-point source pollution is something we can all do. Waters to the Sea: Discovering Alabama (WTTS), an interactive educational program under development that will engage Alabama’s teachers and students, families, decision makers, and citizens in learning about the state’s key water resource issues and becoming better water stewards. Adapting a watershed approach and promoting a personal stewardship ethic, WTTS clearly addresses high-priority. The owners of these three parcels have been identified as willing sellers. These tracts have also been nominated for acquisition to the State of Alabama’s Forever Wild Land Trust Program. The Weeks Bay Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this fee simple acquisition has been identified as an important factor in the resource recovery process by the Mabus Report and federal and state resource trustees. The Land Trust Alliance Southeast Program’s Gulf Coast Partnership for Land Conservation (GCPLC) has also identified. The protection of ecologically-sensitive properties Gulf wide as a high conservation priority. The owners of these three parcels have also been identified as willing sellers. These tracts have also been nominated for acquisition to the State of Alabama’s Forever Wild Land Trust Program. The Weeks Bay Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this fee simple transaction. The Conservation Fund will also serve as a conservation partner. The Weeks Bay National Estuarine Research Reserve will serve as the primary partner in this transaction.

 mitigation bank, Weeks Bay Reserve East and Back Tract. There is also water frontage on Skunks Bayou. These tracts consist of palustrine forested wetland dominated by broad leaved deciduous trees. The forested wetlands provide nesting habitat for many bird species. This acquisition will allow future resource recovery activities to be conducted on all of these sites. The activity of land acquisition has been identified as an important factor in the resource recovery process by the Mabus Report and federal and state resource trustees. The Land Trust Alliance Southeast Program’s Gulf Coast Partnership for Land Conservation (GCPLC) has also identified. The protection of ecologically-sensitive properties Gulf wide as a high conservation priority. The owners of these three parcels have also been identified as willing sellers. These tracts have also been nominated for acquisition to the State of Alabama’s Forever Wild Land Trust Program. The Weeks Bay Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this fee simple acquisition has been identified as an important factor in the resource recovery process by the Mabus Report and federal and state resource trustees. The Land Trust Alliance Southeast Program’s Gulf Coast Partnership for Land Conservation (GCPLC) has also identified. The protection of ecologically-sensitive properties Gulf wide as a high conservation priority. The owners of these three parcels have also been identified as willing sellers. These tracts have also been nominated for acquisition to the State of Alabama’s Forever Wild Land Trust Program. The Weeks Bay Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this fee simple representation. The Conservation Fund will also serve as a conservation partner. The Weeks Bay National Estuarine Research Reserve will serve as the primary partner in this transaction.

Project Name: Waters to the Sea: Discovering Alabama
Project Description: The BP oil spill provides a perfect opportunity for U.S. citizens to learn how our daily lifestyle choices and common land-use activities can contribute to the health of waterways and coastal environments. Few people are aware, for example, that petroleum products leaking onto the land, carried to coastal waters by rivers and streams, have contributed more pollution to our oceans than all offshore drilling spills combined—and that reducing this kind of non-point source pollution is something we can all do. Waters to the Sea: Discovering Alabama (WTTS), an interactive educational program under development that will engage Alabama’s teachers and students, families, decision makers, and citizens in learning about the state’s key water resource issues and becoming better water stewards. Adopting a watershed approach and promoting a personal stewardship ethic, WTTS clearly addresses high-priority. The owners of these three parcels have been identified as willing sellers. These tracts have also been nominated for acquisition to the State of Alabama’s Forever Wild Land Trust Program. The Weeks Bay Foundation is a land trust accredited by the Land Trust Accreditation Commission. The Foundation has the capacity to provide technical assistance for this fee simple transaction. The Conservation Fund will also serve as a conservation partner. The Weeks Bay National Estuarine Research Reserve will serve as the primary partner in this transaction.
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<th>Lead</th>
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<td>Ryan Fikes</td>
<td>Gulf of Mexico</td>
<td>1500000</td>
<td>The Gulf of Mexico Community-based Restoration Partnership (GCRP) is a regional multi-year partnership that was established in 2005 between the NOAA Community-based Restoration Program (CRP), the EPA Gulf of Mexico Program Gulf Ecological Management Sites (GEMS) Program, and the Gulf of Mexico Foundation. The purpose of the partnership is to strengthen conservation efforts by supporting on-the-ground projects to restore coastal marine habitats, benefit living marine resources, and foster local stewardship of the sites. This successful collaboration will help to expand restoration of habitats that are critical to the sustainability of structural resources in the Gulf of Mexico, and to continue to expand public education and outreach efforts to broaden participation in restoration activities, further developing a conservation ethic at the community level. To date, the GCRP...</td>
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<tr>
<td>Gulf Place Development</td>
<td>631</td>
<td>Brandon Franklin</td>
<td>Gulf Shores</td>
<td>2500000</td>
<td>In an effort to create diversity for the public beach area at the intersection of State Highway 50 and State Highway 182, eyebrow parking along State Highway 182 should be developed. This would allow the existing public parking areas to be developed into open space. This would allow the general public use of this area while also enjoying the beaches. - Construct dune walkovers from the new parking over the vegetated dunes to the beach. This would allow access to the beaches without destroying the vegetation and dunes established along State Highway 182. - Construct new restroom facilities at this site for the general public.</td>
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<tr>
<td>BayWinds Living Shoreline</td>
<td>541</td>
<td>Kevin Marek</td>
<td>Fairhope</td>
<td>70000</td>
<td>As a nursery for the fish and other aquatic life of the Gulf of Mexico, restoration of Mobile Bay habitat will help to mitigate the impact of the Gulf oil spill which occurred during the spring and summer of 2010. Through the years, much of Mobile Bay has been armored with seawalls/bulkheads. This has resulted in the degradation of water quality through the elimination of coastal marshes and seagrass, which has negatively affected fish and shellfish of the bay and beyond. The section of shoreline in Fairhope where this project is proposed has also been armored. Substantial erosion had occurred prior to the installation of the southernmost seawall, approximately 5 years ago. Other seawalls in the area were constructed more than 20 years ago. Essentially all shoreline habitat in the immediate area has been lost. This project proposes to create a reef structure, with the potential to return beach and underwater habitat to more favourable conditions. The City of Fairhope is also undertaking a living shoreline project in the same vicinity. This project would be an extension of that effort. The proposed reef structure would also serve to protect the shoreline from future storm damage, providing a long term solution to the loss of shoreline in the area.</td>
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The Barrier Island Restoration Project for Dauphin Island is the direct placement of 680,000 cubic yards of sand along 0.92 miles of beach to provide a renourishment interval of approximately 5 years. Three offshore, "dune," will be constructed to tie into the existing dune elevation. The project focuses on the east end project is primarily environmental benefits and to restore the public beach between Fort Gaines and Audubon Street. The purpose for the eastern area includes the placement of 240,000 cubic yards of sand along 0.92 miles of beach.

The purpose and associated public benefits of a restoration project include: structure has already been completed on the opposite of the bay at Mon Louis.

Dauphin Island is important not only for the residents but for the entire coastal system as it is the upland sand source for the Mississippi-Alabama barrier island chain. Dauphin Island protects south Mobile County from hurricane storm surge and waves as well as defines and protects the extremely productive estuary of the eastern Mississippi Sound. Dauphin Island's shoreline is receding and overwash is becoming more prevalent. The island is so susceptible to overwashing that the west end had been overwashed at least six times in the twelve month period preceding the oil spill; and it had been partially or completely overwashed dozens of times including most tropical storm events during the past 15 seasons. The oil spill crisis highlights the need for a complete restoration of the barrier island system of the Gulf. The oil spill crisis.

The defining of the beach face. For the barriers was trucked in from pits and mined from the north side of the island. The sand barriers were successful in containing oil on the beach face, while neighboring beach communities had a much more serious oil problem. However, overwash and sand mining has left Dauphin Island thinner, lower, and more vulnerable to breaching. The causes of land loss on Dauphin Island are storms, sea level rise, and a sediment budget deficit. The west end is experiencing an average shoreline recession of 12.7 ft/yr while the east end is experiencing a shoreline recession rate of 9.0 ft/yr.

The objective of the Beach and Barrier Island Restoration Project for Dauphin Island is the direct placement of large amounts of good quality sand in conjunction with vegetation plantings on constructed sand dunes to increase island longevity and prevent overwash. Dauphin Island protects coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers.

Following a mild overwashing event on May 2, 2010, the Town of Dauphin Island constructed sand barriers along the Gulf fronting beaches with the goal of containing oil on the beach face. Sand for the barriers was trucked in from pits and mined from the north side of the island. The sand barriers were successful in containing oil on the beach face, while neighboring beach communities had a much more serious oil problem. However, overwash and sand mining has left Dauphin Island thinner, lower, and more vulnerable to breaching. The causes of land loss on Dauphin Island are storms, sea level rise, and a sediment budget deficit. The west end is experiencing an average shoreline recession of 12.7 ft/yr while the east end is experiencing a shoreline recession rate of 9.0 ft/yr.

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The oil spill crisis, Dauphin Island, Alabama is critical to the protection of island-based and coastal mainland ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers. Specifically, this project will restore coastal and marine habitat for threatened and endangered species and also benefit species of concern; preservation of coastal wetlands ecosystems and represent regional significant economic drivers.

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agglomerated breakwaters will be constructed in the vicinity of the Fort Gaines public beach. The breakwaters will reduce wave energy from the Gulf of Mexico impacting the constructed beach, thus promoting the accretion of sand in the lee of the structures. The two easternmost breakwaters will have an elevation of approximately +4 feet, NAVD and be approximately 250 feet long. The westernmost breakwater will have a crest elevation of +5 feet, NAVD and be approximately 140 feet long. The design for the western project area includes the placement of almost 3.6M cubic yards of sand along 4.5 miles from the public park at the western end of Dauphin Island to the attachment of Pelican island near the fishing pier. The beach crest will be constructed to +5.5 feet, NAVD. A continuous dune with an elevation of +12 feet, NAVD, will be constructed in front of the existing houses. At the east end of the western project area, only a dune will be constructed to provide a higher elevation to protect against inundation from storm surge. The project will provide a 40-foot beach in front of the dune 10 years after construction. The cost is estimated between $64M and $72M, including the construction of the east end design. The project benefits more than one natural resource and/or service (+ / 0 / –).
The Graham Creek Nature Preserve is 484 acres of natural wetland habitats that have been subject to varying degrees of erosion for many years. Current aerial photography compared to historic photographs provides evidence that the southern portion of the project area has experienced the greatest amount of shoreline loss. Site surveys reveal tree stumps in the water where erosion and land loss has contributed to loss of forest and marsh habitat. The near shore area within the bay has been a traditional site of oyster reefs and the site has also been the focus of several local studies for oyster gardening. As proposed, the project will add to oyster resources in the area and help provide source material for the natural settlement of spat on adjacent suitable habitat. The proposed project includes shoreline supplementation to include the restoration of marsh/habitat along the entire shoreline. The project can be considered for segmented construction with an emphasis on the southern part of the land where evidence of erosion is most recognizable. As a protection measure against continued shoreline erosion, the placement of specifically designed wave attenuation devices (WAD) to reduce wave action on the shoreline is expected to provide added stabilization to the shoreline. The project proposes supplementing the shoreline from the end of the housing development at the north and ending near the peninsula at the entrance to the Bon Secour River. Total project length is approximately 55,000 feet. Shoreline supplementation would add approximately 200 feet of fill to create approximately 160 acres of marsh habitat. The open water between the shoreline and the WAD structures would be approximately 50 feet wide. This will allow for the creation of 40 acres of aquatic habitat that will support oysters and Submerged Aquatic Vegetation (SAV). Essential Fish Habitat provided by the calm waters could increase the availability of perishable nursery habitat and thus assist in the recovery of the Mobile Bay commercial and recreational fisheries. While there would not be any effort to create BFWH habitat, it is anticipated that the project will protect what remains and allow for natural recruitment to expand the habitat in the future. Based on rough design calculations the project would need approximately 790,000 cubic yards of repurposed dredge material to create the new wetland habitat. The dredge material is anticipated to be recovered from storage locations of dredge material currently located along the GSWR and from other sources near the project site. The project is feasible and cost effective utilizing techniques that are already in place at other restoration sites in similar settings along coastal Alabama. The project specifically contributes to making the environment and the public whole through habitat restoration and shoreline protection. Habitat restoration and water quality improvement components of this project could compensate for resource losses resulting from the Deepwater Horizon incident. The ultimate project is consistent with long term restoration goals in Alabama and along the Gulf Coast.

Project: Interpretive Educational Center for Foley's Graham Creek Nature Preserve
Submitted by: Leslie Lassitter
Project Name: Graham Creek Interpretive Educational Center for Preserve
Lead: Foley
No./ID: B10000
Project Description: The Graham Creek Nature Preserve is 484 acres of natural wetland habitats that house threatened and endangered plants and animals of the Alabama coastal environment. The goal of the Preserve is to provide an educational and passive recreational opportunity for the residents and visitors of the Gulf Coast. Currently the Preserve includes a canoe/kayak launch, recreational pavilion, picnic areas and rustic hiking trails. The Preserve also hosts educational field trips to many local schools and youth groups with an annual participation level of approximately 1000.
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| Bicycling Trail  | Foley to the Connecting Shoreline | Lassitter Leslie | Baldwin County, Alabama | 13500000 | For much of the distance of this road the northern shoreline is sufficiently wide that there is housing along the shoreline of Bon Secour Bay. In the vicinity of the boat ramp that is labeled Pine Public Access, near the intersection with Plantation Road, the roadway is very close to the waters of the Bay. Comparison of aerial photography from 1992 and present conditions clearly show shoreline erosion from the end of the housing
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<td>Shoreline Restoration on Ft. Morgan Peninsula - Pine Public Access Boat Ramp</td>
<td>Foley to the Connecting Shoreline</td>
<td>Lassitter Leslie</td>
<td>Baldwin County, Alabama</td>
<td>13500000</td>
<td>For much of the distance of this road the northern shoreline is sufficiently wide that there is housing along the shoreline of Bon Secour Bay. In the vicinity of the boat ramp that is labeled Pine Public Access, near the intersection with Plantation Road, the roadway is very close to the waters of the Bay. Comparison of aerial photography from 1992 and present conditions clearly show shoreline erosion from the end of the housing</td>
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<td>Development to the completely undeveloped shoreline to the west. Existing conditions are actually less than the most recent aerial photography which shows a shoreline more than 110 feet in 1992 and approximately 50 feet in 2010. The 1992 photograph also shows nearshore sand bars along the shoreline indicating a sand source for feeding the beaches along the coast. A current view from the roadway illustrates the issue more clearly with the road approximately 30 feet from the shoreline and a small pull off area for vehicle parking directly adjacent to the roadway. Boat launching clearly impinges smooth and safe traffic flow. This presents a public danger. Continued shoreline erosion will eventually cause roadway failure. Further to the west in the undeveloped lands, the shoreline beaches completely disappear and tree stumps can be found in the nearshore waters. The proposed project includes shoreline supplementation to include the restoration of marsh habitat and sand beach. Additionally, as a protection measure against continued shoreline erosion, the placement of specifically designed wave attenuation devices to reduce wave action on the shoreline is expected to provide some stabilization to the shoreline in the vicinity of the boat ramp. Public access improvements may provide a means to correct the existing safety concerns by allowing for safer launch and parking for public users. The undeveloped shoreline is in the ownership of the Alabama Department of Conservation and Natural Resources (ADNR) from the end of the shoreline development to the point associated with the Bon Secour refuge to the west. The project proposes supplementing the shoreline from the end of the housing development to the peninsula east of the boat ramp. Total project length is approximately 8,500 feet. With the addition of approximately 150 feet of marsh habitat and 50 more feet of sandy beach, the total restoration would entail the creation of approximately 40 acres of marsh habitat and 10 acres of beach habitat to the existing shoreline. The total new width of replenished shoreline would amount to 200 feet with an additional 100 feet between the shoreline and the WAD (approx. 32 acres for shellfish and seagrass restoration). A total of 892,000 cubic yards of additional material would need to be placed. This is proposed to be recovered from the regular maintenance of the nearby Intracoastal Waterway and using some of the existing dredge material storage locations found in nearby Mobile Bay. There is no requirement for land acquisition. The project would reset the shoreline to conditions present prior to development of the Ft. Morgan peninsula. In the vicinity of the boat ramp, the additional land will provide a small protected embayment for launch and retrieval of boats during stormy conditions. The WAD placement and new shoreline location will provide protection from continuing erosion in the undeveloped lands to the west. The created habitat and the calm waters between the new shoreline and the WAD shoreline protection would also provide excellent habitat for the restoration of seagrass habitat and the potential for the establishment of oysters on the WAD structures and the adjacent waters. Essential Fish Habitat provided by the calm waters could help in increasing the availability of fish nursery habitat and thus assist in the recovery of the Mobile Bay commercial and recreational fisheries. The project is feasible and cost effective utilizing techniques that are already in place at other restoration sites in similar settings.</td>
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The Graham Creek Nature Preserve is 484 acres of natural wetland habitats that house threatened and endangered plants and animals of the Alabama coastal environment. The goal of the Preserve is to provide an educational and passive recreation opportunity for the residents and visitors of the Gulf Coast. Currently, the Preserve includes a canoe/kayak launch, recreational pavilion, picnic areas and rustic hiking trails. The Preserve also hosts educational field trips to many local schools and youth groups with an annual participation level of approximately 1,000 students. In order to increase environmental stewardship and awareness, the Graham Creek Nature Preserve could serve coastal Alabama as the largest coastal accessible municipal property for citizens and tourists to receive an environmental education with passive recreation activities. Philomene Holmes Boulevard is a gravel road that provides access to the Preserve from the Foley Beach Express. The first phase was completed with a roadway length of 3000 feet. The second phase is 1000 feet with five low area crossings which would require culverts and road building and one stream crossing (north tributary Graham Creek) requiring a small bridge of about 150 feet. This roadway would allow visitors to access the entire Preserve, including paddle-plant bogs and pine savannas. The gravel roadway construction cost would be approximately $250,000, and the bridge construction cost would be approximately $150,000 for a total of $400,000. One of the major features of the nature Preserve is the diverse and unique habitats. The City plans to enhance the recreational opportunities by providing multi-use trails throughout the Preserve. Trail uses will include walking, hiking, cross-country running and bicycling for a total of 18 miles of trails. For trail improvement and directional signage the City anticipates the cost to be $65,000. For educational information displays, the City proposes a kiosk within each major habitat for habitat description and flora and fauna found within each at a total cost of $10,000. Maps/brochures will be offered for Preserve users at an initial cost of $5,000. Restroom facilities are another need based on the increased usage of the Preserve. To add a small restroom facility with the necessary utility installations would cost approximately $100,000. The trail component within the Preserve would need a total of $200,000 in funding. Passive recreation is encouraged by the nature Preserve, and the addition of an archery trail would further enhance the Preserve. The Foley School System is participating nationally with archery, although there are no outdoor courses in the area. The Preserve has the opportunity to add the archery course for competitions on the coast. This activity would require funding in the amount of $30,000 for targets and the isolated and dedicated archery trail.
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<tr>
<td>Nearshore and Snorkeling Reef Project</td>
<td>Phillip West</td>
<td>Orange Beach</td>
<td>500000</td>
<td>The City of Orange Beach is requesting the State of Alabama, Department of Conservation &amp; Natural Resources (Marine Resources Division) to implement a program funded by MRDA to establish nearshore (i.e., within State waters) artificial reefs for both hook and line fishing, and, closer to the beach, for snorkeling. This project would greatly benefit reef fish species and baitfish, and provide additional recreational opportunities for tourists as well as residents. The project would utilize commercially-available artificial reefs in State waters, which would allow smaller boats access to fertile fishing grounds near Perdido Pass, Alabama. Also, reefs placed near the shoreline (approx. 14' of water) within reach of swimmers will provide exciting opportunities to explore reefs and reef fish species. Water clarity in eastern Baldwin County is generally amenable to this type of use, and will create additional recreational opportunities, similar to the Snorkeling Trail project in Pensacola Beach and Perdido Key, Florida.</td>
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<tr>
<td>South Baldwin Wildlife Rescue and Rehabilitation Facility</td>
<td>Leslie Lashitter</td>
<td>Baldwin County</td>
<td>250000</td>
<td>Baldwin County is filled with a diversity of coastal habitats. These habitats are the home of numerous flora and fauna that have been impacted by the Deepwater Horizon release. Migratory species use many of these habitats for wintering. Currently there are no local facilities for injured animals. The nearest locations are in Auburn and Birmingham, which means many of these animals do not survive. The establishment of a local facility would allow for quick rescue and initial analysis of the affected animal and if possible, subsequent release of the animal back into its habitat. The coastal communities of Foley, Orange Beach, Gulf Shores, the Alabama State Park and the Bon Secour National Wildlife Refuge plan to combine efforts to establish and maintain a South Baldwin Rescue and Rehabilitation facility. The main facility could be established within the Foley Graham Creek Nature Preserve where there is ample land to establish flight cages and educational facilities. A main satellite facility could be established in Orange Beach. This could promote tourism while offering initial rescue and rehabilitation for injured wildlife. This would allow for a collaborative effort to protect and preserve numerous species. Each community would offer a different aspect of the rehabilitation and release. Funds would be needed for a main facility with trained staff and satellite facilities. Each facility would need numerous types of cages, medical equipment and food supplies. An educational aspect would be provided through signage and viewing areas for visitors at the facilities. Also there could be a partnership with universities to provide assistance in the management of the facility with lab areas and housing. Municipal owned lands could house the facilities to avoid land purchase costs. The request is to fully fund and maintain a facility for the rescue, rehabilitation and</td>
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<tr>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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|                       | Submitted by | Marine Amelioration (Y/N) | Water Quality Improvement (Y/N) | Benthic (Y/N) | Sediment (Y/N) | Habitat (Y/N) | Monitoring & Adaptive Management (Y/N) | Project is consistent with programmatic restoration goals (Y/N) | Project is consistent with criteria set forth in the public notice (Y/N) | Project delivers benefits cost-effectively (Y/N) | Project prevents future and collateral injury to natural resources and services (Y/N) | Project is technically feasible (+ / 0 / -) | Project readiness (+ / 0 / -) | Sustainability/Long-term Benefit of project (+ / 0 / -) | Project is not already fully funded (Y/N) | Project is consistent with programmatic restoration goals (Y/N) | Project is consistent with criteria set forth in the public notice (Y/N) | Project delivers benefits cost-effectively (Y/N) | Project prevents future and collateral injury to natural resources and services (Y/N) | Project is technically feasible (+ / 0 / -) | Project readiness (+ 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Coastal Alabama has tremendous environmental beauty. From the fringing coastal saltwater marshes, to the tourist-filled beaches of Gulf Shores and Orange Beach, Alabama contains tremendous natural resources. The Deepwater Horizon incident impacted many habitat types in the Gulf of Mexico and in coastal Alabama specifically. Timing for the incident coincided with the northern movement of neotropical migratory birds as well as the spawning of fish species (non-target and sport species). Shrimps, crabs and benthic macroinvertebrates in shallow coastal waters were adversely impacted by either the presence of oil or the presence of other polycyclic aromatic hydrocarbons (PAH) components. Aquatic birds, such as the pelican, gannet, and some shore birds, were negatively impacted by the presence of oil on the surface of the water, on shorelines, and in marshes. The proposed project is expected to address the restoration of tidal marsh habitats that support all of the impacted species. The impact to species is difficult to compensate in areas that were not heavily oiled. In some cases, the presence of the oil is now minimal. However, because the overall coastal ecosystem has been suffering from continuing environmental impact from natural (sea level rise, wave energy) and man-made (erosion from ship wakes) sources, the amount of suitable habitat for the recovery of the impacted species has been compromised or has disappeared altogether. Much of the shoreline in Upper Mobile Bay is in some state of environmental degradation. Due to the high energy wave environment many of the tidal marshes have suffered significant land loss due to coastal erosion and sea level rise. The marsh islands would provide additional fringing marsh habitat. Additionally, the marsh habitat will provide for further decrease in discharge velocity that enters the cove through the City of Mobile stormwater discharge. The breakwaters outside will serve to lower the current wave energy that enters the system. This will have two effects. There will be much less erosion of marsh habitat and will provide a less energetic environment through which SAV, now existing along the edge of the existing wetland, to expand throughout the shallow waters in the cove. The shoreline development to the west of the proposed project is mitigation wetlands for the Alabama State Port Authority’s (ASPA) Choctaw Point Terminal project and a public park and access area that was also constructed by the ASPA and is operated by the City of Mobile. The project being proposed will create approximately 40 acres of Marsh Islands in Arlington Cove adjacent to the new Arlington Park complex. The Marsh Islands would be protected from erosion with either a segmented rip-rap breakwater or a breakwater constructed of wave attenuation devices (WAD). The WAD will be specifically designed to protect the cove from existing wave energy. The project would provide increased forish habitat in the Upper Mobile Bay. The proposed project is consistent with anticipated long-term restoration needs and the anticipated final restoration plan and is feasible and cost effective.
## Coastal Alabama Habitat Restoration - Dauphin Island, Alabama

**Project Information**

- **Project Name**: Coastal Alabama Habitat Restoration - Dauphin Island, Alabama
- **Project ID**: 367
- **Submitted By/Primary Lead**: Henry
- **Location**: coastal AL
- **Cost**: 8000000

**Project Description**

Coastal Alabama has tremendous environmental beauty. From the fringing coastal saltwater marshes, to the tourist-filled beaches of Gulf Shores and Orange Beach, Alabama contains tremendous natural resources. The Deepwater Horizon incident impacted many habitat types in the Gulf of Mexico and in coastal Alabama specifically. Timing for the incident coincided with the northern movement of neotropical migratory birds as well as the spawning of fish species (non-target and sport species). Shrimp, crabs and benthic macroinvertebrates in shallow coastal waters were adversely impacted by either the presence of oil or the presence of other polycyclic aromatic hydrocarbons (PAH) components. Aquatic birds, such as the pelican, gannet, and some shore birds, were negatively impacted by the presence of oil on the surface of the water, on shorelines, and in marshes.

The proposed project is expected to address the restoration of tidal marsh habitats that support all of the impacted species. The impact to species is difficult to compensate in areas that were not heavily oiled. In some cases, the presence of the oil is now minimal. However, because the overall coastal ecosystem has been suffering from continuing environmental impact from natural (sea level rise, wave energy) and man-made (erosion from ship wakes) sources, the amount of suitable habitat for the recovery of the impacted species has been compromised or has disappeared altogether. Much of the shoreline in Mobile Bay and Mississippi Sound, including Bayou Heron, is in some state of environmental degradation. Due to the high energy wave environment many of the tidal marshes have suffered significant land loss due to coastal erosion, sea level rise and boat wakes. The project being proposed will contribute to making the environment whole by restoring approximately 25 acres of tidal marsh in Bayou Heron on the north side of Dauphin Island, Alabama. The marsh would be protected from erosion with either a segmented rip-rap breakwater or a breakwater constructed of wave attenuation devices (WAD). The WAD will be specifically designed to protect the marsh from existing wave energy. Some armoring would be placed along the toe of the dike adjacent to the Bayou Heron Navigation Channel. Alternative designs will be evaluated including construction of small islands behind breakwater protection similar to restoration projects that have been complete in Galveston Bay, Texas. The project would provide new oyster reef habitat and increase fish habitat in Bayou Heron. Additionally, specific plantings on the island are proposed to help restore bird habitat. This would increase habitat for neotropical migratory birds, including nesting and foraging habitat. Additional vegetative manipulation is expected to provide a habitat conducive for the nesting and feeding habitat of many aquatic bird species. The proposed project is consistent with anticipated long-term restoration needs and the anticipated final restoration plan is feasible and cost effective.

**Trustee Portal**

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## Coastal Alabama Habitat Restoration - Bayou Heron, Mobile, Alabama

**Project Information**

- **Project Name**: Coastal Alabama Habitat Restoration - Bayou Heron, Mobile, Alabama
- **Project ID**: 305
- **Submitted By/Primary Lead**: Henry
- **Location**: coastal AL
- **Cost**: 1500000

**Project Description**

Coastal Alabama has tremendous environmental beauty. From the fringing coastal saltwater marshes, to the tourist-filled beaches of Gulf Shores and Orange Beach, Alabama contains tremendous natural resources. The Deepwater horizon incident impacted many habitat types in the Gulf of Mexico and in coastal Alabama specifically. Timing for the incident coincided with the northern movement of neotropical migratory birds as well as the spawning of fish species (non-target and sport species). Shrimp, crabs and benthic macroinvertebrates in shallow coastal waters were adversely impacted by either the presence of oil or the presence of other polycyclic aromatic hydrocarbons (PAH) components. Aquatic birds, such as the pelican, gannet, and some shore birds, were negatively impacted by the presence of oil on the surface of the water, on shorelines, and in marshes.

The proposed project is expected to address the restoration of tidal marsh habitats that support all of the impacted species. The impact to species is difficult to compensate in areas that were not heavily oiled. In some cases, the presence of the oil is now minimal. However, because the overall coastal ecosystem has been suffering from continuing environmental impact from natural (sea level rise, wave energy) and man-made (erosion from ship wakes) sources, the amount of suitable habitat for the recovery of the impacted species has been compromised or has disappeared altogether. Much of the shoreline in Mobile Bay and Mississippi Sound, including Bayou Heron, is in some state of environmental degradation. Due to the high energy wave environment many of the tidal marshes have suffered significant land loss due to coastal erosion, sea level rise and boat wakes. The project being proposed will contribute to making the environment whole by restoring approximately 25 acres of tidal marsh in Bayou Heron on the north side of Dauphin Island, Alabama. The marsh would be protected from erosion with either a segmented rip-rap breakwater or a breakwater constructed of wave attenuation devices (WAD). The WAD will be specifically designed to protect the marsh from existing wave energy. Some armoring would be placed along the toe of the dike adjacent to the Bayou Heron Navigation Channel. Alternative designs will be evaluated including construction of small islands behind breakwater protection similar to restoration projects that have been complete in Galveston Bay, Texas. The project would provide new oyster reef habitat and increase fish habitat in Bayou Heron. Additionally, specific plantings on the island are proposed to help restore bird habitat. This would increase habitat for neotropical migratory birds, including nesting and foraging habitat. Additional vegetative manipulation is expected to provide a habitat conducive for the nesting and feeding habitat of many aquatic bird species. The proposed project is consistent with anticipated long-term restoration needs and the anticipated final restoration plan is feasible and cost effective.

**Trustee Portal**

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<th>Project Name</th>
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<th>Cost</th>
<th>Project Description</th>
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<tbody>
<tr>
<td>Orange Beach/Gulf State Park/Gulf Shores Beach Restoration</td>
<td>389</td>
<td>Phillip West</td>
<td>Gulf Shores, Orange Beach</td>
<td>1470000</td>
<td>The cities of Orange Beach and Gulf Shores, along with Gulf State Park (ACDM) currently maintain an &quot;engineered beach&quot; along 16.2 miles of shoreline. In 2005, the project originally placed approximately six (6) million cubic yards of dredged beach-quality sand along 16.2 miles of shoreline. Additionally, nearly 1.5 million sea urchns and panic grass were planted in the project's dune feature, and 80,000 linear feet of sand fencing were installed at the base of the dune. The project later...</td>
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<tr>
<td>Project Name</td>
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<td>Primary Lead</td>
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<tr>
<td>Dauphin Island Parkway Salt Marsh, Finfish and Shellfish Habitat Restoration</td>
<td>390</td>
<td>Buddy Coutting</td>
<td>Dauphin Island</td>
<td>$331,000</td>
<td>December 2008 - Top Restored Beach Award from The American Shore and Beach Preservation Association. Since its construction, the 08/05/05 beach restoration project has withdrawn damage from eight (8) named tropical storms or hurricanes, but has prevented any significant damage to Gulf structures during this time period. Beginning in 2008, the project has been impacted from Tropical Storms Gustav, Ike and Ida, with the damage being collected and summarized in FEMA Category 6 project worksheets for each project owner. Currently, the two cities and Gulf State Park are working toward completing a permit application to repair the damage, per FEMA’s guidelines and approved project worksheets, and to commence construction in Fall 2011 in order to meet a March 31, 2012 deadline for construction. However, because the damage being repaired does not meet “full” beach fill volumes, the Owner Group proposes to construct an “improved” beach fill project, which could be constructed in a more conventional manner, and offer even greater protection for landward structures and public infrastructure. The Owner Group members of Orange Beach and Gulf Shores believe the utmost consideration and priority be given to this project for the following reasons: 1. Providing additional, valuable storm protection for our residents and tourism industry; 2. Meeting FEMA’s deadlines and maintaining “elgibility” for Federal disaster assistance following Presidentially-declared storm events; 3. Facilitate the be the search for compatible beach-quality materials in Federal waters; 4. The project is currently being designed and permitted, and should be considered “shovel ready”. The project could have a significant, positive impact on the public’s perception of area beaches. The beach restoration project is a vital component to maintaining the recreational viability of the area’s beaches, and continuing to afford the protection to coastal structures and public infrastructure that prevents costly business interruption. This project, moreover, is shovel-ready and needs to be expedited in order to meet federal deadlines.</td>
</tr>
</tbody>
</table>

**Project Information**

- **Project Name:** Dauphin Island Parkway Salt Marsh, Finfish and Shellfish Habitat Restoration
- **Project ID:** 390
- **Submitted By:** Buddy Coutting
- **Primary Lead:** Dauphin Island
- **Location:** $331,000

**Project Description**

- December 2008 - Top Restored Beach Award from The American Shore and Beach Preservation Association. Since its construction, the 08/05/05 beach restoration project has withdrawn damage from eight (8) named tropical storms or hurricanes, but has prevented any significant damage to Gulf structures during this time period. Beginning in 2008, the project has been impacted from Tropical Storms Gustav, Ike and Ida, with the damage being collected and summarized in FEMA Category 6 project worksheets for each project owner. Currently, the two cities and Gulf State Park are working toward completing a permit application to repair the damage, per FEMA’s guidelines and approved project worksheets, and to commence construction in Fall 2011 in order to meet a March 31, 2012 deadline for construction. However, because the damage being repaired does not meet “full” beach fill volumes, the Owner Group proposes to construct an “improved” beach fill project, which could be constructed in a more conventional manner, and offer even greater protection for landward structures and public infrastructure. The Owner Group members of Orange Beach and Gulf Shores believe the utmost consideration and priority be given to this project for the following reasons: 1. Providing additional, valuable storm protection for our residents and tourism industry; 2. Meeting FEMA’s deadlines and maintaining “elgibility” for Federal disaster assistance following Presidentially-declared storm events; 3. Facilitate the be the search for compatible beach-quality materials in Federal waters; 4. The project is currently being designed and permitted, and should be considered “shovel ready”. The project could have a significant, positive impact on the public’s perception of area beaches. The beach restoration project is a vital component to maintaining the recreational viability of the area’s beaches, and continuing to afford the protection to coastal structures and public infrastructure that prevents costly business interruption. This project, moreover, is shovel-ready and needs to be expedited in order to meet federal deadlines.
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<tbody>
<tr>
<td>Robinson Island Restoration Project</td>
<td>370</td>
<td>Phillip West</td>
<td>dido Bay</td>
<td>$875,000</td>
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Project Description:
Depositing 2,250 CY of oyster shells between the breakwater and the marsh to improve shellfish habitat. The benefits of the project were stabilizing unconsolidated sediment in the nearshore, reducing turbidity and erosion, improving water quality and improving biodiversity and productivity by improving habitat for marine fishes, invertebrates, migratory birds and marine mammals. The construction cost estimate for this project was $875,000 in 2004. The project limits of the PRP focused on an area between the Heron Bay Cutout bridge and the Dauphin Island bridge. There is ample opportunity to expand northward in phases from the Heron Bay Cutout to Dauphin Island Bridge PRP project. Approximately 7,800 feet north of the Heron Bay Cutout, Mobile County owns 8 acres of parkland known as Bayfront Park. Bayfront Park is described as a bird lover’s paradise, and is listed as site #47 on the Alabama Coastal Birding Trail. It is located in the Alabama Port community north of the Dauphin Island Bridge. Many species of local and migratory birds visit this park in the spring and fall to take advantage of its fresh water and to shelter themselves among the trees and reeds. Pelicans are ever present, soaring on the wind-wave formed as bay breezes blow up against and over dense stands of pines. Herons, egrets, osprey, gulls, and terns stalk the shoreline. Playground equipment and covered picnic tables with grills are available. The area is also popular with wind surfers and people waiting for crabs, mullet, andounder. The Dauphin Island Parkway Salt Marsh, Fin Fish and Shell Fish Restoration project could ultimately extend from the Dauphin Island bridge to north of Bayfront Park for a total distance of 18,000 feet and involve 18,000 feet of segmented breakwater, 1.25 acres of salt marsh restoration, 550,000 CY of beneficial use of dredge material and 30 acres of oyster reef habitat while further enhancing the protection of the only evacuation route from the Town of Dauphin Island and helping to stabilize the shoreline at Bayfront Park. The project is feasible and cost effective utilizing techniques that are already in place at other restoration sites in similar settings along coastal Alabama. The project specifically contributes to making the environment and the public whole through habitat restoration and shoreline protection. Habitat restoration and water quality improvement components of this project could compensate for resource losses resulting from the Deepwater Horizon incident. As noted, portions of the ultimate project have been studied for more than a decade and are consistent with long term restoration.

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perimeter encircle these islands. The conspicuous signs would mark bird nesting areas, the perimeter of the three islands as well as the perimeter of the sea grass beds that the area. The grant would support a comprehensive signage program involving the conditions. Existing signage is not adequate in the face of increasing human use of extremely sensitive sea grass beds have all contributed to declining environmental widespread littering, free roaming dogs, and incursion of motorized vessels into island environments for the past 25 years. Intrusions into bird nesting or compromised its success. Herons have abandoned use of nest trees for nesting. Approximately 1000 feet of fence would be installed. This maintain a permanent sand fence enclosure around areas historically used by terns near human activity areas on Rob.

2. Install sand fencing enclosures to protect least tern/heron nesting areas. Most of the platforms would be placed on Robinson Island, where the largest amount of nesting has historically occurred. Great blue herons will be the primary target species, although other wading bird species may also use the platforms. Construction would take place during the June-January timeframe to avoid bird nesting activities. Costs associated with purchase of lumber, hardware, associated equipment; and to support city employees to carry out the work or supervise volunteers would be paid out of grant funds. Acquisition of a 27 ft. pontoon boat-motor would support this activity by providing a means to transport equipment and people from the mainland to the island worksites. This boat would also be vital is carrying out the other activities associated with this project. Platform sites would be selected based on the location of pine trees used for nesting prior to recent storms. Follow-up monitoring of bird use would be carried out for 10 years using volunteers. Colonial-nesting birds have been confined to three nesting sites in coastal Alabama according to officials with the Dauphin Island Sea Laboratory, one of which is Robinson Island. These islands were identified as one of 4 priority areas in collaboratory work by the Mobile Bay National Estuary Program and The Nature Conservancy in their 2006 report “Conserving Alabama’s Coastal Habitats - Acquisition and Restoration Priorities of Mobile and Baldwin Counties.” Install sand fencing enclosures to protect least tern/brown nesting areas. Least terns have nested on the ground on Robinson and Gilchrist Islands. Human activities and the episodic presence of dogs on the islands have restricted tern nesting or compromised its success. Herons have abandoned use of nest trees near human activity areas on Robinson Island. The project would construct and maintain a permanent sand fence enclosure around areas historically used by terns and herons for nesting. Approximately 100 feet of fence would be installed. This should eliminate disturbance to nesting terns and herons, thereby help sustaining populations that have been suffering impacts from humans, particularly during the past 15 years. The acquisition of a boat-motor (as above) would help with this project by facilitating transport of materials, equipment, and personnel from the mainland to island construction areas. 4. Install protective/interveneive signage and develop education brochures. Human behavior problems have adversely affected island environments for the past 25 years. Intrusions into bird nesting areas, widespread littering, free-roaming dogs, and incursion of motorized vessels into extremely sensitive sea grass beds have all contributed to declining environmental conditions. Existing signage is not adequate in the face of increasing human use of the area. The grant would support a comprehensive signage program involving the perimeter of the three islands as well as the perimeter of the sea grass beds that encircle these islands. The conspicuous signs would mark bird nesting areas, the perimeter of sea grass beds, and reminders about the need for animal control and

3. Install bird nesting platforms and transport equipment and people from the mainland to the island worksites. This project by facilitating transport of materials, equipment, and personnel from the mainland to island construction areas.
After removal from the islands when people depart. Additionally, at least four large educational type signs would be installed featuring information about the environmental features of the islands and the role/behavior of human conduct in sustaining island uses into the future. The grant would also support an educational "island care joint venture" with marinas, restaurants, boat rentals, and other commercial interests in the Perdido Pass, Terry Cove, Cotton Bayou, and Bayou St. John area, most, if not all of which depend (directly or indirectly) on the islands well-being to support their customer base. This effort would include educational brochures, signs, place mats, and other materials featuring the islands value and the need for environmentally sustainable human interactions with these resources. The signage project would be facilitated by purchase of the boat/motor (as above) that would help transport equipment and personnel to work sites, as well as acting as a work platform for in-water sign installation. 5. Reestablish native island vegetation. The upland vegetation of Robinson, Gilchrist, and Walker islands has been severely affected by tropical storms and sea level rise. Natural re-vegetation has been slowly occurring. A significant number of pine trees on the islands previously used for bird nesting have been lost. The project would boost recovery of natural vegetation. The project would include planting native species such as sand pine, slash pine, salt bush, smooth cordgrass, and sea oats on the three islands. Some removal of exotic vegetation may be necessary to facilitate success of this planting program. A partnership with Gulf Shores High School would be developed to facilitate this part of the project. Two greenhouses would be constructed at Gulf Shores High School under supervision of Orange Beach city employees. Students/volunteers would gather native plants in the project area and raise the young plants at the greenhouse. When the seedlings are of suitable size, students and volunteers would plant them on the islands. Monitoring, follow-up care, and replanting (to the degree necessary) would be conducted by students and volunteers. A total of 15 acres on the three islands would be restored. Acquisition of the boat/motor (as above) would facilitate this part of the project by transporting students/volunteers to the islands and carrying equipment-supplies necessary to support the work on the islands.

### Project Information

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<th>Cost</th>
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<tbody>
<tr>
<td>Public Boat Launch Facility</td>
<td>The City of Orange Beach hereby requests the State of Alabama, Department of Conservation and Natural Resources (ADCNR) to construct a public boat launch facility along Old River, in Gulf State Park (Baldwin County, Alabama). The city has designed and engineered a facility for the proposed location, and these schematics and plans have been submitted to the ADCNR as part of a concurrent NRDA project request.</td>
<td>394</td>
<td>Phillip West</td>
<td>Orange Beach</td>
<td>2200000</td>
<td>Trustee Portal</td>
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<tr>
<td>Boat-Accessible Public Restroom Facility for Boggy Point Boat Launch</td>
<td>The proposed project would provide a体现出支持的, boat-accessible restroom facility at the State-owned and managed Boggy Point Boat Launch, in Orange Beach, Alabama. This facility would be centrally located for boaters in the Terry Cove/Cotton Bayou/Bayou St. John/Perdido Pass area, and located within easy reach of Robinson and Bird Islands, which can host thousands of leisure boats and swimmers during the busy Spring and Summer boating season. There are no other public facilities in the area that are accessible by boat. The purpose would be to provide clean, sanitary comfort facilities for the boating public, and to reduce pollution in the concentrated swimming and boating areas.</td>
<td>395</td>
<td>Phillip West</td>
<td>Orange Beach</td>
<td>300000</td>
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<td>Pilot Town Property Acquisition and Shellfish Restoration</td>
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<td>Ft Morgan</td>
<td>$8,100,000</td>
<td>Project Title: Pilot Town Property Acquisition and St. Andrews Bay Estuarine and Shellfish Habitat Restoration. Project Cost: NTE $2,000,000 (land acquisition) Dredging $5,600,000, Breakwater $1,500,000, Planting etc. $1,000,000. Total $8,100,000 Pilot town is a large part of Alabama History. For some, the history of Mobile is dependent on the establishment of Pilot Town. The settlement was established early in the 19th century as a communal town on the Fort Morgan Peninsula. The settlement got its name from the bar pilots who guided sea-going vessels past the sand bars of Mobile Bay. In prehistory, the land is known to have been used and settled by Native American people. Pilot Town was destroyed in a 1906 hurricane, but traces of the settlement, including an old graveyard, can still be found there. Archaeological proof of Native American settlement can also be found. Historians have stated that the area was truly a paradise. &quot;Citrus grew wild and oysters paved the bottom of nearby St. Andrews Bay.&quot; Pilot town is one of Alabama’s most significant historical sites. The aerial photograph below compares the 1940 shoreline of Navy Cove and St. Andrews Bay (red line) against the 2009 shoreline. Erosion of the protective peninsula that was a signature of Navy Cove is almost completely lost to erosion. The shoreline in the project area has eroded approximately 600 feet since 1940 with the loss of approximately 25 acres of high quality wetlands and uplands. The property lies within the congressionally outlined acquisition area for the 1,990-acre Little Point Clear Unit of the Bon Secour National Wildlife Refuge. Purchase of the Little Point Clear unit would extend the refuge lands further west to include the western shore of St. Andrews Bay and encompass Pilot Town. Land prices, however, have prevented the Pilot Town tract and surrounding acreage from being acquired. The property has been described as &quot;acre for acre the best wildlife habitat on the peninsula.&quot; It is adjacent refuge property, which protrudes out from the Fort Morgan peninsula, is primarily estuary habitat streaked with narrow tidal inlets called finger sloughs and is host to species of marsh birds such as long sedge, herons, egrets, piping plovers and seaside sparrows. It is also host to many migratory Neotropical birds at certain times of the year. Other shore birds, like ospreys, use dead trees to roost. The protected waters of the sloughs and shallow bays act as a nursery for a myriad of aquatic species. In 2001, the U.S. Fish &amp; Wildlife Service, which manages the refuge, offered to purchase the property for $2 million. It included about 90 acres the owners had bought in a 1998 auction for $620,000, but the bid was rejected. Since that time an entrance road has been constructed to a subdivision on a portion of the property, however, 47 acres remain unobstructed and include some of the most ecologically diverse habitat on the peninsula and most if not all of the cultural history of Pilot Town. St. Andrews Bay lies to the East of the Pilot Town property and historically contained substantial oyster bed reefs. Due to Hurricanes, many areas of the Bay have been silted in covering most of the oyster beds. Beds can still be found in places particularly in the finger sloughs. The bay also includes a small marsh island that was once connected to Pilot Town by a Peninsula. Over the years, hurricanes and other erosional forces have breached the Peninsula causing salinity levels to increase in the bay as well as shoaling in the bay that further reduced suitable habitat for oyster beds. This project as proposed would provide a unique...</td>
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<td>Project Name</td>
<td>Proj ID</td>
<td>Submitted By/Primary Lead</td>
<td>Location</td>
<td>Cost</td>
<td>Project Description</td>
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<tr>
<td>Seagrass Restoration and WQ Management in Old River Estuary</td>
<td>351</td>
<td>John Dougherty</td>
<td>Coastal Gulf of Mexico</td>
<td>1200000</td>
<td>The proposed project consists of installing an ocean inlet pipeline across the barrier island to deliver transparent, high-salinity, low-nutrient seawater into the degraded estuary. An in-line, high-volume pump station is to be operated by remote control as determined by data collected from a variety of in-situ sensors and public data sources within the respective watershed. The objectives include active regulation of residence time, salinity, nutrient concentration and water clarity with the goal of providing optimum conditions for proliferation of seagrasses and increased aquatic species diversity. The pipeline crossing is to be located near the tidal node of the Peninsula. Pump operation generally will occur during the ebb tide with shut-off during the flood tide to allow for mixing of seawater and estuarine waters. Benefits accrue over time from the point of delivery to the ocean inlet. During low rainfall periods, no pumping may be required; during high rainfall periods, continuous pumping may be conducted to provide a benthic layer of seawater for protection of seagrass beds. Avg project cost=$7,500/ac; Restored Economic Benefit=20,500/ac; Estimated Benefit=Cost Ratio=2.75 Long term station operation and estuary management will be the responsibility of state and/or local government with a funding mechanism established by MRDA. Project success will be measured under the quality ranking process cooperatively established by NOAA and MARD through the ASSETS software - Assessment of Estuarine Trophic State (<a href="http://www.eutro.org">http://www.eutro.org</a>), and by annual comparison of standing seagrass acreage and blade density with pre-project conditions. These results will ultimately determine the quantity of environmental offsets achieved on behalf of the Deepwater Horizon Oil Spill damage assessment.</td>
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<tr>
<td>Coastal Alabama Habitat Restoration</td>
<td>357</td>
<td>Paul Looney</td>
<td>Coastal AL</td>
<td>800000</td>
<td>Coastal Alabama has tremendous environmental beauty. From the fringing coastal saltwater marshes, to the tourist-filled beaches of Gulf shores and Orange Beach, Alabama contains tremendous natural resources. The Alabama Department of Conservation and Natural Resources (ADCMR), State Lands Division (SLD) owns many</td>
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| Portersville Bay     | Two of coastal Alabama habitat. The purpose for acquiring the coastal habitats was to protect the resource for future generations. The Deepwater horizon oil spill incident impacted many habitat types in the Gulf of Mexico and in coastal Alabama specifically. Timing for the incident coincided with the northern movement of neotropical migratory birds as well as the spawning of fish species (non-target and sport species). Shrimp, crabs and benthic macroinvertebrates in shallow coastal waters were adversely impacted by either the presence of oil or the presence of other Polycyclic aromatic hydrocarbons (PAH) components. Aquatic birds, such as the pelican, gannet, and some shore birds, were negatively impacted by the presence of oil on the surface of the water, on shorelines, and in marshes. The proposed project is expected to address the restoration of habitats that support all of the impacted species. The impact to species is difficult to compensate in areas that were not heavily oiled. In some cases, the presence of the oil is now minimal. However, because the overall coastal ecosystem has been suffering from continued environmental impact from natural (sea level rise, wave energy) and man-made (erosion from ship wakes) sources, the amount of suitable habitat for the recovery of the impacted species has been compromised or has disappeared altogether. Many of the State-owned lands in the Mississippi Sound are in some state of environmental degradation. Due to the high energy wave environment many of the state-owned islands have suffered significant land loss due to coastal erosion and sea level rise. This type of land loss can be seen at all of the state-owned islands in the Portersville Bay and Grand Bay areas. The project being proposed is to concentrate on two specific islands owned by the AIDNR SLD in Mississippi sound. Coffee Island (also known as Isle aux Herbes) has endured shoreline erosion historically. A comparison of shoreline location between 1917 and the present present shows continuing and extensive shoreline erosion. In 1958 the island was breached and the two pieces were renamed in some GIS applications (Isle aux Herbes, and Terrapin Island). Some restoration work has been completed on this island but there is still more work required to complete the planned restoration and shoreline protection. This project will continue the planned restoration and shoreline protection work that was initiated. At this point, it appears that the south shore of the island would be the main emphasis. The project would provide new oyster reef habitat and increase finfish habitat in the Sound. Additionally, specific plantings on the island are proposed to help restore bird habitat. This would increase habitat for Neotropical migratory birds, including nesting and foraging habitat. Additional vegetative manipulation is expected to provide a habitat conducive for the roosting and nesting habitat for many aquatic bird species. The southern part of Coffee Island has been given the name Terrapin Island. Specific work will be aimed at providing/Increasing suitable habitat for the reproductive success and sustainability of the Mississippi diamondback terrapin. Where possible, mudflats and tidal creeks will be restored or created to increase habitat that can be used for an expanding terrapin population. Finally, throughout the Alabama coast, there are several plant species that have invaded natural communities. In the coastal environment, one of the most obnoxious invasive species is the common reed (Phragmites australis). The project proposes to address this and other invasive species.
<table>
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<tr>
<th>Coastal Alabama Habitat Restoration - Mobile Bay Bird Islands</th>
<th>Gannets, Osprey, and Intermediate Habitat</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
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<td>Additional Standards</td>
<td>Additional Criteria</td>
<td>PDARP Criteria</td>
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<tr>
<td>358</td>
<td>Paul Looney Mobile Bay</td>
<td>The island referenced here is in Portersville Bay. There are historic photographs of the island dating to 1917 which show the extensive erosion of the shoreline compared to the present shoreline of the island. Restoration of this island would include shoreline stabilization structures, backfilling to an agreed upon historic island profile and planting of suitable plant communities to provide suitable habitat for the same species discussed above.</td>
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scientific investigations have concluded that the number of birds killed, and the number of bird species impacted are hard to know specifically. It has been estimated that for every oiled bird captured and rehabilitated, there could be as many as 10 others that were never found. Initial estimates, while imprecise, are that thousands of birds in hundreds of species were impacted by the incident. Mobile Bay, for the most part, did not get direct impact from oil released from the Deepwater Horizon. However, due to past development trends, the amount of natural habitat available in Mobile Bay has been reduced by the construction of shoreline housing and shoreline armoring. Development of shoreline housing and the eventual armoring of the shoreline have resulted in a loss of fringing saltwater and fresh water wetland habitat, shallow mud flat habitat, and low elevation wetland and fast land vegetation. A developed shoreline does not contain any marsh habitat, tidal creeks, or wooded wetland habitat which is present on undeveloped shorelines in Mobile Bay. The environmental effects of an armored and developed shoreline has resulted in the loss of nearshore habitat and potential nesting and roosting habitat. Ecotone variation is possible, with some upland habitat available. Scientific investigations have concluded that the number of birds killed, and the number of bird species impacted are hard to know specifically. It has been estimated that for every oiled bird captured and rehabilitated, there could be as many as 10 others that were never found. Initial estimates, while imprecise, are that thousands of birds in hundreds of species were impacted by the incident.

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## Project Information

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<th>Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Property Acquisitions for Protecting the Big Creek Lake/Converse Reservoir</td>
<td>4081</td>
<td>Dwight McGough</td>
<td>Mobile County</td>
<td>$450,000</td>
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<tr>
<td>Rehabilitation of Sanitary Sewer Mains - Foley, Alabama</td>
<td>342</td>
<td>Richard Peterson</td>
<td>Foley</td>
<td>$125,000</td>
</tr>
</tbody>
</table>

## Project Description

- **Big Creek Lake/Converse Reservoir Watershed** covers approximately 103 square miles or 65,920 acres in western Mobile County, Alabama. This watershed system is the sole source of raw water for the two drinking water treatment plants for the City of Mobile’s water distribution system along with one of two sources for industrial use. This water supply system is also currently a source of drinking water for the City of Prichard, Chickasaw, and Spanish Fort. The Big Creek Lake/Converse Reservoir Watershed Management Program includes purchasing available properties and land use rights to prevent conditions from occurring that may adversely affect water quality within the watershed basin. Several properties within the watershed have been purchased by MAWSS over the years to ensure proper and management practices are followed for protecting the Big Creek Lake/Converse Reservoir water quality. As development continues to occur on the properties within the watershed that are neither owned nor controlled by the Mobile Area Water & Sewer System, the potential for detrimental effects to the water quality increases. Some examples of these conditions are drainage runoff containing nutrients from fertilizers or watercraft or naturally occurring residuals from erosion. The potential adverse affects of land development on raw water quality include runoff with increased amounts of sediment, chemicals and nutrients that promote the growth of algae. By owning the properties within the watershed, the implementation of proper land management programs by MAWSS can be assured for maintaining exceptional water quality for future generations.

- **The Utilities Board of the City of Foley (Rivera Utilities), in partnership with the City of Foley, desires to rehabilitate up to 8.6 miles of aged, deficient sanitary sewer mains within the City’s sewer collection system. Most of the collection system in and around downtown Foley was constructed of streetlift clay pipe 40-70 years ago. Rivera Utilities has identified, inspected and cataloged these deficiencies during routine internal video inspections. Deficiencies in the clay pipe include broken pipes, offset joints, root intrusion, and active groundwater infiltration/ stormwater infiltration (I/I). Where possible, mains will be rehabilitated using trenchless construction methods such as pipe relining and pipe bursting to minimize construction costs. These areas fall within the watersheds of Wolf Bay and Bon Secour Bay/Oyster Bay. Treated effluent is discharged from Riviera’s Wastewater Treatment Facility (WWTF) to Wolf Creek, which flows to Wolf Bay. Ultimately, flow from these watersheds enters the Intracoastal Waterway, Perdido Bay, Mobile Bay, and the Gulf. Wolf Bay is a pristine estuary designated by ADEM as an “Outstanding Alabama Waters”. Bon Secour Bay and Oyster Bay are popular locations for sport fishing and shellfish harvesting and are bordered by the Bon Secour National Wildlife Refuge. Both watersheds host very diverse habitats that do support or have historically supported several Federally listed species including bald eagles, Florida manatees, Kemp’s ridley turtle. Historic aerial photography can provide a basis for the eventual size of the project based on past erosion patterns. The general size for an individual island is envisioned to be over 20 acres and less than 200 acres. Lower in the Bay the created island habitat will support saltwater marsh habitat and marine floral and faunal communities. This project concept could be used to create or enhance islands in the Alabama waters of the Mississippi Sound.
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<th>Project Name</th>
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<tr>
<td>Safe Harbour</td>
<td>Rosa Zirlott, Bayou La Barre</td>
<td>$900,000</td>
<td>$54</td>
<td>This proposal supports the Public Access Objective (Increase public access to water resources) and the Sustainable Land Use Planning Objective in the Mobile Bay NEP Comprehensive Conservation and Management Plan. The proposal also supports the coastal community Resiliency and Resource Management Priority Theme Area of the Mississippi-Alabama Sea Grant Consortium (MDMIA) Strategic Plan. Commercial fishing along coastal Alabama began not long after the arrival of European settlers in the 1700’s. Plenty of shore line was available for docking vessels and for shore side catch handling activities. Location of these activities changed as the markets and transportation changed. The biggest change, however, has occurred in the last 40 years because of the following three major developments. 1. During this period the per capita consumption of seafood has occurred in the last 40 years because of the following three major developments. 1. During this period the per capita consumption of seafood has changed. 2. The number and size of the seafood support industries also increased especially the fish building and repair sectors. Vessel construction converted from wood to steel. The number and size of the seafood support industries also increased especially the fish building and repair sectors. Vessel construction converted from wood to steel. 3. Offshore oil exploration expanded along with commercial/sport fishing, and recreational use. During this period the per capita consumption of seafood has occurred in the last 40 years because of the following three major developments. 1. During this period the per capita consumption of seafood has changed. 2. The number and size of the seafood support industries also increased especially the fish building and repair sectors. Vessel construction converted from wood to steel. 3. Offshore oil exploration expanded along with commercial/sport fishing, and recreational use.</td>
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<tbody>
<tr>
<td>The Renovation of Mobile, Alabama’s Antiquated Storm Water Treatment Methods to Meet Modern EPA Standards</td>
<td>Carol Adams Davis</td>
<td>Mobile Bay</td>
<td>$407,260</td>
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The Renovation of Mobile, Alabama’s Antiquated Storm Water Treatment Methods to Meet Modern EPA Standards” would be an excellent NDA restoration project. Because Mobile County is located on Mobile Bay in a low-lying coastal community, storm water management should have a high priority. Mobile’s problems associated with the drainage and flooding of an old fragile deteriorated storm water collection system are well known by its residents. Overloaded inadequate storm drains become plugged with leaves and trash, thus our frequent excess rainfall has nowhere to go, so water collects in low areas, causing flash flooding of our streets and sidewalks. All untreated runoff, containing hydrocarbons, trash, and other pollutants, eventually end up in our watersheds and Mobile Bay. Mobile’s present Storm Water Management System is a natural target for a complete municipal storm water system retrofit. The Natural Resources Damage Assessment (NRDA) funds could create a contemporary storm water program for Mobile, which would improve the water quality of Mobile Bay Estuary, the fourth largest estuary in the United States. The design, construction, operation and maintenance of up-to-code storm water plan would incorporate a large budget including the following: Retrofitting Program, Monitoring Program, Best Management Practices, Pesticide, Herbicide and Fertilizer Programs, Used Oil & Toxic Materials, Street Maintenance Program, Spill Response and Clean Up, Program for Public Education and Reporting, Leakage and Cross Connections, Industrial Program, General Commercial and Residential Program, Nicu Construction and Illegal Dumping, Landfills and Other Waste Facilities, Combined Sewer Overflow Program, Groundwater & Wellhead Protection, Drinking Water Protection, Watershed Assessment & Total Maximum Daily Loads, Septic and Inland Infiltration Program, Consistent Street Sweeping Program Engineering & Planning: Design Criteria, Standards and Guidance, Field Data Collection, Max 1er Planning, Design, Field and Operations Engineering, Hazard Mitigation, Zoning Support, Multi-objective Planning Support, GIS Geospatial Information System and Database Management, Mapping, Land Use Planning & Controls Regulation and...
One year after the spill, we are still feeling the negative impact of the oil spill. Customers began to ask "Where is this product from?" due to the perception problems caused by the spill. The Organized Seafood Association of Alabama has been marketing Alabama Wild Caught Seafood since 2002. The Deep Water Horizon Oil Spill created a major shift in the perception of the quality of Gulf Coast waters and seafood. In order for present and future stakeholders to have confidence in our seafood, it is critical that the quality is questioned, along with an established website where data and other information can be disseminated continually. In the event of a critical water quality emergency, a preparedness plan will be in place to respond to these emergencies with initial mitigation procedures and a check and balance approach to lab methodology. Reports will be prepared in a technical and non-technical format to inform those persons or organisations of the quality of Gulf Coast waters and seafood on a routine basis. Briefs will be prepared in the event of a disaster or other incident where water and/or seafood quality is questioned, along with an established website where data and other information can be disseminated continually. In the event of a critical water quality emergency, data from the sampling events would be catalogued and evaluated continuously to determine any shift or trend in water or seafood quality. A quality assurance/quality control plan will be developed to provide plausibility of the data and a check and balance approach to lab methodology. Reports will be prepared in both a technical and non-technical format to inform those persons or organisations of the quality of Gulf Coast waters and seafood on a routine basis. 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Develop Wildlife Recovery and Rehab within Coastal Alabama

Project Name: "Coastal Alabama"  
Location: 406B  
Submitted By/Primary Lead: Lloyd L. Copi Jr.  
Cost: Coastal AL  

Project Description:

- Background: "Wildlife recovery within watershed consists presently of state and federal personnel, with a focus on endangered species. - Wildlife professionals have identified the need for a more reliable and analytical approach to recovery. - Wildlife-rehab locations are presently limited to facilities in Florida and Mississippi. 
- Concept: Obtain state and federal permits. - Develop financial support (non-government and government) to cover start-up and operating expenses. - Develop partnerships that include state and federal wildlife professionals, research and educational institutions, and local veterinarians to provide wildlife rehab services and analysis of wildlife mortality and injury. - Develop local facility that will house rehab services and provide educational programs on wildlife populations, habitat, and direct threats to wildlife health with the goal of mitigating long-term threats and preparing for natural and human-caused incidents that adversely affect wildlife. 
- Benefits: "Address an immediate need to provide sustainable and reliable wildlife recovery within the Mobile Bay watershed. - Provides an analytical approach to wildlife injury and mortality that will result in statistically valid baseline information on the health of wildlife populations. - Provides opportunities for biology students to gain practical field experience. - Provides marketing benefits to donors and cooperators. - Highlights the aesthetic and economic value of the natural resources of coastal Alabama. - Enhances the ability to maintain local control and management of future significant incidents that require wildlife recovery and rehab."

Island Wildlife Habitat Enhancement

Project Name: "Island Wildlife Habitat"  
Location: 5059  
Submitted By/Primary Lead: Phillip West  
Cost: Perdido Bay  

Project Description:

- Island Wildlife Habitat Enhancement: "Install bird nesting platforms. The loss of large mature pine trees used as nest sites to hurricanes will be temporarily offset by installation of 20 bird nesting platforms on Robinson, Gilchrest, and Walker Islands (the latter two after they are acquired from private interests). Most of the platforms would be placed on Robinson Island, where the largest amount of nesting has historically occurred. Great blue herons will be the primary target species, although other wading bird species may also use the platforms. Construction would take place during the June-July timeframe to avoid bird nesting activities. Costs associated with this proposal include purchase of lumber, hardware, associated equipment, and to support city employees to carry out the work or supervise volunteers would be paid out of restoration project funds. Acquisition of a 27 ft. pontoon boat would support this activity by providing means to transport equipment and people from the mainland to the island work sites. This boat would also be vital is carrying out the other activities associated with this project. Platform sites would be selected based on the location of pine trees used for nesting prior to recent storms. Follow-on monitoring of bird use"
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<td>Sustaining Alabama’s Working Waterfront through Oyster Aquaculture</td>
<td>would be carried out for 20 years using volunteers. Colonial-nesting birds have been confirmed to three nesting sites in coastal Alabama according to officials with the Dauphin Island Sea Laboratory, one of which is Robinson Island. These islands were identified as one of 4 priority areas in collaborative work by the Mobile Bay National Estuary Program and The Nature Conservancy in their 2006 report. &quot;Conserving Alabama’s Coastal Habitats’ Acquisition and Restoration Priorities of Mobile and Baldwin Counties.&quot; B. Install sand fencing enclosure to protect least tern/heron nesting areas. Least terns have nested on the ground on Robinson and Biloxi Islands. Human activities and the episodic presence of dogs on the islands have restricted tern nesting or compromised its success. Herons have abandoned use of nest trees near human activity areas on Robinson Island. The project would construct and maintain a permanent sand fence enclosure around areas historically used by terns and herons for nesting. Approximately 1000 feet of fence would be installed. This should eliminate disturbance to nesting terns and herons, thereby help sustaining populations that have been suffering impacts from humans, particularly during the past 15 years. The acquisition of a boat-motor (as above) would help with this project by facilitating transport of materials, equipment, and personnel from the mainland to island construction areas. C. Install protective/interpretive signage and develop educational brochures Human behavior problems have adversely affected island environments for the past 25 years. Intrusions into bird nesting areas, widespread littering, free-ranging dogs, and incursion of motorized vessels into extremely sensitive sea grass beds have all contributed to declining environmental conditions. The proposal would support a comprehensive signage program involving the perimeter of the three islands as well as the perimeter of the sea grass beds that encircle these islands. The conspicuous signs would mark bird nesting areas, the perimeter of sea grass beds, and reminders about the need for animal control and litter removal from the islands when people visit. Additionally, at least four large educational-type signs would be installed featuring information about the environmental features of the islands and the role/behavior of human conduct in sustaining island uses into the future. The grant would also support an educational &quot;island care joint venture&quot; with marinas, restaurants, boat rentals, and other commercial interests in the Perdido Pass, Terry Cave, Cotton Bayou, and Bayou St. John area, most, if not all of which depend directly or indirectly on the islands well-being to support their customer base.</td>
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<th>Restoration Types Addressed</th>
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<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
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<tr>
<td>Sustaining</td>
<td>Bill Walton</td>
<td>AL 1200000</td>
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Auburn University has partnered with Mississippi-Alabama Sea Grant Consortium and Alabama Cooperative Extension to launch off-bottom oyster farming in Alabama. Here we propose to expand this effort to include a large number of coastal residents, pursuing oyster farming both as environmentally and economically sustainable jobs as well as contributing significant numbers of oysters to restoration projects throughout the coastal waters of Alabama. 1. Enhancement of public oyster reefs by seeding with juvenile oysters Provide 50 million juvenile oyster per year (set on varying sizes of culture) for seeding onto public oyster beds to enhance the public fisheries within Alabama, raised by local oyster farmers and in partnership with Alma Bryant High School’s aquaculture program. Within 5 years, 250 million juvenile oysters will be added to public oyster beds in the region. For
The proposed work has environmental benefits, is economically viable and culturally compatible. The intent of this project is to assist state resource agencies in implementing existing oyster management strategies where a percent of the oysters on public reefs are harvested and the remainder provide critical fisheries habitat. Assuming 20% survival to market size, this stock enhancement could yield over 6,000 daily limits of eight sacks (AL limits) per year (with 200 market size oysters per sack), providing much needed income to the region, while also providing environmental services. The enhancement of natural oyster reef structure and oyster abundance will also provide for critical ecosystem services through improved water quality, increased biodiversity and creation of more diverse habitat. In addition to educating high school students and creating jobs for watermen at nursery sites, the oyster seed produced at a state supported hatchery will be transitioned to the private sector. 2. Development of off-bottom oyster aquaculture in the region Establish 2 100-acre oyster aquaculture parks in Alabama, where watermen are provided start-up grants to produce adult oysters for the food market and juvenile oysters to supplement oyster reef restoration. The two parks will support 40 independently operated 5-acre oyster farms capable of generating at least $2.5 million per year of combined income within 5 years through sales of premium oysters. These oysters command higher prices than those oysters traditionally produced from the oyster reefs in Alabama thereby providing greater income for the oyster producers and also reducing pressure on natural oyster resources. Initial research suggests that a 5-acre operation would allow an oyster farmer to raise 400,000 oysters per year; potentially yielding a gross annual income with a conservative 80% survival) of over $80,000. This would be a significant increase in annual income for the typical oyster catcher who might currently earn $20,000/year. Regionalisation.We strongly encourage the implementation of these approaches throughout the Gulf region. Parallel efforts are currently underway in Louisiana where Louisiana Sea Grant has partnered with Louisiana State University. The proposed work has environmental benefits, is economically viable and culturally compatible.
Robinson Island

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>Project Description</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project benefits more than one natural resource and/or service (+/-0/-)</td>
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<tr>
<td>Robinson Island Restoration</td>
<td>The upland integrity of Robinson Island has been seriously eroding for over 20 years. Numerous bird nesting trees have been lost, and numerous others are currently threatened by shoreline retreat. The restoration proposal would support a project to restore the shoreline to its 1985 configuration, while protecting remaining trees and stabilizing the island’s northeastern end. A U.S. Army Corps of Engineers permit would be obtained as well as necessary state authorizations to dredge a small amount of sand (estimated at 2500 cubic yards) from shoal areas in adjoining Terry Cove to reconstitute the island’s northeast shoreline. Fabric protection would be installed and riprap of suitable size placed to protect the reconstituted shoreline. Project costs would be related to permit acquisition (including surveys), dredging and sand placement, fabric installation, and riprap placement. Permanent markers would be installed to facilitate monitoring of project effectiveness over time (10 years). Without this project, additional loss of Robinson Island will occur, including more nest trees. The outcome of this project would be the restoration of 250 linear feet of eroded shoreline. The northeast tip of Robinson Island has been seriously eroding for over 20 years. Numerous bird nesting trees have been lost. This project would protect the northeast part of the island and restore shoreline integrity. The project would be limited to the area subject to severe erosion and would only stabilize the shoreline, not recapture lost upland area. Continuing erosion of this area would endanger many of the remaining bird nesting trees found on the island. The work would involve a relatively small amount of dredging and 250 feet of shoreline reinforcement sufficient to protect the island’s integrity. Use of experienced city employees and a marine contractor would help achieve the desired outcome. B. Reestablish Native Island Vegetation The upland vegetation of Robinson Island has been severely affected by tropical storms and sea level rise. Natural re-vegetation has been slowly occurring. A significant number of pine trees on the islands previously used for bird nesting have been lost. The project would boost recovery of natural vegetation. The project would include planting native species such as sand pine, slash pine, salt bush, smooth cordgrass, and sea oats on the island. Some removal of exotic vegetation may be necessary to facilitate success of this planting program. A partnership with Gulf Shores High School would</td>
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<td>Perdido River and Bay</td>
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<td>Mike McMillin</td>
<td>Spanish Fort</td>
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<tr>
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<td>Sherry Cain</td>
<td>Dauphin Island</td>
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<tr>
<td>Dauphin Island Campground Expansion</td>
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<tr>
<td>Dauphin Island Park and Beach</td>
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<td>Sherry Cain</td>
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</tbody>
</table>

**Project Description**

as developed to facilitate this part of the project. This was done by constructing a new lodge for the staff to use during the areas frequent storm events. This results in sewer overflows at the wastewater treatment facility which causes health and environmental hazards. The implementation of this project will prevent future sanitary sewer overflows from occurring.

**Additional Criteria**

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**Programmatic Damage Assessment and Restoration Plan (PDAAP) Criteria**

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<tr>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Restoration Types Addressed**

<p>| Oyster Reef (Y/N) | Sea Turtles (Y/N) | Recreational Use (Y/N) | Habitat on Federal Lands (Y/N) | Monitoring, Adaptive Management, and Administrative Oversight (Y/N) | Project is considerate of strategic frameworks (Y/N/NA) | Project delivers benefits cost-effectively (+/-/0) | Project meets Trustees' goals (+/-/0) | Project has reasonable probability of success (+/-/0) | Project prevents future and collateral injury to natural resources and services (+/-/0) | Project is not already required by existing regulations (Y/N) |
|-------------------|-------------------|------------------------|-------------------------------|---------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
|                   |                   |                        |                               |                                                               |                                                        |                                              |                                               |                                                 |                                                                |                                                               |                                                                |
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<tr>
<td>Board of Public Beach Parking</td>
<td>Board of Public Beach Parking</td>
<td>Nick Wilmott</td>
<td>Magnolia Springs</td>
<td>5000000</td>
<td>The Town of Magnolia Springs incorporated in 2006 in large part to protect the river Magnolia River from rampant development that was occurring in south Baldwin County. Since that time the town council and it’s citizens have spent nearly $100,000,000 conducting studies to determine the source of sediment loading, conducting bacteria and chemistry sampling and developing ordinances to place stringent guidelines on stormwater discharge. The river was reclassified by ADEM as an Outstanding Alabama Water in December 2009 due to the results of sampling by citizens. It is also a Tributary of Weeks Bay National Estuarine Reserve (WBNR). The river has a small watershed and is included in the watershed management plan as developed by WBNR. The major threat to this waterway is sediment loading. In 2008, a large bluff along the headwaters of the river collapsed into the river and that bed load sediment combined with sediment further upstream is threatening spawning habitat for the Striped Bass which concentrate each year around sandstone outcrops near deep spring-fed holes at the headwaters. The upstream navigable sections of the river have filled approximately 6 feet in the last 10 years for a distance of approximately 2400 feet. An estimated 35,000 cubic yards of sediment needs to be dredged before the habitat is destroyed. This area is also widely used for recreation with thousands of residents going to the cold water springs to relax and cool off during warm months.</td>
</tr>
<tr>
<td>Gulf Highlands/ Gulf Shores AL Public Beach Parking</td>
<td>Gulf Highlands/ Gulf Shores AL Public Beach Parking</td>
<td>Nick Wilmott</td>
<td>Fort Morgan</td>
<td>34000000</td>
<td>My family owns 113 acres located along the Alabama Gulf Coast, more specifically on the Fort Morgan Peninsula, with 2700 feet of beach. It is in the directly affected area of the BP Oil Spill of April 20, 2011. We are permitted for a 500 unit condominium complex but my proposal is in a different direction. This land contains endangered species such as the Alabama beach mouse, turtles and different types of plant life, but can also be utilized for human use as well. This property is the largest privately held parcel along Alabama’s small 36 mile coastline. I am proposing this property be purchased and turned into a public beach for generations of Alabama residents and tourists to enjoy. The footprint where the condominiums were going to be placed (approximately 22 acres), could be used as a parking lot (surface material can be decided upon by whomever is in control) for beach access and the remaining 80 acres can either be left as is for conservation and preservation or possible natural trails can be carved through for people to enjoy watching wildlife. This will be a once in a lifetime opportunity to preserve this much land for the general public to use as well as protect generations of wildlife that call this place home. It is a perfect blend of human use and wildlife conservation, and is directly located in the affected area.</td>
</tr>
<tr>
<td>Integrated Approach to Wetland Damage Assessment, Vegetation Monitoring, and Restoration</td>
<td>Integrated Approach to Wetland Damage Assessment, Vegetation Monitoring, and Restoration</td>
<td>William Bernard</td>
<td>coastal Gulf of Mexico</td>
<td>30000000</td>
<td>Problem Statement: Tidal wetlands bordering the Gulf of Mexico, including Federal wetlands in National Wildlife Refuge (NWR) areas, are at risk of being impacted by the oil that continues to wash ashore. A comprehensive and accurate determination of the impact over vast remote areas is not feasible with traditional survey methods. In order to identify and implement the most cost-effective solutions necessary for remediation/restoration; a unified, systematic approach using airborne remote sensing coupled with land-based restoration technologies.</td>
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</table>
### Project Information

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<tr>
<td>Tracking in the Gulf of Mexico</td>
<td>can be implemented to 1) efficiently identify the extent of impacted wetlands, 2) effectively guide the remediation/restoration process from planning to completion, and 3) provide a calibrated measurement of the effectiveness of the remediation/restoration efforts over the long term. Proposed Solution: SpecTIR proposes to provide comprehensive monitoring and restoration services along the Gulf coast using a proven combination of commercially available aerial remote sensing applications and innovative assessment and monitoring techniques that will promote program efficiency and cost-effectiveness. The team will use a scalable, phased approach that will identify impacted wetlands and allow for the prioritization, planning, and performance of restoration efforts. Additionally, the proposed methodology will provide a consistent and scientific means for accurate and quantitative post-restoration monitoring. The first phase of the proposed approach is to provide a baseline for restoration by collecting airborne hyperspectral imagery or, in the case of many Gulf Coast NWR wetlands, assessment of the hyperspectral data already collected prior to impact from oil. Guided by initial analysis of the airborne data, groundtruthing verification and validation of the wetlands will then be performed. SpecTIR will provide the existing 2000 sq km of pre-oil, baseline hyperspectral data collected from Gulf coast NWR areas prior to the oil entering the wetlands. The use of hyperspectral imagery for the discovery of hydrocarbons in the wetlands has been proven in the NASA funded VNIR study of an oil spill in Swanson Creek MD in 2000. The current instruments now include the VNIR portion of the spectra which brings an even higher degree of accuracy to the identification of the vegetative stress and community structure. Data and analysis will be collected into a GIS platform and be disseminated online to effectively guide restoration planning and implementation. Post restoration remote sensing monitoring will be performed to track changes in restoration success relative to the baseline data as well as consistently identified non-impacted sites. This data will be supported with ground truthing, data verification, and sampling by qualified field teams. Once the levels of impact to the wetland vegetation has been ascertained and prioritized, the information can be used to assist in the formulation of remediation and restoration plans. Going forward, progress can be monitored with the identical methodologies and technologies used in the initial assessment.</td>
<td>2135</td>
<td>Nest Amberger</td>
<td>Mobile</td>
<td>320000</td>
</tr>
<tr>
<td>Bandalong Litter Traps in the Dog River Watershed, Mobile, Alabama</td>
<td>The Dog River Clearwater Revival has been trapping trash for over five years now, using nets and booms stretched across the smaller tributaries of the Dog River. Now we are working on a program to trap trash using the Bandalong Litter Trap device. The first trap will be installed on the Montlimar Creek and three quarters funded. By trapping the trash upstream where it is concentrated into the trap, it is easier to remove and dispose of properly. Litter and silt are the major sources of pollution for the Dog River located in Mobile, Alabama. The City of Mobile estimates the need for at least six devices. This request is for three devices.</td>
<td>2137</td>
<td>Bj Smith</td>
<td>Mobile</td>
<td>450000</td>
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<tr>
<td>Project Information</td>
<td>Restoration Types Addressed</td>
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<td><strong>Criteria</strong></td>
<td><strong>Criteria</strong></td>
<td><strong>Criteria</strong></td>
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<tr>
<td>Reconstruct US 98 (Springhill Ave. 1-65 To Broad St. (Multiple Sections))</td>
<td>This is a major U.S. route through the city of Mobile that is in an advanced deteriorated state (drainage, access, green space, pedestrian features) are all in poor condition. Direct project benefits include improved access management, improved use during rain events, encourage redevelopment, improve green space and pedestrian features.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Reconstruct US 99 (Government Street) Multiple Sections)</td>
<td>This is a major US route through the City of Mobile that is in an advanced deteriorated state (drainage, access, green space, pedestrian features) are all in poor condition. Direct project benefits include improved access management, improved use during rain events, encourage redevelopment, improve green space and pedestrian features.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Spring Creek Drainage Repair) Upgrade additional phases</td>
<td>Major drainage route with highly erodible soil. Stabilization will reduce sediment load to Dog River and maintain stream bank green space. Reduce/eliminate flooding in several neighborhoods.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Florida St. Drainage Repair) Upgrade additional phases</td>
<td>Major drainage route with numerous areas of local flooding. Project would reduce/eliminate flooding in several neighborhoods.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Eco-Restoration/ Dredging of Langan Park Lake (Municipal Park)</td>
<td>This is a major outfall for multiple watersheds; this project has the ability to improve water quality, aquatic habitat and recreational use.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Eco-Restoration/ Dredging of Dog River and Tributaries</td>
<td>This is a major outfall for multiple watersheds; this project has the ability to improve water quality, aquatic habitat, recreational use and property value (this tax revenue).</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Drainage Improvements in the Southern Drain Watershed</td>
<td>This project would address areas of high flooding frequency. This project would benefit the environment by identifying illicit discharges of sanitary sewer into the City’s MS4 system, thereby decreasing health risks to the community and improving water quality.</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Reconstruct Old Shell Road Multiple Phases</td>
<td>This east/west cross-town connector route is in an advanced deteriorated state drainage, access, pedestrian access, and utilities are all in extremely poor condition. Project would consist of replacing all deteriorated infrastructure items</td>
<td>Trustee Portal</td>
<td>Project is consistent with criteria identified in the public notice (Y/N): 0</td>
<td>Project is not already required by existing regulations (Y/N): 0</td>
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<tr>
<td>Response and recovery of the periphyton in the near-shore habitats of the Gulf of Mexico</td>
<td>Barry Rosen</td>
<td>Gulf of Mexico</td>
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<td>Little Stickney Drainage Repair/Upgrade</td>
<td>Nick Amberger</td>
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<td>Carlisle Area Drainage Repair/Upgrade additional phases</td>
<td>Nick Amberger</td>
<td>Mobile</td>
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<td>Reconstruct Ann St. (SpringH)</td>
<td>Nick Amberger</td>
<td>Mobile</td>
<td>1400000</td>
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</tbody>
</table>

**Project Description**

and enhancing pedestrian facilities. This project would encourage redevelopment in the immediate community & increase water quality. Project benefits include improved access management, safer use during rain events and improved green space.

Periphyton play an important ecological role on seagrass leaves: 1) as primary producers in a seagrass system; 2) as sources of food for consumers; 3) as a source of sediments (calcareous algae); 4) as an indicator of environmental indicator of water quality; and 5) as a 10X-B filter for the seagrass leaves. This research will focus on the response of periphyton on seagrass leaves in by looking at physiological characteristics (short-term response) of the algal community and taxonomic shifts or losses in the community (long-term) areas that have been impacted versus unimpacted areas throughout the Gulf of Mexico. Several stressors on seagrass communities have lead to their worldwide decline, including an increase in nutrients, higher salinity, and increased wave energy. A new threat came from the weathered oil and chemical dispersants from the Deepwater Horizon oil spill that could be impacting seagrasses in coastal areas. Although entire seagrass beds may have been completely lost or their density may have been reduced, it is also important to understand that periphyton associated with the seagrass is a vital component of the seagrass ecosystem. The periphyton may buffer the seagrass from some of the moderate effects on the seagrass community. The various single-celled organisms that are part of the periphyton may also serve as sentry organisms; their physiological response to stress can signal an early warning of more substantial impacts to the ecosystem or that recovery is underway. Standardized protocols for sampling seagrass leaves will be used (such as certain distance for the growing tip) for sample collection. The number of replicates and the number of locations will be determined in coordination with work being performed by other researchers. A database will be created that identifies the organisms (images of species), physiological status, and community structure indices at key locations. This information will be collected across seasons to understand natural variability, and through time, to determine the impacts to the ecosystem.

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<td>2) East of I Catherine Street, 2) West of I-65 to University Blvd.</td>
<td>Catherine Street</td>
<td>Drainage Repair/Drainage Repair/Drainage Repair/</td>
<td>East of I</td>
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**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

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<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
<td>Project offers opportunities for external funding and collaboration (+ / 0 / -)</td>
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<td>Wetland, Coastal, and Nearshore Habitat (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
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<tr>
<td>Recreational Use (Y/N)</td>
<td>Project is fully funded (Y/N)</td>
<td>Project prevents future and continued adverse effect on public health and safety (+ / 0 / -)</td>
<td></td>
</tr>
<tr>
<td>Habitats on Federal Lands (Y/N)</td>
<td>Project is funded in coordination with work being performed by other researchers (Y/N)</td>
<td>Project is not already required by existing regulations (Y/N)</td>
<td></td>
</tr>
<tr>
<td>Oversight to Support Restoration Implementation (Y/N)</td>
<td>Project is consistent with regional or local conservation plan or restoration effort (Y/N)</td>
<td>Project complies with applicable laws and regulations (Y/N)</td>
<td></td>
</tr>
<tr>
<td>Damage Assessment (PDARP) Criteria</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td></td>
</tr>
</tbody>
</table>

**Additional Criteria**

<table>
<thead>
<tr>
<th>Sustainability/Long-term Benefit of project (+ / 0 / -)</th>
<th>Project offers opportunities for external funding and collaboration (+ / 0 / -)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project supports existing regional or local conservation plan or restoration effort (Y/N)</td>
<td>Project is technically feasible (+ / 0 / -)</td>
</tr>
<tr>
<td>Project is not already required by existing regulations (Y/N)</td>
<td>Project prevents future and continued adverse effect on public health and safety (+ / 0 / -)</td>
</tr>
<tr>
<td>Project offers opportunities for external funding and collaboration (+ / 0 / -)</td>
<td>Project complies with applicable laws and regulations (Y/N)</td>
</tr>
<tr>
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<tr>
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<td>Project complies with applicable laws and regulations (Y/N)</td>
</tr>
<tr>
<td>Project Name</td>
<td>Proj No/ID</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>U.S. 90 to Wat Ave. to Kentucky Mobile Drainage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruct Broad St. / Beauregard St. - U.S. 90 to Water St.</td>
<td>4090</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Map City of Mobile Drainage Systems</td>
<td>4091</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Construct New Public Works facility</td>
<td>4092</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>City Wide Bridge/Culvert Maintenance Project</td>
<td>4093</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Restoration of the Former Ziebach WWTF Property Near Mobile Bay</td>
<td>4098</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruct Dauphin Street (Fulton street to Broad Street)</td>
<td>5053</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruct/Rebuild Stations throughout the City of Mobile</td>
<td>5056</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruct/Repair Bridges throughout the City of Mobile</td>
<td>5057</td>
</tr>
</tbody>
</table>

353
**Project Information**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted by Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct a City of Mobile Regional Recycling Center</td>
<td>Nick Amberger</td>
<td>Mobile</td>
<td>8000000</td>
</tr>
<tr>
<td>Renovation of Mobile, Alabama’s Storm Water Treatment Methods to Meet Modern EPA Standards</td>
<td>Nick Amberger</td>
<td>Mobile</td>
<td>10000000</td>
</tr>
</tbody>
</table>

**Project Description**

This project would create an opportunity to have a modern recycling center in the expanding West Mobile area. Its construction would reduce burdens on landfills and help to reduce improper disposal of materials.

**Additional Criteria**

<table>
<thead>
<tr>
<th>Reasonable Probability of Success (+/-0/-)</th>
<th>Project is not already required by existing regulations (Y/N)</th>
<th>Project offers opportunities for external funding (Y/N)</th>
<th>Project delivers benefits cost-effectively (+/-0/-)</th>
<th>Sustainability/Long-term Benefit of project (+/-0/-)</th>
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</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

The effect of the project alternative on public health and safety (+/-0/-)

The effect of the project alternative on public health and safety (+/-0/-)

<table>
<thead>
<tr>
<th>Marine Mammals (Y/N)</th>
<th>Dryland &amp; Wetland Restoration (Y/N)</th>
<th>Combined Sewer Overflow Program (Y/N)</th>
<th>Land Use Planning &amp; Controls (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

The Project Information table is likely part of a form or a database entry that includes various identifiers, project names, locations, costs, and other details related to storm water management projects. The text elaborates on the importance of storm water management in Mobile, the issues associated with it, and the proposed solutions such as developing new facilities and standards to improve water quality and reduce flooding.
Modern EPA Standards is necessary for a resilient ecosystem in Mobile Bay and the Gulf of Mexico.

Increased public access to City Docking facilities
8109 Stan Wright Bayou La Batre 2500000 The City of Bayou La Batre owns and operates the city docks which is located at the mouth of Bayou La Batre as it opens into the Mississippi Sound and Portersville Bay. This facility was the staging arena for the BP VOO program. Currently these facilities offer very limited access for local fishermen and the general public. Public access to these docking facilities was denied during the Deep Water Horizon incident due to the exclusive use of these facilities for the BP VOO program. There is an expressed need within the community for better docking facilities for local fishermen and recreational boaters. The city proposed to construct a substantial pier with boat slips that provide water and sewer services (connected to the municipal water and sanitary sewer systems). The pier would include additional boat launching facilities and storage facilities and fishing opportunities to increase the public’s access and enjoyment of the waterfront. A boardwalk will be constructed along a portion of the bayou to provide passive recreation for the public as well. Trustee Portal N N N N N Y N

Acquisition of Wetlands for Habitat enhancement and public access for the City of Satsuma
9061 William Stewart Satsuma 3000000 This project requests NRDA funding to purchase land for conservation and public access in the city limits of the City of Satsuma in north Mobile County, Alabama. Trustee Portal N N N N N N Y N

Restore Our East End Beaches
10051 Sherry Cain Dauphin Island 2000000 Restore the sand on the East End of Dauphin Island, plant sea oats, panic grass, etc. The East End of Dauphin Island is home to Historic Fort Gaines, Dauphin Island Sea Lab, Dauphin Island Campground, and Audubon Sanctuary. Dauphin Island is the first defense for the oyster beds, the marshes and the wetlands to the south and this barrier island helps protect the main land. Trustee Portal N N Y N N N N N

Alabama Port and Heron Bay Seawor Improve- ments
10054 Joe Summers-gill Mobile County 3500000 Although densely developed, southwestern Mobile County has no public sanitary sewer systems. Currently, most households and businesses within the MCWSFPA territory rely on individual on-site septic systems for sewer disposal. Unfortunately, these systems experience high failure rates due to sandy soil conditions and heavy rain events. There are 200 such homes and businesses located in the Heron Bay and Alabama Port communities that have been of concern for many years due to their ecological significance and proximity to the coastal waterways. According to the Mobile County Health Department, there is a high number of failing septic systems in this area, polluting the productive wetlands of Fowl River, Mississippi Sound and Mobile Bay. In addition, these septic tanks are installed at sea level adjacent to Cedar Point, the most productive oyster reefs in coastal Alabama. MCWSFPA proposes to construct a public sewer collector and treatment system in the Heron Bay and Alabama Port communities. This project will restore valuable coastal areas and will offset damage by the Deepwater Horizon Oil Spill as many of similar salt marshes were oiled during the event and were injured during response and recovery. For example, heavy equipment used to deploy boom impacted the natural hydrology of the wetlands. Removal of pollutants associated with on-site septic systems will improve water quality and will improve habitat for fish and wildlife. The
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Restoration Types Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria</th>
<th>Additional Criteria</th>
</tr>
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<tbody>
<tr>
<td>City of Chickasaw Wetland Restoration and Water Quality Improvement Project</td>
<td>The Utilities Board of the City of Chickasaw currently owns and maintains two 5-acre wastewater stabilization lagoons that operate in parallel and are used to treat wastewater collected from the City of Chickasaw and the Port of Chickasaw. The lagoons drain directly into Chickasobogue Creek which subsequently drains into Mobile River to Mobile Bay. This lagoon treatment works was installed in the late 1980s to replace an aging mechanical primary treatment plant. The dual-lagoon (5-acre) treatment works was designed for a flow of approximately 1,500,000 gallons per day to serve a population of 15,000 persons. Due to evolving management practices and changes in the treatment process, the lagoon treatment system serving the City of Chickasaw has recently failed to meet treatment standards. As a result, the Utilities Board of the City of Chickasaw has entered into a Consent Decree issued by the Alabama Department of Environmental Management (ADEM) on July 17, 2009. Although some minor impacts from the noncompliance have been mitigated, there is a critical need for an updated wastewater treatment facility, according to ADEM and consulting engineers. This facility would meet treatment standards and would enable the City of Chickasaw to restore wetlands in the former sewage lagoons. The lagoons that used to receive effluent will be realigned into coastal wetlands in order to make the environment and public whole by restoring natural resources injured as a result of the Deepwater Horizon Oil Spill. In addition to improving water quality standards, the restored wetland will provide habitat for fish and wildlife. The project includes costs associated with engineering, permitting, project management and construction of the wastewater treatment facility.</td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td></td>
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<tr>
<td>Bon Secour National Wildlife Refuge</td>
<td>This project will permanently protect lands identified by the U.S. Fish &amp; Wildlife Service as critical for acquisition and long-term management by the Bon Secour National Wildlife Refuge (NWR). It will add approximately 250 acres of sensitive coastal lands to the Little Point Clear Unit at this refuge. It includes significant animal habitat along St. Andrews Bay and greater than 100 acres of salt and freshwater wetlands, as well as several tidal sloughs, and adjacent upland areas. This acreage shares several property borders with the FWS, and will immediately be managed for improved habitat.</td>
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<tr>
<td>Grand Bay National Wildlife Refuge</td>
<td>This effort seeks to permanently protect lands identified by the U.S. Fish &amp; Wildlife Service as critical for acquisition and long-term management by the Grand Bay National Wildlife Refuge (NWR). This project intends to add approximately 2,250 acres to the nearly 18,000 acres currently owned by the United States Fish &amp; Wildlife Service and the Grand Bay National Estuarine Research Reserve, managed by the State of Mississippi. It will add critical coastal frontage to the Grand Bay NWR for permanent protection, and improved management of coastal wetlands, and adjacent upland areas.</td>
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</tr>
<tr>
<td>Headwaters Coastal Forest Protection, Baldwin County, AL &amp; Escambia/</td>
<td>Protection of approximately 100,000 acres of working forest lands in the Mobile Bay/Perdido/Pensacola Bay Basins. The acquisition of a working forest easement over these lands would permanently protect the integrity of each of the respective estuarine systems through permanent protection of the water quality and avoidance of further sedimentation through land fragmentation and conversion.</td>
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</tr>
<tr>
<td>Project Name</td>
<td>Project Description</td>
<td>Project Information</td>
<td>Restoration Types Addressed</td>
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<td>Public Notice</td>
<td>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</td>
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</tr>
<tr>
<td>Biscayne National Park, FL</td>
<td>For more information, request resume. Project Type Mitigation of polluted waters through filtration by mussel clusters.</td>
<td></td>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
</tr>
<tr>
<td>SIPHON</td>
<td>Mitigation of Polluted Waters through Filtration by Mussels Clusters</td>
<td></td>
<td></td>
<td>Project is consistent with criteria identified in the public notice (Y/N)</td>
<td>Project meets Trustees’ goals (+ / 0 / -)</td>
<td>Project has reasonable probability of success (+ / 0 / -)</td>
</tr>
<tr>
<td>The Gulf Restoration Fund</td>
<td>The Gulf Restoration Fund supports organizations and individuals working on the restoration of the coastal and marine ecosystems of the Gulf of Mexico. The Gulf of Mexico is the ninth largest body of water in the world and home to over 15,000 different species of plants and animals. While the damages and impact of the BP Deepwater Horizon explosion and subsequent spill are still being assessed, this fund focuses on the other 80% of the Gulf that has been destroyed by decades of coastal development projects, agricultural runoff, overfishing and pollution.</td>
<td></td>
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</tr>
<tr>
<td>440</td>
<td>Case Manager / Shimmer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>359</td>
<td>Bio-remediation of Estuaries and oil affected Intertidal areas</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The protection from further fragmentation of this land base will ensure long-term timber management, which will continue to provide jobs for the region.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Principal Lead</th>
<th>Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulf of Mexico Restoration</td>
<td>365</td>
<td>John Easton</td>
<td>Gulf states</td>
<td></td>
<td>Site local fishing boats to collect long-term data on the environmental impacts of the spill. Find out if the tar on the bottom is being digested by natural organisms and identify which ones. Figure out the rate that the tar and oil is biodegrading. Do definitive research on whether dispersants are safe for the environment or do they do more damage than the original spill? Do experiments on different types of bio-remediation on the beaches and in the wetlands to see whether they are effective. Accordingly may I suggest a cluster. Our project continued, and until the violent political issues of the time intervened we made rustic strides in aquaculture, taking the project to a new level where crushed mussel shell fertilized home gardens, and steamed mussel meat fed poultry. Suffice to say, we eat well. Unbeknown to me then, I'd unwittingly pioneered an African subsistence food source methodology, and without due attention had made use of available junk, allowing a lifetime passion and study of filtration at work. Our project was of a highly rudimentary nature. The modern form of the activity is best explained by Swedish experts Odd Lindahl and Sven Koilberg at: <a href="http://www.bioscience-explained.org/Exfoils_S.pdf?musuweng.pdf">http://www.bioscience-explained.org/Exfoils_S.pdf?musuweng.pdf</a>. This natural process of mitigating your oil degraded ecosystems will prove slow, yet highly effective. There is no quick fix. In an innovative and cost-effective manner, bioremediation of petrocarbons becomes a natural process through filtration, wherein nature is assisted, and allowed to do its work. Accordingly I may suggest a project with the involvement of the fantastically innovative ladies of Matter Of Trust (Org), who have stock piles of nylon and a commendable panache for getting things done. (A copy of this mail is forwarded to them). I am happy to project manage the venture, being in a ‘go to position’, where my time and enthusiasm are at your disposal. My motto is “Shut up, Put up, and manage the venture, being in a ‘go to position’, where my time and enthusiasm are at your disposal.”</td>
</tr>
<tr>
<td>Ocean Floor Recovery Project</td>
<td>466</td>
<td>Elder Greg</td>
<td>Gulf of Mexico</td>
<td></td>
<td>Build large vacuum cleaners to pump up the oil that is laying just below the ocean floor. The oil can be pumped and filtered into tankers. It’s right there. Scoop it up. It’s money in the bank. I don’t want a dime. I would just like to give money made to S’s charity and the people who clean up the gulf.</td>
</tr>
</tbody>
</table>
### Project Information

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<tr>
<th>Project Name</th>
<th>Project Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Capacity for the Alabama Marine Mammal Stranding Network</td>
<td>The Marine Mammal Stranding Network (AMMSN) was formalized by the 1992 amendments to the Marine Mammal Protection Act (MMPA), and NOAA’s NMFS was designated as the lead agency to coordinate related activities. Volunteer AMMSNs exist throughout all coastal states to respond to marine mammal strandings. Volunteer AMMSN organizations/participants must either be authorized under Section 112c (Stranding Agreements from the NMFS regional offices) or Section 109h (Federal, State or local government officials) of the MMPA to respond to and/or rehabilitate stranded marine mammals. The AMMSN plays a critical role in understanding key causes of marine mammal morbidity and mortality, and also in the early detection and mitigation of anthropogenic or natural threats to marine mammals. The AMMSN is also critical for monitoring the health of populations post DWH and during restoration activities. In Alabama, the only authorized Stranding Agreement holder responding to and investigating stranded marine mammals throughout the State is the Alabama Marine Mammal Stranding Network (AMMSN), operated out of the Dauphin Island Sea Lab on Dauphin Island, Alabama. On average, Alabama experiences ~29 cetacean (whale or dolphin) strandings each year. This project will enhance the capacity of the AMMSN to respond to, necropsy, and analyze samples collected from stranded marine mammals in Alabama waters to better understand causes of marine mammal illness and death. It will also support increased data consistency for information collected from stranded marine mammals by supporting the AMMSN to enter their data into a regional marine mammal health database (Gulf MAP). The information collected by the AMMSN from stranded marine mammals will enable managers to mitigate impacts to marine mammals from natural and anthropogenic threats and to monitor population recovery post-DWH. PDARP: Increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention of anthropogenic and natural threats. Project benefit: This project will increase marine mammal survival through better understanding of causes of illness and death, and early detection and intervention of anthropogenic and natural threats.</td>
<td>~27,000/year</td>
</tr>
</tbody>
</table>

### Restoration Types Addressed

<table>
<thead>
<tr>
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<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Marine mammals</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is consistent with criteria specified in the public notice (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
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<tr>
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<td>Project is time critical (+/0/-)</td>
<td>Project is time critical (+/0/-)</td>
<td>Project is not already required by other regulations (Y/N)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
</tr>
<tr>
<td></td>
<td>Project readiness (+/0/-)</td>
<td>Project readiness (+/0/-)</td>
<td>Project is technically feasible (+/0/-)</td>
<td>Project is consistent with programmatic restoration goals (Y/N)</td>
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<td>Project benefit (+/0/-)</td>
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<td>Project is time critical (+/0/-)</td>
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<td>Project is not already required by other regulations (Y/N)</td>
<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
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<td></td>
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<td>Project offers opportunities for external funding &amp; collaboration (+/0/-)</td>
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</table>
Dolphin Bycatch Assessment of Project Name Shri Commercial Bottlenose Estuarine Dolphin Fishery

Location Perdido Bay, state waters

Coastal AL

Mobile Bay, MS Sound, Coastal AL state waters

Project Description

Bottlenose dolphins. Therefore, this project will develop information needed to reduce the incidental bycatch of bottlenose dolphins in the skimmer and otter trawl fishery in Alabama state waters by: (1) enhancing observer coverage in Alabama inshore waters to achieve robust levels of observer coverage to accurately determine levels of bycatch (e.g. expand federal coverage into state waters), implement new observer program consistent with the federal program, etc; (2) characterizing and understanding the nature of dolphin interactions with both skimmer and otter trawl gear (e.g. use the DIDSON to characterize underwater interactions and surface observations per Hattaway and Foster 2015); (3) testing potential gear modifications (e.g. modify net and lazy line materials or configurations, etc) to reduce harmful interactions, and (4) directly monitoring stranding and observer data to measure effectiveness of bycatch reduction solutions. Enhancing observer coverage could include increasing coverage in inshore state waters, including non-federally permitted vessels and skimmer trawls to provide information on bycatch rates and estimate distribution of fishery effort (Soldevilla et al. 2015, 2016). Conducting research to better understand the risk factors/causes of dolphin entanglements and interactions in skimmer and other trawls would help determine next steps to identify ways to reduce bycatch (Soldevilla et al. 2015; Hattaway & Foster 2015). PDARP: Reduce commercial fishery bycatch through collaborative partnerships. Project benefits: enhance survivorship and recovery of bottlenose dolphins in AL state waters by reducing lethal dolphin bycatch in shrimp trawl gear.

Assessment of Bottlenose Dolphin Estuarine Populations and Health

Project Name

Mobile Bay, MS Sound, Perdido Bay, Coastal AL state waters

Project Description

Certain data collection activities are crucial to offset critical data uncertainties and provide foundational information to inform future restoration projects within Alabama state waters. For example, updated bottlenose dolphin estuarine stock assessment work including population and health assessments inform and support both identification of future restoration needs as well as monitoring. Among other things, baseline population abundance estimates are necessary to determine.

Project Information

Project Name Shri Commercial Bottlenose Estuarine Dolphin Fishery

Submitted By Primary Lead AL MDEQ, Coastal AL

Location Coastal AL

Cost 120,000

Submitted Via See Table 3 below.

Project Description

Marine mammal bycatch in fishing gear is a leading source of mortality among marine mammals and one of the main threats identified for bottlenose dolphins in the Gulf of Mexico (Phillips and Rossel 2014; Read et al. 2006). The mean annual bycatch mortality estimates for the Gulf of Mexico portion of the shrimp trawl otter fishery from 2010-2014 in the Alabama/ Mississippi estuarine stock strata was 27 animals (CV 1.1; 95% CI: 0.150) (Soldevilla et al. 2016). These estimates are based on bycatch rates from near-shore waters as there has been no observer coverage, and hence no observed takes, in Alabama estuarine waters. However, shrimp fishery interactions in Alabama estuarine dolphins have been documented. In 2016, a commercial shrimp fisherman reported a lethal entanglement of a dolphin in the lazy line of the trawl in Alabama. Observer data in inshore Alabama waters is crucial to accurately determine the magnitude of bottlenose dolphin bycatch in the shrimp trawl fishery and additional information is needed to identify, test, and implement ways to reduce bycatch. Critical information is also needed to understand the shrimp trawl effort distribution in inshore waters as it relates to estuarine stocks of bottlenose dolphins. Therefore, this project will develop information needed to reduce the incidental bycatch of bottlenose dolphins in the skimmer and otter trawl fishery in Alabama state waters by: (1) enhancing observer coverage in Alabama inshore waters to achieve robust levels of observer coverage to accurately determine levels of bycatch (e.g. expand federal coverage into state waters), implement new observer program consistent with the federal program, etc; (2) characterizing and understanding the nature of dolphin interactions with both skimmer and otter trawl gear (e.g. use the DIDSON to characterize underwater interactions and surface observations per Hattaway and Foster 2015); (3) testing potential gear modifications (e.g. modify net and lazy line materials or configurations, etc) to reduce harmful interactions, and (4) directly monitoring stranding and observer data to measure effectiveness of bycatch reduction solutions. Enhancing observer coverage could include increasing coverage in inshore state waters, including non-federally permitted vessels and skimmer trawls to provide information on bycatch rates and estimate distribution of fishery effort (Soldevilla et al. 2015, 2016). Conducting research to better understand the risk factors/causes of dolphin entanglements and interactions in skimmer and other trawls would help determine next steps to identify ways to reduce bycatch (Soldevilla et al. 2015; Hattaway & Foster 2015). PDARP: Reduce commercial fishery bycatch through collaborative partnerships. Project benefits: enhance survivorship and recovery of bottlenose dolphins in AL state waters by reducing lethal dolphin bycatch in shrimp trawl gear.

Assessment of Bottlenose Dolphin Estuarine Populations and Health

Project Name

Mobile Bay, MS Sound, Perdido Bay, Coastal AL state waters

Project Description

Certain data collection activities are crucial to offset critical data uncertainties and provide foundational information to inform future restoration projects within Alabama state waters. For example, updated bottlenose dolphin estuarine stock assessment work including population and health assessments inform and support both identification of future restoration needs as well as monitoring. Among other things, baseline population abundance estimates are necessary to determine.

Related to AL portal 248
sustainable levels of human-caused impacts on estuarine bottlenose to a stock (e.g., per Soldevilla et al. 2015, 2016). Therefore, this project will fill critical data uncertainties for estuarine stocks of bottlenose dolphins in Alabama state waters by determining updated population abundance estimates, understanding dolphin distribution in estuarine waters and seasonal movement patterns, and fecundity rates. This will be achieved by conducting systematic mark-recapture photo identification surveys repeated over select time-frames and seasons. This project will also include additional state and federal collaborative photo-identification coverage in Alabama state waters to achieve consistent coverage throughout the year. This effort will further inform future restoration projects and increase dolphin survival by: (1) characterizing dolphin habitat and identifying potential local stressors affecting estuarine bottlenose dolphin stocks; (2) providing a field team for rapid response monitoring and support for entangled/entrapped/out-of-habitat dolphins to increase survival; and (3) providing support for standardizing data collection, analysis, and integration across stock assessments. Conducting systematic surveys to determine population abundance and collaborative, consistent photo-identification coverage in state waters will collectively support future restoration planning efforts by establishing baseline information and identifying threats for further study. This project will also directly increase bottlenose dolphin survival by supporting implementation of rapid response teams for entangled/entrapped/out-of-habitat dolphins by providing local monitoring of at-risk dolphins. Finally, this project supports monitoring efforts by establishing baseline information before implementation of marine mammal projects, as well as other restoration projects with the potential to impact marine mammals. PDARP: Increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention of anthropogenic and natural threats. Project benefits: Increased bottlenose dolphin survival through better understanding of BSE populations and threats. 

Reduction of Bottle-nose Dolphin Bycatch in Commercial Gillnets
Mobile Bay, MS Sound, Perdido Bay, Coastal AL state waters
500,000
Marine mammal bycatch in fishing gear is a leading source of mortality among marine mammals and one of the main threats identified for bottlenose dolphins in the Gulf of Mexico (Phillips and Ross 2014; Read et al. 2006). Dolphins are known to become incidentally entangled in gillnet gear resulting in mortality and serious injury. In 2012, federal observer coverage was initiated to better characterize fishing effort, catch, and bycatch and interactions with protected species on state- and federal-registered commercial gillnet vessels operating within Alabama, Mississippi, and Louisiana state waters (gillnetting is prohibited in Texas and Florida state waters) (Mathis et al. 2016). Although there have currently been no observed takes of bottlenose dolphins within Alabama state waters, dolphin interactions with gillnets were documented. In Alabama, 46% of observed gillnet sets had observations of bottlenose dolphins present during haul back, with dolphins feeding out of the net during 7% of sets and sometimes swimming into the circle of the strike net to feed (Mathis et al. 2016). Dolphins commonly depredate on gillnet gear and use nets as a foraging strategy, which leads to an increased risk of lethal entanglement. Recently, some strandings of bottlenose dolphins in Alabama where commercial gillnet effort is known to concentrate show lesions on the carcass that are related to Trustee portal? Y N N N N N N
**Project Information**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>Reduce Injury and Mortality of Bottlenose Dolphins from Hook-and-Line Fishing Gear</td>
<td>Mobile Bay, MS Sound, Perdido Bay, Coastal AL state waters</td>
<td>$480,000</td>
<td></td>
</tr>
</tbody>
</table>

**Project Description**

Characteristics of interactions with gillnet gear: Therefore, this project will develop information needed to further characterize and determine the extent and magnitude of dolphin interactions with gillnet gear operating in Alabama state waters by: (1) exploring the use of alternative observer coverage methods to overcome existing challenges and enhancing/expanding observer coverage on state-documented commercial gillnet vessels in Alabama state waters (e.g., enhance existing federal coverage, implement new observer program consistent with the federal program, etc). This information is needed to refine and enhance our understanding of fishing effort, catch, bycatch and interactions with bottlenose dolphins. (2) Conducting fine-scale behavioral observations of dolphins in areas where interactions are known to occur to further characterize the nature of their interactions will gillnets. This information will be used to identify, develop, test, and implement ways to prevent and reduce lethal interactions (e.g. testing gear and fishery practice modifications).

**Additional Criteria**

- **Water Quality/ Nonpoint Source Nutrient Reduction (Y/N)**: Y
- **Wetland, Coastal, and Nearshore Habitat (Y/N)**: N
- **Oyster Reef (Y/N)**: N
- **Birds (Y/N)**: N
- **Sea Turtles (Y/N)**: N
- **Recreational Use (Y/N)**: N
- **Habitat on Federal Lands (Y/N)**: N
- **Oversight to Support Restoration Implementation (Y/N)**: N
- **Project is consistent with programmatic restoration goals (Y/N)**: Y
- **Project is considerate of strategic frameworks (Y/N/NA)**: Y/NA
- **Project meets Trustees' goals (+ / 0 / -)**: +
- **Project is not already required by existing regulations (Y/N)**: Y
- **Project is technically feasible (+ / 0 / -)**: +
- **Sustainability/Long-term Benefit of project (+ / 0 / -)**: +
- **Project is time critical (+ / 0 / -)**: +
- **Public Health and Safety (+ / 0 / -)**: +
- **Project is not already fully funded (Y/N)**: N
- **The effect of the project alternative on public health and safety (Y/N)**: Y
- **Project is not currently impacted by existing regulations (Y/N)**: Y
- **Project complies with applicable laws and regulations (Y/N)**: Y
- **Project supports existing regional or local conservation plans (Y/N)**: Y
- **Project prevents future and collateral injury to natural resource (Y/N)**: Y
- **Project delivers benefits cost effective (Y/N)**: Y
- **Project is consistent with criteria identified in the public notice (YN)**: Y
- **Project has reasurability of success (Y/N)**: Y
- **Project has positive public health and safety effects (+ / 0 / -)**: +
- **Project is located in an area of high economic value (Y/N)**: Y
- **Project is located in an area of high biodiversity value (Y/N)**: Y
- **Project is located in an area of high cultural value (Y/N)**: Y
- **Project is located in an area of high ecological value (Y/N)**: Y
- **Project is located in an area of high economic value (+ / 0 / -)**: +
- **Project is located in an area of high biodiversity value (+ / 0 / -)**: +
- **Project is located in an area of high cultural value (+ / 0 / -)**: +
- **Project is located in an area of high ecological value (+ / 0 / -)**: +

**Public Notice**

**Oil Pollution Act (OPA) Criteria (15 CFR 990.54)**

<table>
<thead>
<tr>
<th>Project</th>
<th>Public Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

**Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria**

- **Project is consistent with criteria identified in the public notice (YN)**: Y
- **Project has reasurability of success (Y/N)**: Y
- **Project has positive public health and safety effects (+ / 0 / -)**: +
- **Project is located in an area of high economic value (Y/N)**: Y
- **Project is located in an area of high biodiversity value (Y/N)**: Y
- **Project is located in an area of high cultural value (Y/N)**: Y
- **Project is located in an area of high ecological value (Y/N)**: Y
- **Project is located in an area of high economic value (+ / 0 / -)**: +
- **Project is located in an area of high biodiversity value (+ / 0 / -)**: +
- **Project is located in an area of high cultural value (+ / 0 / -)**: +
- **Project is located in an area of high ecological value (+ / 0 / -)**: +

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### Project Information

<table>
<thead>
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<th>Project Name</th>
<th>Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Reduce Harmful and Lethal Impacts to Dolphins from Illegal Feeding Activities</td>
<td></td>
<td>AL BSE and Coastal waters</td>
<td>$350,000 - $500,000</td>
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</table>

### Project Description

It has been well documented for more than 20 years that illegally feeding wild dolphins can lead to a variety of high-risk situations that place both dolphins and people in danger (Cunningham-Smith et al., 2006; NMFS 1994; Orams et al., 2002; Samuels & Bejder, 2004). Feeding dolphins approach boats more readily looking for handouts, thus increasing the animals’ risk for boat strike or gear entanglement (Bechdel et al., 2009; Powell & Wells, 2011). Fed dolphins can also become targets for human acts of retaliation, often from fishermen who become frustrated by dolphins begging, removing bait or catch from their lines, or scavenging on undersized throw-backs. Begging behaviors can be passed through a dolphin population via social learning, thus perpetuating and increasing the prevalence of the problem over time (Donoghue et al., 2002; Wells, 2000; Whitehead et al., 2004). Calves of provisioned mothers are at increased risk of insufficient hunting experience due to neglect while mothers are seeking handouts from humans (Hausgraf & Mann, 2003. Mann & Barnett, 1999; Mann & Kims, 2003). Areas within Alabama (e.g., Orange Beach) are known for illegally feeding wild dolphins by various water users (i.e. tourism vessels, commercial and recreational fishermen etc). Therefore, the goal of this project is to reduce lethal impacts to dolphins from illegal feeding activities known to occur within Alabama state waters by effectively changing human behaviors through a targeted outreach and education strategy in a phased approach. This can be achieved by the following phases: (1) designing and implementing social science studies (e.g. surveys, focus groups, interviews) to characterize the nature and extent of feeding wild dolphins in Alabama state waters by user group, the motivations/perspectives/attitudes of each user group, and the receptiveness to different outreach/education messages and tools/products designed to reduce illegal feeding; (2) based on the social science studies, develop a comprehensive and targeted outreach plan to effectively educate and inform target audiences about the harm of feeding wild dolphins and how to help promote dolphin conservation; and (3) partner with the state and local stakeholders to widely distribute and communicate educational tools and messages to reach targeted user groups throughout Alabama.
**Project Description**

Reduce Harmful and Lethal Impacts to Dolphins from Illegal Harassment Activities from Vessel-Based Ecotourism Activities

Vessel-based harassment specifically by recreational and ecotourism vessels has been documented in Alabama waters, particularly around Perdido Bay. Dolphins are significantly affected by vessel-based harassment both at an individual and population level (Bejder et al., 2006a; Bejder et al., 2006b; Lusseau et al., 2006). Numerous studies examining the effects of viewing have shown that vessels disturb dolphins’ natural behavior patterns, causing shifts in activity budgets, changes in group cohesion and group size, deviations in swim patterns, increased traveling behavior, and reductions in natural foraging and resting behaviors (Allen & Reed, 2001; Bejder et al., 2006a; Bejder et al., 2006b; Constantine et al., 2004; Lusseau et al., 2003a; Lusseau, 2003b; Lusseau, 2003c; Samuels & Bejder, 2004). These short-term behavioral changes can lead to long-term biological impacts for dolphin populations such as declines in reproductive health and permanent habitat displacement or abandonment (Bejder, 2005; Bejder et al., 2006b; Lusseau, 2008; Lusseau et al., 2006; Tyne et al., 2014). To help prevent harassment to dolphins, NOAA Fisheries promotes responsible viewing of wild dolphins by encouraging vessel operators to follow the Southeast Region Marine Mammal & Sea Turtle Viewing Guidelines (http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/document/nnoa_southeast_marinemammal_seaturtle_viewingguidelines_brochure.pdf). To help prevent harassment to dolphins, NOAA Fisheries promotes responsible viewing of wild dolphins by encouraging vessel operators to follow the Southeast Region Marine Mammal & Sea Turtle Viewing Guidelines (http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/document/nnoa_southeast_marinemammal_seaturtle_viewingguidelines_brochure.pdf).

In Alabama, we partnered with the Alabama Department of Conservation and Natural Resources and MS/AL Sea Grant to implement educational programs in Alabama largely based on these viewing guidelines. However, there are no studies that evaluate the effectiveness of these guidelines in reducing harassment to wild dolphins. Furthermore, the existing viewing guidelines do not address emerging harassment concerns caused by more recent vessel-based viewing platforms and methods such as ecotourism vessels promoting dolphins jumping in their wake (i.e. wake-riding) and jet-ski dolphin tours. Therefore, the goal of this project is to reduce harmful impacts to dolphins from vessel-based ecotourism activities known to occur in Alabama by effectively changing human behaviors through a targeted and phased outreach and education strategy. This can be achieved by the following phases: (1) conducting field observations to evaluate existing viewing guidelines and modify/augment/update them to address emerging conservation concerns within Alabama; (2) implementing social science studies (e.g. surveys, focus groups, interviews) to characterize the perceptions, receptiveness, attitudes, and motivations of vessel-based ecotourism businesses and their patrons to determine the feasibility and potential effectiveness of revised outreach messages; (3) based on the social science studies, developing a comprehensive and targeted outreach plan to effectively educate and inform the ecotourism vessel owners and operators and their patrons on the importance of responsibly viewing and any revisions to existing guidelines; and (4) partner with the state and local stakeholders to widely distribute and communicate educational tools and messages to reach targeted user groups throughout Alabama.

Reduce Marine Mammal Takes

Perdido Bay and coastal Alabama state waters $300,000 $500,000 Enforcement is a crucial tool for reducing illegal activities known to cause harm to marine mammals in state waters. The Marine Mammal Protection Act (MMPA) strictly prohibits the "take" of marine mammals. Therefore, this approach would enhance state enforcement of the MMPA in Alabama state waters by: (1) increasing

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted by</th>
<th>Lead Location</th>
<th>Cost</th>
<th>Project Description</th>
</tr>
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<tbody>
<tr>
<td>Reduce Harmful and Lethal Impacts to Dolphins from Illegal Harassment Activities from Vessel-Based Ecotourism Activities</td>
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<td>Alabama Coastal waters</td>
<td>$500,000</td>
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<td>Submitted By</td>
<td>Priority Lead</td>
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<tr>
<td>Assessing the vulnerability of sea turtle nests to inundation to improve management</td>
<td>12532</td>
<td>Matthew Ware</td>
<td>Baldwin County</td>
<td>$40,021</td>
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A communication pathway between the state and federal agencies and partnering with stakeholders. We would also work collaboratively with state and federal agencies including law enforcement to identify and prioritize hot-spot areas for potential MMPA violations and in need of increased and consistent enforcement efforts. Necessary resources and equipment to increase and sustain enforcement activities in identified hot-spot areas would be identified, and enforcement increased/enhanced in areas of need to reduce associated harm from illegal activities. A communication pathway between the state and federal agencies and law enforcement would also be established to continuously re-evaluate needs to ensure consistency in enforcement enhancement efforts.

This project seeks to develop a model of inundation stress on sea turtle nests, and a description of the spatial distribution of inundation risk on a loggerhead nesting beach in the northern Gulf of Mexico. Sea turtles lay their eggs on sandy shores, which are at risk of groundwater inundation, wave wash-over, and erosion during their incubation. Inundation restricts gas exchange across the shell membrane, resulting in negative impacts to embryonic development and egg viability. Sea level rise and coastal squeeze are projected to exacerbate this problem. Nest relocation used as an inundation mitigation strategy may include unintended consequences (e.g. increased embryonic mortality, altered sexual development), therefore, it is used for nests most at risk. To better protect nests and minimize nest inundation, wave run-up modeling and in situ nest information is used to assess the vulnerability of sea turtle nests to inundation. A USGS wave run-up model currently in development will be used to identify sections of beach at significant risk of wave exposure. This information will be integrated into a new management tool that accounts for a nest’s distance to the high tide line, elevation, and exposure risk to maximize nest productivity while minimizing nest manipulation with respect to nest relocation in situ. Monitoring of nest inundation stress will be used to validate the model and help describe nest productivity. This project will take place in Fort Morgan, Al. (including...

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**Table: Project Information**

<table>
<thead>
<tr>
<th>Restorative Type Addressed</th>
<th>Programmatic Damage Assessment and Restoration Plan (PDARP) Criteria</th>
<th>Public Notice</th>
<th>Oil Pollution Act (OPA) Criteria (15 CFR 990.54)</th>
<th>Additional Criteria</th>
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<tbody>
<tr>
<td>Water Quality/Nonpoint Source Nutrient Reduction (Y/N)</td>
<td>Project delivers benefits cost-effectively (+/0/-)</td>
<td>Project meets Trustees’ goals (+/0/-)</td>
<td>Project prevents future and collateral injury to natural resources and services (+/0/-)</td>
<td>Project's implementation plan and enforcement needs/products. Training would be conducted and outreach products distributed by firms dedicated towards MMPA enforcement. Law enforcement would also be established to continuously re-evaluate needs to ensure consistency in enforcement enhancement efforts.</td>
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<tr>
<td>Oyster Reef (Y/N)</td>
<td>Project is consistent with consistent enforcement goals (+/0/-)</td>
<td>Project has reasonable probability of success (+/0/-)</td>
<td>Project is regularly required by existing regulations (+/0/-)</td>
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<td>Sea Turtles (Y/N)</td>
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<td>Project is consistent with existing regional or local conservation plans (+/0/-)</td>
<td>Project is considerate of strategic frameworks (Y/N/NA)</td>
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<td>Habitat on Federal Lands (Y/N)</td>
<td>Project benefits more than one natural resource and/or service (+/0/-)</td>
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<td>Notice/Public Notice (PDARP) Criteria</td>
<td>Project supports existing regional or local conservation plan (+/0/-)</td>
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<td>Additional Criteria</td>
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<td>Project is not already fully funded (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
<td>Project is not already fully funded (Y/N)</td>
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1. Awareness and understanding of the MMPA to avoid state enforcement efforts, and 2) increasing resources for state enforcement agencies to dedicate to targeting MMPA-related activities. We would work collaboratively with state and federal agencies including law enforcement to determine law enforcement training needs, how best to conduct consistent training, and identify specific training and educational needs/products. Training would be conducted and outreach products distributed by partnering with stakeholders. We would also work collaboratively with state and federal agencies including law enforcement to identify and prioritize hot-spot areas for potential MMPA violations and in need of increased and consistent enforcement efforts. Necessary resources and equipment to increase and sustain enforcement activities in identified hot-spot areas would be identified, and enforcement increased/enhanced in areas of need to reduce associated harm from illegal activities. A communication pathway between the state and federal agencies and law enforcement would also be established to continuously re-evaluate needs to ensure consistency in enforcement enhancement efforts.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project ID</th>
<th>Submitted By/Primary Lead</th>
<th>Location</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Improving Habitat Injured by Spill Response: Restoring the Night Sky in Alabama</td>
<td>1293</td>
<td>Dianne Ingram Baldwin and Mobile Counties</td>
<td>$20,000</td>
<td>Trustee Portal</td>
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This project will restore and improve coastal habitats at Bon Secour National Wildlife Refuge (BSNWR) damaged by the Deepwater Horizon spill by upgrading lighting materials and practices that presently trespass onto and pollute habitat on federally managed lands. Insufficient lighting casts light directly into areas adjacent to the intended lit space, and creates light domes over cities (sky glow). Sky glow affects environments tens of miles from city centers. Light pollution has been shown to significantly harm nesting sea turtles (Witherington and Martin 2014), beach mice (Bird et al. 2004), sea birds (Montevecchi 2006) and a diverse range of other marine and terrestrial species (Longcore and Rich 2004, Gaston et al. 2013). This project would provide a wide range of environmental benefits to federally managed habitat at BSNWR and incidentally to nearby coastal and marine habitats and inform similar affected areas in the spill zone. The project would be implemented by the National Park Service’s Natural Sounds and Night Skies Division with US Fish and Wildlife Oversight. The Deepwater Horizon event—and the aggressive response associated with it—ruined coastal habitats that play important ecologic and economic roles in the region. Among many restoration options, reducing artificial light trespass offers the potential for immediate improvements in habitat. This project would conduct engineering assessments to quantify the most cost-effective options for reducing light pollution in the vicinity of BSNWR and conduct trials of lighting options to elicit citizen evaluations and test wildlife responses. Some estimate of the eventual scale and benefits of the lighting retrofit can be estimated. Data from 32 American cities ranging from 26,000 to 2,800,000 people indicates there is roughly one streetlight for every ten citizens. In the Gulf Shores, Orange Beach, and Dauphin Island, this implies there are about 1,700 streetlights. Durisco et al (2014) modeled benefits of improved lighting for four cities; they ranged from
42% to 88% reductions in sky glow. Networked controls that dim lights during late
night hours with minimal activity could further reduce sky glow and energy
consumption. The proposed engineering assessment will identify the most feasible,
cost-effective options for reduction in light pollution. Solid state lighting also offers
many options for regulating the spectrum of the lights. There are no environmental
advantages and several advantages to minimizing short wavelength light;
reduced sky glow, diminished impacts on most wildlife species, more limited
penetration of stray light underwater. As reported by the American Medical
Association's Council on Science and Public Health (2016), limiting blue light into
municipal environments is a sensible precaution to avoid potential health risks. The
trade-off is shorter wavelength solid state lighting improves energy efficiency and
color rendition. Accordingly, this project will conduct local tests of human and
wildlife responses to alternative luminaires to assess the benefits of different
lighting levels and spectra. This project will produce an inventory of municipal
lighting and use remote sensing and NPS data products to identify locations within
these communities that disproportionately contribute to light pollution. It will
evaluate the potential economic and environmental benefits of advanced lighting
control options. Last, it will conduct pilot tests of alternative lighting systems to
assess public and ecological responses to different lighting options. DOI expenses
for project planning, execution, and oversight: $44,253 Contract for lighting
engineering services: $100,000 CESU cooperative research agreement for lighting
trials: $58,750 NPS to conduct workshops for outreach/training for municipal code
enforcement, technical draft ordinance writing: ($60,000) Total: $263,003 Proposed
Allocation Category: Habitat Projects on Federally Managed Lands.
Appendix D:

Restoration Type Screening Criteria
Proposed Screening Methodology for Bird Projects

The PDARP sets out three goals for bird restoration:

- Restore lost birds by facilitating additional production and/or reduced mortality of injured bird species.
- Restore or protect habitats on which injured birds rely.
- Restore injured birds by species where actions would provide the greatest benefits within geographic ranges that include the Gulf of Mexico.

The restoration approaches for birds include (1) restore and conserve bird nesting and foraging habitat; (2) create, restore, and enhance coastal wetlands; (3) restore and enhance dunes and beaches; (4) create, restore, and enhance barrier and coastal islands and headlands; (5) restore and enhance submerged aquatic vegetation; (6) protect and conserve marine, coastal, estuarine, and riparian habitats; (7) establish or re-establish breeding colonies; and (8) prevent incidental bird mortality.

A. Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration type under consideration.

B. Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing bird restoration benefits from the portal project sorting, conduct a general eligibility screening based the AL TIG’s goals related to the PDARP restoration type and the following criteria.

1. Project focus is on (i) increased reproduction or decreased mortality for DWH injured species where restoration is not largely complete (wading birds and seabirds including brown pelicans, neotropical migrants); or (ii) filling important information/data gaps for birds in Alabama.
2. Project is more appropriately conducted by the AL TIG than by either the region-wide or open ocean TIGs.
3. Project has a reasonable likelihood of success.
4. Available information is sufficient to permit screening of the project.
5. Project does not fund activities required by local, state or federal law, order, or permit.
6. Project is not already fully funded.
7. Project is not duplicative of other projects on the list.

Projects that receive a “yes” for all the above criteria (1 through 7) would be carried forward to Step 3 below for more project specific consideration.
C. Step 3—Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. From a restoration or data gap perspective, how significant are the project benefits?
2. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
3. Is the project cost-effective?
4. Can the project be implemented in a reasonable time frame?
5. Does the project have a significant potential to result in adverse environmental or human health impacts?
6. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.

D. Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for bird restoration projects. The OPA evaluation would address:

- The cost to carry out the alternative (e.g., cost to benefit).
- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
- The likelihood of success of each alternative.
- The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.


Proposed Screening Methodology for Habitats on Federally Managed Lands

For Habitats on Federally Managed Lands (HFML), the PDARP sets our three restoration goals:

- Restore federally managed habitats that were affected by the oil spill and response actions through an integrated portfolio of restoration approaches across a variety of habitats.
- Restore for injuries to federally managed lands by targeting restoration on federal lands where the injuries occurred, while considering approaches that provide resiliency and sustainability.
- Ensure consistency with land management plans for each designated federal land and its purpose by identifying actions that account for the ecological needs of these habitats.

The PDARP highlights seven restoration approaches that are potentially applicable in Alabama for the HFML restoration type, depending upon the actual location of the federally managed lands in the state and the type of habitat where the injury occurred.

1. Create, restore and enhance coastal wetlands.
2. Restore oyster reef habitat.
3. Create, restore, and enhance barrier and coastal islands and headlands.
4. Restore and enhance dunes and beaches.
5. Restore and enhance submerged aquatic vegetation.
6. Protect and conserve marine, coastal, estuarine, and riparian habitats.
7. Promote environmental stewardship, education, and outreach.

Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration types under consideration—HFML projects. These are projects located on or in an area that directly and significantly affects the quality of habitat on federally-managed coastal or estuarine lands.

Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing HFML restoration benefits from the portal project sorting, conduct a general eligibility screening based on the AL TIG’s goals related to the PDARP restoration types and the following criteria.

1. Available information is sufficient to permit screening of the project.
2. Project constitutes an actual project or a specific action, as opposed to a recommendation for a restoration type (e.g., acquisition of a specific parcel of property vs. acquisition of lands in Baldwin County).
3. Project does not fund activities required by local, state or federal law, order, or permit.
4. Project is not already fully funded.
5. Project is not duplicative of other projects on the list.

Projects that receive a “yes” for all the above criteria (1 through 4) would be carried forward to Step 3 below for more project specific screening.
Step 3--Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. Do the project techniques have a reasonable likelihood of being implemented successfully?
2. Is the project adjacent to land uses that would pose a threat to the success of the project?
3. Is the project consistent with existing management plans (e.g., watershed management plans or species recovery plans) and/or other previous efforts completed by federal, state, local, NGO, or academic entities?
4. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
5. Is the project cost-effective?
6. Can the project be implemented in a reasonable time frame?
7. Does the project have a significant potential to result in adverse environmental or human health impacts?
8. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.

Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives HFML restoration projects. The OPA evaluation would address:

- The cost to carry out the alternative (e.g., cost to benefit).
- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
- The likelihood of success of each alternative.
- The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Proposed Screening Methodology for Marine Mammal Projects

The PDARP sets out three goals for marine mammal restoration:

- Implement an integrated portfolio of restoration approaches to restore injured bay, sound and estuary, coastal, shelf, and oceanic marine mammals across the diverse habitats and geographic ranges they occupy.
- Identify and implement restoration activities that mitigate key stressors in order to support resilient populations. Collect and use monitoring information, such as population and health assessments and spatiotemporal distribution information.
- Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook- and-line fishery interactions.

The PDARP notes that this “restoration portfolio includes approaches designed to decrease and mitigate interactions with commercial and recreational fishing gear, characterize and reduce impacts from noise, reduce harm from industrial activities, reduce illegal feeding and harassment, and increase understanding of causes of marine mammal illness and death.”

A. Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration type under consideration.

B. Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing marine mammal restoration benefits from the portal project sorting, conduct a general eligibility screening based the AL TIG’s goals related to the PDARP restoration type and the following criteria.

1. Project (i) makes direct contributions to reducing mortality or morbidity of Alabama marine mammal populations caused by direct anthropogenic stressors or threats; or (ii) reduces natural stressors or takes other actions that support the ecological needs of marine mammals resulting in increased resilience of Alabama populations; or (iii) plays a significant role in the collection and/or analysis of data that improves our ability to restore marine mammal populations.
2. Project is more appropriately conducted by the AL TIG than by the region-wide or open-ocean TIGs.
3. Project has a reasonable likelihood of success.
4. Available information is sufficient to permit screening of the project.
5. Project does not fund activities required by local, state or federal law, order, or permit.
6. Project is not already fully funded—confirm but generally removed under Step 1.
7. Project is not duplicative of other projects on the list.
Projects that receive a “yes” for all the above criteria (1 through 7) would be carried forward to Step 3 below for more project specific consideration.

C. Step 3--Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
2. Is the project cost-effective?
3. Can the project be implemented in a reasonable time frame?
4. Does the project have a significant potential to result in adverse environmental or human health impacts?
5. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.

D. Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for marine mammal restoration projects. The OPA evaluation would address:

• The cost to carry out the alternative (e.g., cost to benefit).
• The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
• The likelihood of success of each alternative.
• The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
• The extent to which each alternative benefits more than one natural resource and/or service.
• The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Proposed Screening Methodology for Nutrient Reduction Projects

The PDARP sets out three goals for the nutrient reduction restoration type:

- Reduce nutrient loadings to Gulf Coast estuaries, habitats, and resources that are threatened by chronic eutrophication, hypoxia, or harmful algal blooms or that suffer habitat losses associated with water quality degradation.
- Where appropriate, co-locate nutrient load reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.
- Enhance ecosystem services of existing and restored Gulf Coast habitats.

The PDARP identifies agricultural conservation practices as a major potential restoration technique for reducing nutrient pollution; it also identifies an array of other restoration approaches including stormwater management practices, forestry management practices, creation and enhancement of wetlands, hydrologic restoration, and coastal and riparian conservation (PDARP, page 5-35). The PDARP states that “the Trustees will establish watershed selection criteria to inform site and project selection prior to implementing the restoration approach.” The remainder of this note outlines the steps in the AL TIG’s approach for selecting projects that meet the PDARP goals and objectives.

A. Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration type under consideration.

Items to be considered:

- Projects address nutrient reduction resource concerns;
- Projects is not already funded; and
- Project is not duplicative of other projects on the list.
B.  Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing nutrient reduction benefits from the portal project sorting, conduct an initial project screening based the AL TIG’s goals related to the PDARP restoration type and the following criteria.

Project is designed to make a significant direct contribution to reducing nutrients from agricultural or urban sources through implementation of active\(^1\) measures to reduce nutrient loadings to coastal ecosystems injured by the DWH spill. These include:

1. agricultural conservation practices,
2. stormwater management practices,
3. forestry management practices,
4. creation and enhancement of wetlands, and
5. hydrologic restoration.

Note - Eliminated projects that addressed:
• Water Reuse
• Study/Assessment/ Data Collection/Monitoring (only)
• Drainage, streambank stabilization, and/or Creek channeling
• Sewer infrastructure
• Debris removal
• Heavy metal removal (water quality)
• Projects without a defined scope

C.  Step 3—Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
2. Is the project likely to be cost-effective?
3. Can the project be implemented in a reasonable time frame?
4. Does the project have a significant potential to result in adverse environmental or human health impacts?
5. Is the project funding activities required by local, state or federal law, order, or permit?
6. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

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\(^1\) Non-Active measures would include conducting additional watershed planning
D. Step 4—Watershed(s) Considerations

Project occurs in the set of Alabama watersheds that (1) have completed watershed management plans,2 (2) have large and well-documented sources of nutrients from agricultural lands and/or have substantial nutrient contributions from urban sources, and (3) are co-located or have synergistic benefits with other DWH restoration initiatives. Based on these criteria, projects in the following watersheds were identified for further consideration.

Mobile County
- Red Creek-Eightmile Creek
- Toulmins Spring Branch-Three Mile Creek
- Upper Dog River
- Lower Dog River
- Halls Mill Creek
- Fowl River
- Bayou La Batre
- West Fowl River

Baldwin County
- Upper Fish River
- Middle Fish River
- Lower Fish River
- Magnolia River
- Skunk Bayou
- Bon Secour River
- Oyster Bay
- D’Olive Creek (sub basin of the Tensaw River-Apalachee River)

Decisions of the AL TIG to move projects from Step 4 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 4 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.

E. Step 5—OPA Evaluation

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for nutrient reduction projects. The OPA evaluation would address:

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2 Watershed management plans have either been completed or are expected to be completed by summer of 2017.
• The cost to carry out the alternative (e.g., cost to benefit).
• The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
• The likelihood of success of each alternative.
• The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
• The extent to which each alternative benefits more than one natural resource and/or service.
• The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Proposed Screening Methodology for Oyster Projects

The PDARP sets out three goals for oyster restoration:

- Restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.
- Restore resilience to oyster populations that are supported by productive larval source reefs and sufficient substrate in larval sink areas to sustain reefs over time.
- Restore a diversity of oyster reef habitats that provide ecological functions for estuarine-dependent fish species, vegetated shoreline and marsh habitat, and nearshore benthic communities.

The PDARP notes that ‘[t]his restoration will be accomplished by directly restoring reef habitat, enhancing oyster reef productivity, and restoring regional oyster recruitment by increasing oyster spawning stock populations and, subsequently, the regional larval supply.’

### A. Step 1--Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration type under consideration

### B. Step 2-- Initial Project Screening Criteria

Using the set of projects identified as providing oyster restoration benefits from the portal project sorting, conduct a general eligibility screening based the AL TIG’s goals related to the PDARP restoration type and the following criteria.

1. Project (i) makes direct contributions to solving long-term oyster survivorship problems in Alabama coastal waters, or (ii) plays an important role in filling major scientific information or data gaps for oysters or (iii) promotes effective stewardship of oyster resources in the state.
2. Project is more appropriately conducted by the AL TIG than by the region-wide TIG. Project has a reasonable likelihood of success (e.g., occurs in waters of appropriate conditions).
3. Available information is sufficient to permit screening of the project.
4. Project does not fund activities required by local, state or federal law, order, or permit.
5. Project is not already fully funded—confirm but generally removed under Step 1.
6. Project is not duplicative of other projects on the list.

### C. Step 3--Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:
1. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
2. Is the project expected to yield significant public (i.e., non-commercial) benefits.
3. Is the project cost-effective?
4. Can the project be implemented in a reasonable time frame?
5. Does the project have a significant potential to result in adverse environmental or human health impacts?
6. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.

D. Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for oyster restoration projects. The OPA evaluation would address:

- The cost to carry out the alternative (e.g. cost to benefit).
- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses
- The likelihood of success of each alternative.
- The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Proposed Screening Methodology for Sea Turtle Projects

The PDARP sets out four goals for sea turtle restoration:

- Implement an integrated portfolio of restoration approaches to address all injured life stages (hatchling, juvenile, and adult) and species of sea turtles.
- Restore injuries by addressing threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (e.g., cold water temperatures), loss or degradation of nesting beach habitat (e.g., coastal armoring and artificial lighting), and other anthropogenic threats.
- Restore sea turtles in the various geographic and temporal areas within the Gulf of Mexico that are relevant to injured species and life stages.
- Support existing conservation efforts by ensuring consistency with recovery plans and recovery goals for each of the sea turtle species.

The PDARP identifies a variety of approaches for sea turtle restoration. These involve (1) identifying and implementing measures to reduce bycatch in commercial and recreational fisheries; (2) enhancing sea turtle hatchling productivity and restoring and conserving nesting beach habitat; (3) enhancing state enforcement to improve compliance with existing requirements to reduce bycatch in commercial fisheries; (4) increasing sea turtle survival through enhanced mortality investigations and early detection of and response to anthropogenic threats and emergency events; and (5) reducing injury and mortality of sea turtles from vessel strikes.

In addition, the AL TIG will consider projects that fill knowledge and data gaps specific to sea turtles using Alabama’s terrestrial and in-water habitats.

A. Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration type under consideration.

B. Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing sea turtle restoration benefits from the portal project sorting, conduct a general eligibility screening based the AL TIG’s goals related to the PDARP restoration type and the following criteria.

1. Project (i) makes direct contributions to reducing sea turtle bycatch and vessel collision mortality or injury in Alabama coastal waters, or (ii) enhances hatchling productivity or restores/conserves nesting habitat; or (iii) enhances enforcement; or (iv) increases
survival through actions to investigate and respond to threats and emergency incidents; or (v) fills knowledge or data gaps specific to sea turtles and habitats in Alabama.

2. Project is more appropriately conducted by the AL TIG than by the region-wide or open ocean TIGs or can’t be effectively scaled for only Alabama (e.g., projects that would not benefit from region-wide economies of scale or coordination). Examples include projects that increase capacity of share the beach programs in Alabama, acquire land to protect locally valuable nesting sites, or address direct threats to or data gaps for sea turtles in Alabama.

3. Project has a reasonable likelihood of success.

4. Available information is sufficient or can be made sufficient in reasonable amount of time to permit screening of the project.

5. Project does not fund activities required by local, state or federal law, order, or permit.

6. Project is not already fully funded.

7. Project is not duplicative of other projects on the list.

Projects that receive a “yes” for all the above criteria (1 through 7) would be carried forward to Step 3 below for more project specific consideration.

C. Step 3--Project Specific Screening Considerations

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?

2. Is the project cost-effective?

3. Can the project be implemented in a reasonable time frame?

4. Does the project have a significant potential to result in adverse environmental or human health impacts?

5. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.
D. Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for sea turtle restoration projects. The OPA evaluation would address:

- The cost to carry out the alternative (e.g., cost to benefit).
- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
- The likelihood of success of each alternative.
- The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Proposed Screening Methodology for Wetlands, Coastal, and Nearshore Habitats

For the Wetlands, Coastal and Nearshore Habitats (WCNH), the PDARP sets out three goals for restoration:

- Restore a variety of interspersed and ecologically connected coastal habitats in each of the five Gulf states to maintain ecosystem diversity, with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities.

- Restore for injuries to habitats in the geographic areas where the injuries occurred, while considering approaches that provide resiliency and sustainability.

- While acknowledging the existing distribution of habitats throughout the Gulf of Mexico, restore habitats in appropriate combinations for any given geographic area. Consider design factors, such as connectivity, size, and distance between projects, to address injuries to the associated living coastal and marine resources and restore the ecological functions provided by those habitats.

The PDARP highlights six restoration approaches relevant to Alabama for WCNH.

1. Create, restore and enhance coastal wetlands.
2. Restore oyster reef habitat.
3. Create, restore, and enhance barrier and coastal islands and headlands.
4. Restore and enhance dunes and beaches.
5. Restore and enhance submerged aquatic vegetation.
6. Protect and conserve marine, coastal, estuarine, and riparian habitats.

Step 1—Eligibility Screening

As with all the restoration types, project selection begins with identification of projects that have been submitted by the public that have been initially categorized as potentially targeting the restoration types under consideration—WCNH projects.

Step 2—Initial Project Screening Criteria

Using the set of projects identified as providing WCNH restoration benefits from the portal project sorting, conduct a general eligibility screening based the AL TIG’s goals related to the PDARP restoration types and the following criteria.

1. Project (i) is located in areas identified as high priority for WCNH restoration by the AL TIG – specifically the estuarine portions of Mississippi Sound and Grand Bay, and the Fowl River, Weeks Bay, and Perdido Bay/River watersheds.
2. Project constitutes an actual project or a specific action, as opposed to a recommendation for a restoration type (e.g., acquisition of a specific parcel of property vs. acquisition of lands in Baldwin County).
3. Project focus is on active measures to meet the PDARP goals as opposed to research or monitoring activities.
4. Project does not fund activities required by local, state or federal law, order, or permit.
5. Project is not already fully funded.
6. Project is not duplicative of other projects on the list.

Projects that receive a “yes” for all the above criteria (1 through 6) would be carried forward to Step 3 below for more project specific screening.

**Step 3--Project Specific Screening Considerations**

After developing a ‘short list’ based on the application of the above criteria, each project would be reviewed to evaluate the proposed scope in relation to a variety of project specific considerations. Among the considerations would be:

1. Do the project techniques have a reasonable likelihood of being implemented successfully?
2. To what extent does the project protect or restore a continuum of habitats (e.g., nearshore reef to salt marsh to coastal freshwater wetlands and adjacent upland buffer) within the nearshore ecosystem and therefore contribute to an integrated, connected food web?
3. Will the project contribute to habitat protection or restoration in the vicinity of other projects proposed for selection in this plan, thereby achieving a greater overall benefit to nearshore habitats?
4. Is the project adjacent to land uses that would pose a threat to the success of the project?
5. Is the project consistent with existing management plans (e.g., watershed management plans or species recovery plans) and/or other previous efforts completed by federal, state, local, NGO, or academic entities?
6. Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
7. Is the project cost-effective?
8. Can the project be implemented in a reasonable time frame?
9. Does the project have a significant potential to result in adverse environmental or human health impacts?
10. Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?

Decisions of the AL TIG to move projects from Step 3 to the reasonable range of alternatives are based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in the restoration plan. As a result, a project considered in Step 3 may have received a generally favorable review but a decision was made not to move it to the reasonable range of alternatives for this plan. The reason or reasons a project has not been carried forward at this time will be documented in the restoration plan.
Step 4—Evaluation of Reasonable Range of Alternatives

Full OPA and NEPA analysis would be performed on the remaining initiatives that have been determined to comprise the reasonable range of alternatives for WCNH restoration projects. The OPA evaluation would address:

- The cost to carry out the alternative (e.g., cost to benefit).
- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
- The likelihood of success of each alternative.
- The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Full NEPA would be conducted for each of the projects that comprise the reasonable range.
Appendix E:

Consultation Correspondence
April 10, 2018

Rusty Swafford
Gulf of Mexico Branch Supervisor
Habitat Conservation Division
Attn: Brandon Howard
4700 Avenue U, Bldg. 307
Galveston, Texas 77551

Re: Request for Essential Fish Habitat Consultation for Projects Proposed for Funding under the Deepwater Horizon Oil Spill Natural Resource Damage Assessment in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment

Dear Rusty,

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center requests Essential Fish Habitat (EFH) consultation, as established under the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267). The NOAA Restoration Center is requesting consultation on behalf of the Alabama Trustee Implementation Group.

Four of the projects proposed in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment may affect designated EFH. Enclosed please find EFH assessments and BE forms for these projects:

• Little Lagoon Living Shorelines
• Coastal Alabama Sea Turtle Triage and Treatment Center
• Oyster Cultch Relief and Reef Configuration
• Oyster Grow Out Restoration Reef Placement

These EFH assessments incorporate the comments I received from your staff during technical assistance in early 2018.

For further questions about the projects, please contact Christy Fellas in the NOAA Restoration Center, Southeast Region at 727-551-5714 or christina.fellas@noaa.gov. Thank you for your assistance.

Sincerely,

[Signature]
Christy Fellas
DWH Environmental Compliance Coordinator
NOAA Restoration Center
MEMORANDUM FOR: FILE

FROM: Christy Fellas, DWH Environmental Compliance Coordinator
NOAA Restoration Center, Southeast Region

DATE: April 9, 2018

SUBJECT: Projects Proposed in Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment: ESA No Effect Determination

Under the Endangered Species Act (ESA) Section 7(a)(2), each Federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or destroy/adversely modify designated critical habitat. If a Federal agency determines that a Federal action will have no effect on ESA-listed species or designated critical habitat, then the Federal agency is not required to consult with NMFS for purposes of ESA. This memo is not intended to include a summary of DOI protected species for the determinations provided below.

Based on my review of project materials (Fall 2017- Spring 2018) and in coordination with representatives from NOAA’s Protected Resource Division (PRD) in the South East Regional Office (SERO), the NOAA Restoration Center determined that the projects listed below proposed for implementation in the Trustee Implementation Group Restoration Plan #2 and Environmental Assessment will have no effect to listed species under the jurisdiction of National Marine Fisheries Service. This is due to the location (upland or inland) or the nature of activities proposed (planning only). These projects will not require further ESA evaluation. Should any project be modified in a way that could adversely impact ESA, this determination will be reevaluated as appropriate.

Proposed Projects
- Magnolia River Land Acquisition (Holmes Tract)
- Weeks Bay Land Acquisition East Gateway Tract
- Weeks Bay Land Acquisition Harrod Tract
- Coffee Island Restoration – Phase I
- Restoring the Night Sky
- Toulmin Springs Branch Engineering & Design
- Fowl River Nutrient Reduction
- Weeks Bay Nutrient Reduction
- Coastal Alabama Sea Turtle Conservation Program (share the beach)
- Side-scan Mapping of Mobile Bay Relic Oyster Reefs
- Little Lagoon Living Shorelines
Under the Endangered Species Act (ESA) Section 7(a)(2), each Federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or destroy/adversely modify designated critical habitat. If a Federal agency determines that a Federal action will have no effect on ESA-listed species or designated critical habitat, then the Federal agency is not required to consult with NMFS for purposes of ESA. This memo does not include any conclusions or determinations for ESA-listed species under the jurisdiction of USFWS.

Based on my review of project materials (Fall 2017-Spring 2018) and in coordination with representatives from NOAA’s Protected Resource Division (PRD) in the South East Regional Office (SERO) and the Office of Protected Resources, the NOAA Restoration Center determined that the projects described below and proposed for implementation in the Trustee Implementation Group Restoration Plan #2 and Environmental Assessment, do not require further ESA consultation. Should any project be modified in a way that could adversely affect ESA-listed species or their designated critical habitat in a way that is not covered in an existing consultation, this determination will be re-evaluated as appropriate.

**Coastal Alabama Sea Turtle Triage and Treatment Center**
This project involves the construction of a new sea turtle triage and treatment center in the City of Orange Beach, Alabama. The triage facility is located on an upland site, thus there will be no effects on marine life stages of sea turtles or gulf sturgeon. The building of this facility does not change the need for response, but rather provides a location to take stranded turtles. Any stranding response (and related handling of ESA-listed sea turtles) that results in a transfer of a sea turtle to this facility is covered under the existing Alabama sea turtle stranding and salvage network (STSSN) permit. Once the facility is operational, an application will be submitted to USFWS for the care of sea turtles – this is not under the jurisdiction of NMFS. Based on this information, no further ESA consultation is required with NMFS.
Coastal Alabama Sea Turtle Habitat Usage and Population Dynamics

This project involves coastal Alabama’s sea turtle conservation program, which operates across all sea turtle nesting beaches of the Alabama coast. Specifically, the project would use biological, genetic and stable isotope analyses to study sea turtle migration patterns, habitat use, human threats, and life history parameters for sea turtles using Alabama waters. This work would be conducted under NMFS 10(a)(1)(A) Permit No. 17304-03, issued on September 20, 2013, to Dr. Kristen Hart (Principal Investigator, USGS) to annually capture and handle sea turtles. On September 20, 2013 NMFS issued a biological opinion (BO) on the effects of the proposed research carried out under 10(a)(1)(A) Permit No. 17304-03. The BO concluded that the issuance of the permit as proposed is likely to adversely affect, but not likely to jeopardize the continued existence of loggerhead sea turtles (Northwest Atlantic Ocean DPS), green sea turtles (both the Florida breeding population and rangewide listing), Kemp’s ridley sea turtles, or hawksbill sea turtles. In addition, the proposed permit is not likely to adversely affect any designated critical habitat under NMFS jurisdiction. The BO also concluded that the action as proposed is not likely to adversely affect gulf sturgeon or their designated critical habitat.

Based on this information, no further ESA consultation with NMFS is required as the projects are covered by an existing NMFS consultation.
May 7, 2018

David Bernhart
Assistant Regional Administrator for Protected Resources
Attn: Mike Tucker
NOAA Fisheries Service, Southeast Regional Office
263 13th Avenue South
Saint Petersburg, Florida 33701

Re: Request for section 7 Endangered Species Act Informal Consultation for Projects Proposed for Funding under the Deepwater Horizon Oil Spill Natural Resource Damage Assessment in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment

Dear Mr. Bernhart,

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center requests informal consultation under section 7 of the Endangered Species Act (ESA) for the project listed below that is not likely to adversely affect ESA-listed species of their designated critical habitat.

The NOAA Restoration Center, a Lead Federal Agency, is requesting consultation on behalf of the Alabama Trustee Implementation Group. Enclosed please find a Biological Evaluation form for this project based on the following effect determinations:

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Not Likely to Adversely Affect</th>
<th>Requesting Streamlined Consultation under NMFS’ DWH ESA Framework BiOp?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Capacity of the Alabama Marine Mammal Stranding Network</td>
<td>Green Sea Turtle, Loggerhead Sea Turtle, Kemp’s Ridley Sea Turtle, Hawksbill Sea Turtle, Leatherback Sea Turtle, Gulf Sturgeon, Sperm Whale*</td>
<td>No</td>
</tr>
</tbody>
</table>

*The NMFS marine mammal health and stranding response program holds a permit to cover take associated with response/handling of large whales; therefore, no additional ESA consultation is needed for those species.
This project is part of a group of projects proposed for funding in the Deepwater Horizon Oil Spill Natural Resource Damage Assessment in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment. ESA consultation was previously requested on the other projects in this plan via email on April 9, 2018.

For further questions about the projects, please contact Christy Fellas in the NOAA Restoration Center, Southeast Region at 727-551-5714 or christina.fellas@noaa.gov. Thank you for your assistance.

Sincerely,

[Signature]

Christy Fellas
DWH Environmental Compliance Coordinator
NOAA Restoration Center
The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a Federal fisheries management plan (FMP). A Federal agency must prepare an EFH Assessment for any Federal action that may adversely affect EFH (50 CPR 600.920(e)(l)). A Federal agency must first determine whether their action may adversely impact EFH. If a Federal agency determines that a Federal action may adversely impact EFH, then the Federal agency must prepare an EFH assessment. If a Federal agency determines that a Federal action will not adversely affect EFH, then the Federal agency is not required to prepare an EFH Assessment.

Based on my review of project materials (Fall 2017- Spring 2018) in coordination with representatives from NOAA’s Habitat Conservation Division (HCD) in the South East Regional Office (SERO), the NOAA Restoration Center determined that all projects proposed for implementation in the in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment will not affect EFH because the projects are upland, restricted to planning or have been designed to avoid adverse affects on EFH. As a result, none of the projects below require further EFH evaluation. Should any project be modified in a way that could adversely impact EFH, this determination will be reevaluated as appropriate.

Proposed Projects
- Magnolia River Land Acquisition (Holmes Tract)
- Weeks Bay Land Acquisition East Gateway Tract
- Weeks Bay Land Acquisition Harrod Tract
- Lower Perdido Islands Restoration Phase I
- Coffee Island Restoration – Phase I
- Restoring the Night Sky
- Toulmin Springs Branch Engineering & Design
- Fowl River Nutrient Reduction
- Weeks Bay Nutrient Reduction
- Coastal Alabama Sea Turtle Conservation Program (share the beach)
- Coastal Alabama Sea Turtle Habitat Usage and Population Dynamics
Proposed Projects (continued)

- Coastal Alabama Sea Turtle Protection: Enhancement and Education
- Enhancing Capacity for the Alabama Marine Mammal Stranding Network
- Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health
- Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education
- Colonial Nesting Wading Bird Telemetry Study
- Side-scan Mapping of Mobile Bay Relic Oyster Reefs
- Oyster Hatchery at Claude Peteet Mariculture Center
April 10, 2018

Rusty Swafford
Gulf of Mexico Branch Supervisor
Habitat Conservation Division
Attn: Brandon Howard
4700 Avenue U, Bldg. 307
Galveston, Texas 77551

Re: Request for Essential Fish Habitat Consultation for Projects Proposed for Funding under the Deepwater Horizon Oil Spill Natural Resource Damage Assessment in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment

Dear Rusty,

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center requests Essential Fish Habitat (EFH) consultation, as established under the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267). The NOAA Restoration Center is requesting consultation on behalf of the Alabama Trustee Implementation Group.

Four of the projects proposed in the Alabama Trustee Implementation Group Restoration Plan #2 and Environmental Assessment may affect designated EFH. Enclosed please find EFH assessments and BE forms for these projects:

- Little Lagoon Living Shorelines
- Coastal Alabama Sea Turtle Triage and Treatment Center
- Oyster Culch Relief and Reef Configuration
- Oyster Grow Out Restoration Reef Placement

These EFH assessments incorporate the comments I received from your staff during technical assistance in early 2018.

For further questions about the projects, please contact Christy Fellas in the NOAA Restoration Center, Southeast Region at 727-551-5714 or christina.fellas@noaa.gov. Thank you for your assistance.

Sincerely,

Christy Fellas
DWH Environmental Compliance Coordinator
NOAA Restoration Center
MEMORANDUM TO: Leslie Craig
Southeast Region Supervisor, NOAA Restoration Center

FROM: Virginia M. Fay
Assistant Regional Administrator, Habitat Conservation Division

SUBJECT: Essential fish habitat review of the Alabama Trustee Implementation
Group Restoration Plan #2

In response to the Deepwater Horizon oil spill, NOAA and the other Trustee agencies propose to
fund eighteen projects in southern Alabama. The Triage Center Project, Little Lagoon Living
Shoreline Project, Oyster Clutch Relief and Reef Configuration Project, and the Oyster Grow-Out
and Restoration Reef Placement Project would result in minimal and temporary impacts to estuarine
water column and subtidal sand and mud habitats categorized as essential fish habitat (EFH) under
provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-
Stevens Act).

The NOAA’s Restoration Center prepared biological evaluations and EFH assessments for these
projects and provided the documents for our review by electronic mail dated April 10, 2018.
Technical assistance has been provided by the Southeast Regional Office’s Habitat Conservation
Division (SERO HCD) to avoid and minimize impacts to EFH. Those changes were incorporated
into final project design. The NOAA’s Restoration Center determined the projects will have no
substantial adverse effect on EFH because the projects are either in uplands, are restorative in
nature, or have been designed to avoid permanent impacts. The SERO HCD has reviewed the EFH
assessments and have determined the documents adequately evaluate proposed project impacts to
EFH. We concur the project implementation would result in minimal temporary EFH impacts to
estuarine water column, sand, and mud habitats; however, these impacts will not be substantial.
Best management practices to minimize both short-term construction impacts and long-term
impacts to habitats have been developed. The SER HCD has no EFH conservation
recommendations to provide pursuant to Section 305(b)(2) of the Magnuson-Stevens Act at this
time. Further consultation on this matter is not necessary unless future modifications are proposed
and such actions may result in adverse impacts to EFH.

cc:
F/HC3 – Fellas
F/SER – Giordano
F/SER4 – Dale
F/SER46 – Howard
May 3, 2018

Dr. Amy Hunter
DCNR
State Lands Division, Coastal Section
5 Rivers Delta Resource Center
Spanish Fort, Alabama 36527

Re: AHC 2018-0689
   TIG NRDA Restoration Plan II
   Baldwin and Mobile Counties

Dear Dr. Hunter:

Upon review of the above referenced projects, we offer the following comments:

1. **Magnolia River Land Acquisition Project (Holmes Tract)**
   We agree with acquisition. Restoration activities should be coordinated with AHC to determine whether they have the potential to impact historic properties.

2. **Weeks Bay Land Acquisition Project (East Gateway Tract)**
   We agree with acquisition. Restoration activities should be coordinated with AHC to determine whether they have the potential to impact historic properties.

3. **Weeks Bay Acquisition Project (Harrod Land Tract)**
   We agree with acquisition. Restoration activities should be coordinated with AHC to determine whether they have the potential to impact historic properties. There are two known archaeological sites near this project area.

4. **Little Lagoon Living Shoreline Project**
   Installing coconut fiber "coir" logs and grass planting may have the potential to impact historic resources, depending on what methods are used. Please clarify what is involved in each action. There are six known archaeological sites in the vicinity of this project area.

5. **Fowl River Nutrient Reduction Project**
   We agree with technical assistance. Future DCNR-funded maintenance and corrective activities should be coordinated with AHC to determine whether they have the potential to impact historic properties.

6. **Weeks Bay Nutrient Reduction Project**
   We agree with technical assistance. All ground-disturbing activities should be coordinated with AHC to determine whether they have the potential to impact historic properties.

7. **CAST Conservation Program**
   We agree with the proposed actions as they have no potential to impact historic properties.
8. Facility Proposed by the CAST Triage Project
   We agree with the proposed actions. This area has been surveyed for cultural resources with negative findings. In addition, significant ground disturbance has already occurred due to previous construction.

9. CAST Habitat Usage and Population Dynamics Project
   We agree with the proposed actions as they have no potential to impact historic properties.

10. CAST Protection: Enhancement and Education Project
    We agree with the proposed actions as they have no potential to impact historic properties.

11. Enhancing Capacity for the Alabama Marine Mammal Stranding Network
    We agree with the proposed actions as they have no potential to impact historic properties.

12. Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education
    We agree with the proposed actions as they have no potential to impact historic properties.

13. Potential Oyster Mounding Study Sites
    We agree with planning for this project. We concur with DCNR that culch deployment activities should be coordinated with our office. We recommend that the side scan sonar survey be conducted to meet Alabama's Policy for Archaeological Survey and Testing (attached) so that our office may review the findings with regard to historic properties. Maritime survey policy begins on page 9-12. Feel free to contact our office if you have questions about this policy.

14. Proposed Oyster Reef Mapping
    We recommend that the side scan sonar surveys be conducted to meet Alabama’s Policy for Archaeological Survey and Testing (attached) so that our office may review the findings with regard to historic properties. Please explain the process of hand dredging and pole sounding.

15. Remote Setting Oyster Reef Research
    We agree with actions at Claude Peteet Mariculture Center Complex.
    We concur with DCNR that an archaeological survey should be conducted for the proposed activities at Dauphin Island due to the proximity of the known archaeological site.
    All ground-disturbing activities associated with culch deployment should be coordinated with our office.

16. Oyster Reef Grow-Out and Restoration Reef Placement Project
    We concur with DCNR’s determination that these actions should be coordinated with our office.

We appreciate your commitment to helping us preserve Alabama’s historic archaeological and architectural resources. Should you have any questions, please contact Amanda McBride at 334.230.2692 or Amanda.McBride@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Wofford
Deputy State Historic Preservation Officer

LAW/AM/am
Architectural Survey Guidelines

Alabama Historical Commission
468 S. Perry Street
Montgomery, AL 36130-0900
(334) 242-3184
SURVEY PRODUCTS AND DOCUMENTATION

FIELD VISIT
The consultant may meet with the AHC Architectural Survey Coordinator on site prior to the field survey.

SURVEY NUMBERS
The survey number is comprised of a two letter county abbreviation followed by a five digit number. The survey number uniquely identifies each resource and should be used on the survey forms, maps, inventory, photographs, and survey report. A county abbreviation list can be found on the last page of this document.

Example: the survey number for the 25th property surveyed during a project in Dallas County would be: Ds00025.

SURVEY FORMS
An AHC Survey Form will be filled out for every resource 50 years of age or older. Digital versions are available from the AHC and will be accepted with the following stipulations: 1) hard copies still must be submitted, in numerical order by survey number; 2) each form must be saved as the survey number.

SURVEY REPORT AND INVENTORY
A Survey Report must be completed for all survey projects regardless if a National Register nomination will be prepared in the future. Refer to pages 4 and 5 for guidelines on how to complete a survey report.

An inventory is a listing of all surveyed historic resources numerically organized by survey number. For each surveyed resource include the following information: the assigned survey number, historic name (if known), address, date of construction, architectural type and brief description, integrity, modifications, current conditions, and any other noteworthy information.

Digital versions of the Survey Report and inventory are accepted with the following stipulations: 1) documents must be saved as .pdf file type; 2) documents must be turned in on a CD or DVD labeled with name and date of survey and the document names.

SURVEY MAPS
The AHC will digitize all completed survey maps. Please be as neat as possible. If maps are turned in messy and hard to understand, they will be returned for correction.

All maps should contain key elements including: 1) north arrow; 2) a reference of the map scale or absence of scale, and 3) name of survey, property or district, county, and state.

All maps, regardless of size, should be folded to an approximately 8 ½” x 11” size and placed within appropriately sized archival quality, clear plastic sleeves or ringed manila
pockets and submitted **unbound**. Reduce all non-USGS maps to a size no larger than a USGS quad map and fold accordingly. Label all maps with the name and date of project.

**USGS maps:** When possible, the AHC recommends that all surveyed resources be marked on U.S. Geological Survey topographic maps. Clearly and neatly identify surveyed resources by the assigned survey number (only the last few digits…example: if the survey number is Ds00025, only write 25 on the map) and note other pertinent information as space allows. When using USGS maps where there is a high concentration of resources, photocopy and enlarge the target area to either 8 ½” x 11” or 11” x 17”. If this option is chosen, please label the photocopied section by 1) quad name and date and 2) name and date of the survey. The AHC requires one complete set of USGS maps for the entire survey area with all surveyed resources marked by the assigned survey number. Use 7.5-minute series (1:24000) scale maps for surveys. Obtain USGS maps through the Oil and Gas Board, 420 Hackberry Lane, P.O. Box 0218, Tuscaloosa, Alabama 35486, (205) 349-2852.

**Digital USGS Maps:** The AHC will accept digital versions of USGS maps on CD as long as the maps are printable and the assigned survey number clearly identifies each surveyed resource. Digital maps cannot be substituted for original USGS maps for NR projects. Label the CD/DVD with the name and date of the project, and the contents of the CD/DVD.

**Plat Maps:** Use plat maps only in urban areas where individual buildings are not delineated on the USGS maps. In these situations a more detailed map -- such as a planimetric, tax map, or city plat map -- that shows all surveyed resources with assigned survey numbers is required. A USGS map is also required that shows the boundaries of the surveyed area. Reduce all non-USGS maps to a size no larger than a 7.5-minute series (1:24000) scale USGS quad map.

**Other Maps:** When USGS or Plat maps are not available for a particular area, please discuss map options with the AHC Survey Coordinator.

**PHOTOGRAPHIC DOCUMENTATION**

The AHC will accept .jpg format digital photos for survey work. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. The AHC recommends saving digital images in 8-bit (or larger) color format, which provides maximum detail even when printed in black-and-white. The file name for each electronic image saved on a CD-R or DVD-R will be saved as the assigned survey number. If multiple pictures are taken of the same resource, add a lower case letter beginning with “a” to the end of the survey number.

CD-Rs and DVD-Rs submitted with a survey will be labeled with: the name of the survey, the county where the survey was performed, the person(s) performing the survey, and the date of the survey. All photographic documentation will become the property of the AHC.
SURVEY REPORT GUIDELINES

A final survey report that meets the Secretary of Interior Standards should be included.

I. Scope of survey: A survey report is a summary of how the surveyor accomplished the survey. The survey report should address the following items:
   A. Description of the survey
      1. People who did the work
      2. Surveyor’s qualifications
   B. Purpose of the survey
      1. Why undertake the survey?
      2. What did the surveyor expect to find?
   C. Survey Methodology
      1. How was the survey accomplished? Describe survey techniques.
         a. Review of previous surveys
         b. Local authorities and historical groups contacted
         c. Sources reviewed
      2. What criteria were used to identify and assess the properties?

II. What did the survey find?
   A. Area of survey
      1. A verbal boundary description of the entire survey area
      2. Acreage of survey area
      3. Was the entire area thoroughly inspected? If not, which portions were not surveyed and why?
      4. If, and to what extent, interiors were examined
   B. Actual number of buildings documented
   C. Analytical information obtained through the survey
   D. Ways this information can be used in the future
   E. Recommendation on the next step to take in connection with the collected data

III. Description of Surveyed Area: A descriptive statement should be prepared about the overall survey and its results. It should include all components of the survey including historical, architectural, and archaeological. The description should include the following types of information, where applicable.

   A. General physical description of the natural and man-made character of the survey area, including important geographical and topographical features, density of development, current land uses, and types of historic resources that are most prominent.
   B. General description of the survey area during periods it achieved significance. If a series of maps is available that illustrate the physical development of the resource area, these can be included.
   C. Architectural overview
      1. The general character of the surveyed area, such as residential, commercial or industrial and the type of buildings found in the surveyed area
      2. Include a general description of types, styles, or periods of architecture represented in the surveyed area. Discuss such features as scale, proportions, materials, workmanship, design, and quality.
3. Describe the general condition and integrity of buildings, including alterations and additions, and any restoration or rehabilitation activities.
4. Describe the physical relationship of buildings to each other and to the environment. Include a general discussion of facade lines, street plans, parks, structural density, vegetation, and important natural features and discuss the changes over time.
5. Provide a breakdown of the approximate percentage of buildings found in the area (commercial, residential, educational, religious, etc.)

IV. Significance of Surveyed Area: The significance of the surveyed area should include historical and architectural components. It should pertain to the surveyed area as a whole, not specific individual properties. Justify all areas of significance in the narrative.

A. Briefly discuss the overall significance of the historic resources within the area.

B. Discuss the broad historical development of the area, including pre- and post-European contact settlement. Discuss the development of transportation routes, trade, agriculture industry, immigration, etc. What are the major periods of significance in the survey area? How do the surveyed resources represent these periods?

C. Briefly discuss major historical events and figures related to the significance of the surveyed area and indicate which properties relate to them.

D. Discuss in general terms the areas of significance exhibited by the survey area, citing some specific resources as examples.

V. Inventory of Recorded Properties: This is a brief description of each resource included in the final inventory and should include, if applicable, survey number, circa date of construction, brief architectural description, historical data, architect/builder, alterations, current condition, etc.

VI. National Register Eligible Resources: Include a list of recommended National Register eligible individual properties and historic districts or district expansions. Include boundaries of all properties and historic districts.

VII. Recommendations: A brief summary that recommends if additional survey or research should be undertaken in the survey area, needs for context development, and ways survey information can be used.

VIII. Bibliographic References: List the major sources for compiled information used in the survey overview. General reference works on architecture, archaeology, etc. should not be included unless they provide specific information that was of assistance in evaluating the properties. Use a standard bibliographic style listing author, full title, date and location of publication, and publisher. For an article, list the magazine or journal from which it was taken, volume number, and date. For unpublished manuscripts, indicate where copies are available. List all oral interviews with the date of the interview.
<table>
<thead>
<tr>
<th>Alabama County Abbreviations</th>
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Appendix F:

Federal Trustee Consistency Determinations
March 14, 2018

Scott Brown
Alabama Department of Environmental Management
Mobile Branch | Coastal Section
3664 Dauphin Street, Suite B
Mobile, Alabama 36608

RE: Proposed Restoration Projects in the Alabama Restoration Area

Dear Mr. Brown:

The Natural Resource Trustees for the Deepwater Horizon Oil Spill Alabama Trustee Implementation Group (Alabama TIG) have prepared a draft restoration plan, entitled, "Draft Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds and Oysters". This restoration plan, if approved by the Alabama TIG after consideration of public review and comment, would select for implementation 22 restoration projects within Alabama's coastal zone. The Alabama TIG includes two state trustee agencies and four federal trustee agencies: the Alabama Department of Conservation and Natural Resources (ADCNR); the Geological Survey of Alabama; the United States Department of Commerce, represented by the National Oceanic and Atmospheric Administration (NOAA); the United States Department of the Interior (DOI), represented by the United States Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and National Park Service (NPS); the United States Department of Agriculture (USDA); and the United States Environmental Protection Agency (EPA) (collectively the AL TIG).

DOI, NOAA, USDA, and EPA (the "Federal Trustees") have reviewed the restoration plan and proposed projects for consistency with the Alabama Coastal Area Management Program (ACAMP) and have found that, as proposed, these restoration actions are consistent to the maximum extent practicable with the applicable, enforceable policies of the State's federally-approved ACAMP. This letter submits that determination for State review on behalf of all Federal Trustees.

Background

On April 20, 2010, the Deepwater Horizon (DWH) mobile drilling unit exploded, caught fire, and eventually sank in the Gulf of Mexico, resulting in a massive release of oil and other substances from British Petroleum’s (BP) Macondo well and causing loss of life and extensive natural resource injuries. 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 northern Gulf of Mexico. Approximately 3.19 million barrels (134 million gallons) of oil were released into the ocean. Oil spread from the deep ocean to the surface and nearshore environment, from Texas to Florida. The oil came into contact with and injured natural resources as diverse as deep-sea coral, fish and shellfish, productive wetland habitats, sandy beaches, birds, endangered sea turtles, and protected marine life. The oil spill prevented people from fishing, going to the beach, and enjoying their typical recreational activities along the Gulf of Mexico. Extensive response actions, including cleanup activities and actions to try to prevent the oil from reaching sensitive resources, were undertaken to try to reduce harm to people and the environment. However, many of these response actions had collateral impacts on the environment and on natural resource services. The oil and other substances released from the well in combination with the extensive response actions together make up the DWH oil spill.

In accordance with the Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (Final PDARP/PEIS) and Record of Decision (ROD), the AL TIG has prepared a draft Restoration Plan/Environmental Assessment (RP II/EA), which
simultaneously fulfills requirements under the Oil Pollution Act (OPA) and the National Environmental Policy Act (NEPA) and proposes a range of restoration alternatives to restore for losses to natural resources and services injured in Alabama as a result of the DWH oil spill. Specifically, the restoration alternatives proposed in the draft RP II/EA focus on the following resource topics: Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters. OPA requires the Trustees to develop a restoration plan. NEPA requires federal agencies to conduct NEPA analysis, in this case an EA, for any “major federal action significantly affecting the quality of the human environment.” The draft RP II/EA describes the restoration planning process and provides analysis focusing on project-specific issues in an integrated EA tiered from the Final PDARP/PEIS. The RPII/EA considers a total of 26 unique restoration projects, of which 22 unique projects have been identified as preferred alternatives or MAM funded to be carried forward for implementation. These projects are described below.

**Proposed Alabama Restoration Projects:**

The AL TIG proposes the following restoration actions for implementation in Alabama. Projects proposed for only engineering and design (E&D) at this time are noted as such:

1. **Magnolia River Land Acquisition (Holmes Tract)**

   **Project Summary.** The Magnolia River Land Acquisition (Holmes Tract) project would acquire an 80-acre property through a fee simple purchase by the Weeks Bay Foundation (WBF) and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR). The Holmes Tract is located in Baldwin County off Keith Lane along the Magnolia River (PIN 287940, 65806, and portion of 20643) and includes about 80 acres. The property is one of the largest undeveloped tracts on Magnolia River that has not been timbered. It contains more than 1 mile of frontage on Magnolia River and Weeks Creek, including a perimeter of salt marsh and forested wetland fringe. WBF would protect the property in perpetuity and address restoration needs to ensure that it provides the best habitat for native and endemic species. Restoration activities proposed for the Holmes Tract could include invasive species control (prescribed fire or other methods), native vegetation planting, and minimal limited erosion control measures. This project would be accomplished with support from the town of Magnolia Springs and the Weeks Bay National Estuarine Research Reserve (NERR).

   **Project Implementation.** The property would be purchased by WBF through a willing seller at or below the Yellow Book appraised value and transferred into the permanent ownership of the State. The acquisition of this property would include an appropriate land protection instrument (i.e., deed restriction or conservation easement placed on the property) to ensure that the purpose of restoration as described in this plan is maintained in perpetuity. In addition, WBF would work with the Weeks Bay NERR to create a management plan and prioritize restoration needs, including re-creating longleaf pine savannas, pitcher plant bogs, and marsh and swamp habitat (where appropriate).

   **Project Timeline.** Due diligence and acquisition would take approximately 6 months to 1 year to complete. Development of a restoration plan and associated restoration activities would be conducted over a 3-year period following acquisition.

2. **Weeks Bay Land Acquisition (East Gateway Tract)**

   **Project Summary.** The Weeks Bay Land Acquisition (East Gateway Tract) project would fund the WBF to acquire the 175-acre East Gateway Tract through a fee simple purchase and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR. The East Gateway Tract is located in Baldwin County at the mouth of Weeks Bay and contains approximately 175 undeveloped acres. The project would protect the eastern shore of the mouth of Weeks Bay where a large salt marsh with an unnamed stream provides protected habitat and shelter for wading birds, duck species, and
various indigenous marine life. This property contains more than 100 acres of wetlands, including estuarine intertidal marsh and freshwater forested wetlands. The bay front edge of the property is a popular place for anglers to anchor and angle for redfish and speckled trout.

**Project Implementation.** WBF would purchase the property from a willing seller at or below the Yellow Book appraised value. The acquisition of this property would include an appropriate land protection instrument (i.e., deed restriction or conservation easement) to ensure that the purpose of restoration as described in this plan is maintained in perpetuity. WBF would work with Weeks Bay NERR to create a management plan and prioritize restoration needs, including re-creating longleaf pine savannas, pitcher plant bogs, and marsh and swamp habitat (where appropriate). This project would also include E&D for the removal of a bulkhead on the waterfront point of the property that splits Weeks Bay and Mobile Bay. The bulkhead is contributing to shoreline scouring and erosion. A shoreline restoration plan would be developed as part of the bulkhead removal E&D.

**Project Timeline.** The total project timeframe is 4 years. Due diligence and land acquisition would take approximately 6 months to complete. Development of a shoreline restoration plan would take approximately 1 year to complete. Design and engineering of the bulkhead removal on the point would take approximately 18 months to complete following completion of the plan.

### 3. Weeks Bay Land Acquisition (Harrod Tract)

**Project Summary.** The proposed Weeks Bay Land Acquisition (Harrod Tract) project would fund WBF or the State of Alabama would acquire the 231-acre Harrod Tract and transfer it into the permanent ownership of ADCNR with management by the Weeks Bay NERR. The Weeks Bay Land Acquisition (Harrod Tract) project would protect approximately 231 acres in perpetuity to maintain its conservation value. The Harrod Tract is located in Baldwin County, Alabama, off Sherwood Highland Road (PIN 065600). The property is one of the largest remaining undeveloped parcels of cypress and gum swamp, marsh, and river shoreline in coastal Alabama and is the largest privately owned tract on the lower Fish River. Located adjacent to protected wetlands, it includes 7,600 feet of Fish River shoreline, as well as frontage along Turkey Branch and Waterhole Branch, two of Fish River's primary tributaries. Multiple smaller bayous (artificially constructed lakes) are also present on the property. The wetlands are composed of fringing salt marsh transitioning into hardwood cypress and gum swamp. The extensive marsh edge provides valuable nursery habitat for a host of estuarine organisms including shrimp, crabs, and fish. Hundreds of species of migratory birds use the habitat, more than a dozen resident species of shorebirds are found at the edges and within the property, along with a representative array of local wetland flora and fauna. The 231-acre property includes more than 100 acres of intact wetlands habitat.

**Project Implementation.** A restoration plan would be developed, and associated restoration activities would be conducted on the purchased property, which could include invasive species control (prescribed burning or other methods), native vegetation planting, and limited erosion control measures. WBF would purchase the property through a willing seller at or below the Yellow Book appraised value; as an accredited land trust, WBF would maintain the conservation value of the property and prohibit any future development. The acquisition of this property would include an appropriate land protection instrument (i.e., deed restriction or conservation easement) to ensure that the purpose of restoration as described in this plan is maintained in perpetuity.

**Project Timeline.** Acquisition would take approximately 6 months to complete. Restoration activities would be conducted over a 3-year period following acquisition. A monitoring plan would be developed and implemented as part of this project.
4. Lower Perdido Islands Restoration Phase I (E&D)

*Project Summary.* In recent decades, the valuable habitats on the Perdido Islands complex have experienced sustained erosion and other ecological injuries resulting from storms, intense boat traffic in nearshore waters, and shoreline and upland recreational use. The Lower Perdido Islands Restoration Phase I project would fund The Nature Conservancy (TNC) to develop a proactive and unified strategy for protecting the ecological functions of the Perdido Islands complex while allowing for passive public recreation. The project area includes several islands at the intersections of Bayou Saint John, Terry Cove, Cotton Bayou, and Perdido Pass, all in proximity to Orange Beach, Alabama, within the lower Perdido River and Bay watershed. The total project area encompasses approximately 420 acres and includes Robinson Island (11 acres), Bird Island (15 acres), Walker Island (7 acres), Gilchrest Island (2 acres), Boggy Point (7 acres), and the surrounding estuarine and marine environment. The remaining portion of the project area includes open water and a variety of wetland types.

*Project Implementation.* For Phase I of the Lower Perdido Islands Restoration Project, TNC would develop a conservation management plan to evaluate the most appropriate methods for minimizing adverse impacts on sensitive habitats, and conduct a sediment modeling study to provide information on erosion that would inform future habitat restoration activities on the islands. Project elements would include identifying and describing the issues (such as erosion) and evaluating and recommending shoreline protection and restoration, submerged aquatic vegetation (SAV) protection, and dune habitat protection strategies. Specific activities likely would include a habitat survey, baseline monitoring, recreational use monitoring/behavioral observations, preliminary permit and compliance investigations, stakeholder coordination, and identification of factors that may assist in restoration and improved conservation. Other interim habitat enhancement activities associated with the project would include the installation of signage on the islands alerting visitors to nesting bird habitat, tree plantings for bird nesting habitat, and marine debris monitoring. Aside from marine debris monitoring, which the City of Orange Beach would implement through its regular program, these activities would be implemented by TNC in close coordination with the City of Orange Beach.

*Project Timeline.* This Phase I project is expected to take approximately 18 months to complete, including the development of a conservation management plan, sediment modeling study, and interim habitat enhancement activities. Baseline monitoring data would be collected as part of Phase I.

5. Southwestern Coffee Island Habitat Restoration Project-Phase I (E&D)

*Project Summary.* This project would support planning activities related to the restoration and creation of colonial nesting bird breeding habitat and tidal wetlands along the southwestern shoreline of Coffee Island, located in Mississippi Sound in south Mobile County, Alabama. Phase I proposes funding for two tasks—(1) a synthesis of colonial wading bird and shorebird nesting data, and (2) E&D and permitting for the restoration of habitat on Coffee Island to evaluate whether the project should be considered for further development in a later plan. The project site where E&D activities would occur is state-owned island (managed by ADCNR) located in the Portersville Bay section of eastern Mississippi Sound. The island currently supports a small (approximately 1.0 acre) breeding colony of wading birds, including snowy egrets, tricolor herons, little blue herons, cattle egrets, white ibis, and similar colonial nesting wading bird species. Additionally, adjacent to the colony, a small shelly beach (approximately 0.50 acre) provides nesting habitat for shorebirds such as black skimmers and American oystercatchers.

*Project Implementation.* This project includes E&D and analysis activities resulting from field studies, biological assessments, data synthesis, modeling, sediment source investigations, development of drawings and construction plans, and construction cost estimates as well as obtaining required permits. The project consists of two components. First, all colonial nesting bird habitat data in coastal Alabama would be compiled and analyzed, resulting in a Colonial Nesting Birds Data Synthesis and Assessment.
Findings from this assessment are expected to determine whether nesting habitat is a limiting resource for colonial wading birds and if this project would be designed to restore wetlands and/or bird nesting habitat. The second component would include conducting engineering, design, and regulatory compliance for the proposed restoration of wetlands and bird nesting habitats along the southwestern shoreline of Coffee Island.

**Project Timeline.** Planning, site investigations, data synthesis, and E&D would take approximately 12 to 18 months. Permitting would take 6 to 9 months, running concurrently with E&D.

6. **Little Lagoon Living Shoreline**

**Project Summary.** The Little Lagoon Living Shoreline project aims to restore a minimum of 2,200 feet of shoreline of Little Lagoon, on Bon Secour National Wildlife Refuge (BSNWR), to the west of Gulf Shores, Alabama. Little Lagoon is a shallow body of brackish water, 10 miles long and 0.5 mile wide, and the targeted length of shoreline is actively eroding, threatening the adjacent Pine Beach Road. Construction of a living shoreline would protect habitat on adjacent federal land by buffering the shoreline against erosion. The project would include planning, implementation, and monitoring of a living shoreline project that uses natural materials rather than hardened structures or barriers, strategically placed to provide protective erosion control management to restore natural habitat, functions, and processes.

**Project Implementation.** The Little Lagoon Preservation Society, Friends of BSNWR, and BSNWR would collaborate on implementation. USDOI would contract a qualified professional with living shoreline expertise to evaluate, plan, and implement the project. Depth surveys and measurements for project design such as wave energy would be provided in a desk top analysis. In general, one or two rows of biodegradable coconut fiber “coir” logs may then be placed along the eroding shoreline to stabilize vegetation and attenuate wave action, and grass plantings (e.g., *Spartina alterniflora* or *Juncus roemerianus*) may be placed between the logs and the eroded shoreline to jump start a vegetated buffer. Native mussels may also be seeded among the shoreline grasses. The specific restoration activities would be finalized during the evaluation and planning process.

**Project Timeline.** Once the contract is awarded to a qualified professional, planning, permitting, and project implementation should occur within approximately 10 to 12 months. Following installation, the monitoring surveys would be performed quarterly for 3 years by BSNWR staff or other designated individuals to evaluate erosion and vegetation recovery.

7. **Restoring the Night Sky – Assessment, Training, and Outreach (E&D)**

**Project Summary.** Past lighting assessments and documented sea turtle disorientations along the Alabama coast suggest that anthropogenic light pollution negatively affects Alabama’s natural resources. The long-term goal of the Restoring the Night Sky—Assessment, Training, and Outreach (E&D) project is to reduce the impacts of light pollution on federally managed lands that disorients nesting sea turtles and hatchlings, disrupting their reproductive activities and reducing their reproductive success. The project would produce an Alabama coast-wide analysis of the impacts of light pollution on federally managed lands and nearshore waters in Baldwin and Mobile counties in Alabama, helping to guide future work to mitigate this issue. Specifically, the project would help restore coastal habitats at BSNWR injured by the DWH oil spill by producing an inventory of artificial light sources that affect the refuge. This project has three primary objectives: (1) use remote sensing and NPS data products to identify locations that disproportionately contribute to light pollution on the Alabama coast; (2) produce a detailed strategy to mitigate the identified problematic lighting; and (3) work with local governments to improve their understanding and capacity to address lighting concerns in the future. The assessment would detail the most problematic locations across the Alabama coast with respect to impacts on coastal wildlife, evaluate the most cost-effective options to reduce light pollution in coastal Alabama, and describe the best options.
to elicit public participation in reducing light pollution. The project would also include pilot tests of alternative lighting systems to assess public and ecological responses to different lighting options.

**Project Implementation.** The project would help support lighting workshops and training for city code enforcement and staff, homeowners, and condominium and hotel owners in Alabama’s coastal cities that wish to participate. These workshops would ensure that the technical nature of assessing and improving lighting for sea turtles is well understood by those in local government who are tasked with addressing problematic lighting. Further assistance may include developing meaningful ordinance language and reasonable solutions to any conflicts created by lighting. Once funded, USDOT would implement the project through the NPS’s Natural Sounds and Night Skies Division, which has experience working throughout the country on light pollution mitigation projects. Local assistance would be provided by USFWS. This project would be performed largely through face-to-face meetings and training, data collection in the field, and computer modeling.

**Project Timeline.** The timeline for this project would be determined based on the availability of funding.

8. **Toulmins Spring Branch Engineering and Design (E&D)**

**Project Summary.** The Toulmins Spring Branch project would fund E&D for a variety of non-structural and structural best management practices (BMPs) that would reduce nutrients and pollutants into Toulmins Spring Branch, a creek that is listed as having impaired water quality on Alabama’s 303(d) list. The project location is at the headwaters of Toulmins Spring Branch, within the Three Mile Creek watershed and directly south of the Bessemer Hope VI multi-family and mixed use development in the City of Prichard, Alabama. This E&D project is intended to fill this critical funding gap and clear the way for the actual project to be implemented.

**Project Implementation.** The project would include a watershed assessment and a conceptual plan for the entire length of Toulmins Spring Branch that details opportunities for erosion and sedimentation reduction, nutrient and pathogen reduction, and flooding and stormwater management. E&D would be performed for an approximately 6-acre park, a 1-acre created wetland, approximately 600 linear feet of bioswales, and riparian buffers on vacant, abandoned urban parcels in the headwaters of Toulmins Spring Branch. These structural BMPs would have the combined purpose of reducing the input of sediment, nutrients, and pollutants into the creek via stormwater runoff. Non-structural BMPs would include public outreach, community education and training, and litter clean-ups, with the goal of reducing inputs from litter and other avoidable water pollutants. As a secondary benefit, additional features such as trails, footbridges, gazebos, and public gathering areas can be incorporated to create valuable public recreational and community amenities and increase public awareness for Toulmins Spring Branch and its restoration.

**Project Timeline.** The proposed E&D work is estimated to be completed in approximately 6 months.

9. **Fowl River Nutrient Reduction**

**Project Summary.** The Fowl River Nutrient Reduction project seeks to improve water quality in the Fowl River watershed through improved land management practices that reduce nutrient and sediment runoff. The watershed encompasses 52,782 acres, draining much of southern Mobile County, and is a significant contributor of freshwater flow into Mobile Bay. Land uses in the watershed are 21 percent urban, 15 percent agricultural, 63 percent forested, and 1 percent water/wetlands. Increasing development and continuing erosion and sedimentation threaten water and habitat quality. Improved land management practices using existing USDA-NRCS conservation practice standards (CPS) and their specifications, would be the primary tool used to reduce erosion and nutrient inputs in the watershed. Examples of such measures would include erosion and sediment control practices such as cover crops, conservation tillage, and field borders. Although cattle production is not the primary agricultural industry in the watershed, livestock exclusion from stream, wetlands, and drainage ways would be a priority conservation measure.
Ecosystem services that are provided by conservation practices include reducing nitrogen, phosphorus, and sediment runoff, which would improve water quality and mitigate chronic ecosystem threats (e.g., hypoxia, harmful algal blooms, and impaired recreational use). Improved water quality in the Fowl River watershed would ultimately benefit all estuarine and marine resources of coastal Alabama.

**Project Implementation.** The project is organized into four phases for implementation: (1) conservation planning (including landowner outreach and education) and environmental evaluation, (2) conservation practice engineering and design, (3) conservation practice implementation, and (4) water quality monitoring. Technical assistance would be provided to landowners through the development of conservation plans for their lands, which would identify water quality resource concerns. Financial assistance could be provided to landowners to implement site-specific conservation practices to address the resource concerns on their property. USDA-NRCS would implement the project in the Fowl River watershed to improve water quality by implementing conservation practices to reduce nutrient and sediment runoff. USDA-NRCS and its conservation partners would help voluntarily participating landowners by developing conservation plans that identify natural resource concerns and conservation practices that landowners can implement to reduce nutrient and sediment runoff. The conservation planning and implementation would be completed for the purpose of addressing nutrient and sediment loading concerns, with the goal of making and observing a measurable impact.

**Project Timeline.** The project would be implemented over a 4-year period with the first year consisting primarily of landowner outreach and planning. Implementation of the conservation plans would begin in year 2 and continue through year 4. Baseline data collection through instream water quality monitoring would be initiated in the targeted watersheds in year 1. Water quality monitoring would be continued after most of the conservation practices are implemented. More than one of the four phases as described above can be conducted simultaneously. The project would last no more than 5 years.

**10. Weeks Bay Nutrient Reduction**

**Project Summary.** The Weeks Bay Nutrient Reduction project seeks to improve water quality in the Weeks Bay watershed through improved land management practices that reduce nutrient and sediment runoff. The watershed encompasses approximately 130,000 acres in southwest Baldwin County, which flows into Weeks Bay, a shallow sub-estuary of Mobile Bay.

The implementation of land management practices using existing USDA-NRCS CPS and specifications would be the primary tool used to reduce erosion and nutrient inputs in the watershed. Examples of such measures would include erosion and sediment control measures such as cover crops, conservation tillage, and field borders. Ecosystem services that are provided by conservation practices include reducing nitrogen, phosphorus, and sediment runoff, which would improve water quality and mitigate chronic ecosystem threats (e.g., hypoxia, harmful algal blooms, and impaired recreational use). Improved water quality in Weeks Bay watershed would ultimately benefit all estuarine and marine resources of coastal Alabama.

**Project Implementation.** The Weeks Bay Nutrient Reduction project would focus on the middle Fish River, lower Fish River, and Magnolia River. Conservation planning would be conducted in all three of these watersheds; however, conservation implementation would only occur in two of the watersheds. The watersheds selected for implementation would be based on conservation opportunities on high-priority lands as ascertained from conservation planning efforts, and the phases of project implementation would be the same as described above for the Fowl River Nutrient Reduction project. Technical assistance would be provided to landowners through the development of conservation plans for their lands, which would identify water quality resource concerns.

**Project Timeline.** The project would be implemented over a 4-year period with the first year consisting primarily of landowner outreach and planning. Implementation of the conservation plans and identified
land management practices would begin in year 2 and continue through year 4. Baseline data collection through instream water quality monitoring would be initiated in the targeted watersheds in year 1. Water quality monitoring would be continued after most of the conservation practices are implemented. More than one of the four phase as described above can be conducted simultaneously. The project would last no longer than 5 years.

11. CAST Conservation Program

**Project Summary.** The Coastal Alabama Sea Turtle (CAST) Conservation Program project is designed to support existing sea turtle programs in Alabama to strengthen efforts to protect nesting sea turtles and enhance the survival of sea turtle hatchlings in Alabama. The proposed project would provide funding for the continued operation, expansion, and enhancement of the existing Share the Beach Sea Turtle Nest Monitoring Program (Share the Beach), which as of January 2018 is proposed to be managed by the Alabama Coastal Foundation (ACF). ACF is an organization dedicated to environmental stewardship, with considerable experience in program management; fundraising; and volunteer recruitment, training, and management. ACF’s administration of the program would allow for better overall program management, including better management, analysis, and reporting of data collected under the program. Previously, this program had been managed by Friends of BSNWR.

The CAST Conservation Program would expand and enhance ACF’s Share the Beach program by providing funds to guide the Share the Beach program in actions necessary to support sea turtle restoration in Alabama, such as maintaining and implementing protocols for sea turtle nest monitoring activities and reducing threats on nesting beaches. Under this project, additional staff experienced in sea turtle nest monitoring protocol would be hired to work with Share the Beach. This project would also help support a greater emphasis on public education, focused on minimizing anthropogenic threats to sea turtles outlined in the Northwest Atlantic Loggerhead Recovery Plan (NMFS, et al., 2008), such as artificial lighting and nesting obstacles and promoting the region’s potential for ecotourism while avoiding disturbance to or manipulation of sea turtle nests and hatchlings. This project would bring Alabama's sea turtle conservation program to a level of capacity similar to other states in the region by funding two full-time biologists, four seasonal team leaders annually, two summer interns annually, and an administrative position, as well as staff training, data collection and management, program equipment, and public education, among other activities.

**Project Implementation.** Under this project, ACF would provide management of the Share the Beach program, and administrative activities would occur out of ACF’s Mobile office. ACF would manage program administration; volunteer contact information; and all files, equipment, and materials necessary to successfully administer the Share the Beach program. This project would fund staff time, additional program equipment, education, and travel expenses. No infrastructure or other proposed improvements would be funded with these proposed project funds. As part of program management, all current permits would be maintained, and ACF employees and volunteers would be trained by personnel with sea turtle expertise in nesting survey protocols and data management, in collaboration with USFWS. ACF would work with USFWS on the permitting process to revise Alabama sea turtle nest monitoring permit and permit holders as needed. Under the administration of ACF, the Share the Beach program would be reviewed annually to evaluate its effectiveness, including: (1) lessons learned from previous year, (2) consulting new scientific information about sea turtles, and (3) collaboration with USFWS to review sea turtle data collection, monitoring, and handling protocols. Additional activities that would be continued and expanded include continual recruitment and engagement of volunteers, volunteer training, nest monitoring and related data collection, outreach and education to residents and tourists, and data management.

**Project Timeline.** Management of Share the Beach and expansion of the program would occur over a 3-year period.
12. CAST Triage

Project Summary. The purpose of this project is to provide a new, appropriately equipped facility and program for the initial triage, treatment, release, and/or transfer of injured or ill sea turtles. Currently, there are no facilities in Alabama equipped for handling sea turtle strandings. The project would construct a new facility on property owned by the City of Orange Beach and establish a program that would be supported by the City of Orange Beach in the future. This facility would complement and enhance the current Alabama Sea Turtle Stranding and Salvage Network (ALSTSSN). This facility and associated program would allow sea turtles injured in Alabama and proximity in adjacent states to be treated and released faster and with less stress on the animal from handling and transport. The expectation is that faster intervention, along with shorter periods of captivity and minimized handling, would improve the outcomes for injured or ill turtles by decreasing the time to receive treatment and providing a local resource to contact for citizens to report injured or distressed turtles. The program would also work to educate the public about (1) anthropogenic threats to sea turtles treated at the facility, (2) current science on how best to address the threats, and (3) conservation for sea turtles in the wild. Educational materials would be coordinated with Alabama’s Share the Beach Sea Turtle Nest Monitoring Program to create a consistent and unified message.

Project Implementation. The site for this proposed facility is located in Orange Beach, Alabama, on city-owned property adjacent to Cotton Bayou. A large portion of the proposed site was previously a fire station. The building slab, some of the parking lot and other features still exist. The remaining areas have all been disturbed/filled/excavated for the construction of the adjacent water tower, power substation, and the roadway. The project would occupy 1 to 3 acres of land, upon which would be built a 40-foot by 60-foot, wind-rated, light commercial metal structure on a concrete slab be built. Construction would include the following elements: base building; site/utilities; water supply (bore); pumps/filtration; tanks (1 large and 2 medium, miscellaneous small); HVAC (entire building) office/storage area; perimeter fence; concrete drives/apron; walk-in cooler/freezer; and enclosed triage/necropsy area. The building would be insulated, climate controlled, and equipped with a full bath, office/storage area, and walk-in cooler/freezer units. The budget includes funds for a variety of tank sizes to accommodate the different species/sizes of marine turtles and one large enough for pre-release assessment (this can be changed to any number of configurations). Each tank would be accessed by an overhead hoist or mobile gantry and would include an elevating floor platform as is appropriate in a rehabilitation tank. The primary water source would be achieved through an underground bore into Cotton Bayou. The proposed project would likely place four pipes underneath the roadway between Cotton Bayou and the project site. Two pipes would be for intake and two for discharge (primary and secondary). The primary discharge pipe would be the first pipe used for discharge. The secondary discharge pipe would be in place as a backup. The pipes would likely be 3 to 4 inches in diameter depending upon the terms of the permit, and they would be bored (horizontally drilled) in place. The final location of the pipe and its point of exchange with Cotton Bayou would be determined during the permitting process and informed by the regulatory process.

Construction methods would include common construction practices consistent with the adopted International Building Codes for steel buildings and associated items such as electrical, mechanical, plumbing, and fire/life safety. The parking lot would be constructed of pervious material such as crushed concrete. Estimated parking for 10 to 12 vehicles is possible at the site. The facility would be connected to the public sewer system, and waste water would be discharged to the sanitary sewer via grinder pump. Associated infrastructure would require both a domestic and saltwater source (both are nearby, but the saltwater requires a bore); electrical service (nearby); sewer line tap and grinder pump (nearby and included); and broadband network access (achieved via point-to-point microwave shot to nearby service provider access point). Effluent from the tanks would be discharged into Cotton Bayou in accordance with all required permits. Required permits may include United States Army Corps of Engineers (USACE) Section 10 and Section 404 permits as well as water quality and coastal zone management consistency certifications from the Alabama Department of Environmental Management (ADEM). Any
necessary building permits would be obtained in accordance with local, state, and federal laws. Other permits such as National Pollutant Discharge Elimination System permits would be obtained if required and necessary.

**Project Timeline.** Planning could take from 60 to 120 days. Construction would require approximately 90 days and would include completion of the necessary regulatory and compliance process. The facility would operate under the ALSTSSN permit and would always remain a sub-permittee on the ALSTSSN permit. Additionally, the facility would need its own permits based on the treatment being performed and length of captivity. These facility permits are not in place but would be applied for at the appropriate time relative to the project because facilities and other program requirements must be in place at the time of application.

13. CAST Habitat Usage and Population Dynamics

**Project Summary.** The CAST Habitat Usage and Population Dynamics project would study migration patterns, habitat usage, and distribution patterns of sea turtles of the Alabama Coast. The project proposes to sample in-water sea turtles to initiate a long-term monitoring program designed to determine distribution and habitat use, vital rates (including survival rates), connectivity, and potential impacts of anthropogenic activities for sea turtles in coastal and nearshore waters of Alabama. The project objective is to inform the AL TIG and other state and federal initiatives about the locations and types of activities that would provide the most cost-effective means of reducing threats to sea turtles and increasing their populations in coastal Alabama.

Using biological, genetic and stable isotope analyses researchers can explain links among and within populations that can identify human actions that disrupt important population connections and cause environmental threats. Genetic analysis allows researchers to identify the connectivity of turtles using Alabama waters to larger populations, such as determining from which nesting beaches juvenile turtles using Alabama waters originated. The project would also fund the collection of sea turtle movement data in and around the Alabama coast. Analyses of these data would be used to characterize where sea turtles are foraging, migration patterns, habitat use, and life history parameters for sea turtles using Alabama waters.

**Project Implementation.** The methods proposed for collecting these data include genetic analyses, stable isotope analyses, mark-recapture, and habitat modeling (including anthropogenic threats). The sea turtles would be captured by hand or using dip nets and tangle (set) nets at several sites along the Alabama coast, including inshore waters (i.e., Perdido Bay, Bon Secour Bay, Mobile Bay, and the Mississippi Sound) and the nearshore waters of the Gulf of Mexico. Gulf of Mexico Marine Assessment Program for Protected Species would serve as a pilot study for this project. Data from that work would help to locate prime capture locations in Alabama waters and identify the most effective capture methods. In addition, funds from these projects can be leveraged to provide a region-wide assessment of juvenile turtles using waters of the northern Gulf of Mexico. Data sharing would follow standard Natural Resource Damage Assessment (NRDA), Bureau of Ocean Energy Management, and United State Geological Survey (USGS) protocols. In addition to direct capture, researchers may obtain sea turtles for study that are legally captured during relocation trawling by the USACE hopper dredging operations. Morphometric data, including size and weight, would be gathered from all sampled turtles, and a visual health assessment would be conducted. Biological samples, including blood, skin, and scute, would be gathered from each individual.

It is estimated that 100 turtles could be captured per year, with a minimum of 40 samples per species needed for genetic and vital rates analysis. For mark-recapture analysis, a minimum of 5 years of captures is necessary.
Project Timeline. Investigators currently hold a current, 5-year, renewable National Marine Fisheries Service (NMFS) permit (#17304-03) that allows these activities; therefore, capture, marking, and sampling for this project could be initiated immediately upon receipt of funds. The project is funded for 3 years.

14. CAST Protection: Enhancement and Education

Project Summary. Enforcement of existing Federal, state and local regulations and ordinances is a crucial tool for reducing activities and behaviors that cause harm to sea turtles in state waters. This project would enhance state enforcement of federal regulations and increase turtle protections in Alabama state waters by: (1) increasing awareness and understanding of the Endangered Species Act (ESA) and applicable regulations through education of state enforcement officers; (2) increasing resources for state enforcement agencies to more proactively dedicate efforts toward ESA-related activities; (3) taking steps to reduce fisheries bycatch (i.e., fishery and social science surveys, purchasing and distributing turtle excluder devices for the skimmer trawl fishery); and (4) taking steps to reduce impacts on nesting turtles, such as nest vandalism and lighting harassment.

Project Implementation. NMFS, USFWS, and ADCNR would work collaboratively with Marine Resources Division (AMRD) law enforcement and federal offices of law enforcement to determine law enforcement training needs, how best to conduct consistent training, and to identify specific training and educational needs/products. A full-time AMRD biologist would be hired to implement several elements in this project (i.e., enforcement training sessions, public education and outreach, stakeholder collaboration). Training of AMRD enforcement officers would be conducted and outreach products would be distributed to the public. NOAA NMFS protected resources staff, USFWS, and AMRD biologists would also work together to identify and prioritize hot spot areas for potential ESA violations and those areas that need increased and consistent enforcement efforts. Resources and equipment necessary to increase and sustain enforcement activities in identified hot spot areas would be identified, and state enforcement increased/enhanced in areas of need to reduce associated harm from illegal activities. A communication pathway between the state and federal agencies and law enforcement would also be established to continuously reevaluate needs to ensure consistency in enforcement enhancement efforts.

Project Timeline. This project would begin as soon as funding becomes available and is proposed for 4 years. Increased state enforcement around sea turtle nesting beaches would occur throughout the duration of the project. Year 1 would be used to hire and train a biologist, to develop initial partnerships with local and federal stakeholders, and coordinate with skimmer trawl owners for Turtle Excluder Device (TED) installation. Social science and fisheries surveys would be contracted by the end of year 2, and the results would be used to inform the targeting of public outreach materials. Training of AMRD law enforcement officers on sea turtles would likely occur in the winter of years 2, 3, and 4, with the bulk of training in year 2 and supplemental training of newly hired officers provided in years 3 and 4. In year 3, nest sites would be remotely monitored with game and/or surveillance cameras, and in years 3 and 4, outreach plans would be developed and targeted outreach and education would be implemented.

15. Enhancing Capacity for the Alabama Marine Mammal Stranding Network

Project Summary. This project would enhance the capacity of the Alabama Marine Mammal Stranding Network (ALMMSN) by providing funding for staff time, equipment and supplies, and sample analyses. ALMMSN is operated out of the Dauphin Island Sea Lab (DISL) on Dauphin Island, Alabama. This project would allow ALMMSN to use and expand on its existing infrastructure for cetacean stranding response and communications and data management to enhance the ALMMSN’s operations. Information on dead or stranded cetaceans is obtained by collecting basic stranding data (Level A) and performing necropsies; however, ALMMSN has limited capacity for live cetacean stranding response. In addition,
ALMMSN has limited resources to conduct in-depth analysis of causes of illness and mortality in stranded cetaceans. The project would allow ALMMSN to better respond to live or dead stranded cetaceans, to necropsy animals, and to analyze samples collected from cetaceans stranded in Alabama waters to better understand the causes of marine mammal illness and death. It would also support increased data consistency for information collected from stranded marine mammals by supporting ALMMSN to enter its data into a regional marine mammal health database (known as GulfMAP, hosted by NOAA). The information collected by ALMMSN from stranded cetaceans should enable managers to mitigate impacts on marine mammals from natural and anthropogenic threats and to monitor population recovery post-DWH oil spill. Accordingly, this project is expected to provide a better understanding of the causes of illness/mortality through the early detection and intervention of anthropogenic and natural threats. Additionally the project is expected to increase the survival of rescued animals and recovery of populations affected by the DWH oil spill by improving marine mammal stranding response, data collection, data analyses, and reporting for Alabama waters. By enhancing mutual aid and collaboration to augment overall response capability of NOAA’s Marine Mammal Health and Stranding Response Program, this project would also increase data consistency and the timeliness of data availability to managers of marine mammals to allow for rapid responses to emerging threats.

**Project Implementation.** This project would continue ALMMSN’s current data collection efforts and expand them by providing more in-depth data analysis provided by the ALMMSN staff in collaboration with the NMFS Southeast Regional Office and Southeast Fisheries Science Center. This increased collaboration would build capacity in the region by training ALMMSN to improve live stranding responses in the future. ALMMSN would also maintain its current reporting, databases, publications, and necropsy reports, and increase the number of metadata records relative to cetaceans responded to, necropsies conducted, and samples processed, as well as its number of publications.

**Project Timeline.** This effort is currently funded by NFWF-GBEF through 2019. The proposed timing of this project is January 1, 2020, to January 1, 2023, which includes all activities under this program.

### 16. Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health

**Project Summary.** This project is aimed at defining common bottlenose dolphin distribution, abundance, and population structure within Alabama state waters to assess the status of bottlenose dolphins using Alabama waters by collecting data on dolphin distribution, habitat use, mortality rates, and feeding habits. The project is a data collection effort to: (1) investigate stock structure across Mobile Bay, Perdido Bay, and nearshore Alabama waters and the seasonal (summer/winter) abundance, distribution, and habitat use of common bottlenose dolphins on the Alabama coast using capture-mark-recapture and photo-ID surveys; and (2) assess dolphin condition following the DWH oil spill using field observation and remote biopsy sampling, both of which would inform future restoration planning. This data collection effort would provide valuable resource-level monitoring for bottlenose dolphins, a largely unstudied top predator in Alabama waters, informing pre restoration baselines and providing more effective restoration planning and implementation.

**Project Implementation.** With additional training and support from NOAA NMFS Southeast Fisheries Science Center, DISL has in place the infrastructure and staff necessary to manage the project, including coordinating fieldwork with collaborators, performing sample processing and analyses, and submitting annual reports to ADCNR. Data would be comparable to and transferable to inform Gulf-wide conservation efforts. Four remote biopsy surveys of bottlenose dolphins would be conducted in Mobile Bay, Perdido Bay, and adjacent coastal waters defined as more than 2 kilometers from the shoreline to the 20 meter contour line to obtain adequate seasonal sample sizes for genetic analysis. Each season, the goal would be to collect 40 samples within both Mobile Bay and Perdido Bay and 25 samples in the adjacent coastal waters (i.e., a total of 260 samples). Each seasonal remote biopsy survey would be conducted during a 42 day window using one boat staffed with four scientists. This survey window includes an
average of 2 days for each full survey day required. Dolphin tissue samples would be stored at DISL, and analyses would include: (1) genetic analysis for stock structure, sex determination, species confirmation, and morphotype determination; (2) stable isotope and fatty acid analyses for diet assessment; (3) contaminant and harmful algal bloom toxin detection; and (4) mtDNA integrity and bioenergetics efficiency analysis. All samples (~260) would be analyzed for genetic structure, ~200 samples would be analyzed for diet assessment, and ~50 percent of samples would be randomly selected for contaminant analyses, depending on the quantity of sample available to accommodate the multiple analyses proposed and selected to represent each sampling location and time relative to sex and age class of the sampled population. Twelve seasonal (two per site per year) photo-ID mark-recapture surveys of dolphins would also be conducted at sites in Perdido Bay and Mobile Bay following established protocols outlined in Rosel et al 2011. Abundance estimates for Mobile Bay and Perdido Bay would follow established methods for photo-ID mark-recapture surveys. Mobile Bay surveys would require two boats staffed with three scientists each. Photos would be collected using high-resolution digital photography of dorsal fin and flanks of each animal.

**Project Timeline.** This project has a 4-year timeline. As proposed, identifying survey routes and selection and staff training would occur during spring 2019. Photo-ID surveys would begin during summer 2019 and repeated during summers 2020 and 2021, as well as winters 2019–2020 and 2021–2022. Remote biopsy surveys would be performed during winter 2019–2020 and summer 2020 and 2021. Tissue and data analysis would begin after the first surveys are completed and continue through the duration of the study. Final reporting is expected by winter 2022.

17. Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education

**Project Summary.** This project would reduce injury and mortality in Alabama estuarine bottlenose dolphins. This would be accomplished by: (1) increasing resources for ADCNR AMRD to dedicate toward MMPA-related activities and increasing patrol hours; and (2) increasing awareness and understanding of the MMPA through education to assist state enforcement efforts; (3) conducting social science studies (e.g., interviews, focus groups, etc.) to help (a) characterize the nature and extent of the illegal feeding of dolphins, vessel-based harassment, and interactions of dolphins with hook and line fishing gear in Alabama and (b) understand attitudes and perceptions of these user groups; (4) conducting systematic fishery surveys to help characterize the nature and extent of dolphin interactions with commercial fishing vessels and hook-and-line gear in Alabama, and (5) developing and implementing a comprehensive and targeted outreach plan based on the results of these social science studies and systematic fishery surveys. Enforcement is a crucial tool for reducing activities known to cause harm to marine mammals in state waters, and enhancing state enforcement would provide a key component to aid in reducing injury and mortality in Alabama estuarine bottlenose dolphins. NMFS and ADCNR would work collaboratively with AMRD law enforcement and NOAA Office of Law Enforcement to determine law enforcement training needs and how best to conduct consistent training and to identify specific training and educational needs/products. AMRD would hire a biologist to implement training of enforcement officers on the MMPA and public outreach topics related to marine mammals. The biologist would coordinate with the NMFS Office of Protected Resources to receive and stay up-to-date on issues and information related to marine mammal protection.

Resources and equipment necessary to increase and sustain state enforcement activities in hotspot areas would be identified, and state enforcement would be increased/enhanced in areas of need to reduce harm from illegal activities. A communication pathway between the state and federal agencies and law enforcement would be established to reevaluate needs on an ongoing basis to ensure consistency in enforcement enhancement efforts.

This project would also enhance public knowledge of marine mammal protection and the MMPA by contracting with a company who would conduct a social science survey, which would inform the creation
of a well-informed, targeted education and outreach program for the Alabama coast. This program would inform the public and vessel operators about the harmful effects of illegal feeding and harassment of marine mammals in the Gulf of Mexico. Additionally, this project would contract with a company to conduct a fisheries survey to characterize dolphin interactions with commercial and recreational fisheries, which would also inform the education and outreach program. Educational components could include how commercial and recreational fisheries could help prevent these impacts within Alabama state waters. The biologist would oversee the contracting for the surveys and the implementation of the education and outreach program for coastal Alabama.

**Project Implementation.** AMRD would hire a full-time biologist to implement the elements in this project (i.e., enforcement training sessions, targeted public education and outreach, stakeholder collaboration) and to work on the CAST Protection: Enhancement and Education project (i.e., the position would be funded 50 percent from this project budget. See Section 2.6.4.5. This biologist would specifically focus on (1) characterizing dolphin interactions with commercial and recreational fishing vessels; (2) developing practices to reduce harmful and/or lethal impacts on dolphins from hook-and-line fishing related injuries, illegal feeding activities, and vessel-based ecotourism activities; (3) implementing a public outreach and education program based on the results of the social science and fisheries surveys; and (4) training AMRD enforcement personnel.

To develop the outreach and education program, the AMRD biologist, in coordination with NMFS, would specifically focus on contracting with a company(ies): (1) to conduct a systematic fisheries science survey to characterize dolphin interactions with commercial and recreational fisheries; and (2) to conduct social science studies (e.g. interviews, focus groups) to characterize the nature and extent of illegal feeding and harassment activities in Alabama state waters by user group. Conducting the fishery surveys and social science studies would help inform the identification, development, and implementation of ways to reduce harmful interactions with dolphins, including outreach and education.

**Project Timeline.** This project is proposed to support 4 years of implementation. Year 1 would be used to (1) hire and train a biologist, (2) develop initial partnerships with local and federal stakeholders, and (3) develop and print enforcement training materials. Training AMRD law enforcement officers on the MMPA and safe marine mammal viewing practices would likely occur in the winter of years 2, 3, and 4, with the bulk of training in year 2 and supplemental training provided in years 3 and 4, as updates to viewing practices are added, and as potentially new harmful fisheries and viewing interactions are discovered. The biologist would contract with a company (or companies) to conduct social science and systematic fisheries surveys in years 2-3. These surveys would inform the development of a targeted outreach program, which would be developed and implemented by the biologist in years 3 and 4. Additional MMPA-related patrols would be conducted throughout the project life.

18. **Colonial Nesting Wading Bird Tracking and Habitat Use Assessment – Two Species**

**Project Summary.** This project would initiate monitoring studies expected to inform and enhance future restoration planning for key colonial nesting wading bird species along the Alabama coast that were injured by the DWH oil spill. The goals of the monitoring are to better understand the extent to which declines in colonial nesting wader populations result from habitat limitations versus other potential causes such as increased prevalence of predators or human disturbance. The proposed study would (1) determine daily and seasonal movements among nesting colonies at three important breeding areas—Mississippi Sound, Gaillard Island, and Perdido Bay; (2) determine seasonal and annual home ranges for birds marked at sites identified above and document fidelity to specific nesting colonies, dispersal timing, and regional dispersal among known breeding colonies within the study area; (3) document average foraging distances, time away from nests, and important foraging areas within the study area; and (4) determine weekly and seasonal habitat use within the study area. This project alternative would sample only two species to provide information that is of comparable value in characterizing colonial wading bird
movements, habitat use and survival. The project would include 30 satellite tags per species (120 total) and 50 VHF per species (100 total)

**Project Implementation.** This project proposes a telemetry tracking study of the movements of two wading bird species breeding along the Alabama coast. Target species include tricolored heron and either little blue heron or white ibis, based on additional recommendations from Trustee bird experts. The proposed 4-year study would employ a combination of satellite and VHF transmitters in conjunction with color leg-bandng to generate the monitoring data to help elucidate limiting habitat components for these species.

**Project Timeline.** Banding permits and state/federal scientific permits are required to capture, handle, and mark birds. Researchers would be required to supply applicable Institutional Animal Care and Use Committee permits before work begins. Satellite tags are custom built and would take approximately 3 months upon receipt of funds for tags to be acquired for deployment. Bird captures would begin the first breeding season after project funding and mobilization.

19. Oyster Cultch Relief and Reef Configuration

**Project Summary.** The AMRD is proposing to investigate the merits of deploying different types of culch material in various configurations to facilitate positive settlement and growth of oysters on selected reef areas in Mobile Bay, Alabama, building on work they previously conducted with DISL. This project has three primary objectives: (1) determine if there are differences in oyster settlement, growth, and survival on reefs of differing levels of relief and/or orientation relative to currents, (2) determine optimum reef material relief needed to restore oyster density on specific reefs within historical reef areas in which hydrology parameters such as oxygen and salinity and oyster recruitment and survival are highly variable, and (3) estimate the cost/benefits of deploying culch in certain configurations as opposed to traditional culch broadcast methods. AMRD experts expect this alternative would provide useful insights into improving methods for locating culch sites in coastal Alabama similar to other studies that have been conducted (Gregalis et al., 2008), selecting appropriate culch materials, and constructing reefs with the most effective degree of relief.

**Project Implementation.** The construction phase of the project would include the deployment of oyster shell, limestone rock, and fossilized oyster shell in three experimental configurations including mounding, elongated furrows, and control plots using typical culch broadcasting methods. Within the designated area(s), nine mounds, six furrows, and six control plots would be created. Control plots would be created using traditional culch broadcast methods at 100 percent 1-inch bottom coverage in the vicinity of experimental plots. Control plots would cover approximately the same area as the experimental plots. Final project site selection, culch height, and reef area would be determined by the results of pre-monitoring surveys. For the purposes of this project, two sites have been tentatively selected for pre-monitoring surveys, including a 36-acre reef approximately 1 mile north-northeast of the mouth of East Fowl River, and Denton Reef (70 acres), located approximately 3 miles southeast of the mouth of East Fowl River. Physical conditions would determine which type of plot would be used in each project site. For example, previous physical data indicate dissolved oxygen at the benthic (bottom) interface at Denton Reef is consistently hypoxic (low oxygen) or anoxic (no oxygen) and not conducive to oyster growth. Therefore, using mounds at Denton Reef could place spat in areas of more suitable dissolved oxygen by elevating the oysters in the water column where dissolved oxygen is higher. Using this proposed design, nine mounds (three culch treatments at three different depths and with three different culch types) would be created at Denton Reef. Three control plots would be established at this site. The control plots would use traditional oyster shell culch and broadcast methods.

On the proposed site near the mouth of Fowl River, six furrow sites would be created to evaluate the effects of relief, reef material, and orientation relative to currents on settlement, growth, and survivorship.
Three control plots using traditional cultch shell deployed in traditional 1-inch bottom coverage would be established at this site.

Following the construction phase these mounds and furrows and control plots would be monitored for oyster settlement and growth annually for 3 years. Individual mound construction including total area and maximum height would depend on the depth of the bottom in which it is placed to ensure compliance with the USACE authorized minimum clearance requirement depth. The area of the base of each mound would be calculated to support reef material to attain the desired relief. Length, height, and orientation of each furrow would also depend on depth and direction of currents at study site. It is anticipated that the width of each furrow would be approximately 2 feet wide, although the actual width would depend on the cascading effect of material deployed to a specific maximum height. Furrows would be planted a minimum of 2 feet apart.

**Project Timeline.** Planning, pre-monitoring, and site selection are anticipated to take 3 months (January–March of project year). The invitation to bid and bid process is anticipated to take 1 month (March of project year). Construction is anticipated to take 1 month and conclude by May of the first year. Construction would include acquiring, transporting, and deploying cultch material on areas and in configurations as determined by AMRD staff. It is anticipated that those selected to do the work would transport cultch by push boat and barge to the site and deploy the material off the deck using skid steers, excavator shovels, or high pressure water hoses. High pressure water hoses may only be used to distribute shell onto control plots.

### 20. Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D)

**Project Summary.** This project would use sonar technology to identify benthic areas of mid- to lower-Mobile Bay that are suitable to support cultch material for oyster reef restoration. Depending on the side-scan results, these areas could be used to reestablish oyster populations through initial efforts to seed reef areas with hatchery-raised, high-density oyster spat setting. The project would survey the current extent and conditions of the relic oyster reefs identified in the 1968 reef surveys contracted by AMRD and other water bottoms not surveyed. Approximately 8,847 acres of non-contiguous, state-owned water bottoms have been identified for side-scan mapping in mid- to lower Mobile Bay based on a survey of living and relic oyster reefs conducted in 1968. An additional 5,153 acres of oyster bottoms have been identified in upper Mobile Bay to quantify the location and extent of existing oyster resources that contribute to larval production and recruitment to lower Mobile Bay oyster reefs.

**Project Implementation.** Side-scanning activities may be performed by an entity with side-scan sonar capabilities, in addition to AMRD staff. To identify priority areas for side scanning and for contract specifications, grids comprising 2 kilometers by 2 kilometers would be superimposed on a map of historical oyster surveys within Mobile Bay. Side scanning and image processing would occur during the following 4 months. Once completed, AMRD staff would verify the data from random areas in mapped areas with high reflectance via hand dredge and pole to confirm the extent of bottom hardness and sediment burden. The gathered information would be used to prioritize areas for future oyster reef restoration.

**Project Timeline.** The surveys are expected to be completed within 1 year. Afterward, the next 4 months of the project would entail project planning and identification of target areas for side-scan mapping and contract development. Side scanning and image processing would occur during the next 4 months. The final 4 months would consist of ground-truthing mapped areas. The overall project would last approximately 2 years.
21. Oyster Hatchery at Claude Peteet Mariculture Center – High Spat Production with Study

**Project Summary.** The proposed project would construct an oyster hatchery at the existing Claude Peteet Mariculture Center in Gulf Shores and would provide operation and maintenance funding for the facility for a 4-year project period. Additionally, the project would result in the deployment of cultch material, including spat on shell, to areas identified as suitable for oyster growth. The 45-acre Claude Peteet Mariculture Center complex is located on the north side of the Gulf Intracoastal Waterway. The oyster spat produced from this project would be used for oyster restoration projects in Mobile Bay, which has experienced reduced oyster production compared to the early 20th century. This project would use information gained from mapping relic oyster reefs identified in the late 1960s. Information from areas mapped with side-scan technology in previous efforts and as part of another proposed project in this Restoration Plan would be assessed to determine suitability (i.e., hardness of bottom, sediment burden) for spat deployment. Side-scan images would be produced of water bottoms in areas recognized as conditionally approved for oyster harvest, while other areas would be identified in conditionally restricted or restricted waters. Images would direct where spat deployment would occur during each year of operation. Spat produced in the proposed hatchery would be deployed to both areas as conditions allow. Cultch material could also be deployed as needed.

Additionally, a comprehensive oyster restoration plan would be developed for coastal Alabama and funded through this restoration plan. The purpose of the comprehensive oyster restoration plan is to develop a long-term strategy to develop and sustain stable and resilient oyster populations in coastal Alabama. The plan would characterize local oyster populations, including an understanding of larval transport and recruitment trends, as well as environmental factors that affect them. The plan would aim to restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs. The plan would analyze existing literature, pull together data from previous and ongoing projects (including side-scan sonar, larval transport studies, and habitat suitability index), develop overall restoration goals and priorities, and provide specific recommendations to meet overall restoration goals and objectives.

**Project Implementation.** The proposed project would create an oyster hatchery at the existing Claude Peteet Mariculture Center in Gulf Shores and provide operation and maintenance funding for the facility for 4-year project period. A new greenhouse building is proposed for protecting the oyster hatchery tanks and equipment. The greenhouse would be approximately 60 X 96 feet (5,750 ft²) and constructed with sidewalls, ventilation, and mechanical devices to maintain temperature within the structure. The proposed greenhouse structure would have two bays (adjoining rooms) and would replace two of four existing greenhouses of the same dimensions. The proposed greenhouse would be on the footprint of the existing structure. As part of this proposed hatchery project, broodstock holding and spawning tanks and larvae settlement tanks, water chillers/heaters, pumps, air blowers, and filtration systems would be purchased and installed within or adjacent to the new greenhouse.

Additionally, an existing concrete pad at the AMRD office on Dauphin Island would be expanded to approximately 70 x 25 feet, and a roof structure would be constructed over the pad. The covered pad would contain a total of four settlement tanks (three existing, one new), to which water would be supplied from Little Dauphin Island Bay. The concrete pad is approximately 60 feet from the water source.

**Oyster Culture:** The project would entail acquisition of wild oyster broodstock from local waters and maintaining that broodstock in existing ponds at the Claude Peteet Mariculture Center. Before spring spawning, oyster broodstock would be gathered from the ponds and held in tank systems (within the newly constructed hatchery which is described below) where the temperatures would be held at levels to prevent spawning but maintain adult oysters in pre-spawning ripe condition. As needed, small batches of oysters would be retrieved from the holding tanks and induced to spawn in smaller temperature-controlled systems. Released eggs and sperm would be combined to produce fertilized larvae, which would be
moved into culture systems and fed daily rations of paste algae. These larvae would remain in the culture system for approximately 14 to 20 days until they develop into pediveligers (footed larvae). Once the larvae have reached the pediveliger state, they would be transferred to setting tanks where they would be given approximately 10 to 14 days to set on the provided substrate. During the setting period, spat would be fed live algae sourced naturally from brackish water sources. After the setting period, the culch material and spat would be removed from the tanks and placed on a contracted barge for transport to suitable areas in Mobile Bay and Mississippi Sound identified by AMRD staff.

**Hatchery Infrastructure:** The proposed hatchery would install a static water culture system. This static water culture system consists of broodstock holding and spawning tanks, larvae settlement tanks, water chillers/heaters, pumps, air blowers, and filtration systems. Once the static water culture system is installed, the proposed oyster hatchery is anticipated to produce up to approximately 65 million 10-day-old spat (24-day-old oysters) each year.

In addition to the oyster culture facility at the Claude Peteet Mariculture Center, an additional settlement tank and a simple structure to cover existing and proposed additional settlement tanks, are proposed at the AMRD office on Dauphin Island. The current 50 x 20-foot concrete pad would be expanded to 70 x 25 feet, and a simple roof structure would be constructed to cover the 70 x 25-foot structure and protect the settlement tanks. Currently, three settlement tanks are in place at the existing concrete pad. The dimensions of each tank are 30 feet long x 4 feet high x 3 feet wide. The volume is approximately 2,693 gallons. Each settlement tank holds 20 culch cages. Each culch cage holds 0.38 cubic yard of culch. The existing water intake and effluent pipes would likely be reconfigured to accommodate the additional tank.

**Project Timeline.** Within the first few months of the project, AMRD would hire one full-time biologist to oversee purchasing of equipment and installation of tanks, pumps, and the heater/chiller. Three biologist aides would be hired within 6 months of the project start to assist with hatchery infrastructure installation and spawning, larvae, and spat production. During years 2–4, a biologist aide within existing AMRD biological staff would be used during the summer to assist with oyster spat care and deployment. In addition, a portion of the operating budget would be set aside to pay for electricity, maintenance, replacement of equipment, and algae paste for larval culture.

Design and construction of the proposed additional supplement tank and simple structure to cover existing and proposed settlement tanks would likely take 6 months and occur during the first winter (non-spawning season) the project is funded.

Contracts would be developed during the first 3 months of the project for the greenhouse structure at the Claude Peteet Mariculture Center and barge transport of spat. The greenhouse is anticipated to be installed within 6 months (June assuming a January start date) and barge contracting would be completed within 8 months (August) of the start of the project. The tanks, heater chillers, and filtration would be purchased during the first 6 months and installed 3 months after the installation of the greenhouse. Oyster broodstock would be acquired in months 9 to 12 (September–December), and the first spawning cycle would begin around the fourth month (April) of years 2 through 4. The barge would be contracted for deployment to occur 4 days per month or 20 days per season during years 2 through 4.

The comprehensive oyster restoration plan would be developed within the first year after project funding.

### 22. Oyster Grow-Out and Restoration Reef Placement

**Project Summary.** This project would establish up to three protected oyster gardening grow-out areas located in Grand Bay, Portersville Bay, and Bon Secour Bay, and use these adult sized oysters for restoration reef placement. The project, to be conducted and managed by the Alabama Cooperative Extension System in coordination with its other oyster gardening activities, would grow out oysters to at least 1 year old, place these oysters on existing reef sites, including existing complementary living shoreline sites in Mobile Bay and Mississippi Sound as well as culchted sites, and identify and prioritize
future restoration reef locations (including nearshore living shorelines and intertidal reefs). Additionally, the project would include monitoring the success in terms of oyster survival and reproduction of both the grow-out areas and restoration sites to determine effective techniques to increase the sustainability of oyster populations in Alabama. This project would build on other efforts such as ACF’s Oyster Shell Recycling Program and the Mobile Bay Oyster Gardening effort, which recently received approval to expand into Little Lagoon. It would also build on a recently completed NFWF-funded project that demonstrated successful plantings and subsequent spawning of advanced stock-sized oysters in Mobile Bay and Mississippi Sound can potentially reduce aggressive predation by oyster drills.

**Project Implementation.** Once the necessary permits are obtained, 12 to 20 pilings (12-inches diameter) would be pushed into the sediment, or if necessary, installed with a vibratory hammer. A wire or rope would connect the pilings, to which oyster baskets (cages) would be attached at regular intervals and hang, suspended in the water column. A single layer of oysters would be placed on the bottom of each oyster basket. Each site would occupy approximately 0.5 acre. The targeted volume of each grow-out site is 20,000–25,000 oysters using the Oyster Gardening program only, or 48,000–50,000 oysters per site when supplemented from the Auburn University Shellfish Lab hatchery.

Periodic maintenance may be necessary following severe weather events or other situations that would disturb the grow-out sites. If the structures were disturbed, they would need to be repaired and/or reinstalled. Further, the grow-out sites would be adaptively managed over time to retrofit the structures with the most effective predator controls.

Oysters would be grown at the selected grow-out sites for 1 year within suspended oyster baskets that would be installed on pilings. Each of the grow-out sites are on privately leased riparian areas and would be managed by the Auburn University Marine Extension and Research Center. Then, the cultch, live oysters, and spat on shell, would be transferred via boat from the grow-out sites to reefs, living shorelines, and intertidal areas that are located in waters classified as Conditionally Approved for oyster harvesting by the Alabama Department of Public Health: Seafood Division. The Alabama Cooperative Extension System would work with the AL TIG, AMRD, and other restoration practitioners to determine the need for additional locations for other oyster gardening program grow-out sites. If additional sites were needed, they would be identified in Mobile Bay, Bon Secour Bay, Mississippi Sound, and Perdido Bay.

**Project Timeline.** Planning and permitting is expected to take approximately 8 to 12 months. Installation and setup of the grow-out sites is expected to take approximately 6 months. Oysters would be grown at the selected grow-out sites for 1 year. Monitoring would be conducted for the duration of the project (approximately 5 years).
Summary of Coastal Zone Management Consistency Review for Proposed Projects:

The AL TIG’s view of the principal enforceable policies of the ACAMP that are potentially applicable to the projects proposed in the RP II/EA and the basis of our determination of consistency with these policies is reflected in the following summaries:

1. Magnolia River Land Acquisition (Holmes Tract)

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. Acquisition of the parcel would not violate any state air quality standards. The project would result in long-term beneficial impacts to water quality by preventing future development of the site.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on wildlife and fisheries habitats by preventing development and restoring native vegetation and habitats on the parcel.

Provisions of ACAMP Considered Inapplicable to the Magnolia River Land Acquisition (Holmes Tract) Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Magnolia River Land Acquisition (Holmes Tract) project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

2. Weeks Bay Land Acquisition (East Gateway Tract)

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. Acquisition of the parcel would not violate any state air quality standards. The project would result in long-term beneficial impacts to water quality by preventing future development of the site.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project
would not adversely affect these resources and would have long-term beneficial impacts on wildlife and fisheries habitats by preventing development restoring native vegetation and habitats on the parcel.

**Provisions of ACAMP Considered Inapplicable to the Weeks Bay Land Acquisition (East Gateway Tract) Project**

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Weeks Bay Land Acquisition (East Gateway Tract) project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

### 3. Weeks Bay Land Acquisition (Harrod Tract)

#### 335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. Acquisition of the parcel would not violate any state air quality standards. The project would result in long-term beneficial impacts to water quality by preventing future development of the site.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on wildlife and fisheries habitats by preventing development restoring native vegetation and habitats on the parcel.

**Provisions of ACAMP Considered Inapplicable to the Weeks Bay Land Acquisition (Harrod Tract) Project**

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Weeks Bay Land Acquisition (Harrod Tract) project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)
4. **Lower Perdido Islands Restoration Phase I (E&D)**

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The project would not violate any state air and water quality standards because only engineering and design activities are proposed at this time.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would result in short- and long-term beneficial impacts to wildlife habitats during the interim by installing signage alerting visitors to nesting bird habitat and planting trees to enhance bird nesting habitat.

**Provisions of ACAMP Considered Inapplicable to the Lower Perdido Islands Restoration Phase I (E&D) Project**

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Lower Perdido Islands Restoration Phase I (E&D) project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

5. **Southwestern Coffee Island Habitat Restoration Project-Phase I (E&D)**

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The project would not violate any state air and water quality standards because only engineering and design activities are proposed at this time.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and may result in long-term beneficial impacts to wildlife habitat because data collected from the study are expected to provide useful insights that would allow the TIG to more effectively target future active restoration measures designed to benefit colonial nesting birds in Alabama.
Provisions of ACAMP Considered Inapplicable to the Southwestern Coffee Island Habitat Restoration Project- Phase I Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Southwestern Coffee Island Habitat Restoration Project- Phase I project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

6. Little Lagoon Living Shoreline

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles during project implementation, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. Similarly, the project would cause short term adverse impacts to water quality resulting from increased turbidity during placement of coco coir logs and shoreline vegetation planting. However, any effects to water quality would be temporary and would not violate state water quality standards.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would result in temporary adverse impacts on previously impacted shoreline and estuarine habitat due to noise, increased human traffic and other temporary disturbances. Following construction, long-term impacts on habitat resulting from the project would be beneficial and would include stabilization of at least 2,200 feet of shoreline along Little Lagoon. Best Management Practices (BMPs) would be implemented to ensure that adverse impacts to wildlife and protected species are avoided or minimized. The AL TIG is currently in consultation with the Alabama State Historic Preservation Office (SHPO) to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

335-8-2-.06 Shoreline Stabilization and Erosion Mitigation

Pursuant to Ala. Admin. Code r. 335-8-2-.06 (1), bulkheads, the placement of rip-rap, and other structural shoreline armament shall not adversely affect hydrology or function of wetlands or submerged aquatic vegetation beds. Although the project would result in result in temporary adverse impacts to wetlands due to increased turbidity and other disturbances during project implementation, the project is expected to result in long-term beneficial impacts to wetlands by reducing erosion, restoring natural hydrological processes, and enhancing shoreline vegetation. No filling of wetlands would occur.
Pursuant to Ala. Admin. Code r. 335-8-2-.06 (2), jetties, groins, breakwaters and like structures must protect an existing navigational channel or a use of regional benefit, and must not result in significant impacts to adjacent shorelines. The project would implement living shoreline techniques that use natural materials rather than hardened structures or barriers, strategically placed to provide protective erosion control management to restore natural habitat, functions, and processes.

Provisions of ACAMP Considered Inapplicable to the Little Lagoon Living Shoreline Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Little Lagoon Living Shoreline project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

7. Restoring the Night Sky – Assessment, Training, and Outreach (E&D)

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The project would not violate any state air and water quality standards because it focuses on reducing light pollution on Alabama’s sea turtle nesting beaches and does not include in-water work or the use of motorized equipment.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on loggerhead sea turtle critical nesting habitat on Alabama beaches by reducing light pollution, which can disorient nesting turtles and hatchlings.

Provisions of ACAMP Considered Inapplicable to the Restoring the Night Sky – Assessment, Training, and Outreach (E&D) Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Restoring the Night Sky – Assessment, Training, and Outreach (E&D) project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
8. **Toulmins Spring Branch Engineering and Design (E&D)**

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The project would not violate any state air and water quality standards because only engineering and design activities are proposed at this time. The project is anticipated to result in long-term beneficial impacts to water quality because it would develop BMPs that would reduce nutrients and pollutants into Toulmins Spring.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because only engineering and design activities are proposed at this time.

**Provisions of ACAMP Considered Inapplicable to the Toulmins Spring Branch Engineering and Design Project**

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Toulmins Spring Branch Engineering and Design project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

9. **Fowl River Nutrient Reduction**

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The Fowl River Nutrient Reduction project would not violate any state air or water quality standards. The project would result in long-term beneficial impacts due to water quality in the Fowl River watershed through improved land management practices that reduce nutrient and sediment runoff.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the
critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on fisheries habitats due to reduced nutrient inputs, which are expected to improved water quality in the Fowl River watershed.

Provisions of ACAMP Considered Inapplicable to the Fowl River Nutrient Reduction Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Fowl River Nutrient Reduction project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

10. Weeks Bay Nutrient Reduction

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The Weeks Bay Nutrient Reduction project would not violate any state air or water quality standards. The project would result in long-term beneficial impacts due to water quality in the Weeks Bay watershed through improved land management practices that reduce nutrient and sediment runoff.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on fisheries habitats due to reduced nutrient inputs, which are expected to improved water quality in the Weeks Bay watershed.

Provisions of ACAMP Considered Inapplicable to the Weeks Bay Nutrient Reduction Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Weeks Bay Nutrient Reduction project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
11. CAST Conservation Program

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The project would not violate any state air or water quality standards because it consists of the continuation and expansion of Alabama’s existing sea turtle conservation program.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources and would have long-term beneficial impacts on threatened and endangered sea turtles and their critical habitat on Alabama beaches because the existing sea turtle conservation program would be continued and expanded.

Provisions of ACAMP Considered Inapplicable to the CAST Conservation Program Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the CAST Conservation Program project:

- 335-8-2-.02 Dredging and/or Filling
- 335-8-2-.03 Mitigation
- 335-8-2-.04 Marinas
- 335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
- 335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
- 335-8-2-.07 Canals, Ditches and Boatslips
- 335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
- 335-8-2-.09 Groundwater Extraction
- 335-8-2-.10 Siting, Construction and Operation of Energy Facilities
- 335-8-2-.11 Commercial and Residential Development
- 335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

12. CAST Triage

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as excavators, dozers, loaders, trenchers, and dump trucks, would result in temporary adverse impacts on air quality, but these impacts would not violate any state air quality standards. The project could result in short-term adverse impacts to water quality in Cotton Bayou due to increased runoff during the initial stages of construction. BMPs would be implemented to ensure that impacts are minimized to the extent possible and violations of any state air or water quality standards are avoided.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the...
critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. Although the project would result in short- and long-term adverse impacts to wildlife habitat within the project footprint, impacts would be minimal because the project would be located on a previously disturbed site that does not provide high quality wildlife habitat. The project area does not contain designated critical habitat for any endangered or threatened species. BMPs would be implemented to ensure that any adverse impacts to wildlife or fisheries habitats are minimized to the extent possible. The AL TIG is currently in consultation with the Alabama SHPO to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

Provisions of ACAMP Considered Inapplicable to the CAST Triage Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the CAST Triage project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

13. CAST Habitat Usage and Population Dynamics

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles during the study, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because project activities would be limited to a study that would consist of mark and re-capture of sea turtles.

Provisions of ACAMP Considered Inapplicable to the CAST Habitat Usage and Population Dynamics

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the CAST Habitat Usage and Population Dynamics project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
14. CAST Protection: Enhancement and Education

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles associated with increased enforcement activities, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because project activities would include increased enforcement and education and outreach programs. The project may result in long-term beneficial impacts to threatened and endangered sea turtles and their critical habitats in Alabama due to enhanced public awareness and increased enforcement.

Provisions of ACAMP Considered Inapplicable to the CAST Protection: Enhancement and Education Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the CAST Protection: Enhancement and Education project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

15. Enhancing Capacity for the Alabama Marine Mammal Stranding Network

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with
the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles associated with stranding response activities, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project could result in short-term adverse impacts on beaches or other coastal habitats where marine mammal strandings and associated response activities typically occur. All potential impacts would be temporary, resulting from boat traffic, noise, and human presence during stranding response, and conditions would quickly return to baseline upon completion of stranding response activities.

Provisions of ACAMP Considered Inapplicable to the Enhancing Capacity for the Alabama Marine Mammal Stranding Network Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Enhancing Capacity for the Alabama Marine Mammal Stranding Network project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

16. Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats during sample collection activities, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because project activities would be limited to sample collection and data analysis.

Provisions of ACAMP Considered Inapplicable to the Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health Project
The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

17. Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles associated with increased enforcement activities, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because project activities would include increased enforcement and education and outreach programs. The project may result in long-term beneficial impacts to bottlenose dolphins and their habitats in Alabama due to enhanced public awareness and increased enforcement.

Provisions of ACAMP Considered Inapplicable to the Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
18. Colonial Nesting Wading Bird Tracking and Habitat Use Assessment – Two Species

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and motor vehicles during bird banding, satellite tagging, and other data collection activities, would result in temporary adverse impacts on air quality, but these impacts would be negligible and would not violate any state air quality standards. This project would not result in any adverse impacts to water quality.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because project activities would be limited to data collection to better understand movement and habitat use among colonial nesting wading bird species in Alabama. Results from this project would assist the AL TIG in planning more effective restoration of bird species injured in the DWH spill in Alabama, potentially resulting in long-term beneficial impacts to their habitats.

Provisions of ACAMP Considered Inapplicable to the Colonial Nesting Wading Bird Tracking and Habitat Use Assessment – Two Species Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Colonial Nesting Wading Bird Tracking and Habitat Use Assessment – Two Species project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

19. Oyster Cultch Relief and Reef Configuration

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats, barges, skid steers and excavator shovels, would result in temporary adverse impacts on air quality, but these impacts would not violate any state air quality standards. The project would result in short-term adverse impacts to water quality due to increased turbidity during deployment of oyster cultch material. Turbidity would return to
baseline levels following cultch placement. BMPs would be implemented to ensure that impacts are minimized to the extent possible and violations of any state air or water quality standards are avoided.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would have short-term adverse impacts on fisheries and wildlife habitats due to noise and a temporary increase in turbidity during cultch deployment. However, the proposed project would be expected to result in long-term, beneficial impacts on wildlife and fisheries habitats because it would create or enhance oyster reef habitat in Mobile Bay. BMPs would be implemented to ensure that adverse impacts to wildlife and protected species are avoided or minimized. The AL TIG is currently in consultation with the Alabama SHPO to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

335-8-2-.02 Dredging and/or Filling

Ala. Admin Code r. 335-8-2-.02 contains a number of requirements for projects which include the dredging and filling of State water bottoms. The proposed Oyster Cultch Relief and Reef Configuration project would place oyster cultch material at two sites in Mobile Bay. Deployment of oyster cultch is an approved activity by USACE under a Nationwide Permit. Although the project may cause short term impacts to water quality resulting from increased turbidity, any effects to water quality will be temporary and the proposed project is not expected to adversely impact existing natural oyster reefs, submersed grassbeds, or wetlands. The project would enhance existing oyster reefs resulting in long term beneficial impacts to oysters and oyster reef habitats. Data collected from the project would help to inform the most productive and cost effective method(s) for conducting larger scale restoration of Alabama’s oyster reefs.

Provisions of ACAMP Considered Inapplicable to the Oyster Cultch Relief and Reef Configuration Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Oyster Cultch Relief and Reef Configuration project:

335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

20. Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D)

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of boats during mapping and ground-truthing activities would result in temporary adverse impacts on air quality, but these impacts would not violate any state air quality standards. Hand dredge and cane pole sampling could result in short-term adverse impacts on water quality due to
increased turbidity, but conditions would quickly return to baseline upon completion of sampling. The proposed project would not violate any state water quality standards.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would have short-term adverse impacts on fisheries and wildlife habitats due to noise and a temporary increase in turbidity during sampling activities. BMPs would be implemented to ensure that adverse impacts to wildlife and protected species are avoided or minimized. The AL TIG is currently in consultation with the Alabama SHPO to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

**Provisions of ACAMP Considered Inapplicable to the Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D) Project**

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D) project:

335-8-2-.02 Dredging and/or Filling
335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

**21. Oyster Hatchery at Claude Peteet Mariculture Center – High Spat Production with Study**

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as barges, vehicles, and other equipment, would result in temporary adverse impacts on air quality, but these impacts would not violate any state air quality standards. The project would be located in upland areas and would not adversely affect water quality. Waste from the hatchery tanks would be collected, and would not be discharged into surrounding waters.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The project would not adversely affect these resources because it would be located in developed, unvegetated upland areas that do not provide suitable habitat for most native wildlife species, nor public access to recreational resources. The AL TIG is currently in consultation with the Alabama SHPO to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

335-8-2-.11 Commercial and Residential Development
Ala. Admin. Code r. 335-8-2-.11 contains requirements for coastal construction and development projects. This proposed project will be in compliance with the requirements of these regulations. New construction would be limited to a greenhouse facility to be located on the site of the existing Claude Peteet Mariculture Center and expansion of an existing concrete pad to a total area of 500 square feet. The project would have no effect on wetlands. Because new construction proposed under the project would not exceed five acres, a permit would not be required.

Provisions of ACAMP Considered Inapplicable to the Oyster Hatchery at Claude Peteet Mariculture Center – High Spat Production with Study Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Oyster Hatchery at Claude Peteet Mariculture Center – High Spat Production with Study project:

- Dredging and/or Filling
- Mitigation
- Marinas
- Piers, Docks, Boathouses, and Other Pile Supported Structures
- Shoreline Stabilization and Erosion Mitigation
- Canals, Ditches and Boatslips
- Construction and Other Activities on Gulf Beaches and Dunes
- Groundwater Extraction
- Siting, Construction and Operation of Energy Facilities
- Commercial and Residential Development
- Discharges to Coastal Waters (greater than 1 million gallons per day)

22. Oyster Grow-Out and Restoration Reef Placement

335-8-2-.01 General Rules Applicable to all Uses Subject to the ACAMP

Pursuant to Ala. Admin. Code r. 335-8-2-.01 (1), all uses subject to the ACAMP that are in violation with applicable state air and water quality standards shall not be permitted or certified to be in compliance with the ACAMP. The use of criteria pollutant generating equipment, such as boats and barges, during project implementation and maintenance activities would result in temporary adverse impacts on air quality. The project would result in short-term adverse impacts to water quality due to increased turbidity during the installation of piles and oyster grow-out baskets, monitoring and maintenance activities, and deployment of oysters and cultch material on other restoration reef sites. BMPs would be implemented to ensure that impacts are minimized to the extent possible and violations of any state air or water quality standards are avoided.

Pursuant to Ala. Admin. Code r. 335-8-2-.01(2), uses subject to the ACAMP shall not have an adverse impact on historical, cultural or archeological resources, on wildlife and fisheries habitats (especially the critical habitat of endangered species listed pursuant to 16 U.S.C. §§ 1531-1543), or on public access to tidal and submerged lands, navigable waters, beaches and other public recreational resources. The proposed project would result in short-term adverse impacts to unvegetated soft-bottom fisheries habitats due to increased noise, vibration, increased turbidity, and visual disturbances during project construction, monitoring, and maintenance. BMPs would be implemented to ensure that adverse impacts to wildlife and protected species are avoided or minimized. The project would result in long-term, beneficial impacts on oyster reef habitat because oysters placed at the sites would enhance spat production, potentially increasing oyster abundance and recruitment in Alabama waters. The presence of the pile-supported grow-out structures would impose a small limitation on public access to tidal and submerged lands, but the restricted area would be minimal in comparison to the large amount of surrounding submerged lands.
accessible by the public. The AL TIG is currently in consultation with the Alabama SHPO to ensure that impacts to any cultural or archeological resources that may be present in the project area are avoided.

335-8-2-.02 Dredging and/or Filling

Ala. Admin Code r. 335-8-2-.02 contains a number of requirements for projects which include the dredging and filling of State water bottoms. The proposed Establishment of Protected Oyster Gardening Program Grow-Out Areas project would place oysters and oyster cultch material at various restoration reef sites in Alabama state waters. Deployment of oysters and oyster cultch is an approved activity by USACE under a Nationwide Permit. Although the project may cause short term impacts to water quality resulting from increased turbidity, any effects to water quality will be temporary and the proposed project is not expected to adversely impact existing natural oyster reefs, submersed grassbeds, or wetlands. The project would enhance existing oyster reefs resulting in long term beneficial impacts to oysters and oyster reef habitats.

335-8-2-.05 Piers, Docks, Boathouses, and Other Pile Supported Structures

Ala. Admin Code R. 335-8-2-.05 contains a number of requirements for projects which include piers, docks, boathouses, and other pile supported structures. The proposed project would construct oyster grow-out areas, consisting of suspended oyster baskets that would be installed on pilings, at up to three sites in Alabama state waters. At each grow-out site, pilings would be installed to support the suspended oyster baskets. Each grow-out site is approximately 0.5 acres and 12-20 total pilings per site would need to be installed to support grow-out installation. The pile-supported oyster grow-out structures would not alter natural hydrology at the sites, and would not affect wetlands or submerged grassbeds.

Provisions of ACAMP Considered Inapplicable to the Oyster Grow-Out and Restoration Reef Placement Project

The following additional elements of the ACAMP were considered but, based on our review, did not appear to be applicable to the Oyster Grow-Out and Restoration Reef Placement project:

335-8-2-.03 Mitigation
335-8-2-.04 Marinas
335-8-2-.06 Shoreline Stabilization and Erosion Mitigation
335-8-2-.07 Canals, Ditches and Boatslips
335-8-2-.08 Construction and Other Activities on Gulf Beaches and Dunes
335-8-2-.09 Groundwater Extraction
335-8-2-.10 Siting, Construction and Operation of Energy Facilities
335-8-2-.11 Commercial and Residential Development
335-8-2-.12 Discharges to Coastal Waters (greater than 1 million gallons per day)

Conclusion:

Based on this review, the Federal Trustees find the Draft RP II/EA to be consistent with the federally-approved ACAMP. This letter submits that determination for review by the State coincident with public review of this document.

The Federal Trustees are requesting and would deeply appreciate a response to this determination of consistency as soon as is practicable. We thank you in advance for your efforts to accommodate this request.
Sincerely,

Dr. Homer L. Wilkes, Director
Gulf Coast Ecosystem Restoration Team
April 17, 2018

Dr. Homer L. Wilkes, Director
Gulf Coast Ecosystem Restoration Team
USDA, Natural Resources Conservation Service
7578 Old Canton Road
Madison Mississippi 39110

RE: State of Alabama Coastal Consistency Concurrence
USDA – Twenty-two Proposed Restoration Projects in the Alabama Restoration Area
The Natural Resource Trustees for the Deepwater Horizon Oil Spill Alabama Trustee Implementation
Group (Alabama TIG) – Draft Restoration Plan II and Environmental Assessment
Alabama Department of Environmental Management (ADEM) Tracking Code: 2018-154-FC-FAA-USDA

Dear Dr. Wilkes:

On March 21, 2018, the ADEM received the USDA’s Consistency Determination (CD) that the restoration plan and its twenty-two proposed restoration projects are consistent with the Alabama Coastal Area Management Program. Public noticing requirements of Title 15 C.F.R. §930.42 have been completed. Pursuant to Title 15 C.F.R. §930.41(a), by this letter the ADEM hereby notifies the USDA of its concurrence with the USDA’s CD.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter. J. Scott Brown is the Mobile-Coastal office contact for this project; he may be reached by phone at 251.304.1176 or by e-mail at jsb@adem.alabama.gov.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

cc: ADCNR-SLD, Hank Burch - (Via Email Only: Hank.Burch@dcnr.alabama.gov)
ASH/jsb/cap

File: CZCERT/
Appendix G:

Conservation Practices List
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<td>561</td>
<td>Heavy Use Area Protection</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>570</td>
<td>Stormwater Runoff Control</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>574</td>
<td>Spring Development</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>576</td>
<td>Livestock Shelter Structure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>578</td>
<td>Stream Crossing</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>580</td>
<td>Streambank and Shoreline Protection</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>587</td>
<td>Structure for Water Control</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>590</td>
<td>Nutrient Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>595</td>
<td>Integrated Pest Management (IPM)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>600</td>
<td>Terrace</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>612</td>
<td>Tree/Shrub Establishment</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>614</td>
<td>Watering Facility</td>
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<td>620</td>
<td>Underground Outlet</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>638</td>
<td>Water and Sediment Control Basin</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>642</td>
<td>Water Well</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>645</td>
<td>Upland Wildlife Habitat Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>647</td>
<td>Early Successional Habitat Development/Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>649</td>
<td>Structures for Wildlife</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>655</td>
<td>Forest Trails and Landings</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>660</td>
<td>Tree/Shrub Pruning</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>666</td>
<td>Forest Stand Improvement</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>326</td>
<td>Clearing and Snagging</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>511</td>
<td>Forage Harvest Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>521</td>
<td>Pond Sealing or Lining, Soil Dispersant</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>584</td>
<td>Channel Bed Stabilization</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>643</td>
<td>Restoration and Management of Rare or Declining Habitats</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>644</td>
<td>Wetland Wildlife Habitat Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Practice Code</td>
<td>Practice Name</td>
<td>Fowl River</td>
<td>Bayou River</td>
<td>Weeks Bay</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------</td>
<td>-----------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>327</td>
<td>Conservation Cover</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>393</td>
<td>Filter Strip</td>
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</tr>
<tr>
<td>410</td>
<td>Grade Stabilization Structure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>412</td>
<td>Grassed Waterway</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>590</td>
<td>Nutrient Management</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Practice Code</td>
<td>Practice Name</td>
<td>Fowl River</td>
<td>Bayou River</td>
<td>Weeks Bay</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------</td>
<td>------------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>410</td>
<td>Grade Stabilization Structure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>412</td>
<td>Grassed Waterway</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>561</td>
<td>Heavy Use Area Protection</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>580</td>
<td>Streambank and Shoreline Protection</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>587</td>
<td>Structure for Water Control</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Appendix H:

Environmental Evaluation Site-Specific Form
# ENVIRONMENTAL EVALUATION WORKSHEET

## A. Client Name:

## B. Conservation Plan ID # (as applicable):

## C. Identification # (farm, tract, field #, etc. as required):

## D. Client's Objective(s) (purpose):

## E. Need for Action:

<table>
<thead>
<tr>
<th>H. Alternatives</th>
<th>No Action</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>√ if RMS</td>
<td>✓ if RMS</td>
<td>✓ if RMS</td>
</tr>
</tbody>
</table>


## Resource Concerns

In Section "F" below, analyze, record, and address concerns identified through the Resources Inventory process. (See FOTG Section III - Resource Planning Criteria for guidance).

## F. Resource Concerns and Existing/ Benchmark Conditions

(Analyze and record the existing/benchmark conditions for each identified concern)

### SOIL: EROSION

<table>
<thead>
<tr>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>No Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SOIL: SOIL QUALITY DEGRADATION

<table>
<thead>
<tr>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>No Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WATER: EXCESS / INSUFFICIENT WATER

<table>
<thead>
<tr>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>No Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WATER: WATER QUALITY DEGRADATION

<table>
<thead>
<tr>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>No Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Resource Concerns and Existing/Benchmark Conditions</td>
<td>I. (continued)</td>
<td>No Action</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>(Analyze and record the existing/benchmark conditions for each identified concern)</td>
<td>Amount, Status, Description <em>(Document both short and long term impacts)</em></td>
<td>√ if does NOT meet PC</td>
</tr>
<tr>
<td>AIR: AIR QUALITY IMPACTS</td>
<td>NOT meet PC</td>
<td>NOT meet PC</td>
</tr>
<tr>
<td>PLANTS: DEGRADED PLANT CONDITION</td>
<td>NOT meet PC</td>
<td>NOT meet PC</td>
</tr>
<tr>
<td>ANIMALS: INADEQUATE HABITAT FOR FISH AND WILDLIFE</td>
<td>NOT meet PC</td>
<td>NOT meet PC</td>
</tr>
<tr>
<td>ANIMALS: LIVESTOCK PRODUCTION LIMITATION</td>
<td>NOT meet PC</td>
<td>NOT meet PC</td>
</tr>
<tr>
<td>ENERGY: INEFFICIENT ENERGY USE</td>
<td>NOT meet PC</td>
<td>NOT meet PC</td>
</tr>
<tr>
<td>HUMAN: ECONOMIC AND SOCIAL CONSIDERATIONS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In Section "G" complete and attach Environmental Procedures Guide Sheets for documentation as applicable. Items with a "●" may require a federal permit or consultation/coordination between the lead agency and another government agency. In these cases, effects may need to be determined in consultation with another agency. Planning and practice implementation may proceed for practices not involved in consultation.

<table>
<thead>
<tr>
<th>G. Special Environmental Concerns (Document existing/benchmark conditions)</th>
<th>J. Impacts to Special Environmental Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clean Air Act</strong>&lt;br&gt;Guide Sheet FS1 FS-2</td>
<td><strong>No Action</strong>&lt;br&gt;Document all impacts (Attach Guide Sheets as applicable)</td>
</tr>
<tr>
<td><strong>Clean Water Act / Waters of the U.S.</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Alternative 1</strong>&lt;br&gt;Document all impacts (Attach Guide Sheets as applicable)</td>
</tr>
<tr>
<td><strong>Coastal Zone Management</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Alternative 2</strong>&lt;br&gt;Document all impacts (Attach Guide Sheets as applicable)</td>
</tr>
<tr>
<td>Coral Reefs&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Environmental Justice</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
</tr>
<tr>
<td><strong>Cultural Resources / Historic Properties</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Endangered and Threatened Species</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
</tr>
<tr>
<td><strong>Migratory Birds/Bald and Golden Eagle Protection Act</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Natural Areas</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
</tr>
<tr>
<td><strong>Invasive Species</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Prime and Unique Farmlands</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
</tr>
<tr>
<td><strong>Riparian Area</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
<td><strong>Scenic Beauty</strong>&lt;br&gt;Guide Sheet Fact Sheet</td>
</tr>
</tbody>
</table>
### K. Other Agencies and Broad Public Concerns

<table>
<thead>
<tr>
<th>Easements, Permissions, Public Review, or Permits Required and Agencies Consulted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Effects Narrative (Describe the cumulative impacts considered, including past, present and known future actions regardless of who performed the actions).</td>
</tr>
</tbody>
</table>

### L. Mitigation

(Record actions to avoid, minimize, and compensate)

### M. Preferred Alternative

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>preferred alternative</td>
<td></td>
</tr>
<tr>
<td>Supporting reason</td>
<td></td>
</tr>
</tbody>
</table>

### N. Context (Record context of alternatives analysis)

The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.

### O. Determination of Significance or Extraordinary Circumstances

**Intensity:** Refers to the severity of impact. Impacts may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

If you answer ANY of the below questions “yes” then contact the State Environmental Liaison as there may be extraordinary circumstances and significance issues to consider and a site specific NEPA analysis may be required.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the preferred alternative expected to cause significant effects on public health or safety?</td>
<td></td>
</tr>
<tr>
<td>Is the preferred alternative expected to significantly affect unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?</td>
<td></td>
</tr>
<tr>
<td>Are the effects of the preferred alternative on the quality of the human environment likely to be highly controversial?</td>
<td></td>
</tr>
<tr>
<td>Does the preferred alternative have highly uncertain effects or involve unique or unknown risks on the human environment?</td>
<td></td>
</tr>
<tr>
<td>Does the preferred alternative establish a precedent for future actions with significant impacts or represent a decision in principle about a future consideration?</td>
<td></td>
</tr>
<tr>
<td>Is the preferred alternative known or reasonably expected to have potentially significant environment impacts to the quality of the human environment either individually or cumulatively over time?</td>
<td></td>
</tr>
<tr>
<td>Will the preferred alternative likely have a significant adverse effect on ANY of the special environmental concerns? Use the Evaluation Procedure Guide Sheets to assist in this determination. This includes, but is not limited to, concerns such as cultural or historical resources, endangered and threatened species, environmental justice, wetlands, floodplains, coastal zones, coral reefs, essential fish habitat, wild and scenic rivers, clean air, riparian areas, natural areas, and invasive species.</td>
<td></td>
</tr>
<tr>
<td>Will the preferred alternative threaten a violation of Federal, State, or local law or requirements for the protection of the environment?</td>
<td></td>
</tr>
</tbody>
</table>

### P. To the best of my knowledge, the data shown on this form is accurate and complete:

In the case where a non-NRCS person (e.g. another AL TIG Trustee) assists with planning they are to sign the first signature block and then NRCS is to sign the second block to verify the information's accuracy.

<table>
<thead>
<tr>
<th>Signature (TSP if applicable)</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature (NRCS)</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If preferred alternative is not a federal action where NRCS has control or responsibility and this NRCS-CPA-52 is shared with someone other than the client then indicate to whom this is being provided.
2) is a federal action that has **NOT** been sufficiently analyzed or may involve predicted significant adverse environmental effects or extraordinary circumstances and may require an EA or EIS. Contact the State Environmental Liaison. Further NEPA analysis required.

**Q. NEPA Compliance Finding (check one)**

<table>
<thead>
<tr>
<th>The preferred alternative:</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) is a federal action that has been sufficiently analyzed in an existing NEPA document to which this environmental evaluation is tiered because the expected effects are within the range of those described in the applicable NEPA document and there are no predicted significant adverse environmental effects or extraordinary circumstances.</td>
<td>Document in &quot;R.1&quot; below. No additional analysis is required.</td>
</tr>
<tr>
<td>2) is a federal action that has <strong>NOT</strong> been sufficiently analyzed or may involve predicted significant adverse environmental effects or extraordinary circumstances and may require an EA or EIS.</td>
<td>Contact the State Environmental Liaison. Further NEPA analysis required.</td>
</tr>
</tbody>
</table>

**R. Rationale Supporting the Finding**

I have considered the effects of the alternatives on the Resource Concerns, Economic and Social Considerations, Special Environmental Concerns, and Extraordinary Circumstances as defined by Agency regulation and policy and based on that made the finding indicated above.

**S. Signature of Responsible Federal Official:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
</table>

**Additional notes**
Appendix I:

Conservation Practice Network Effects Diagram
NRCS CONSERVATION PRACTICE EFFECTS- NETWORK DIAGRAM

Conservation Cover (327)

1. Permanent vegetative cover established

D.1 (-) Wind erosion
D.2 (-) Energy inputs
I.1 (-) Particulate matter
C.1 (+) Air quality
1.2 (-) Greenhouse gases
D.3 (+) Soil organic matter
I.3 (+) Carbon Storage
C.2 (+) Soil health
D.4 (-) Water erosion
I.4 (+) Quality of runoff water
D.5 (-) Volume of water runoff
I.5 (-) Sedimentation
D.6 (-) Acres of cropland production
I.9 (-) Potential income
D.7 (+) Cost of establishment and maintenance
D.8 (+) Wildlife food and cover
D.9 (+) Wildlife food and cover
D.10 (+/-) Net returns
D.11 (+) Wildlife habitat
D.12 (+) Upland wildlife populations
D.13 (-) Habitat fragmentation
D.14 (+) Recreational opportunities
D.15 (+) Biodiversity
C.3 (+) Fishable, swimmable, and drinkable waters
C.4 (+) Quality of receiving waters
C.5 (+/-) Income and income stability (individual and community)

Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

Start

Initial setting: Land requiring natural resource protection that does not have vegetative cover

NRCS CONSERVATION PRACTICE EFFECTS- NETWORK DIAGRAM

September 2014

LEGEND
Mitigating practice
Associated practice
#. Created by practice
D. Direct effect
I. Indirect effect
C. Cumulative effect
Pathway

Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

Filter Strip (393)

1. Area of permanent vegetation that intercepts sheet flow
   - D.1 (+) Filtration
   - D.2 (+) Adsorption and transformation of pollutants
   - D.3 (-) Velocity of runoff water
   - D.4 (+) Infiltration

2. Cropland removed from production
   - D.5 (+) Forage production

I.1 (-) Sediment and particulate contaminants (including pathogens) to sensitive areas
   - I.2 (-) Maintenance of drainage ditches and other structures
   - I.3 (-) Dissolved contaminants (including nutrients) to sensitive areas

C.2 (+) Quality of receiving waters
C.3 (+) Fishable and swimmable waters; reduced health and safety issues for humans, domestic and wild animals
C.4 (+) Air quality of the airshed
C.5 (+/-) Income and income stability (individuals and community)
C.6 (+) Habitat suitability, health to humans, domestic and wild animals
C.7 (+) Preservation of infrastructure; reduced community maintenance costs
C.8 (+) Preservation of fishery resources
C.9 (+) Increased recreational opportunities
C.10 (+) Wildlife food and cover

D.1 (+) Filtration
D.2 (+) Adsorption and transformation of pollutants
D.3 (-) Velocity of runoff water
D.4 (+) Infiltration
D.5 (+) Forage production
D.6 (+) Wildlife food and cover
D.7 (-) Airborne particulate matter, (-) Chemical drift
D.8 (-) Crop production

I.9 (+) Quality of terrestrial and aquatic wildlife habitat
I.10 (+) Beneficial insects
I.11 (-) Pesticide use
I.12 (+/-) Net return to farmer
I.13 (+) Biodiversity
I.14 (+) Conservation and enjoyment of wildlife

Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

Grade Stabilization Structure (410)

1. Structure stabilizes grade and controls erosion
   - I.1 (+) Channel stability
   - I.2 (-) Head cutting and channel erosion
   - I.3 (+) Upstream sediment deposition
   - I.4 (+) Crop production
   - C.1 (+/-) Income and income stability (individuals and community)

2. Decreased slope above structure
   - I.3 (+) Upstream sediment deposition
   - I.4 (+) Crop production
   - C.1 (+/-) Income and income stability (individuals and community)

3. Sedimentation above structure
   - I.4 (+) Crop production
   - C.1 (+/-) Income and income stability (individuals and community)

D.1 (-) Water velocity

I.6 (-) Overland and gully erosion

I.7 (+) Ponding behind structure

I.8 (-) Downstream deposition

I.9 (+) Surface water quality

I.10 (-) Tillage

I.11 (-) Fossil fuel use

I.12 (-) Greenhouse gas emissions

C.3 (+) Air quality of the airshed

C.2 (+) Fishable and swimmable waters; reduced health and safety issues for humans, domestic, and wild animals.

C.1 (+/-) Income and income stability (individuals and community)

I.1 (+) Channel stability

Critical Area Planting (342)

Pond (378)

Initial setting: Natural or artificial channel downcutting or creating gullies

LEGEND

# Created by practice
D Direct effect
I Indirect effect
C Cumulative effect

Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
Grassed Waterway (412)

Initial setting: Cropland, nonirrigated, subject to water erosion and/or runoff

D.1 (+) Wildlife food and cover

D.2 (+) Livestock feed

D.3 (+) Land removed from cropping

D.4 (+) Infiltration

D.5 (+) Filtration

D.6 (-) Runoff velocity

D.7 (+) Conveyance of runoff water

D.8 (+) Carbon sequestration, (-) Greenhouse gas emissions

I.1 (+) Upland wildlife

C.1 (+) Health for humans, domestic and wild animals

I.2 (+/-) Net return to farmer

C.2 (+) Fishable and swimmable waters; reduced health and safety issues for humans, domestic, and wild animals.

I.3 (+/-) Crop production

I.4 (-) Soluble contaminants to receiving waters

I.5 (+) Soil quality

I.6 (-) Gully erosion (ephemeral and classic)

I.7 (-) Sediments and sediment-borne contaminants to receiving waters

I.8 (-) Maintenance of drainage ditches and other structures

C.3 (+) Quality of receiving waters

C.4 (+/-) Income and income stability (individuals and community)

C.5 (+) Preservation of infrastructure; reduced community maintenance costs

C.6 (+) Air quality of the airshed

C.7 (+) Quality of receiving waters

C.8 (+) Filtration

C.9 (+) Infiltration

C.10 (+) Carbon sequestration, (-) Greenhouse gas emissions

LEGEND

#. Created by practice

Mitigating practice

Associated practice

D. Direct effect

I. Indirect effect

C. Cumulative effect

Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
Heavy Use Area Protection (561)

1. Stabilize ground surface that is frequently and intensively used by people, animals, or vehicles.

D.1 (+) A stable or non-erosing surface.

I.1 (+) Livestock health
I.3 (-) Wear and tear on equipment
I.5 (+) Dust control
I.6 (-) Erosion
I.9 (+) Runoff from area
I.10 (+) Nutrients, organics and pathogens to ground and surface waters
I.11 (-) Contaminated runoff to ground and surface waters: sediment, nutrients, pathogens, and organics
C.1 (+) Water quality and aquatic habitats
C.2 (+) Stream fauna, e.g., fish, invertebrates
C.3 (+) Recreational opportunities
C.4 (+/-) Income and income stability (individuals and community)
C.5 (+) Public/private health, safety, and aesthetics
C.6 (+) Stream quality
C.7 (+) In-stream fish and wildlife
C.8 (+) In-stream migratory birds
C.9 (+) Aggregated aquatic habitats
C.10 (+) Aesthetic and recreational opportunities
C.11 (+) Public/private safety
C.12 (+) Public/private health
I.1 (+) Livestock health
I.2 (+) Productivity, and potential income
I.3 (-) Wear and tear on equipment
I.4 (-) Maintenance costs
I.5 (+) Dust control
I.6 (-) Erosion
I.7 (-) Downslope deposition
I.8 (-) On- and off-site maintenance costs
I.10 (+) Nutrients, organics and pathogens to ground and surface waters
I.11 (-) Contaminated runoff to ground and surface waters: sediment, nutrients, pathogens, and organics
I.12 (-) Noxious algal and weed growth
I.13 (+) Dissolved oxygen in surface waters
I.14 (+) Collection of animal manure for treatment
I.15 (-) Inorganic fertilizer inputs/costs
I.16 (-) Odors
I.17 (+/-) Net return

Initial settings:
1. Established AFO needing a stable surface area for livestock, equipment or vehicles; or
2. Intensively used development area needing treatment to address an erosion or water quality problem

Start

D.2 (+) Water quality

LEGEND

Mitigating practice
Associated practice
#. Created by
D. Direct effect
I. Indirect effect
C. Cumulative effect
Pathway
Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

Initial setting: Cropland, nonirrigated, receiving manure and subject to erosion

Start

Nutrient Management (590)

1. Method of application optimized for equipment and source availability
   - D.1 (+) Local Vendor income
   - C.2 (-) Crop business support infrastructure
   - C.1 (+) Crop business support infrastructure
   - C.3 (+/-) Income and income stability (individuals and community)

2. Nutrient amount optimized to meet crop needs
   - D.2 (-) Costs to farmer
   - D.3 (+) Time required by farmer
   - C.2 (-) Crop business support infrastructure
   - I.2 (-) Time required by farmer

3. Nutrient application timing optimized to crop growth stage
   - D.4 (+) Crop growth and vigor
   - C.1 (+) Crop business support infrastructure
   - I.3 (-) Pest/pathogen infestations

D.5 (-) Nutrients to ground and surface water
   - I.5 (+) Dissolved O₂ in surface waters
   - I.4 (+) Stream/lake fauna, e.g., fish, invertebrates
   - C.4 (+) Habitat suitability; health for humans, domestic, and wild animals

D.6 (-) Excess nutrients in fields

I.1 (-) Local vendor income

I.2 (-) Time required by farmer

I.3 (-) Pest/pathogen infestations

I.4 (+) Stream/lake fauna, e.g., fish, invertebrates

I.5 (+) Dissolved O₂ in surface waters

I.6 (+) Meeting water quality standards

I.7 (-) Noxious algal growth

I.8 (-) Noxious algae growth

D.4 (+) Crop growth and vigor

D.5 (-) Nutrients to ground and surface water

D.6 (-) Excess nutrients in fields

Initial setting: Cropland, nonirrigated, receiving manure and subject to erosion

Pathway

LEGEND

# Created by practice
D. Direct effect
I. Indirect effect
C. Cumulative effect

Note:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.
Appendix J:

Finding of No Significant Impact (FONSI) from Implementation of the Alabama Trustee Implementation Group Final Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Mammals; Birds; and Oysters
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1.0 INTRODUCTION

The Alabama Trustee Implementation Group (AL TIG) prepared the Alabama Trustee Implementation Group Final Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Mammals; Birds; and Oysters (RP II/EA) to partially address injuries to natural resources and resource services in the Alabama Restoration Area caused by the Deepwater Horizon (DWH) oil spill. The RP II/EA fulfills the AL TIG’s requirements under the Oil Pollution Act (OPA), the National Environmental Policy Act (NEPA), and both statutes’s implementing regulations. Additionally, the AL TIG completed the RP II/EA pursuant to the DWH Consent Decree,1 which sets forth the allocations for post-settlement DWH restoration by Restoration Area and for specific Restoration Types.

In accordance with OPA, and as set forth in the DWH Consent Decree and as described in the DWH Trustees’ 2016 Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (Final PDARP/PEIS), the AL TIG includes two state trustee agencies and four federal trustee agencies: the Alabama Department of Conservation and Natural Resources (ADCNR); the Geological Survey of Alabama; the United States Department of Commerce, represented by the National Oceanic and Atmospheric Administration (NOAA); the United States Department of the Interior (USDOI), represented by the United States Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and National Park Service (NPS); the United States Department of Agriculture (USDA); and the United States Environmental Protection Agency (USEPA) (collectively the AL TIG).

The RP II/EA tiers from the Final PDARP/PEIS, which is a programmatic document developed by the DWH Trustees to guide and direct the DWH oil spill restoration effort. The Final PDARP/PEIS was prepared in accordance with OPA and associated natural resource damage assessment (NRDA) regulations and under NEPA. The Final PDARP/PEIS includes a portfolio of Restoration Types that addresses the diverse suite of injuries that occurred at both regional and local levels. To continue restoration planning and restoration of lost natural resources and their services in Alabama as a result of the DWH oil spill incident, the RP II/EA focuses on implementing projects to address three of the five Trustee programmatic restoration goals: (1) Restore and Conserve Habitat, (2) Restore Water Quality, and (3) Replenish and Protect Living Coastal and Marine Resources. Monitoring and Adaptive Management (MAM) funds are also being proposed for this plan to address uncertainties with existing data in order to inform and enhance future restoration.

1 On April 4, 2016, the United States District Court for the Eastern District of Louisiana entered a Consent Decree resolving the DWH Trustees’ claims against British Petroleum Exploration and Production (BP) for natural resource damages under OPA. Under the Consent Decree among Defendant BP Exploration & Production Inc. (“BPXP”), The United States of America, and the States of Alabama, Florida, Louisiana, Mississippi, and Texas (Consent Decree), BP agreed to pay $8.1 billion in natural resource damages (which includes the $1 billion that BP previously committed to pay for Early Restoration projects) over a 15-year period. As part of the Consent Decree, BP also agreed to pay up to an additional $700 million for adaptive management or to address injuries to natural resources that are presently unknown but may become known in the future. The settlement allocated a specific sum of money to the Restoration Areas in each of the Gulf States, as well as to the Regionwide and Open Ocean Restoration Areas, to conduct restoration within each Restoration Area and for specific Restoration Types (NOAA, 2016; U.S. Department of Justice, 2016).
The AL TIG released its first restoration plan *Final Restoration Plan I and Environmental Impact Statement: Provide and Enhance Recreational Opportunities* in May 2017 and selected six restoration projects in Baldwin and Mobile counties to address one Restoration Type, “Provide and Enhance Recreational Opportunities.”

For the remaining seven Restoration Types, in December 2016, as part of its restoration planning efforts, the AL TIG asked the public for project ideas that could benefit Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters in the Alabama Restoration Area. The project submissions received through this process, along with projects previously submitted during prior restoration planning processes, were screened by the AL TIG to develop a reasonable range of alternatives for consideration in RP II/EA. Based on the OPA and NEPA evaluations of this reasonable range, the AL TIG then selected a set of preferred restoration alternatives to be funded wholly or in part under the AL TIG’s Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction; Sea Turtles; Marine Mammals; Birds; and Oysters Restoration Type allocations. These alternatives are intended to help restore and conserve habitats and resources that were injured by the DWH oil spill.

The Wetlands, Coastal, and Nearshore Habitats Restoration Type is intended to address extensive injuries to wetland, coastal, and nearshore habitats across the northern Gulf of Mexico and in Alabama specifically. Oil and cleanup efforts on the shoreline of Alabama injured habitats and the species reliant on the coastal habitat for their lifecycle.

The Habitat Projects on Federally Managed Lands Restoration Type focuses on injuries to federally managed land. This included Bon Secour National Wildlife Refuge (BSNWR), Grand Bay National Wildlife Refuge, and several small parcels on BLM property. These areas provide important habitats for sea turtles, birds, and other resources injured by the spill.

The Nutrient Reduction (Nonpoint Source) Restoration Type is intended to help address injuries to water quality. Improvements will be made through nutrient reduction projects, which will have cascading ecological benefits, increasing the overall health and productivity of the Gulf of Mexico ecosystem and helping restore natural resources injured by the DWH oil spill. In coastal Alabama, an ongoing watershed planning process is documenting these linkages.

The Sea Turtles Restoration Type is intended to address injuries to four species of sea turtles that inhabit the Gulf of Mexico (loggerhead, Kemp’s ridley, green, and hawksbill). All these species are listed as threatened or endangered under the Endangered Species Act (ESA). The injuries associated with the DWH oil spill include mortality of all life stages (i.e., juvenile and adult sea turtles, small juvenile sea turtles, and hatchling sea turtles). In addition, many nesting areas were impacted.

The Marine Mammals Restoration Type is intended to address injuries to marine mammals. Animals suffered physical damage and toxic effects from the oil components. An injury assessment of marine animals found high levels of mortality and reproductive failure. Because cetaceans are long-lived animals, give birth to only one calf every few years, and are slow to reach reproductive maturity, these stocks would take many decades to recover without active restoration.

The Birds Restoration Type is intended to address injuries to birds. The spill and response activities resulted in high numbers of dead and injured birds, with at least 93 species of birds exposed to DWH oil, including both resident and migratory species and across all five Gulf Coast states.

Lastly, the Oysters Restoration Type is intended to address injuries to oysters. Because of the DWH oil spill, 8.3 million adult-equivalent oysters were lost in the northern Gulf of Mexico. The oil affected
spawning stock, larval production, spat settlement, and spat substrate availability. The loss of oysters also increased shoreline erosion.

2.0 LEAD AND COOPERATING AGENCIES

The Council on Environmental Quality’s (CEQ) NEPA implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508) require a federal agency to serve as lead agency to supervise the NEPA analysis when more than one federal agency is involved in the same action (40 CFR 1501.5(a)). The AL TIG designated the USDA to serve as the lead federal agency for NEPA compliance for RP II/EA. Each of the other federal and state co-Trustees are participating as cooperating agencies pursuant to NEPA (40 CFR 1508.5) and the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill (SOP) (DWH Trustees 2016:27, Appendix F:2–3).

3.0 PUBLIC PARTICIPATION

The AL TIG issued a notice of solicitation to the public on December 20, 2016, to request submission of project ideas through February 3, 2017. On August 30, 2017, the AL TIG then issued a Notice of Intent informing the public that it was initiating the drafting of a restoration plan to address the following Restoration Types: Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Non-point Source); Sea Turtles; Marine Mammals; Birds; and Oysters.

Project ideas were considered and evaluated by the AL TIG as documented in the draft RP II/EA. On April 5, 2018, a Notice of Availability of the Draft RP II/EA was published in the Federal Register. On April 18, 2018, the AL TIG held a public meeting at the 5 Rivers Delta Resource Center in Spanish Fort, Alabama, to facilitate the public review and comment process. The meeting and notice encouraged the public to review and comment on the draft RP II/EA during the 30-day comment period that ran through May 7, 2018. The public was also notified of the availability of the draft RP II/EA for comment online (http://www.gulfspillrestoration.noaa.gov/restoration-areas/alabama). Comments were accepted via an online public comment portal, in person at the April 18 meeting, and via the U.S. Postal Service. The AL TIG received submissions from private citizens; businesses; federal, state and local agencies; and non-governmental organizations. The AL TIG reviewed the comments and considered them prior to finalization of the RP II/EA. Chapter 16 of the RP II/EA provides further detail on the public comment process, including a summary of all public comments received on the draft RP II/EA and the AL TIG’s responses.

4.0 ADOPTION OF THE RP II/EA NEPA ANALYSIS BY FEDERAL AGENCY MEMBERS OF THE ALABAMA TIG

Each federal agency represented on the AL TIG must make its own independent evaluation of the NEPA analysis in support of its decision-making responsibilities. In accordance with 40 CFR 1506.3(a) and the SOP (DWH Trustees 2016: Appendix F:4), each of the federal agencies participating in the AL TIG has reviewed the RP II/EA, found that it meets the standards set forth in its own NEPA implementing procedures, and accordingly has adopted the RP II/EA NEPA analysis.

5.0 DESCRIPTION OF PROPOSED ACTIONS AND ALTERNATIVES

NEPA and the CEQ NEPA regulations require the federal agency decision maker to consider the environmental effects of the proposed action and a reasonable range of alternatives, including the no action alternative (42 USC § 4332; 40 CFR § 1502.14). The RP II/EA considers 26 project alternatives. Of these 26 projects, the AL TIG identified 20 preferred alternatives to be fully funded from Restoration Type funds, one preferred alternative to be partially funded from Restoration Type funds and
partially funded from MAM funds, and one activity to be fully funded using MAM funds. A detailed description of each of the alternatives considered in the RP II/EA is provided in Chapter 3 of the RP II/EA. Projects proposed for engineering and design only at this time are designated with “E&D.”

5.1 Alternatives Analyzed: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters

Table 1 describes the restoration alternatives analyzed in the RP II/EA.

Table 1: Restoration Alternatives

<table>
<thead>
<tr>
<th>Alternative Name</th>
<th>Location</th>
<th>Summary</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands, Coastal, and Nearshore Habitats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perdido River Land Acquisition (Molpus Tract)</td>
<td>Perdido River</td>
<td>Acquire 1,391 acres along the river to conserve and restore coastal habitats. Project actions would include clearing and prescribed burns, which would ease hydrologic restoration and return land to longleaf pine.</td>
<td>No</td>
</tr>
<tr>
<td>Magnolia River Land Acquisition (Holmes Tract)</td>
<td>Magnolia River</td>
<td>Acquire 80 acres to be purchased by the Weeks Bay Foundation (WBF) and managed by the Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR) to protect habitats and design a long-term management plan for the area.</td>
<td>Yes</td>
</tr>
<tr>
<td>Weeks Bay Land Acquisition (East Gateway Tract)</td>
<td>Weeks Bay</td>
<td>Acquire 175 acres to be purchased by the WBF and managed by the Weeks Bay NERR to restore the land. This project will develop a shoreline restoration plan and includes E&amp;D for removal of the bulkhead.</td>
<td>Yes</td>
</tr>
<tr>
<td>Weeks Bay Land Acquisition (Harrod Tract)</td>
<td>Weeks Bay</td>
<td>Acquire 231 acres to be purchased by the WBF and managed by Weeks Bay NERR. A Restoration plan will be created that includes strategies on invasive species control, native vegetation planting, and erosion control.</td>
<td>Yes</td>
</tr>
<tr>
<td>Lower Perdido Islands Restoration Phase I (Engineering and Design [E&amp;D])</td>
<td>Perdido Islands</td>
<td>Develop a conservation management plan for sensitive island habitats and conduct a sediment modeling study to inform future habitat restoration activities on the islands. This project also includes installation of educational signage and tree plantings.</td>
<td>Yes</td>
</tr>
<tr>
<td>Southwestern Coffee Island Habitat Restoration Project—Phase I (E&amp;D) (also evaluated under the Birds Restoration Type)</td>
<td>Coffee Island</td>
<td>Implement two tasks: (1) synthesize data on colonial wading bird and shorebird nesting data from coastal Alabama, and (2) conduct E&amp;D and permitting to restore habitats on Coffee Island.</td>
<td>Yes</td>
</tr>
<tr>
<td>Alternative Name</td>
<td>Location</td>
<td>Summary</td>
<td>Preferred Alternative</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>Habitat Projects on Federally Managed Lands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Little Lagoon Living Shoreline</td>
<td>Little Lagoon</td>
<td>Implement living shoreline techniques to reduce erosion and restore at least 2,200 feet of Little Lagoon shoreline. Lay rows of biodegradable coconut fiber logs, plant grass, and provide native mussel seeding (if possible) to create a shoreline buffer.</td>
<td>Yes</td>
</tr>
<tr>
<td>Restoring the Night Sky – Assessment, Training, and Outreach (E&amp;D) (also evaluated under Sea Turtles Restoration Type)</td>
<td>Baldwin and Mobile County coasts</td>
<td>Determine the impacts of artificial lighting on sea turtle nesting on federally managed lands, create a plan to mitigate lighting issues, and help teach local government officials how to better address lighting pollution.</td>
<td>Yes</td>
</tr>
<tr>
<td>Nutrient Reduction (Nonpoint Source)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bayou La Batre Nutrient Reduction</td>
<td>Portersville Bay and Mississippi Sound</td>
<td>Reduce nutrient input to improve the ecological health of these areas. This project would use United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) conservation practice standards (CPS) such as cover crops and conservation tillage.</td>
<td>No</td>
</tr>
<tr>
<td>Toulmins Spring Branch (E&amp;D)</td>
<td>Toulmins Spring</td>
<td>Implement E&amp;D project to reduce the amount of nutrients and pollution that enters the Toulmins Spring. This project will include best management practices, a watershed assessment, and a conceptual plan.</td>
<td>Yes</td>
</tr>
<tr>
<td>Fowl River Nutrient Reduction</td>
<td>Mobile Bay</td>
<td>Restore water quality through reducing nutrients and sediment loadings into Mobile Bay. This project will use USDA-NRCS CPS practices like cover crops and conservation tillage.</td>
<td>Yes</td>
</tr>
<tr>
<td>Weeks Bay Nutrient Reduction</td>
<td>Weeks and Mobile Bays</td>
<td>Restore water quality by reducing nutrients and sediment loadings in Weeks and Mobile Bays. This project will use USDA-NRCS CPS practices like cover crops and conservation tillage.</td>
<td>Yes</td>
</tr>
<tr>
<td>Sea Turtles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Alabama Sea Turtle (CAST) Conservation Program</td>
<td>Alabama</td>
<td>This project will continue and expand the Share the Beach program, including sea turtle nesting protection activities, outreach and education to the public, and enhanced data collection related to nesting sea turtles.</td>
<td>Yes</td>
</tr>
<tr>
<td>Alternative Name</td>
<td>Location</td>
<td>Summary</td>
<td>Preferred Alternative</td>
</tr>
<tr>
<td>------------------</td>
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</tr>
<tr>
<td>CAST Triage</td>
<td>City of Orange Beach</td>
<td>This project will establish a sea turtle triage center and a program for the initial triage, treatment, release, and/or transfer of injured or ill sea turtles. The program will educate the public about anthropogenic threats to sea turtles, science supporting how to address identified threats, and best conservation practices.</td>
<td>Yes</td>
</tr>
<tr>
<td>CAST Habitat Usage and Population Dynamics</td>
<td>Alabama Coast</td>
<td>Collect data on sea turtles to study distribution and habitat use. This project will collect data through genetic analysis, stable isotope analyses, mark-recapture, and habitat modeling.</td>
<td>Yes</td>
</tr>
<tr>
<td>CAST Protection: Enhancement and Education</td>
<td>Alabama state waters</td>
<td>Enhance state enforcement of the ESA and increase sea turtle protection through increased public awareness, increased state resources and patrol hours, distribution of TEDs for the skimmer trawl fishery, systematic data collection on fisheries bycatch issues, and reduction of anthropogenic impacts to nesting sea turtles.</td>
<td>Yes</td>
</tr>
<tr>
<td>Restoring the Night Sky–Assessment, Training, and Outreach (E&amp;D) (also evaluated under the Habitat Projects on Federally Managed Lands Restoration Type)²</td>
<td>Baldwin and Mobile County coasts</td>
<td>Determine the impact of artificial lighting on sea turtle nesting on federally managed lands, create a plan to mitigate lighting issues, and help teach local government officials how to better address lighting pollution.</td>
<td>No</td>
</tr>
</tbody>
</table>

### Marine Mammals

<table>
<thead>
<tr>
<th>Marine Mammals</th>
<th>Location</th>
<th>Summary</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Capacity for the Alabama Marine Mammal Stranding Network</td>
<td>Alabama waters</td>
<td>Implement program to better understand the causes of cetacean illness and death. This project will increase data consistency entered into the marine mammal health database. The Alabama Marine Mammal Stranding Network (ALMMSN) will expand infrastructure and staff for communication and data management.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

² As noted in Section 2.7 of the RP II/EA, Preferred Alternative, ultimately this project was considered appropriate for MAM funding and would be implemented using that funding, rather than from the Sea Turtles Restoration Type
<table>
<thead>
<tr>
<th>Alternative Name</th>
<th>Location</th>
<th>Summary</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health</td>
<td>Mobile Bay, Perdido Bay, &amp; adjacent coastal waters in the Gulf of Mexico</td>
<td>Data collection and analysis of bottlenose dolphin abundance, distribution, and habitat use in Alabama waters. Abundance estimates would follow established protocols for photo-ID mark-recapture surveys. This study would also include dolphin health information such as prey/diet assessment and contaminant analysis.</td>
<td>No</td>
</tr>
<tr>
<td>Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education</td>
<td>Alabama</td>
<td>This project will reduce injury and mortality in Alabama estuarine bottlenose dolphins through increased state enforcement training, additional resources and patrol hours from MMPA (Marine Mammal Protection Act of 1972) enforcement; systematic studies on fisheries bycatch and harassment issue; and comprehensive public outreach/education on identified target issues.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Birds**

<table>
<thead>
<tr>
<th>birds</th>
<th>Birds</th>
<th>Location</th>
<th>Summary</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Southwestern Coffee Island Habitat Restoration Project—Phase I (E&amp;D) (also evaluated under the Wetlands, Coastal, and Nearshore Habitats Restoration Type)</td>
<td>Coffee Island</td>
<td>Implement two tasks: (1) synthesize data on colonial wading bird and shorebird nesting data from coastal Alabama, and (2) conduct E&amp;D and permitting to restore habitats on Coffee Island.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Colonial Nesting Wading Bird Tracking and Habitat Use Assessment—Four Species</td>
<td>Alabama coast</td>
<td>Collect monitoring data that would address information gaps on nesting habitat used by wading birds injured by the DWH spill. Four species would be targeted for study: tricolored heron, little blue heron, cattle egret, and white ibis.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Colonial Nesting Wading Bird Tracking and Habitat Use Assessment—Two Species</td>
<td>Alabama coast</td>
<td>Collect monitoring data that will address information gaps on nesting habitat used by wading birds injured by the DWH spill. Two species would be targeted for study: tricolored heron and the blue heron or the white ibis (based on additional recommendations from Trustee bird experts).</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Oysters**

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As noted in Section 2.7 of the RP II/EA, Preferred Alternative, ultimately this project was considered appropriate for MAM funding and would be implemented using that funding, rather than from Marine Mammal Restoration Type.
### Alternative Name | Location | Summary | Preferred Alternative
---|---|---|---
Oyster Cultch Relief and Reef Configuration | Mobile Bay | This project will focus on studying variables that affect oyster populations, find optimum reef qualities for oyster populations, and predict the cost/benefits to cultch configurations that are not traditional. | Yes
Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D) | Mobile Bay | Identify waters that will be able to support oyster cultch and in the long-term reestablish oysters in the mid- to lower Mobile Bay. This will be done through side-scan mapping to determine the best locations for future oyster reef restoration. | Yes
Oyster Hatchery at Claude Peteet Mariculture Center–High Spat Production with Study | Mobile Bay, Claude Peteet Mariculture Center | Construct an oyster hatchery at the Claude Peteet Mariculture Center and develop a comprehensive oyster restoration plan for Alabama. This project will create about 65 million, 10-day-old spat each year for 4 years to be deployed at areas identified for oyster populations. The oyster restoration plan will include recommendations to support sustainable, stable, and resilient oyster populations in coastal Alabama. | Yes
Oyster Hatchery at Claude Peteet Mariculture Center–Low Spat Production without Study | Mobile Bay, Claude Peteet Mariculture Center | Build an oyster hatchery at the Claude Peteet Mariculture Center. This project would create about half the spat as the high spat production alternative for 4 years and the spat would be deployed at areas identified for oyster populations. | No
Oyster Grow-Out and Restoration Reef Placement | Grand Bay, Portersville Bay, and Bon Secour Bay | Develop three “off-bottom oyster grow-out areas.” This project will also identify future restoration reef locations and monitoring oysters at the grow-out areas. | Yes

#### 5.2 No Action Alternative

NEPA requires consideration of a no action alternative as a basis for comparison of the potential environmental consequences of the action alternatives(s) considered in a restoration plan. Under the no action alternative, the AL TIG would not, at this time, select and implement any of the restoration alternatives evaluated in this RP II/EA intended to help restore injuries from the DWH oil spill. Accordingly, the no action alternative would not meet either the DWH Trustees’ purpose and need for implementing restoration alternatives that address lost natural resources and their services as described in Section 5.3.2 of the Final PDARP/PEIS or the AL TIG’s goal of improving ecosystem health in the Alabama Restoration Area through restoration and conservation.

#### 5.3 Preferred Alternatives

After evaluating all 26 projects included in the reasonable range of alternatives, the AL TIG ultimately proposed to fund 22 restoration alternatives: 20 preferred alternatives to be fully funded from...
Restoration Type funds, one preferred alternative to be partially funded from Restoration Type funds and partially funded from MAM funds, and one activity to be fully funded using MAM funds (see Table ES-1 in the RP II/EA). The AL TIG has determined that implementation of these alternatives and project elements associated with these alternatives best meets the OPA selection criteria and supplemental criteria developed by the AL TIG. Table 2 summarizes the alternatives preferred for Restoration Type funding.

Table 2: Preferred Alternatives to be Funded with Restoration Type Allocations and MAM Funds

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<tr>
<th>Wetlands, Coastal, and Nearshore Habitats</th>
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<td>Magnolia River Land Acquisition (Holmes Tract)</td>
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<tr>
<td>Southwestern Coffee Island Habitat Restoration Project—Phase I (E&amp;D) (also evaluated under the Birds Restoration Type)</td>
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<tr>
<td>Restoring the Night Sky – Assessment, Training, and Outreach (E&amp;D) (also evaluated under Sea Turtles Restoration Type)</td>
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<th>Nutrient Reduction (Nonpoint Source)</th>
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<td>Fowl River Nutrient Reduction</td>
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<tr>
<td>CAST Habitat Usage and Population Dynamics</td>
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<td>CAST Protection: Enhancement and Education</td>
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</table>

| Restoring the Night Sky – Assessment, Training, and Outreach (E&D) (also evaluated under Habitat Projects on Federally Managed Lands Restoration Type) |

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4 As noted in Section 2.7 of RP II/EA, Preferred Alternative, ultimately this project was considered appropriate for MAM funding and would be implemented using that funding, rather than from the Sea Turtles Restoration Type.
### Marine Mammals

- Enhancing Capacity for the Alabama Marine Mammal Stranding Network
- Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health
- Alabama Estuarine Bottlenose Dolphin Protection: Enhancement and Education

### Birds

- Southwestern Coffee Island Habitat Restoration Project—Phase I (E&D) (also evaluated under the Wetlands, Coastal, and Nearshore Habitats Restoration Type)
- Colonial Nesting Wading Bird Tracking and Habitat Use Assessment—Two Species

### Oysters

- Oyster Cultch Relief and Reef Configuration
- Side-scan Mapping of Mobile Bay Relic Oyster Reefs (E&D)
- Oyster Hatchery at Claude Peteet Mariculture Center–High Spat Production with Study
- Oyster Grow-Out and Restoration Reef Placement

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### 6.0 ANALYSIS SUMMARY

For RP II/EA, the AL TIG developed a screening process to identify a reasonable range of alternatives to be further evaluated under OPA and NEPA. This process is more fully described in Section 2.4, Screening for Reasonable Range of Alternatives, of the RP II/EA. Ultimately, the AL TIG identified alternatives preferred for implementation in the RP II/EA based on the criteria set forth in OPA, NEPA, and additional factors developed by the AL TIG. More information is provided on these processes in Chapter 3 and Chapters 5 through 13 of the RP II/EA. As a result of this evaluation, 22 restoration alternatives are proposed by the AL TIG for funding (see Table 1-2 in the RP II/EA) using Restoration Type and MAM funds. As stated in the Final PDARP/PEIS, the no action alternative “does not meet the purpose and need for restoration of injured resources and services,” and therefore is not identified as a preferred alternative in the RP II/EA.

In the RP II/EA, the AL TIG addresses NEPA requirements by tiering from environmental analyses conducted in the Final PDARP/PEIS, evaluating existing analyses, and preparing environmental consequences analyses for projects as appropriate. The purpose of the Proposed Action is to improve the condition of natural resources injured by the DWH oil spill. The analysis included in the RP II/EA supports the following conclusions:

- **Impacts that may be both beneficial and adverse.** The RP II/EA evaluates both beneficial and adverse impacts of the Proposed Action.

- **The degree to which the proposed action affects public health or safety.** The Proposed Action will have no significant adverse impacts on public health and safety. Some alternatives, such as those that reduce shoreline erosion through land acquisition or living shorelines, would have long-term, beneficial impacts to public health and safety.

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5 As noted in Section 2.7 of RP II/EA, Preferred Alternative, ultimately this project was considered appropriate for MAM funding and would be implemented using that funding, rather than from the Marine Mammal Restoration Type.
Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. The Proposed Action will have no significant adverse impacts on the unique characteristics of the geographic areas. Specifically, the Proposed Action is not expected to have significant effects on wetlands, floodplains, municipal water sources, ecologically critical areas, wild and scenic river corridors, park lands, wilderness, wilderness research areas, research natural areas, inventoried roadless areas, national recreation areas, or prime farmlands, particularly on a regional basis. The Proposed Action is not expected to result in the introduction or spread of a nonindigenous species. All projects with an identified potential for invasive species colonization include provisions for invasive species management and best practices to minimize the risk of the introduction or spread of nonindigenous species.

The degree to which the effects on the quality of the human environment are likely to be highly controversial. The effects of the Proposed Action on the quality of the human environment are not controversial. Public comments were received on the draft RP II/EA, and none of those comments indicates controversy or opposition to the alternatives considered in RP II/EA.

The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. Implementation of the Proposed Action would not pose uncertain risks to the human environment. The Proposed Action has uncertainties associated with the outcomes of each project identified in the MAM plans. The plans identify key sources of uncertainty, incorporate monitoring data needs and decision points that address these uncertainties, and establish a decision-making process for making adjustments, if needed.

The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. As shown in the RP II/EA analysis, no significant effects would occur under the Proposed Action or represent a decision in principal about a future consideration. Although information gathered from the analysis of the restoration alternatives may inform future alternatives identification and analysis; however, it does not commit the AL TIG to future actions. The AL TIG will include full OPA and NEPA analyses of related alternatives if proposed in a future restoration plan.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The Proposed Action will not result in significant adverse cumulative impacts. As discussed in the RP II/EA, the Proposed Action is intended to benefit natural resources. Though some minor, primarily short-term, adverse effects may occur in some locations, the cumulative effects of these actions on the quality of the human environment are not expected to be regionally significant, particularly when focusing on the significant adverse impacts that NEPA is intended to help decision makers avoid, minimize, or mitigate.

The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. In compliance with the National Historic Preservation Act and the implementing regulations at 36 CFR Part 800, the AL TIG (through ADCNR) initiated Section 106 consultation with the Alabama Historical Commission (AHC) on March 30, 2018, regarding the effects of the proposed projects on cultural resources at all locations under consideration in the RP II/EA. On May 3, 2018, AHC responded to ADCNR with comments regarding the effects of the proposed projects (Appendix E). These comments were subsequently addressed in the appropriate chapters and sections for each project in the final RP II/EA. If any further work is undertaken at any of the project locations, all cultural resource studies will adhere to applicable federal procedures, as well as State of Alabama
procedures for conducting archaeological and historical/architectural investigations and evaluations (AHC, 2006; AHC, n.d.).

- **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** In some cases, based on coordination with resource agencies, the Trustees have made preliminary determinations that a proposed project **May Affect, but is Not Likely to Adversely Affect** certain ESA-listed species. The effects determinations and the respective listed species are described in Chapters 7 through 13 of the RP II/EA under the “Rare and Protected Species – Affected Environment” and “Rare and Protected Species – Environmental Consequences” subsections. The Trustees are consulting with the appropriate agencies for ESA compliance, which will be completed prior to project implementation.

- **Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.** The Proposed Action is expected to comply with all applicable federal laws and regulations relevant to the preferred projects. Environmental reviews and consultations will be finalized prior to the initiation of the relevant project activities. Table 15-1 in the RP II/EA and Table 3 below provide a summary of the federal regulatory compliance review and approvals as of August 1, 2018. For all projects in which the compliance status is labeled as complete, no significant or adverse effects were found. Environmental reviews and consultations not yet completed will be finalized prior to the initiation of the relevant project activities.

- **Impacts to marine mammal stocks and managed fish species.** While there could be temporary disturbance to marine mammals and managed fish species during any project that includes in-water work during construction or short-term events using vessels, these impacts would be expected to be minor and short term. Over the long term, adverse impacts to marine mammal stocks and managed fish species are not expected with the majority of projects having long-term benefits from the improvement of aquatic habitats through land acquisitions or other habitat improvements.

- **Impacts to biodiversity/ecosystem functioning and essential fish habitat.** The RP II/EA analyzes impacts on coastal, nearshore and marine habitats, and essential fish habitat. Impacts on these ecosystems would range from no impacts to short term and adverse, and include long-term, beneficial impacts, depending on the alternative. For those alternatives where adverse impacts on marine and coastal ecosystem were identified, mitigation measures will be implemented.
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Notes: N/A – not applicable
7.0 LITERATURE CITED

Alabama Historical Commission (AHC)


Deepwater Horizon Trustees

2016 Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill (SOPs)

National Oceanic and Atmospheric Administration (NOAA)


United States Department of Justice

8.0 DETERMINATION

Based on the information presented in this document and the analysis contained in the RP II/EA, it is hereby determined that implementation of the Restoration Plan (the Proposed Action) will not significantly impact the quality of the human environment, as described above. Therefore, an environmental impact statement will not be prepared.
FOR THE STATE OF ALABAMA:

CHRISTOPHER M. BLANKENSHIP
Principal Representative, Alabama Department of Conservation and Natural Resources

9/4/2018
DATE
FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION:

DOLEY.CHristoph
ER.D.1365844042
CHRISTOPHER D. DOLEY
Principal Representative, National Oceanic and Atmospheric Administration

PENN.Tony.MAR
TIN.1365863640
TONY PENN
Chief, Assessment and Restoration Division
National Ocean Service
National Oceanic and Atmospheric Administration
KEVIN D. REYNOLDS
Designated Department of Interior Natural Resource Trustee Official
FOR THE U.S. DEPARTMENT OF AGRICULTURE:

HOMER L. WILKES
Principal Representative, U.S. Department of Agriculture

9/4/2018
DATE