

# RESTORE Council FPL 3 Proposal Document

## **General Information**

*Proposal Sponsor:*

Mississippi Department of Environmental Quality

*Title:*

Coastal Nearshore Habitat Restoration and Development Program in Mississippi

*Project Abstract:*

Mississippi, through the Mississippi Department of Environmental Quality (MDEQ), is requesting \$40M in Council-Selected Restoration Component funding for the proposed Coastal Nearshore Habitat Restoration and Development Program in Mississippi. This would include \$8M in planning funds as FPL Category 1, as well as a separate \$32M implementation component as an FPL Category 2 priority for potential funding. This program would support the primary RESTORE Comprehensive Plan goal to restore and conserve habitat through activities to create, restore, and enhance coastal habitat, including marsh, beach, and dunes through the dedicated sourcing of materials. Program activities include planning, engineering and design, and construction of habitat in the three coastal counties of Mississippi, and builds off work funded by the Initial FPL, as well as National Fish and Wildlife Foundation Gulf Ecosystem Benefit Fund projects. To accelerate habitat creation and restoration, MDEQ may utilize multiple methods for sourcing material for habitat construction.

Coastal nearshore habitats provide many important ecosystem services including acting as natural buffers to protect shorelines from erosion, storm surge protection, fisheries production, and water quality benefits through sediment and nutrient reduction. The creation of new coastal nearshore habitats and the restoration of these habitats would continue to support and increase these ecosystem services to coastal systems in Mississippi. Program duration is 10 years.

*FPL Category:* Cat1: Planning/ Cat2: Implementation

*Activity Type:* Program

*Program:* Beneficial Use of Dredge Material Program for Marsh Creation and Restoration in Mississippi

*Co-sponsoring Agency(ies):* N/A

*Is this a construction project?:*

Yes

*RESTORE Act Priority Criteria:*

(I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.

(II) Large-scale projects and programs that are projected to substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast ecosystem.

(III) Projects contained in existing Gulf Coast State comprehensive plans for the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

(IV) Projects that restore long-term resiliency of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands most impacted by the Deepwater Horizon oil spill.

*Priority Criteria Justification:*

Marsh creation and restoration using BU sediments and other dredging activities are ways to restore the ecological integrity of any coastal bay and estuary system. Marsh systems arguably provide the greatest contribution of ecosystem services (natural buffers, storm surge protection, improves fisheries production, faunal support, sequesters carbon etc.) to coastal systems. Marsh creation and restoration within the State of Mississippi and across the Gulf substantially enhance natural resources and coastal wetland ecosystems. Coastal and Marine Resources is a foundational program in the Mississippi Gulf Coast Restoration Plan (MDEQ, 2017). Several documents and organizations have highlighted the need and economic values in using BU including the Gulf of Mexico Alliance Habitat Conservation & Restoration Team (GOMA HCRT, 2009, 2010), earlier versions of the Gulf Regional Sediment Management Master Plan, the Final Master Plan for the Beneficial Use of Dredge Material for Coastal Mississippi, and Project Management Plan for Selected Beneficial Use Projects Along Coastal Mississippi (CH2Mhill, 2011a&b). By restoring existing marsh and creating new marsh in coastal waters, the State and other partners around the Gulf are enhancing the resilience of the system allowing it to continue to provide the ecosystem services listed above.

*Project Duration (in years):* 10

**Goals**

*Primary Comprehensive Plan Goal:*

Restore and Conserve Habitat

*Primary Comprehensive Plan Objective:*

Restore , Enhance, and Protect Habitats

*Secondary Comprehensive Plan Objectives:*

N/A

*Secondary Comprehensive Plan Goals:*

N/A

*PF Restoration Technique(s):*

Create, restore, and enhance coastal wetlands, islands, shorelines and headlands: Protect natural shorelines

Create, restore, and enhance coastal wetlands, islands, shorelines and headlands: Sediment placement

## **Location**

### *Location:*

Coastal waters of the State of Mississippi including the Mississippi Sound and Barrier Islands

### *HUC8 Watershed(s):*

South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Pascagoula)  
South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Escatawpa)  
South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Mississippi Coastal)  
South Atlantic-Gulf Region(Pearl) - Pearl(Lower Pearl)

### *State(s):*

Mississippi

### *County/Parish(es):*

MS - Hancock  
MS - Harrison  
MS - Jackson

### *Congressional District(s):*

MS - 4

## **Narratives**

### *Introduction and Overview:*

#### General Description of Activity:

The Coastal Nearshore Habitat Restoration and Development Program in Mississippi (Program) would support the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region by creating, restoring, and enhancing coastal habitat, including marsh, beach, and dunes through the dedicated sourcing of materials. To accomplish this, the Program would incorporate planning, engineering and design (E&D), and construction of habitat in the three coastal counties of Mississippi. This program builds off the planning, E&D, and permitting work funded within the Beneficial Use (BU) project under the Initial Funded Priority List (FPL) as well as National Fish and Wildlife Foundation Gulf Ecosystem Benefit Fund (NFWF-GEBF) projects. In order to accelerate habitat creation and restoration, MDEQ may utilize multiple methods for sourcing material for habitat construction (e.g. dedicated material sourcing from borrow sites, upland sites, beneficial use of dredge materials, etc.). In order to receive any materials for habitat creation and restoration, all applicable environmental permitting, testing, and compliance would need to be completed, including sediment testing.

### Primary Goal and Objective:

The Program addresses the Gulf Coast Ecosystem Restoration Council Comprehensive Plan Goal #1: Restore and Conserve Habitat. The Program would restore and create habitat within Mississippi coastal waters, including priority bays and estuaries, and within the Mississippi Sound. The activity of the Program, restoring and creating coastal marsh habitats, is consistent with RESTORE Council's primary objective of Restore, Enhance, and Protect Habitats.

### Commitments in 2016 Comprehensive Plan Update:

The following describes how this Program addresses the commitments set forth in the 2016 Comprehensive Plan Update:

- **Regional ecosystem-based approach to restoration:** There have been several documents on strategies (GOMA HCRT, 2009, 2010) to coastal restoration that highlight the beneficial use of dredged sediments as a priority investment to an ecologically and economically sustainable coastal habitat. The Gulf Coast Ecosystem Restoration Task Force (GCERTF, 2011) identified restoring and conserving nearshore habitats, with a focus on marshes as a major action across the Gulf, under one of the four main restoration goals.
- **Leveraging resources and partnerships:** The State of Mississippi has invested in BU of dredge materials for marsh restoration using NFWF-GEBF, RESTORE, and Natural Resource Damage Assessment (NRDA) funding. MDEQ would consider previous planning efforts and coordinate with ongoing BU marsh restoration activities during site identification and scope development for project implementation.
- **Engagement, Inclusion, and Transparency:** The State of Mississippi's prioritization of this Program is based on multiple public and stakeholder engagement activities; including the Annual Mississippi Restoration Summit and the Mississippi Coastal Restoration Plan (NFWF-GEBF). Throughout Mississippi's restoration public engagement and planning efforts, stakeholders have consistently identified the restoration and protection of marsh and critical habitats as a top priority (see Public Engagement, Outreach, and Education section).
- **Science-based decision-making:** Sustainable and effective coastal wetland enhancement is linked with sediment management in coastal ecosystems (Parson and Swafford, 2012; Parson et al., 2012; ERG, 2014). The use of BU of dredge materials is a viable conservation strategy for coastal wetland restoration (Cornwell et al., 2020; Guilfoyle et al., 2020). There are multiple examples of studies around the United States where the use of sediment, dredge materials, and BU, has successfully been undertaken in coastal habitat restoration: Coos Bay, Oregon (Cornu and Sadro, 2002), thin-layer sediment application in North Carolina (Leonard et al., 2002) and Louisiana (Ford et al., 1999), beneficial use of dredge materials to supplement subsidence in diked marshes in California (Marcus, 2000), marsh creation in Louisiana (Edwards and Proffitt, 2003) and Texas (Minello and Rozas; Rozas and Minello, 2001)
- **Delivering results and measuring impacts:** The proposed Program would utilize project-level workplans that would adhere to site-specific milestones and monitoring success criteria. These would be documented in observational data management plans.

**General Description of Environmental Benefits:** Coastal marshes play a vital role in the ecological integrity of open shoreline habitats and are vital components of ecosystem health within a broader landscape context of coastal ecosystems (Wigand et al., 2017). They are keystone habitats within the coastal environment as they provide the base for a host of ecosystem services and benefits (Purcell et al, 2020). These ecosystem services include: serving as natural buffers to protect shorelines from eroding; storm surge protection (Gittman et al., 2014); fisheries production, water quality enhancement through sediment and nutrient reduction, faunal support, carbon sequestration, and providing habitat for a multitude of trophic levels within the ecosystem (Barbier et al., 2011; Mendelssohn et al., 2012). The creation of new marsh and the restoration of existing marsh in Mississippi's coastal system would continue to support and increase these ecosystem services in Mississippi.

**Environmental Stressors being addressed:** Between 1998 and 2004, wetland loss rates in the Gulf of Mexico were 25 times higher than anywhere in the U.S (Stedman and Dahl, 2008). In Mississippi, increased development over time (as well as storms and other impacts) has accelerated the rate of wetland loss. As a result of wetland loss, coastal services protecting the main land areas against soil

erosion, flooding, as well as providing refuge for many threatened and commercially important species are being lost (Chapman and Reed, 2006). Wetland losses can detrimentally impact coastal ecosystems through increases in the ecosystems' vulnerability to storm surge and flooding, changes in nutrient cycling, declines in net primary and secondary productivity, fluctuations in species composition, habitat loss for fisheries and wildlife, and loss of recreational, aesthetic, and ecosystem services. Mississippi is estimated to have lost 60 percent of its wetlands statewide over the last 200 years (Dahl, 1990; Chapman and Reed, 2006). Since 1950, 15 percent (9,000 acres) of the marsh south of Interstate 10 (I-10) has been lost (Schmid, 2001). Shoreline erosion in Mississippi's salt marsh systems is extensive. For example, shoreline erosion rates at Grand Bay have been recorded at more than 24 feet/year or 7 acres/year (Schmid, 2000). This rate of loss continues today and would be exacerbated by expected increases in sea-level rise. Rising sea level can have multiple impacts due to its potential to alter ecosystems (Craft et al., 2009) and threaten coastal communities (Woodrey et al., 2012) by increasing the potential for tidal flooding and enhanced storm surges. Sea level trends recorded at NOAA's Dauphin Island tide station show the mean sea level trend is approximately 3.50 mm/year based on monthly mean sea level data from 1966 to 2016 which is equivalent to a change of approximately 1.15 feet in 100 years (NOAA, 2013). Coastal wetland modification and degradation can reduce wetland function and impair natural hydrological functioning and biological integrity. Primary causes for wetland modification include increases in impervious surfaces in watersheds, agricultural practices, flood control structures (e.g., canals, ditches, levees), and industry. Although regulations and incentives have reduced wetland habitat loss since the 1970s, continued urban growth and other landscape alterations can leave wetlands open to hydrological and biological fluxes (Mitsch and Gosselink, 2000) that negatively impact ecosystem functioning including increased stormwater inflow, increased sedimentation and nutrient loading, and decreased species richness and abundance, including coastal bird species (DeLuca et al., 2008).

In addition to stresses on coastal habitat, species that utilize the coastal habitat mosaic have also endured impacts. Ecosystem ramifications resulting from bird injury following the Deepwater Horizon oil spill are well documented (Barron, 2012; Haney et al., 2014; Trustees, D.N., 2016 [PDARP]). Impaired performance or reduction in numbers had multiple effects on reproduction and trophic dynamics in the ecosystem. The Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS) identified ninety-three bird species that were directly impacted by the oil spill. Mississippi's bird injury was extensive with thousands of birds impacted including several species of shorebirds (colonial and solitary nesters), wading birds, and marsh birds (Trustees, D.N., 2016 [PDARP]).

Total Cost: \$40,000,000. Implementation is scalable.

Timeline: 10 years.

Partners: MDEQ's project identification and development efforts would include coordination with local entities to identify local dredging plans and priorities and coordination with relevant state and federal agencies (e.g., MDMR, USACE). Coordination would occur with MDMR BU program staff throughout the process and with USACE and other federal agencies (e.g., Department of the Interior, Bureau of Ocean and Energy Management), as needed, to discuss options/locations and availability of source materials, environmental compliance and other due diligence issues which may arise in the identification and assessment of project options.

Alignment with FPL3 Planning Framework: This Program aligns with the FPL3 Planning Framework priority approaches and techniques for Mississippi by addressing the approach Create, restore and enhance coastal wetlands, islands, shorelines, and headlands and the technique Sediment

placement. Additionally, the proposed Program builds off of previous investments from the NFWF GEBF, RESTORE Comprehensive Plan Component (Initial FPL) and Spill Impact Component (MSEP), and NRDA restoration projects.

#### *Proposed Methods :*

The proposed Program would include the following primary activities:

#### Program Management and Oversight

Program management and oversight would cover all activities associated with the Program. MDEQ personnel and its contractors would provide administrative programmatic functions and/or support during the life of the grant. MDEQ, with contractual support, would also manage the data associated with this Program in accordance with the procedures outlined in the Observational Data Plan and the Data Management Plan.

#### Permitting and E&D

Engineering, design, and permitting of the identified solutions would utilize and apply standard engineering practices for similar projects, including certified and stamped plans. Engineering and design services would provide the design for containment and habitat dimensions for identified sites. The number of engineering and design plans would depend on the availability of source material and sites selected for project implementation.

The appropriate state/federal agencies would be engaged for permitting requirements for containment structure and source material placement. Project design would take into consideration best management practices. Additional activities may include environmental compliance, testing of sediments, geotechnical investigations and other needs associated with site design.

#### Construction Implementation

Federal, state, and local groups undertake dredging activities constantly in the Gulf environment for navigation maintenance, infrastructure, and/or hydrological connectivity. Synergistically linking sediment management to the science of habitat creation helps to address coastal habitat loss through sustainable resource management (GCERTF, 2011; CH2M Hill, 2011a, b; ERG, 2014). In identifying sites and developing scopes of work for implementation, MDEQ will consider previous planning efforts. In 2011, the Final Master Plan for the Beneficial Use of Dredge Material for Coastal Mississippi (CH2M Hill, 2011a) provided an appendix of potential material sources for marsh creation projects including maintenance cycle timing, date of last dredge event, timing for next dredge event, typical quantities/current disposal, and types of dredge material. In 2015, the State of Mississippi initiated a planning project titled Utilization of Dredge Material for Marsh Restoration in Coastal Mississippi (NFWF-GEBF #45721) which revisited and updated the 2011 efforts. Construction implementation would be based on final plans and specifications developed during engineering, design and permitting. Construction implementation may include all potential activities associated with habitat construction and BU capacity development. Construction implementation may include, but is not limited to, containment construction, materials sourcing (e.g. dedicated material sourcing from borrow sites, upland sites, BU of dredge materials, etc.), transport of materials, pumping costs to sites, and marsh/beach/dune construction. Engineering and design and construction services would be procured consistent with applicable procurement standards.

#### Coastal Habitat Site Selection

Site selection for coastal habitat restoration and creation will consider ecological principles, as well as economic and implementation feasibility. MDEQ will support BU site locations and designs which maximize direct and indirect ecological benefits to the extent practicable based on individual project dynamics. MDEQ would assess factors such as availability of material, proximity to material

supply/dredging sites, material transport logistics, overall cost feasibility (e.g., cost estimates for containment, materials sourcing/transport, and construction), and permitting. The State of Mississippi has been investing in multiple coastal habitat restoration projects. Unlike other coastal restoration programs, the landscape for coastal nearshore habitat restoration at large scales is limited by geographic variables, regulatory compliance measures, as well as opportunities to build back coastal habitat in strategic locations. The State has undertaken two planning exercises that have identified several coastal habitat restoration locations through NFWF-GEBF and the Initial FPL BU project (MDEQ 2017). From a large scale perspective, several coastal habitat restoration sites have already been identified and prioritized within the Mississippi coastal landscape including the following: Deer Island (several ongoing coastal habitat restoration projects including Deer Island Marsh Restoration [DIMR] IV, United States Army Corps of Engineers (USACE) Lagoon, and the Mississippi Coastal Improvements Program [MsCIP] proposed expansion), Round Island, Greenwood Island, Cat Island, Pelican Key, Wolf River, Beardslee, and Graveline Bayou. Significant planning has occurred for each of these sites and they are in various phases of development (e.g., E&D, permitting, construction, land acquisition, etc.). The State of Mississippi will continue to develop all of these sites but will also be working with state and federal agencies to determine additional sites that would allow strategic coastal habitat restoration to take place.

#### Monitoring

See monitoring section.

#### *Environmental Benefits:*

As discussed previously, there are a number of drivers and stressors of coastal marsh impacts, including erosion, land conversion, and sea-level rise. All the stressors and drivers result in marsh loss at varying rates. Efforts to mitigate this loss include the creation and restoration of marsh through targeted placement of appropriate dredged sediment and the use of marsh protection and conservation techniques, such as the installation of living shorelines, and acquisition, protection, and management of upland habitats adjacent to coastal marsh habitats that can serve as habitat transition corridors. MDEQ is currently using all of these approaches under various restoration programs. For this proposed Program, MDEQ would re-establish habitats by implementing large-scale, multi-nearshore-habitat coastal restoration projects. The projects would support the following environmental benefits: benefits to a multitude of trophic levels within the ecosystem; provide several ecosystem services including shoreline protection, storm surge buffering (Broom et al., 2019), carbon sequestration (Drake et al., 2015); and enhance water quality by trapping and holding sediment and creating biogeochemical conditions for nutrient assimilation and transformation (Tobias and Neubauer, 2019).

Sustainable restoration and creation of coastal habitats is key when confronting threats from sea-level rise and tropical storms. The creation of multiple habitat types driven by topographic variation (Kim et al., 2010), distance to tidal streams, and other factors ensures habitat viability and resilience into the future. Integrated habitats from low marsh to uplands also provide benefit to multiple species with each vegetation zone comprised of distinctive macrophyte assemblages and the species that use them (Moffet et al., 2010).

New Round Island is a recent example of the environmental benefits that can be received from utilizing BU to create a large-scale, multi-nearshore-habitat site in the Mississippi Sound. MDEQ, in collaboration with the Port of Pascagoula, MDMR, NFWF, and USACE, benefited from a federal dredging opportunity to construct approximately 220 acres of coastal nearshore (marsh and sand beach) habitat near the existing Round Island in the Mississippi Sound. The configuration of the island provides bird habitat, shoreline protection, and storm surge buffering to the cities of Pascagoula and Gautier; and with its topographical range has the capability to support numerous

habitat types from low marsh to vegetated dunes. Since its creation in 2016, thousands of shorebirds and pelicans have used the habitat for nesting, loafing, and foraging. Notable examples include: the largest count of Western Sandpiper recorded in Mississippi (900); the largest count of brown pelicans recorded in Mississippi (2,200); the only colony of Sandwich Terns recorded in Mississippi since the 1960's (nest count of 2,724), and; the largest count on record in Mississippi of Wilson's Plover (27). Additional species that have nested on the site include Snowy Plover, American Oystercatcher, Least Tern, Caspian Tern, Gull-billed Tern, Royal Tern, Laughing Gull, and Black Skimmer. As the project site evolves and marsh vegetation colonizes in the interior sections of the island, it is expected that more bird guilds will utilize the habitat. New Round Island also provides ample opportunity to apply restoration approaches and techniques to refine habitats specific to species or groups of species (e.g., shorebird nesting habitat). Coastal habitats created under this proposed Program could have similar ecological and ecosystem service benefits as New Round Island.

*Metrics:*

Metric Title: PRM011 : Restoration planning/design/permitting - # E&D plans developed

Target: 2

Narrative: The number of E&D plans for habitat creation projects.

Metric Title: PRM013 : Restoration planning/design/permitting - # environmental compliance documents completed

Target: 2

Narrative: The number of permits/compliance documents for habitat creation projects.

Metric Title: HR013 : Wetland restoration - Acres restored

Target: 100

Narrative: The number of acres of coastal nearshore habitat systems created.

*Risk and Uncertainties:*

The amount, source, and timing for available materials is the largest uncertainty. Many ports and channels have maintenance dredging permits in which a certain amount of material is expected to be dredged to maintain access; however, the implementation and timing of maintenance dredging is contingent on a number of factors (e.g., budget availability). If availability of dredge material through the Program is limited or later than expected, there are alternatives available for sourcing sediments to establish sites. Alternatives to explore include stockpiled material sites and borrow sites for deriving materials. Timing of sediment availability, as well as the cost associated with alternative material options will be identified, vetted, and weighed against site characteristics to determine the best course of action moving forward for creating containment and habitat construction.

Additionally, there may be uncertainty about the suitability and quality of identified source materials which will be considered in planning, design and permitting. Based on the geology of the sediments, compaction and settlement may occur at respective sites. To mitigate this risk, engineers may design the habitat/marsh to a higher elevation to account for compaction and settlement. Environmental suitability of source materials will also be assessed. Sediments identified as a source will undergo any required environmental compliance sediment testing to ensure that the material is appropriate for use. If a sediment source is determined to be environmentally unsuitable, alternative material sources may be considered.

Sea-level rise and storm surge are two risks and uncertainties to project implementation performance. The threat of storms is a project risk for many coastal restoration projects. In the case



of marsh restoration, a containment and/or breakwater structure constructed will buffer storm damage to natural marsh but may be susceptible to damage. Engineering and design of containment will utilize best practices from similar projects and be based on best available science and factors such as wave and wind energies to minimize these risks as much as possible. Given the variability in sea level rise prediction as well as the anticipated immediate ecosystem service benefits of the implementation of coastal marsh restoration, sea-level rise considerations may be evaluated. (Hummel et al., 2018) summarized a national assessment of coastal facilities at risk for sea level rise. Mississippi was classified as low risk, with low exposure across a sea level rise gradient from 1ft to 6ft.

#### *Monitoring and Adaptive Management:*

Monitoring activities would occur at the program level for each individual workplan implemented. The core components of determining whether coastal habitat restoration and creation was successful include dimension (e.g., marsh elevation and spatial extent) and vegetation density (e.g., abundance and species composition). Monitoring of coastal habitat restoration sites is anticipated to follow established monitoring guidance, including potentially utilizing established reference sites as baseline/reference conditions for this Program in the Mississippi coastal landscape. MDEQ may consider applicable monitoring information from the NRDA Cross Trustee Implementation Group (TIG) Monitoring and Adaptive Management (MAM) and the Council Monitoring and Assessment Program. Each project's observational data plan and data management plan would document the timing of monitoring activities, frequency of data collection, and the duration of the monitoring component.

#### *Data Management:*

MDEQ would store and manage an ISO-compliant relational database and geospatial database on a server that utilizes the Amazon Web Services cloud-based server environment. In addition to the network and server administration provided by Amazon Web Services, MDEQ manages the server, operating system, software and services. GIS information is backed up in three locations. The data is included in server snapshots performed by and stored at Amazon Web Services. Duplicate datasets are also located on a secure, cloud-based system. This system includes separate cloud backup and storage on two separate network attached storage arrays located in Gulfport and Jackson, Mississippi. Finally, copies of the data are stored on an internal server. All electronic data and metadata would be delivered to the RESTORE Council on a yearly basis for review and approval.

#### *Collaboration:*

MDEQ's project identification and development process would include collaboration with the MDMR BU program staff and with the USACE to better understand dredging schedules, source material options, and availability. Future efforts would also include coordination with local units of government to identify local dredging plans and priorities and coordination with relevant state and federal agencies (e.g., MDMR, USACE). MDEQ would engage with cities, counties and other local entities to understand dredging needs, schedules, quantities, and BU site capacity needs, as well engage other federal agencies (e.g., Department of the Interior, Bureau of Ocean and Energy Management) as needed to discuss source material options (e.g., dedicated material sourcing from borrow sites, upland sites, beneficial use of dredge materials, etc.) and availability, environmental compliance and other due diligence issues which may arise in the identification and assessment of project options.

#### *Public Engagement, Outreach, and Education:*

The State of Mississippi's prioritization of the Program is based on multiple public and stakeholder engagement activities. Throughout Mississippi's restoration public engagement and planning efforts, stakeholders have consistently identified the restoration and protection of marsh and critical

habitats as a top priority. The following are examples of public engagement, outreach and education activities which were considered in the selection of this proposal:

Annual Mississippi Restoration Summit: MDEQ has hosted the Mississippi Restoration Summit annually for four consecutive years. The public is invited to learn about restoration projects and programs and to provide input on current and future priorities for restoration. The priority of marsh restoration and protection through the beneficial use of dredge material has been highlighted each year. Based on the input received at the annual summits, investing in coastal habitat restoration and protection continues to be a top priority of stakeholders.

Mississippi Coastal Restoration Plan (NFWF-GEBF): In 2014, MDEQ undertook a multi-year planning effort to develop a comprehensive plan to support NFWF-GEBF restoration program activities in Mississippi. Development of the Mississippi Coastal Restoration Plan included extensive engagement with the public, NGO's/subject matter experts and state and federal agencies. MDEQ's community engagement activities included community conversation and resource summits held in each of the three coastal counties. The community conversation meetings had more than 200 participants, representing 125 organizations, across the three coastal county locations. The priority of habitat conservation and restoration, including utilization of beneficial use of sediments, was a top common value voiced across all three coastal counties.

RESTORE Act Mississippi State Expenditure Plan: Since 2016, MDEQ has solicited stakeholder input to support planning and development of the Mississippi State Expenditure Plan (MSEP). Engagement with a wide range of stakeholders, including private citizens, non-governmental organizations, business owners, elected officials, and other community leaders, has informed the priorities for restoration. In 2019 MSEP planning and development, MDEQ received input from stakeholders that projects which support community resiliency be prioritized.

*Leveraging:*

Funds: \$44,000,000.00

Type: Bldg on Others

Status: Committed

Source Type: Other

Description: These funds are obligated for marsh creation through two projects (Utilization of Dredge Material For Marsh Restoration in Coastal Mississippi Phase I+II). MDEQ has worked with state and federal partners to identify priority sites for marsh creation and has invested in planning, engineering and design, and permitting for sites, as well as construction funding for containment.

Funds: \$2,200,000.00

Type: Bldg on Others

Status: Received

Source Type: Other Federal

Description: The Enhancing Opportunities for Beneficial Use (BU) of Dredge Sediments in the Mississippi Sound (Planning) project provides funding for planning, engineering and design, and permitting for BU sites.

Funds: \$13,000,000.00

Type: Bldg on Others

Status: Received

Source Type: Other

Description: 46 acres of marsh would be created and restored in Heron Bay through the Hancock County Marsh Living Shoreline Early Restoration project.

*Environmental Compliance:*

Environmental compliance documentation will be updated. Similar to project specific implementation information, environmental compliance checklists and required environmental compliance information will be provided on individual projects as identified. All specific environmental compliance needs will be identified during project identification and development activities.

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## Budget

### *Project Budget Narrative:*

A total of \$40,000,000 is being requested from FPL 3b to fund activities associated with the Program. The funds being requested are solely intended to be used for the planning, implementation, and monitoring associated with the Program. An estimated 20% will be used for FPL Category 1 activities such as project planning (e.g., project selection and development), program and project administration (e.g., administrative programmatic functions, coordination, and sub-recipient / contractual support for project implementation), engineering and design, permitting, monitoring, adaptive management and data management activities. An estimated 80% will be for FPL Category 2 implementation (i.e., construction) activities associated with the Program. The need for contingency costs will be considered as appropriate when developing individual project-specific budgets.

### *Total FPL 3 Project/Program Budget Request:*

\$ 40,000,000.00

*Estimated Percent Monitoring and Adaptive Management: 10 %*

*Estimated Percent Planning: 8 %*

*Estimated Percent Implementation: 80 %*

*Estimated Percent Project Management: N/A*

*Estimated Percent Data Management: 2 %*

*Estimated Percent Contingency: N/A*

### *Is the Project Scalable?:*

Yes

### *If yes, provide a short description regarding scalability.:*

The extent of implementation of BU is scalable to a point. If construction funding is necessary to complete a containment or a filling project, that specific construction effort may not be scalable based on engineering and design.

## Environmental Compliance<sup>1</sup>

<b>Environmental Requirement</b>	<b>Has the Requirement Been Addressed?</b>	<b>Compliance Notes (e.g., title and date of document, permit number, weblink etc.)</b>
<b>National Environmental Policy Act</b>	Yes	In Category 1, this proposed activity involves only planning actions. These planning actions are covered by the Council's NEPA Categorical Exclusion for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). Additional NEPA compliance will be required for Category 2 efforts.
<b>Endangered Species Act</b>	N/A	Note not provided.
<b>National Historic Preservation Act</b>	N/A	Note not provided.
<b>Magnuson-Stevens Act</b>	N/A	Note not provided.
<b>Fish and Wildlife Conservation Act</b>	N/A	Note not provided.
<b>Coastal Zone Management Act</b>	N/A	Note not provided.
<b>Coastal Barrier Resources Act</b>	N/A	Note not provided.
<b>Farmland Protection Policy Act</b>	N/A	Note not provided.
<b>Clean Water Act (Section 404)</b>	N/A	Note not provided.
<b>River and Harbors Act (Section 10)</b>	N/A	Note not provided.
<b>Marine Protection, Research and Sanctuaries Act</b>	N/A	Note not provided.
<b>Marine Mammal Protection Act</b>	N/A	Note not provided.
<b>National Marine Sanctuaries Act</b>	N/A	Note not provided.
<b>Migratory Bird Treaty Act</b>	N/A	Note not provided.
<b>Bald and Golden Eagle Protection Act</b>	N/A	Note not provided.
<b>Clean Air Act</b>	N/A	Note not provided.
<b>Other Applicable Environmental Compliance Laws or Regulations</b>	N/A	Note not provided.

<sup>1</sup> Environmental Compliance document uploads available by request ([restorecouncil@restorethegulf.gov](mailto:restorecouncil@restorethegulf.gov)).





## RESTORE Council FPL 3 Proposal Document

### **General Information**

*Proposal Sponsor:*

Mississippi Department of Environmental Quality

*Title:*

Coastal Nearshore Habitat Restoration and Development Program in Mississippi

*Project Abstract:*

This program will support the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region by creating, restoring, and enhancing coastal habitat, including marsh, beach, and dunes through the dedicated sourcing of materials. Coastal nearshore habitats provide a host of ecosystem services including serving as natural buffers to protect shorelines from eroding, storm surge protection, fisheries production, water quality enhancement through sediment and nutrient reduction, faunal support, carbon sequestration, and habitat for a multitude of trophic levels within the ecosystem. The creation of new coastal nearshore habitats and the restoration of these habitats in Mississippi's coastal system will continue to support and increase these ecosystem services to coastal systems in Mississippi. To accomplish this, the Program would incorporate planning, engineering and design (E&D), and construction of habitat in the three coastal counties of Mississippi. This program builds off the planning, E&D, and permitting work funded the Initial Funded Priority List as well as National Fish and Wildlife Foundation Gulf Ecosystem Benefit Fund projects. In order to accelerate habitat creation and restoration, MDEQ may utilize multiple methods for sourcing material for habitat construction (e.g. dedicated material sourcing from borrow sites, upland sites, beneficial use of dredge materials, etc.).

*FPL Category:* Cat1: Planning/ Cat2: Implementation

*Activity Type:* Program

*Program:* Coastal Nearshore Habitat Restoration and Development Program in Mississippi

*Co-sponsoring Agency(ies):* N/A

*Is this a construction project?:* Yes

*RESTORE Act Priority Criteria:*

(I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.

(II) Large-scale projects and programs that are projected to substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast ecosystem.

(III) Projects contained in existing Gulf Coast State comprehensive plans for the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

(IV) Projects that restore long-term resiliency of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands most impacted by the Deepwater Horizon oil spill.

*Priority Criteria Justification:*

Marsh creation and restoration using BU sediments and other dredging activities are ways to restore the ecological integrity of any coastal bay and estuary system. Marsh systems arguably provide the greatest contribution of ecosystem services (natural buffers, storm surge protection, improves fisheries production, faunal support, sequesters carbon etc.) to coastal systems. Marsh creation and restoration within the State of Mississippi and across the Gulf substantially enhance natural resources and coastal wetland ecosystems. Coastal and Marine Resources is a foundational program in the Mississippi Gulf Coast Restoration Plan<sup>4</sup>. Several documents and organizations have highlighted the need and economic values in using BU including the Gulf of Mexico Alliance Habitat Conservation & Restoration Team<sup>5,6</sup>, earlier versions of the Gulf Regional Sediment Management Master Plan, the Final Master Plan for the Beneficial Use of Dredge Material for Coastal Mississippi, and Project Management Plan for Selected Beneficial Use Projects Along Coastal Mississippi<sup>7,8</sup>. By restoring existing marsh and creating new marsh in coastal waters, the State and other partners around the Gulf are enhancing the resilience of the system allowing it to continue to provide the ecosystem services listed above.

*Project Duration (in years):* 10

**Goals**

*Primary Comprehensive Plan Goal:*

Restore and Conserve Habitat

*Primary Comprehensive Plan Objective:*

Restore , Enhance, and Protect Habitats

*Secondary Comprehensive Plan Objectives:*

N/A

*Secondary Comprehensive Plan Goals:*

N/A

*PF Restoration Technique(s):*

Create, restore, and enhance coastal wetlands, islands, shorelines and headlands: Protect natural shorelines

Create, restore, and enhance coastal wetlands, islands, shorelines and headlands: Sediment placement

**Location**

*Location:*

Coastal waters of the State of Mississippi including the Mississippi Sound and Barrier Islands

*HUC8 Watershed(s):*

South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Mississippi Coastal)

*State(s):*

Mississippi

*County/Parish(es):*

MS - Hancock

MS - Harrison

MS - Jackson

*Congressional District(s):*

MS - 4

## **Narratives**

### *Introduction and Overview:*

#### General Description of Activity:

The Coastal Nearshore Habitat Restoration and Development Program in Mississippi (Program) would support the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region by creating, restoring, and enhancing coastal habitat, including marsh, beach, and dunes through the dedicated sourcing of materials. To accomplish this, the Program would incorporate planning, engineering and design (E&D), and construction of habitat in the three coastal counties of Mississippi. This program builds off the planning, E&D, and permitting work funded within the Beneficial Use (BU) project under the Initial Funded Priority List (FPL) as well as National Fish and Wildlife Foundation Gulf Ecosystem Benefit Fund (NFWF-GEBF) projects. In order to accelerate habitat creation and restoration, MDEQ may utilize multiple methods for sourcing material for habitat construction (e.g. dedicated material sourcing from borrow sites, upland sites, beneficial use of dredge materials, etc.). In order to receive any materials for habitat creation and restoration, all applicable environmental permitting, testing, and compliance would need to be completed, including sediment testing.

#### Primary Goal and Objective:

The Program addresses the Gulf Coast Ecosystem Restoration Council Comprehensive Plan Goal #1: Restore and Conserve Habitat. The Program would restore and create habitat within Mississippi coastal waters, including priority bays and estuaries, and within the Mississippi Sound. The activity of the Program, restoring and creating coastal marsh habitats, is consistent with RESTORE Council's primary objective of Restore, Enhance, and Protect Habitats.

#### Commitments in 2016 Comprehensive Plan Update:

The following describes how this Program addresses the commitments set forth in the 2016 Comprehensive Plan Update:

- *Regional ecosystem-based approach to restoration:* There have been several documents on strategies to coastal restoration that highlight the beneficial use of dredged sediments as a priority investment to an ecologically and economically sustainable coastal habitat. The Gulf Coast Ecosystem Restoration Task Force (GCERTF, 2011) identified restoring and conserving nearshore habitats, with a focus on marshes as a major action across the Gulf, under one of the four main restoration goals.
- *Leveraging resources and partnerships:* The State of Mississippi has invested in BU of dredge materials for marsh restoration using NFWF-GEBF, RESTORE, and Natural Resource Damage Assessment (NRDA) funding. MDEQ would consider previous planning efforts and coordinate with ongoing BU marsh restoration activities during site identification and scope development for project implementation.
- *Engagement, Inclusion, and Transparency:* The State of Mississippi's prioritization of this Program is based on multiple public and stakeholder engagement activities; including the Annual Mississippi Restoration Summit and the Mississippi Coastal Restoration Plan (NFWF-GEBF). Throughout Mississippi's restoration public engagement and planning efforts, stakeholders have consistently identified the restoration and protection of marsh and critical habitats as a top priority (see Public Engagement, Outreach, and Education section).

- *Science-based decision-making:* Sustainable and effective coastal wetland enhancement is linked with sediment management in coastal ecosystems (Parson and Swafford, 2012; Parson et al., 2012; ERG, 2014).
- *Delivering results and measuring impacts:* The proposed Program would utilize project-level workplans that would adhere to site-specific milestones and monitoring success criteria. These would be documented in observational data management plans.

*General Description of Environmental Benefits:* Coastal marshes play a vital role in the ecological integrity of open shoreline habitats and are vital components of ecosystem health within a broader landscape context of coastal ecosystems (Wigand et al., 2017). They are keystone habitats within the coastal environment as they provide the base for a host of ecosystem services and benefits. These ecosystem services include: serving as natural buffers to protect shorelines from eroding; storm surge protection (Gittman et al., 2014); fisheries production, water quality enhancement through sediment and nutrient reduction, faunal support, carbon sequestration, and providing habitat for a multitude of trophic levels within the ecosystem (Barbier et al., 2011; Mendelsohn et al., 2012). The creation of new marsh and the restoration of existing marsh in Mississippi's coastal system would continue to support and increase these ecosystem services in Mississippi.

*Environmental Stressors being addressed:* Between 1998 and 2004, wetland loss rates in the Gulf of Mexico were 25 times higher than anywhere in the U.S (Stedman and Dahl, 2008). Wetland losses can detrimentally impact coastal ecosystems through increases in the ecosystems' vulnerability to storm surge and flooding, changes in nutrient cycling, declines in net primary and secondary productivity, fluctuations in species composition, habitat loss for fisheries and wildlife, and loss of recreational, aesthetic, and ecosystem services. Mississippi is estimated to have lost 60 percent of its wetlands statewide over the last 200 years (Dahl, 1990). Since 1950, 15 percent (9,000 acres) of the marsh south of Interstate 10 (I-10) has been lost (Schmid, 2001). Shoreline erosion in Mississippi's salt marsh systems is extensive. For example, shoreline erosion rates at Grand Bay have been recorded at more than 24 feet/year or 7 acres/year (Schmid, 2000). This rate of loss continues today and would be exacerbated by expected increases in sea-level rise. Rising sea level can have multiple impacts due to its potential to alter ecosystems (Craft et al., 2009) and threaten coastal communities (Woodrey et al., 2012) by increasing the potential for tidal flooding and enhanced storm surges. Sea level trends recorded at NOAA's Dauphin Island tide station show the mean sea level trend is approximately 3.50 mm/year based on monthly mean sea level data from 1966 to 2016 which is equivalent to a change of approximately 1.15 feet in 100 years (NOAA, 2013). Coastal wetland modification and degradation can reduce wetland function and impair natural hydrological functioning and biological integrity. Primary causes for wetland modification include increases in impervious surfaces in watersheds, agricultural practices, flood control structures (e.g., canals, ditches, levees), and industry. Although regulations and incentives have reduced wetland habitat loss since the 1970s, continued urban growth and other landscape alterations can leave wetlands open to hydrological and biological fluxes (Mitsch and Gosselink, 2000) that negatively impact ecosystem functioning including increased stormwater inflow, increased sedimentation and nutrient loading, and decreased species richness and abundance, including coastal bird species (DeLuca et al., 2008).

In addition to stresses on coastal habitat, species that utilize the coastal habitat mosaic have also endured impacts. Ecosystem ramifications resulting from bird injury following the Deepwater Horizon oil spill are well documented (Barron, 2012; Haney et al., 2014; Trustees, D.N., 2016 [PDARP]). Impaired performance or reduction in numbers had multiple effects on reproduction and trophic dynamics in the ecosystem. The Deepwater Horizon Oil Spill: Final Programmatic Damage

Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS) identified ninety-three bird species that were directly impacted by the oil spill. Mississippi's bird injury was extensive with thousands of birds impacted including several species of shorebirds (colonial and solitary nesters), wading birds, and marsh birds (Trustees, D.N., 2016 [PDARP]).

Total Cost: \$40,000,000. Implementation is scalable.

Timeline: 10 years.

Partners: MDEQ's project identification and development efforts would include coordination with local entities to identify local dredging plans and priorities and coordination with relevant state and federal agencies (e.g., MDMR, USACE). Coordination would occur with MDMR BU program staff throughout the process and with USACE and other federal agencies (e.g., Department of the Interior, Bureau of Ocean and Energy Management), as needed, to discuss options/locations and availability of source materials, environmental compliance and other due diligence issues which may arise in the identification and assessment of project options.

Alignment with FPL3 Planning Framework: This Program aligns with the FPL3 Planning Framework priority approaches and techniques for Mississippi by addressing the approach Create, restore and enhance coastal wetlands, islands, shorelines, and headlands and the technique Sediment placement. Additionally, the proposed Program builds off of previous investments from the NFWF GEBF, RESTORE Comprehensive Plan Component (Initial FPL) and Spill Impact Component (MSEP), and NRDA restoration projects.

#### Proposed Methods :

The proposed Program would include the following primary activities:

#### Program Management and Oversight

Program management and oversight would cover all activities associated with the Program. MDEQ personnel and its contractors would provide administrative programmatic functions and/or support during the life of the grant. MDEQ, with contractual support, would also manage the data associated with this Program in accordance with the procedures outlined in the Observational Data Plan and the Data Management Plan.

#### Permitting and E&D

Engineering, design, and permitting of the identified solutions would utilize and apply standard engineering practices for similar projects, including certified and stamped plans. Engineering and design services would provide the design for containment and habitat dimensions for identified sites. The number of engineering and design plans would depend on the availability of source material and sites selected for project implementation.

The appropriate state/federal agencies would be engaged for permitting requirements for containment structure and source material placement. Project design would take into consideration best management practices. Additional activities may include environmental compliance, testing of sediments, geotechnical investigations and other needs associated with site design.

#### Construction Implementation

Construction implementation would be based on final plans and specifications developed during engineering, design and permitting. Construction implementation may include all potential activities associated with habitat construction and BU capacity development. Construction implementation may include, but is not limited to, containment construction, materials sourcing (e.g. dedicated

material sourcing from borrow sites, upland sites, BU of dredge materials, etc), transport of materials, pumping costs to sites, and marsh/beach/dune construction. Engineering and design and construction services would be procured consistent with applicable procurement standards.

#### Coastal Habitat Site Selection

The State of Mississippi has been investing in multiple coastal habitat restoration projects. Unlike other coastal restoration programs, the landscape for coastal nearshore habitat restoration at large scales is limited by geographic variables, regulatory compliance measures, as well as opportunities to build back coastal habitat in strategic locations. The State has undertaken two planning exercises that have identified several coastal habitat restoration locations through NFWF-GEBF and the Initial FPL BU project. From a large scale perspective, several coastal habitat restoration sites have already been identified and prioritized within the Mississippi coastal landscape including the following: Deer Island (several ongoing coastal habitat restoration projects including Deer Island Marsh Restoration [DIMR] IV, United States Army Corps of Engineers (USACE) Lagoon, and the Mississippi Coastal Improvements Program [MsCIP] proposed expansion), Round Island, Greenwood Island, Cat Island, Pelican Key, Wolf River, Beardslee, and Graveline Bayou. Significant planning has occurred for each of these sites and they are in various phases of development (e.g., E&D, permitting, construction, land acquisition, etc.). The State of Mississippi will continue to develop all of these sites but will also be working with state and federal agencies to determine additional sites that would allow strategic coastal habitat restoration to take place.

#### Monitoring

See monitoring section.

#### *Environmental Benefits:*

As discussed previously, there are a number of drivers and stressors of coastal marsh impacts, including erosion, land conversion, and sea-level rise. All the stressors and drivers result in marsh loss at varying rates. Efforts to mitigate this loss include the creation and restoration of marsh through targeted placement of appropriate dredged sediment and the use of marsh protection and conservation techniques, such as the installation of living shorelines, and acquisition, protection, and management of upland habitats adjacent to coastal marsh habitats that can serve as habitat transition corridors. MDEQ is currently using all of these approaches under various restoration programs. For this proposed Program, MDEQ would re-establish habitats by implementing large-scale, multi-nearshore-habitat coastal restoration projects. The projects would support the following environmental benefits: benefits to a multitude of trophic levels within the ecosystem; provide several ecosystem services including shoreline protection, storm surge buffering (Broom et al., 2019), carbon sequestration (Drake et al., 2015); and enhance water quality by trapping and holding sediment and creating biogeochemical conditions for nutrient assimilation and transformation (Tobias and Neubauer, 2019).

Sustainable restoration and creation of coastal habitats is key when confronting threats from sea-level rise and tropical storms. The creation of multiple habitat types driven by topographic variation (Kim et al., 2010), distance to tidal streams, and other factors ensures habitat viability and resilience into the future. Integrated habitats from low marsh to uplands also provide benefit to multiple species with each vegetation zone comprised of distinctive macrophyte assemblages and the species that use them (Moffet et al., 2010).

New Round Island is a recent example of the environmental benefits that can be received from utilizing BU to create a large-scale, multi-nearshore-habitat site in the Mississippi Sound. MDEQ, in collaboration with the Port of Pascagoula, MDMR, NFWF, and USACE, benefited from a federal dredging opportunity to construct approximately 220 acres of coastal nearshore (marsh and sand



beach) habitat near the existing Round Island in the Mississippi Sound. The configuration of the island provides bird habitat, shoreline protection, and storm surge buffering to the cities of Pascagoula and Gautier; and with its topographical range has the capability to support numerous habitat types from low marsh to vegetated dunes. Since its creation in 2016, thousands of shorebirds and pelicans have used the habitat for nesting, loafing, and foraging. Notable examples include: the largest count of Western Sandpiper recorded in Mississippi (900); the largest count of brown pelicans recorded in Mississippi (2,200); the only colony of Sandwich Terns recorded in Mississippi since the 1960's (nest count of 2,724), and; the largest count on record in Mississippi of Wilson's Plover (27). Additional species that have nested on the site include Snowy Plover, American Oystercatcher, Least Tern, Caspian Tern, Gull-billed Tern, Royal Tern, Laughing Gull, and Black Skimmer. As the project site evolves and marsh vegetation colonizes in the interior sections of the island, it is expected that more bird guilds will utilize the habitat. New Round Island also provides ample opportunity to apply restoration approaches and techniques to refine habitats specific to species or groups of species (e.g., shorebird nesting habitat). Coastal habitats created under this proposed Program could have similar ecological and ecosystem service benefits as New Round Island.

*Metrics:*

Metric Title: PRM011 : Restoration planning/design/permitting - # E&D plans developed : Planning, Research, Monitoring

Target: 2

Narrative: The number of E&D plans for habitat creation projects.

Metric Title: PRM013 : Restoration planning/design/permitting - # environmental compliance documents completed : Planning, Research, Monitoring

Target: 2

Narrative: The number of permits/compliance documents for habitat creation projects.

Metric Title: PRM004 : Monitoring - # monitoring programs implemented : Planning, Research, Monitoring

Target: 2

Narrative: The number of monitoring programs for habitat creation projects moved forward to implementation. The monitoring programs will reflect site specific monitoring needs.

*Risk and Uncertainties:*

The amount, source, and timing for available materials is the largest uncertainty. Many ports and channels have maintenance dredging permits in which a certain amount of material is expected to be dredged to maintain access; however, the implementation and timing of maintenance dredging is contingent on a number of factors (e.g., budget availability). If availability of dredge material through the Program is limited or later than expected, there are alternatives available for sourcing sediments to establish sites. Alternatives to explore include stockpiled material sites and borrow sites for deriving materials. Timing of sediment availability, as well as the cost associated with alternative material options will be identified, vetted, and weighed against site characteristics to determine the best course of action moving forward for creating containment and habitat construction.

Additionally, there may be uncertainty about the suitability and quality of identified source materials which will be considered in planning, design and permitting. Based on the geology of the sediments, compaction and settlement may occur at respective sites. To mitigate this risk, engineers may design the habitat/marsh to a higher elevation to account for compaction and settlement. Environmental suitability of source materials will also be assessed. Sediments identified as a source will undergo

any required environmental compliance sediment testing to ensure that the material is appropriate for use. If a sediment source is determined to be environmentally unsuitable, alternative material sources may be considered.

Sea-level rise and storm surge are two risks and uncertainties to project implementation performance. The threat of storms is a project risk for many coastal restoration projects. In the case of marsh restoration, a containment and/or breakwater structure constructed will buffer storm damage to natural marsh but may be susceptible to damage. Engineering and design of containment will utilize best practices from similar projects and be based on best available science and factors such as wave and wind energies to minimize these risks as much as possible. Given the variability in sea level rise prediction as well as the anticipated immediate ecosystem service benefits of the implementation of coastal marsh restoration, sea-level rise considerations may be evaluated. (Hummel et al., 2018) summarized a national assessment of coastal facilities at risk for sea level rise. Mississippi was classified as low risk, with low exposure across a sea level rise gradient from 1ft to 6ft.

#### *Monitoring and Adaptive Management:*

Monitoring activities would occur at the program level for each individual workplan implemented. The core components of determining whether coastal habitat restoration and creation was successful include dimension (e.g., marsh elevation and spatial extent) and vegetation density (e.g., abundance and species composition). Monitoring of coastal habitat restoration sites is anticipated to follow established monitoring guidance, including potentially utilizing established reference sites as baseline/reference conditions for this Program in the Mississippi coastal landscape. MDEQ may consider applicable monitoring information from the NRDA Cross Trustee Implementation Group (TIG) Monitoring and Adaptive Management (MAM) and the Council Monitoring and Assessment Program. Each project's observational data plan and data management plan would document the timing of monitoring activities, frequency of data collection, and the duration of the monitoring component.

#### *Data Management:*

MDEQ would store and manage an ISO-compliant relational database and geospatial database on a server that utilizes the Amazon Web Services cloud-based server environment. In addition to the network and server administration provided by Amazon Web Services, MDEQ manages the server, operating system, software and services. GIS information is backed up in three locations. The data is included in server snapshots performed by and stored at Amazon Web Services. Duplicate datasets are also located on a secure, cloud-based system. This system includes separate cloud backup and storage on two separate network attached storage arrays located in Gulfport and Jackson, Mississippi. Finally, copies of the data are stored on an internal server. All electronic data and metadata would be delivered to the RESTORE Council on a yearly basis for review and approval.

#### *Collaboration:*

MDEQ's project identification and development process would include collaboration with the MDMR BU program staff and with the USACE to better understand dredging schedules, source material options, and availability. Future efforts would also include coordination with local units of government to identify local dredging plans and priorities and coordination with relevant state and federal agencies (e.g., MDMR, USACE). MDEQ would engage with cities, counties and other local entities to understand dredging needs, schedules, quantities, and BU site capacity needs, as well engage other federal agencies (e.g., Department of the Interior, Bureau of Ocean and Energy Management) as needed to discuss source material options (e.g., dedicated material sourcing from borrow sites, upland sites, beneficial use of dredge materials, etc.) and availability, environmental compliance and other due diligence issues which may arise in the identification and assessment of project options.

*Public Engagement, Outreach, and Education:*

The State of Mississippi's prioritization of the Program is based on multiple public and stakeholder engagement activities. Throughout Mississippi's restoration public engagement and planning efforts, stakeholders have consistently identified the restoration and protection of marsh and critical habitats as a top priority. The following are examples of public engagement, outreach and education activities which were considered in the selection of this proposal:

Annual Mississippi Restoration Summit: MDEQ has hosted the Mississippi Restoration Summit annually for four consecutive years. The public is invited to learn about restoration projects and programs and to provide input on current and future priorities for restoration. The priority of marsh restoration and protection through the beneficial use of dredge material has been highlighted each year. Based on the input received at the annual summits, investing in coastal habitat restoration and protection continues to be a top priority of stakeholders.

Mississippi Coastal Restoration Plan (NFWF-GEBF): In 2014, MDEQ undertook a multi-year planning effort to develop a comprehensive plan to support NFWF-GEBF restoration program activities in Mississippi. Development of the Mississippi Coastal Restoration Plan included extensive engagement with the public, NGO's/subject matter experts and state and federal agencies. MDEQ's community engagement activities included community conversation and resource summits held in each of the three coastal counties. The community conversation meetings had more than 200 participants, representing 125 organizations, across the three coastal county locations. The priority of habitat conservation and restoration, including utilization of beneficial use of sediments, was a top common value voiced across all three coastal counties.

RESTORE Act Mississippi State Expenditure Plan: Since 2016, MDEQ has solicited stakeholder input to support planning and development of the Mississippi State Expenditure Plan (MSEP). Engagement with a wide range of stakeholders, including private citizens, non-governmental organizations, business owners, elected officials, and other community leaders, has informed the priorities for restoration. In 2019 MSEP planning and development, MDEQ received input from stakeholders that projects which support community resiliency be prioritized.

*Leveraging:*

Funds: \$44,000,000.00

Type: Bldg on Others

Status: Committed

Source Type: Other

Description: These funds are obligated for marsh creation through two projects (Utilization of Dredge Material For Marsh Restoration in Coastal Mississippi Phase I+II). MDEQ has worked with state and federal partners to identify priority sites for marsh creation and has invested in planning, engineering and design, and permitting for sites, as well as construction funding for containment.

Funds: \$2,200,000.00

Type: Bldg on Others

Status: Received

Source Type: Other Federal

Description: The Enhancing Opportunities for Beneficial Use (BU) of Dredge Sediments in the Mississippi Sound (Planning) project provides funding for planning, engineering and design, and permitting for BU sites.

Funds: \$13,000,000.00

Type: Bldg on Others

Status: Received

Source Type: Other

Description: 46 acres of marsh would be created and restored in Heron Bay through the Hancock County Marsh Living Shoreline Early Restoration project.

*Environmental Compliance:*

Environmental compliance documentation will be updated. Similar to project specific implementation information, environmental compliance checklists and required environmental compliance information will be provided on individual projects as identified. All specific environmental compliance needs will be identified during project identification and development activities.

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## **Budget**

### *Project Budget Narrative:*

A total of \$40,000,000 is being requested from FPL 3b to fund planning, implementation and monitoring associated with the Program. An estimated 5% will be used for program planning, which includes project identification. An estimated 83% will be for implementation within the Program which may include, but is not limited to, engineering and design, any required permitting, and activities associated with habitat construction and BU capacity development as described in the Methods section. Included within this implementation component is program and project administration, including administrative programmatic functions, coordination, and sub-recipient / contractual support for project implementation. An estimated 10% will be used for monitoring and adaptive management to monitor progress towards coastal habitat restoration. An estimated 2% will be used for data management activities.

### *Total FPL 3 Project/Program Budget Request:*

\$ 40,000,000.00

*Estimated Percent Monitoring and Adaptive Management: 10 %*

*Estimated Percent Planning: 5 %*

*Estimated Percent Implementation: 83 %*

*Estimated Percent Project Management: N/A*

*Estimated Percent Data Management: 2 %*

*Estimated Percent Contingency: N/A*

### *Is the Project Scalable?:*

Yes

### *If yes, provide a short description regarding scalability.:*

The extent of implementation of BU is scalable to a point. If construction funding is necessary to complete a containment or a filling project, that specific construction effort may not be scalable based on engineering and design.



## **Environmental Compliance**<sup>1</sup>

<b>Environmental Requirement</b>	<b>Has the Requirement Been Addressed?</b>	<b>Compliance Notes (e.g., title and date of document, permit number, weblink etc.)</b>
<b>National Environmental Policy Act</b>	N/A	Note not provided.
<b>Endangered Species Act</b>	N/A	Note not provided.
<b>National Historic Preservation Act</b>	N/A	Note not provided.
<b>Magnuson-Stevens Act</b>	N/A	Note not provided.
<b>Fish and Wildlife Conservation Act</b>	N/A	Note not provided.
<b>Coastal Zone Management Act</b>	N/A	Note not provided.
<b>Coastal Barrier Resources Act</b>	N/A	Note not provided.
<b>Farmland Protection Policy Act</b>	N/A	Note not provided.
<b>Clean Water Act (Section 404)</b>	N/A	Note not provided.
<b>River and Harbors Act (Section 10)</b>	N/A	Note not provided.
<b>Marine Protection, Research and Sanctuaries Act</b>	N/A	Note not provided.
<b>Marine Mammal Protection Act</b>	N/A	Note not provided.
<b>National Marine Sanctuaries Act</b>	N/A	Note not provided.
<b>Migratory Bird Treaty Act</b>	N/A	Note not provided.
<b>Bald and Golden Eagle Protection Act</b>	N/A	Note not provided.
<b>Clean Air Act</b>	N/A	Note not provided.
<b>Other Applicable Environmental Compliance Laws or Regulations</b>	N/A	Note not provided.

<sup>1</sup> Environmental Compliance document uploads available by request ([restorecouncil@restorethegulf.gov](mailto:restorecouncil@restorethegulf.gov)).

## Maps, Charts, Figures

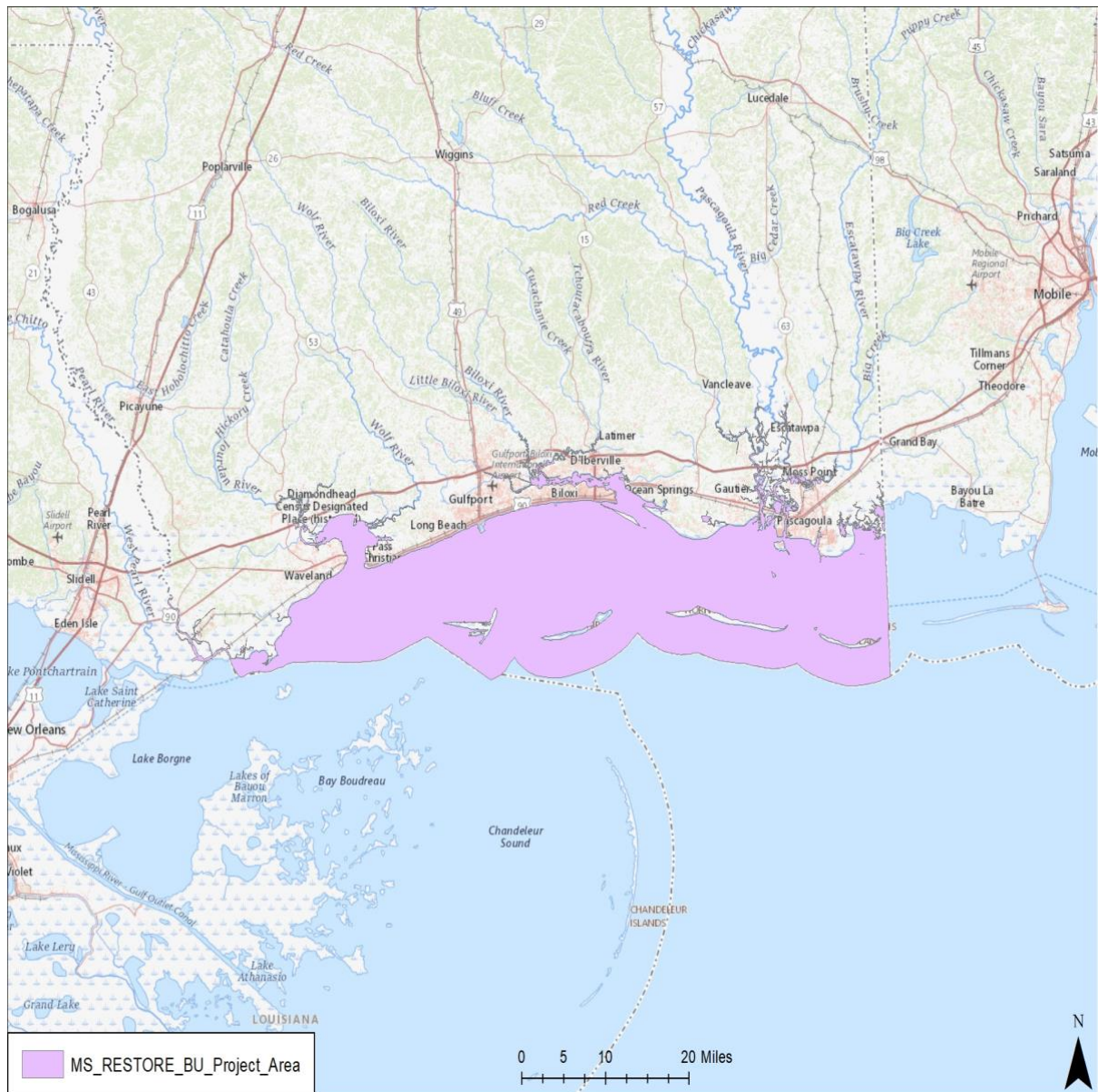


Figure 1: Map of Project area

FPL 3b Internal Staff Review of Proposal Submitted 4/24/2020

Project/Program				Coastal Nearshore Habitat Restoration and Development Program in Mississippi		
Primary Reviewer		John Ettinger		Sponsor		Mississippi
EC Reviewer		John Ettinger		Co-Sponsor		
Notes						
1. Is/Are the selected Priority Criteria supported by information in the proposal?						Yes
Notes						
2. Does the proposal meet the RESTORE Act geographic eligibility requirement?						Yes
Notes						
3. Are the Comprehensive Plan primary goal and primary objective supported by information in the proposal?						Yes
Notes						
4. Planning Framework: If the proposal is designed to align with the Planning Framework, does the proposal support the selected priority approaches, priority techniques, and/or geographic area?						Yes
Notes						
5. Does the proposal align with the applicable RESTORE Council definition of project or program?						Yes
Notes						
6. Does the budget narrative adequately describe the costs associated with the proposed activity?						No
Notes		<p>Council staff recommend that the sponsor edit the budget narrative to specifically identify the amount of funding being requested in FPL Category 1 and FPL Category 2. The proposed budget indicates that approximately 5% of the overall program cost would be dedicated to planning, which would include site identification, and that engineering, design, and permitting are being budgeted as implementation. Program and project administration are also included in implementation. The proposal places the implementation component of this program in FPL Category 2. Council staff recommend that the sponsor consider revising the proposed budget narrative to include site-specific planning activities such as engineering, design, and permitting as components of the overall planning portion of the budget, making it clear that these planning activities are being proposed for funding in FPL Category 1. Program management, monitoring and adaptive management and data</p>				

	<p>management activities should also be considered for inclusion in FPL Category 1. Program management in particular, currently in implementation with no specific amount budgeted, is critical throughout the duration of a program and is recommended for inclusion in Category 1. Finally, Council staff recommend including a statement in the budget narrative that the need for contingency costs will be considered as appropriate when developing individual project-specific budgets.</p>	
7. Are there any recommended revisions to the selected leveraged funding categories?		More information needed
Notes	<p>The sponsor has selected the "Builds on Other Work" leveraging category to describe three other restoration investments related to this proposed program. It would be helpful if the proposal could name the funding sources for these three leveraged investments in this section of the proposal (e.g., NFWF, RESTORE Act Bucket 2).</p>	
8. Have three external BAS reviews been completed?	More information needed	
Notes	<p>Please see the external BAS review comments, and external reviews summary attached with these review comments.</p>	
9. Have appropriate metrics been proposed to support all primary and secondary goals?	No	
Notes	<p>1) Council staff recommend removing metric "PRM004 - # monitoring programs implemented" from this proposal. Because project benefits should be monitored for all RESTORE-funded projects, RESTORE Council metric "PRM004 - # monitoring programs implemented," should not be selected unless it will capture activities apart from project-level monitoring of anticipated project benefits. 2) The proposed metrics do not provide sufficient support for the primary goal of this program, Restore and Conserve Habitat, and do not fully reflect the monitoring activities described in the Monitoring and Adaptive Management section. To support the habitat benefits of sediment placement, Council staff recommend revising the proposal to include metric "HR013 - Wetland restoration - Acres restored". To support the habitat benefits of protecting natural shorelines, Council staff recommend revising the proposal to also include "HR014 - Acres of coastal habitat prevented from eroding." Though projects are yet to be specified, metrics appropriate for the anticipated techniques should still be selected at the proposal stage. Each metric need not apply to each potential project under a proposed program. Should the proposed program be selected for funding, metrics may be added, removed, or replaced, and metric targets may be adjusted, as appropriate at the project workplan application stage.</p>	
10. Environmental compliance: If FPL Category 1 has been selected for the implementation component of the project or program, does the proposal include	N/A	

environmental compliance documentation that fully supports the selection of Category 1?		
Notes	Council staff recommends editing the environmental compliance checklist to indicate "Yes" for NEPA, then writing the following in the corresponding notes section: "In Category 1, this proposed activity involves only planning actions. These planning actions are covered by the Council's NEPA Categorical Exclusion for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). Additional NEPA compliance will be required for Category 2 efforts."	
11. Geospatial Compliance: Have the appropriate geospatial files and associated metadata been submitted along with a map of the proposed project/program area?		More information needed
Notes	The sponsor selected Pascagoula watershed only. The GIS project boundary submitted overlaps Lower Pearl, Mississippi Coastal, and Escatawpa also. Council staff recommends adding Lower Pearl, Mississippi Coastal, and Escatawpa watersheds.	

**FPL 3b BAS Review Summary – Coastal Nearshore Habitat Restoration and Development Program in Mississippi**

**May 2020**

The Best Available Science reviews for the *Coastal Nearshore Habitat Restoration and Development Program in Mississippi* proposal are generally positive. The program proposes valid and appropriate coastal wetland conservation strategies (Reviewer 3), especially given the criticality of sediment for restoration project construction (Reviewer 1). The program will make use of the Master Plan for Beneficial Use of Dredged Material for Coastal Mississippi, which is based on peer-reviewed and publicly available data (Reviewer 2). The information provided to support the proposal objectives is pertinent to the Gulf Coast region (all reviewers). However, Reviewer 3 feels that the proposal objectives should be more clearly defined and more information is needed to support both planning and implementation of the proposed projects.

In assessing the proposal's use of science that maximizes the quality, objectivity, and integrity of information (Reviewer 1 and 2), Reviewer 3 suggests incorporating strong links to existing bodies of knowledge and gaps that may exist within them, noting that while beneficial use of dredge material is a viable conservation strategy for coastal wetland restoration, the proposal could be supported by additional peer-reviewed and publicly available literature. Reviewer 1 questions the level of detail provided in the proposal's budgetary justification, however, detailed budgeting information is not required at the FPL proposal stage.

Reviewers 1 and 2 agree that the program has clearly defined goals and objectives and provided a clear description of the methods proposed and appropriate justification for method selection. Reviewer 3 recommends further specification of goals and objectives and additional detail about coastal habitat restoration techniques/strategies (beneficial use of dredge or other activities) and how these activities will be developed. While Reviewers 1 and 2 agree that the measures of success (metrics) outlined in the proposal aligned with the primary comprehensive plan goals/objectives, Reviewer 3 points out that a metric for Acres of viable/ functional coastal wetland might align better with the Comprehensive Plan objectives.

All reviewers highlight the proposal's discussion of likely environmental benefits, noting that benefits are discussed in the context of the underlying environmental stressors including erosion, land conversion, and sea level rise (Reviewer 2). The proposal points out the resilience achieved by generating multiple habitat types driven by topographic variation (Reviewer 2). While this discussion is supported by best available science in terms of wetland loss rates and shoreline erosion, additional references are needed to support discussion around the primary causes of wetland modification (Reviewer 3).

Reviewers 1 and 2 agree that the literature sources used to support the proposal were accurately and completely cited. However, Reviewer 3 notes that some literature is not cited completely, and also highlights specific passages that could benefit from citing additional references (see Reviewer 3's response to Question 3 for a detailed list of suggestions).

The proposal makes use of the best available data, and will include an observational data plan and a data management plan (Reviewer 2). Reviewer 3 notes that while the proposed

monitoring strategy is presented in a general sense, a more detailed strategy would be helpful to better understand future measures of success. However, it should be noted that detailed monitoring strategies are not required at the proposal stage. While the Monitoring and Adaptive Management section includes guidelines for successful monitoring, and notably, the use of reference sites for establishing baseline/reference conditions, the proposal does not explicitly state how performance criteria will inform Adaptive Management practices or how these practices will be implemented or will lead to improved outcomes (Reviewer 2).

Generally, reviewers agree that the proposal has evaluated the risks and uncertainties in achieving its objectives over time (all reviewers), and in doing so has cited a number of successful beneficial use projects (Reviewer 2). The inclusion of additional peer-reviewed or publicly available references would better support the proposal with respect to risks and uncertainties addressed, in particular, the discussion of sea-level rise and storm-surge could be further supported by more modeling literature (e.g., SLAMM models) (Reviewer 3).

The proposal does discuss the project's vulnerability to potential long-term environmental risks and generally considers applicable short-term implementation risks and uncertainties (all reviewers), including availability of suitable sediment source materials (Reviewer 2 and 3). While no specific mitigation plan is in place, this information should be developed during planning (Reviewer 3). While Reviewer 2 highlights references to recent information related to beneficial use of dredge materials for habitat creation/restoration at New Round Island and the use of the Master Plan for the Beneficial Use of Dredged Material for Coastal Mississippi, Reviewer 3 points out that only one literature citation is used in the discussion of risks/and uncertainties and suggests incorporating more recent science in this section.

All reviewers agree that the sponsor has demonstrated experience in implementing a program similar to the one being proposed. Reviewer 3 suggests this discussion would benefit from inclusion of maps depicting previous projects (although not required as part of the FPL 3 proposals). In the program's evaluation of past successes/failures, the proposal does refer to the successful use of beneficial use materials at New Round Island (Reviewer 2), however more information about potential failures of similar efforts should be included (Reviewer 2 and 3). To add to this discussion, Reviewer 2 notes the importance of employing hydrodynamic and sediment transport principles in the design of Beneficial Use projects.

In summarizing comments, Reviewer 1 notes that the proposal should consider the full range of sediment sources in the design of habitats, but that "this is [a] worthwhile proposal given the criticality of sediment for restoration project construction. The collaboration outlined will be needed" To that end, Reviewer 2 highlights the importance of including project partners with a wide range of expertise. Reviewer 3 adds that while the proposal may need some revision in the form of more supportive information, "There is no question that the coastal wetland conservation strategies proposed by the applicant are valid and appropriate."

## **FPL 3b BAS Review Summary – Coastal Nearshore Habitat Restoration and Development Program in Mississippi**

**May 2020**

The Best Available Science reviews for the *Coastal Nearshore Habitat Restoration and Development Program in Mississippi* proposal are generally positive. The program proposes valid and appropriate coastal wetland conservation strategies (Reviewer 3), especially given the criticality of sediment for restoration project construction (Reviewer 1). The program will make use of the Master Plan for Beneficial Use of Dredged Material for Coastal Mississippi, which is based on peer-reviewed and publicly available data (Reviewer 2). The information provided to support the proposal objectives is pertinent to the Gulf Coast region (all reviewers). However, Reviewer 3 feels that the proposal objectives should be more clearly defined and more information is needed to support both planning and implementation of the proposed projects.

**MDEQ Response: Comment Acknowledged. The State has undertaken significant planning work for coastal habitat restoration, including engaging coastal stakeholders, sister state agencies, and federal agencies to support evaluation of suitable sites to restore/create coastal habitat using multiple techniques, include BU. The proposals objective follows the RESTORE Councils goals and objectives as defined by the Comprehensive Plan and Planning Framework.**

In assessing the proposal's use of science that maximizes the quality, objectivity, and integrity of information (Reviewer 1 and 2), Reviewer 3 suggests incorporating strong links to existing bodies of knowledge and gaps that may exist within them, noting that while beneficial use of dredge material is a viable conservation strategy for coastal wetland restoration, the proposal could be supported by additional peer-reviewed and publicly available literature. Reviewer 1 questions the level of detail provided in the proposal's budgetary justification, however, detailed budgeting information is not required at the FPL proposal stage.

**MDEQ Response: Comment Acknowledged. No additional budget justification is required at the proposal stage. Additional citation and information has been added for BU material use.**

Reviewers 1 and 2 agree that the program has clearly defined goals and objectives and provided a clear description of the methods proposed and appropriate justification for method selection. Reviewer 3 recommends further specification of goals and objectives and additional detail about coastal habitat restoration techniques/strategies (beneficial use of dredge or other activities) and how these activities will be developed. While Reviewers 1 and 2 agree that the measures of success (metrics) outlined in the proposal aligned with the primary comprehensive plan goals/objectives, Reviewer 3 points out that a metric for Acres of viable/ functional coastal wetland might align better with the Comprehensive Plan objectives.

**MDEQ Response: The proposals objective follows the RESTORE Councils goals and objectives as defined by the Comprehensive Plan and Planning Framework. Metric HR013 – Wetland Restoration - Acres restored added.**

All reviewers highlight the proposal's discussion of likely environmental benefits, noting that benefits are discussed in the context of the underlying environmental stressors including erosion, land conversion, and sea level rise (Reviewer 2). The proposal points out the resilience achieved by generating multiple habitat types driven by topographic variation (Reviewer 2). While this discussion is supported by best available science in terms of wetland loss rates and shoreline erosion, additional references are needed to support discussion around the primary causes of wetland modification (Reviewer 3).



**MDEQ Response:** Comment Acknowledged. Additional references have been added.

Reviewers 1 and 2 agree that the literature sources used to support the proposal were accurately and completely cited. However, Reviewer 3 notes that some literature is not cited completely, and also highlights specific passages that could benefit from citing additional references (see Reviewer 3's response to Question 3 for a detailed list of suggestions).

**MDEQ Response:** Comment Acknowledged. Additional literature has been added.

The proposal makes use of the best available data, and will include an observational data plan and a data management plan (Reviewer 2). Reviewer 3 notes that while the proposed monitoring strategy is presented in a general sense, a more detailed strategy would be helpful to better understand future measures of success. However, it should be noted that detailed monitoring strategies are not required at the proposal stage. While the Monitoring and Adaptive Management section includes guidelines for successful monitoring, and notably, the use of reference sites for establishing baseline/reference conditions, the proposal does not explicitly state how performance criteria will inform Adaptive Management practices or how these practices will be implemented or will lead to improved outcomes (Reviewer 2).

**MDEQ Response:** Comment Acknowledged. Detailed monitoring strategy will be developed in the grant application phase.

Generally, reviewers agree that the proposal has evaluated the risks and uncertainties in achieving its objectives over time (all reviewers), and in doing so has cited a number of successful beneficial use projects (Reviewer 2). The inclusion of additional peer-reviewed or publicly available references would better support the proposal with respect to risks and uncertainties addressed, in particular, the discussion of sea-level rise and storm-surge could be further supported by more modeling literature (e.g., SLAMM models) (Reviewer 3).

**MDEQ Response:** Comment Acknowledged. References and information provided is sufficient to document that MDEQ has and will incorporate sea level rise and storm surge into implementation of coastal nearshore habitat restoration.

The proposal does discuss the project's vulnerability to potential long-term environmental risks and generally considers applicable short-term implementation risks and uncertainties (all reviewers), including availability of suitable sediment source materials (Reviewer 2 and 3). While no specific mitigation plan is in place, this information should be developed during planning (Reviewer 3). While Reviewer 2 highlights references to recent information related to beneficial use of dredge materials for habitat creation/restoration at New Round Island and the use of the Master Plan for the Beneficial Use of Dredged Material for Coastal Mississippi, Reviewer 3 points out that only one literature citation is used in the discussion of risks/and uncertainties and suggests incorporating more recent science in this section.

**MDEQ Response:** Comment Acknowledged. Specific mitigation is going to be site specific and will be built into the E&D component of each site. Even at a high level, those mitigation strategies are diverse. The reference and information provided in the risks and uncertainties section is sufficient to document that MDEQ has and will utilize best available science in restoration.

All reviewers agree that the sponsor has demonstrated experience in implementing a program similar to the one being proposed. Reviewer 3 suggests this discussion would benefit from inclusion of maps depicting previous projects (although not required as part of the FPL 3 proposals). In the program's evaluation of past successes/failures, the proposal does refer to the successful use of beneficial use materials at New Round Island (Reviewer 2), however more information about potential failures of similar efforts should be included (Reviewer 2 and 3). To add to this discussion, Reviewer 2 notes the importance of employing hydrodynamic and sediment transport principles in the design of Beneficial Use projects.

**MDEQ Response: Comment Acknowledged.** MDEQ utilizes all available information in the designing of the coastal habitat restoration projects, including those that utilize beneficial use sediments. Potential failures of similar efforts has been addressed in risks and uncertainties section in the proposal. Engineers of record, as well as MDEQ scientific staff will evaluate hydrodynamic and sediment transport processes to understand changes to the marsh and containment over time to determine useful life, maintenance, and implement appropriate adaptive management measures as needed.

In summarizing comments, Reviewer 1 notes that the proposal should consider the full range of sediment sources in the design of habitats, but that "this is [a] worthwhile proposal given the criticality of sediment for restoration project construction. The collaboration outlined will be needed" To that end, Reviewer 2 highlights the importance of including project partners with a wide range of expertise. Reviewer 3 adds that while the proposal may need some revision in the form of more supportive information, "There is no question that the coastal wetland conservation strategies proposed by the applicant are valid and appropriate."

**MDEQ Response: Comment Acknowledged.**

## **COUNCIL COMMENTS**

### **Budget Narrative:**

Council staff recommend that the sponsor edit the budget narrative to specifically identify the amount of funding being requested in FPL Category 1 and FPL Category 2. The proposed budget indicates that approximately 5% of the overall program cost would be dedicated to planning, which would include site identification, and that engineering, design, and permitting are being budgeted as implementation. Program and project administration are also included in implementation. The proposal places the implementation component of this program in FPL Category 2. Council staff recommend that the sponsor consider revising the proposed budget narrative to include site-specific planning activities such as engineering, design, and permitting as components of the overall planning portion of the budget, making it clear that these planning activities are being proposed for funding in FPL Category 1. Program management, monitoring and adaptive management and data management activities should also be considered for inclusion in FPL Category 1. Program management in particular, currently in implementation with no specific amount budgeted, is critical throughout the duration of a program and is recommended for inclusion in Category 1. Finally, Council staff recommend including a statement in the budget narrative that the need for contingency costs will be considered as appropriate when developing individual project-specific budgets.

**MDEQ Response: Revised to reflect adjustments to Category 1 and Category 2 funding.**

### **Leveraged Funding:**

The sponsor has selected the "Builds on Other Work" leveraging category to describe three other

restoration investments related to this proposed program. It would be helpful if the proposal could name the funding sources for these three leveraged investments in this section of the proposal (e.g., NFWF, RESTORE Act Bucket 2).

**MDEQ Response:** All information that Council is requesting is already in the proposal

**Metrics:**

1) Council staff recommend removing metric "PRM004 - # monitoring programs implemented" from this proposal. Because project benefits should be monitored for all RESTORE-funded projects, RESTORE Council metric "PRM004 - # monitoring programs implemented," should not be selected unless it will capture activities apart from project-level monitoring of anticipated project benefits. 2) The proposed metrics do not provide sufficient support for the primary goal of this program, Restore and Conserve Habitat, and do not fully reflect the monitoring activities described in the Monitoring and Adaptive Management section. To support the habitat benefits of sediment placement, Council staff recommend revising the proposal to include metric "HR013 - Wetland restoration - Acres restored". To support the habitat benefits of protecting natural shorelines, Council staff recommend revising the proposal to also include "HR014 - Acres of coastal habitat prevented from eroding." Though projects are yet to be specified, metrics appropriate for the anticipated techniques should still be selected at the proposal stage. Each metric need not apply to each potential project under a proposed program. Should the proposed program be selected for funding, metrics may be added, removed, or replaced, and metric targets may be adjusted, as appropriate at the project workplan application stage.

**MDEQ Response:** Metric HR013 has been added. PRM004 has been deleted.

**Environmental Compliance:**

Council staff recommends editing the environmental compliance checklist to indicate "Yes" for NEPA, then writing the following in the corresponding notes section: "In Category 1, this proposed activity involves only planning actions. These planning actions are covered by the Council's NEPA Categorical Exclusion for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). Additional NEPA compliance will be required for Category 2 efforts."

**MDEQ Response:** Edit made and language added in the notes section.

**Geospatial Compliance:**

The sponsor selected Pascagoula watershed only. The GIS project boundary submitted overlaps Lower Pearl, Mississippi Coastal, and Escatawpa also. Council staff recommends adding Lower Pearl, Mississippi Coastal, and Escatawpa watersheds.

**MDEQ Response:** Additional watersheds will be selected in Piper.

**Gulf Coast Ecosystem Restoration Council**  
**FPL 3b Internal Best Available Science Review Panel Summary**  
**July 2020**

## **Introduction**

On Tuesday, June 30, and Wednesday July 1, 2020 the RESTORE Council convened the Funded Priorities List (FPL) 3b Internal Best Available Science (BAS) Review Panel. The purpose of this internal panel was to use Council member-agency expertise to address external BAS review comments provided for FPL 3b submitted project/program proposals, and potentially identify project/program synergies not identified prior to proposal submission. The ultimate goal of the panel was to provide Council members with substantive best available science content to inform their decision-making.

The internal panel was convened via webinar with representatives from each of the Council's eleven member agencies present. Each BAS Panel member was provided the following:

- 1) Full FPL 3b proposals
- 2) 3 external BAS reviews for each proposal
- 3) Summary of external BAS reviews for each proposal
- 4) Proposal Sponsor's response to the BAS reviews summary
- 5) Any proposed revisions to the proposal

Proposal sponsors provided a brief synopsis of their proposal to the panel, a summary of comments made in external reviews, and discussed their proposed response to the external reviews. Council staff then solicited feedback from the panel on the proposal sponsor's presentation of comments and responses to those comments, and any additional BAS concerns. Council staff also solicited feedback on any existing or future synergies with other Gulf restoration activities. The proceedings of the meeting for this proposal are summarized below.

## **Mississippi**

### **Coastal Nearshore Habitat Restoration and Development Program in Mississippi**

#### **Feedback from the panel on the proposal sponsor's presentation of comments and responses to those comments, and any additional BAS concerns:**

*Citations:* Include additional peer-reviewed and publicly available literature to incorporate links to existing bodies of knowledge and gaps that may exist within them.

- Panelists point out that the NOAA RESTORE science program put together a living shoreline suitability tool that could be a helpful resource for this and other proposed projects/programs.

- Mississippi response: Site selection for Coastal Nearshore Habitat Restoration will be driven by a number of factors including existing planning efforts, existing restoration sites, and other logistical and regulatory constraints. Mississippi could consider referencing this tool as part of the development of restoration activities for a selected site.
- The BAS panel agrees that Mississippi has appropriately addressed this comment.

*Methodological details:* Include a detailed map.

- The BAS panel agrees that Mississippi has appropriately addressed this comment.

*Monitoring and adaptive management:* Include a MAM plan.

- The BAS panel agrees that Mississippi has appropriately addressed this comment.

*Goals and objectives:* Include more details on goals and objectives.

- The BAS panel agrees that Mississippi has appropriately addressed this comment

*Other:* Panelists ask whether additional metrics such as acres restored and acres of erosion prevented would be considered.

- Mississippi response: Acres restored has been included in the revised proposal. Due to uncertainty and difficulty separating project effects from background process, acres of erosion prevented was not included. Conversations around potential metrics and measures will continue with Council staff through the development of FPL 3b as well as during development of the resulting program applications.

**Panel comments on existing or future synergies with proposed activity:**

One panelist highlighted that the Mississippi Master Plan for Beneficial Use was cited in the proposal and something that could be explored further, and synergistically built upon. Mississippi reviewed the proposal to see where the Master Plan is discussed. The master plan as well as several other planning documents are referenced throughout the proposal (abstract, methods). The master plan was improved upon through planning under the NFWF-GEBF as well as FPL BU project and in coordination with partner agencies will leverage coastal restoration sites.



# SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

<b>Proposal Title:</b> Coastal Nearshore Habitat Restoration and Development Program in Mississippi
<b>Location (If Applicable):</b> Gulf-wide
<b>Council Member Bureau or Agency:</b> Mississippi Department of Environmental Quality
<b>Type of Funding Requested:</b> Planning / Implementation

<b>Reviewed by:</b> Reviewer 1
<b>Date of Review:</b> May 7, 2020

## Best Available Science:

*These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:*

<b>Question 1.</b>	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Yes
<b>Comments:</b> <a href="#">Click here to enter text.</a>	

<b>Question 2.</b>	
If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question 3.</b>	
Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question 4.</b>	
Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:

<b>Question A</b>	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question B</b>	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question C</b>	
Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	



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## Science Context Evaluation:

<b>Question A</b>	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question B</b>	
Does the project/program have clearly defined goals objectives?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question C</b>	
Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question D</b>	
Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question E</b>	
Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question F</b>	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question G</b>	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question H</b>	
Does the project/program consider recent and/or relevant information in discussing the elements above?	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question I</b>	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	

<b>Question J</b>	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Yes
<b>Comments:</b>	
<a href="#">Click here to enter text.</a>	



<b>Please summarize any additional information needed below:</b>
<p>This is worthwhile proposal given the criticality of sediment for restoration project construction. The collaboration outlined will be needed. However, this reviewer notes two concerns: (1) The State should consider the full range of sediment sources in the design of coastal habitats... it would be a shame if all funds from the RESTORE Act went to manage on-going USACE dredging projects as there are plenty of other sediment options, and (2) there is not much justification (none?) for the requested budget.</p>



# SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

<b>Proposal Title:</b> Coastal Nearshore Habitat Restoration and Development Program in Mississippi
<b>Location (If Applicable):</b> Gulf-wide
<b>Council Member Bureau or Agency:</b> Mississippi Department of Environmental Quality
<b>Type of Funding Requested:</b> Planning / Implementation

<b>Reviewed by:</b> Reviewer 2
<b>Date of Review:</b> May 9, 2020

## Best Available Science:

*These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:*

<b>Question 1.</b>	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Yes
<b>Comments:</b>	
There is publicly available information supporting the objective to restore and protect coastal nearshore habitats and ecosystems. These natural resources do in fact provide significant ecosystem services including erosion and storm surge protection, fisheries production, water quality enhancement etc.	

<b>Question 2.</b>	
If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?	Yes
<b>Comments:</b>	
The proposal's methods are appropriate for the Mississippi Gulf Coast. The proposal cites several documents (e.g., Master Plans) that call for the activities included in the proposal. In addition, my research on the Beneficial Use Marshes in Galveston Bay, Texas found that this type of marsh creation/restoration project can be quite successful. The Mississippi and Texas Gulf Coasts are quite similar so it is reasonable to expect Beneficial Use Marshes to be effective on the Mississippi Gulf Coast.	

<b>Question 3.</b>	
Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?	Yes
<b>Comments:</b>	
Yes, the literature sources used to support the proposal are accurately cited. The literature sources are readily found in a google search. The literature sources are fairly represented. In addition, the literature sources used to support the proposal are high quality sources.	

<b>Question 4.</b>	
Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	Yes
<b>Comments:</b>	
The proposal does address uncertainties and risks. The largest uncertainty is uncertainty about the amount, source, and timing of available materials. A second uncertainty is uncertainty about the suitability and quality of the source materials. A risk is a major storm during project implementation that causes significant damage.	

Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:

<b>Question A</b>	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Yes
<b>Comments:</b>	
The applicant has indicated the documents that will guide the project. The project will make use of the Master Plan for the Beneficial Use of Dredged Material for Coastal Mississippi. This Master Plan is based on peer-reviewed and publicly available data.	

<b>Question B</b>	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	Yes
<b>Comments:</b>	
In my review of the proposal, I did not see an explicit “justification”. However, the proposal does appear to be based on the best available science and it would make use of the best available data. The proposed project does have an observational data plan and a data management plan which seem reasonable.	

<b>Question C</b>	
Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	Yes
<b>Comments:</b>	
The proposal does identify the risks and uncertainties of the proposed work. It does cite a number of successful Beneficial Use projects. This implies that, although there are risks and uncertainties, it is reasonable to expect that the proposed work would be successful.	

## Science Context Evaluation:

<b>Question A</b>	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Yes
<b>Comments:</b>	
The sponsor points to New Round Island as an example of the environmental/ecosystem benefits of Beneficial Use of Dredge Material projects for habitat restoration.	

<b>Question B</b>	
Does the project/program have clearly defined goals objectives?	Yes
<b>Comments:</b>	
The program goal/objective is to restore, enhance, and protect habitats.	

<b>Question C</b>	
Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?	Yes
<b>Comments:</b>	
The proposal does have a clear description of the methods proposed. For example, the proposed project identifies multiple methods for sourcing material for habitat construction. The project will involve the development of designs for material placement, and it will identify the dimensions of habitat that will be created by the project. Construction implementation activities are identified including containment construction, materials sourcing, and transport of materials.	



<b>Question D</b>	
Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?	Yes
<b>Comments:</b>	
Several environmental benefits are identified including (1) the provision of ecosystem services including shoreline protection and storm surge buffering, (2) enhancement of water quality, (3) carbon sequestration, and (4) creation of favorable biogeochemical conditions. The benefits are discussed in the context of the underlying environmental stressors including erosion, land conversion, and sea level rise. The projects points out the resilience achieved by generating multiple habitat types driven by topographic variation.	

<b>Question E</b>	
Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)	Yes
<b>Comments:</b>	
The project has a number of metrics including: (1) the number of E&D plans for habitat creation projects, (2) the number of permits/compliance documents for habitat creation projects, and (3) the number of habitat creation projects that are implemented.	

<b>Question F</b>	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
<b>Comments:</b>	
The proposal does discuss project's vulnerability to potential long-term environmental risks like sea level rise. It points out that the threat of sea level rise can be mitigated by creating multiple habitat types with a range of topography and with variation in distance to tidal streams.	

<b>Question G</b>	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
<b>Comments:</b>	
Besides the risk posed by sea level rise, the project considers risks associated with the amount and timing of available materials (e.g., dredged materials) for habitat restoration. For example, socio-economic factors may preclude the availability of dredged material from a particular project. The authors point out that there will be alternative sources of sediment including stockpiled material sites and borrow sites. Thus, there are opportunities for risk mitigation.	

<b>Question H</b>	
Does the project/program consider recent and/or relevant information in discussing the elements above?	Yes
<b>Comments:</b>	
The project refers to recent successes in the use of Beneficial Use dredge materials for habitat creation/restoration at New Round Island. One of the documents guiding the proposed project (entitled: Master Plan for the Beneficial Use of Dredged Material for Coastal Mississippi) does point out the recent sediment budgeting efforts for the project area. Documents supporting the proposed work do point to improvements in implementation of Beneficial Use projects in the past twenty years.	

<b>Question I</b>	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Yes
<b>Comments:</b>	
The project does refer to the successful use of Beneficial Use materials at New Round Island. Although potential threats to Beneficial Use projects such as sea level rise and storms are identified, I did not see an evaluation of a failure of a Beneficial Use project. From my research experience in coastal Texas, I am aware of potential failures of this type of project (e.g., sedimentation of creeks built into a Beneficial Use marsh). From my experience, it is important to employ hydrodynamic and sediment transport principles in the design of Beneficial Use projects.	

<b>Question J</b>	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Need more information
<b>Comments:</b>	
The project proposal includes sections on Monitoring and Adaptive Management and Data Management. The Monitoring and Adaptive Management section includes guidelines for successful monitoring including monitoring of the dimensions and species density of the restored marsh. The proposal includes the use of reference sites for establishing baseline/reference conditions and this is important. The proposal suggests that Adaptive Management practices will be implemented. However, it does not explicitly state what Adaptive Management practices will be implemented and how these practices will lead to improved outcomes. The proposal does not state how adaptive management will be informed by the performance criteria.	



<b>Please summarize any additional information needed below:</b>
<p>Reflecting on my overall review, and given my personal experience, two considerations are worth mentioning:</p> <p>(1) Adaptive Management.</p> <p>As mentioned in Question J above, the project proposal does not provide specific information about what adaptive management practices will be implemented and how adaptive management will lead to optimal project performance.</p> <p>The proposal states (p. 5): “Delivering results and measuring impacts: the proposed Program would utilize project-level workplans that would adhere to site-specific milestones and monitoring success criteria. These would be documented in observational data management plans.”</p> <p>There is no mention of adaptive management in this statement.</p> <p>(2) Appropriate Expertise on the Teams.</p> <p>I was involved in Beneficial Use marsh restoration activities in Texas in the [years redacted] time frame. I became aware of some failures of early marsh restoration efforts, related to sedimentation of the marsh’s tidal creeks. The marsh restoration efforts were led by people with backgrounds in fisheries and ecology, but there was a lack of hydrodynamics/sediment transport expertise on the project team. Later marsh restoration work included a wider range of expertise and was more successful.</p>



# SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

<b>Proposal Title:</b> Coastal Nearshore Habitat Restoration and Development Program in Mississippi
<b>Location (If Applicable):</b> Gulf-wide
<b>Council Member Bureau or Agency:</b> Mississippi Department of Environmental Quality
<b>Type of Funding Requested:</b> Planning / Implementation

<b>Reviewed by:</b> Reviewer 3
<b>Date of Review:</b> 5/4/2020

## Best Available Science:

*These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:*

<b>Question 1.</b>	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Need more information
<b>Comments:</b>	
The project proposal, as presented, does not clearly define specific objectives nor provide strong scientific support for the general objective and methodology described.	

<b>Question 2.</b>	
If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?	Yes
<b>Comments:</b>	
The limited literature provided in support of proposed project does address coastal wetland landscapes and is applicable to Gulf Coast.	

<b>Question 3.</b>	
Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?	No
<b>Comments:</b>	
Some literature cited is missing in narrative or not cited appropriately including several documents of significance to this effort in the MS Beneficial Use Master Plan and Project Management Plan. These are only briefly mentioned in the "Priority Project Criteria section with no elaboration. In addition there are several areas that could benefit from additional citation support such as 1)Page 4, In Regional ecosystem-based approach- there is reference to "several documents on strategies to coastal restoration"....what are these referenced documents? , 2) Page 5, In General Description of Environmental Benefits.... more listed references for individual ecosystem services would be helpful, 3) Page 5, In Environmental Stressors...a supporting reference for the statement, "Coastal wetland modification and degradation can reduce wetland function....", 4) Page 7 , In Coastal Habitat Site Selection there is reference to "The State has undertaken two planning excercises..." , if these are in the form of a report document then would be helpful to include as a citation.	

<b>Question 4.</b>	
Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	Need more information
<b>Comments:</b>	

Proposal does address risk and uncertainties in a general sense. Mention of sea-level rise and storm surge could be supported by more modelling/literature (e.g., SLAMM models)

**Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:**

<b>Question A</b>	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Need more information
<b>Comments:</b>	
While beneficial use of dredge material is a viable conservation strategy for coastal wetland restoration, the proposal as presented only provides a cursory review of potential supportive literature.	

<b>Question B</b>	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	No
<b>Comments:</b>	
See comment for Question A above. In addition the proposal framework does not strongly speak to the body of science that exist or refer to data gaps that may exist in this body of science.	

<b>Question C</b>
-------------------

Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	No
<p><b>Comments:</b></p> <p>The applicant could provide additional resources to better support the proposal in respect to the risks and uncertainties addressed. As previously stated, it seems that the proposal, in its current form, has not provided enough informational due diligence to adequately support and clearly communicate uncertainties and risks of project implementation.</p>	

### Science Context Evaluation:

<b>Question A</b>	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Yes
<p><b>Comments:</b></p> <p>It appears through historical funding that the applicant has demonstrated experience in implementing similar projects/programs, as provided in the Coastal Habitat Site Delineation section of the proposal. However on review the proposal could have benefited from some cartographic support depicting previous projects as well as more narrative around project specific successes and failures.</p>	

<b>Question B</b>	
Does the project/program have clearly defined goals objectives?	No
<p><b>Comments:</b></p>	

The current objectives are vague and non-descriptive. Specific goals and/or objectives for this effort should be explicitly stated. Such as, for objectives something similar to the following would be more appropriate..”To use sediment placement strategies, such as the beneficial use of dredge, to restore a minimum of X acres of coastal wetlands within the MS counties of...”

**Question C**

Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?

No

**Comments:**

The proposal needs to explicitly speak to coastal habitat restoration techniques/strategies (beneficial use of dredge or other activities) and clearly state how these activities are developed through conservation design, implementation and monitoring methodology to achieve desired results.

**Question D**

Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?

Need more information

**Comments:**

This section was supported by some of the best available science in terms of wetland loss rates, shoreline erosion, etc. However, more literature support is needed, in particular, around primary causes of wetland modification.

**Question E**

Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)

No

**Comments:**



The proposed metrics do not adequately address the success measures of habitat conservation. Acres of viable/ functional coastal wetland would align better with the Comprehensive Plan objectives.

<b>Question F</b>	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
<b>Comments:</b>	
None provided.	

<b>Question G</b>	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	Need more information
<b>Comments:</b>	
Short-term risks due to availability of suitable sediment source materials was mentioned. However no specific mitigation plans to address this issue were discussed but based on narrative it appears that these may still be in a planning stage and thus forthcoming.	

<b>Question H</b>	
Does the project/program consider recent and/or relevant information in discussing the elements above?	No
<b>Comments:</b>	
Only one literature citation used in this section, so based on that and given available data, it appears that the proposal did not adequately consider relevant information.	

<b>Question I</b>	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Need more information
<b>Comments:</b>	
Based on the information provided to inform review of this proposal, it appears there is need for a more structured and detailed planning exercise to capture the success/failures around the proposed risk and uncertainties. As this information was not adequately captured.	

<b>Question J</b>	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Need more information
<b>Comments:</b>	
Current proposed monitoring strategy is presented in a general sense and still appears to be in a planning phase. A more developed and detailed strategy would be helpful in regards to better understanding future measures of success.	



<b>Please summarize any additional information needed below:</b>
There is no question that the coastal wetland conservation strategies proposed by the applicant are valid and appropriate. However the proposal as presented did not clearly define objectives or provide sufficient supporting information in regards to both planning and implementation of the proposed projects. Eventhough the applicant has a proven history of implementing these proposed strategies, this proposal needs to provide a clearer vision around proposed activities, especially given the competitive nature of these funding streams. The current proposal needs some revision in the form of more supportive information as well as proposal structure such that it improves clarity and understanding around proposed conservation activities from all phases including planning, implementation and evaluation.