

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
MISSISSIPPI STATE EXPENDITURE PLAN
2018 AMENDMENT

Submitted Pursuant to the
Oil Spill Impact Component of the RESTORE Act
33 U.S.C. § 1321(t)(3)

Approved April 2019

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Introduction

Projects, and corresponding project details/provisions, approved in the Mississippi State Expenditure Plan and the Mississippi State Expenditure Plan 2017 Amendment remain in full force and effect to the extent not modified in this MSEP 2018 Amendment.

Overview of the Oil Spill

On or about April 20, 2010, the mobile offshore drilling unit Deepwater Horizon, which was being used to drill a well for BP Exploration and Production, Inc. (BP) in the Macondo prospect (Mississippi Canyon 252 – MC252), experienced an explosion, caught fire, and subsequently sank in the Gulf of Mexico (the Gulf). This incident resulted in the discharge of oil and other substances into the Gulf from the rig and the submerged wellhead. The Deepwater Horizon oil spill (Spill) is the largest maritime oil spill in U.S. history. The Spill discharged millions of barrels of oil over a period of 87 days. In addition, well over one million gallons of dispersants were applied to the waters of the Spill area in an attempt to disperse the spilled oil. An undetermined amount of natural gas was also released to the environment as a result of the Spill. After several failed attempts to stop the release of oil, the well was declared “sealed” on September 19, 2010.

As a result of civil and criminal settlements with the parties responsible for the Spill, the state of Mississippi (Mississippi) has and will continue to receive funding from several sources to restore or benefit the natural resources or the economy of Mississippi, including, but not limited to funding received through the following: (1) the Oil Pollution Act of 1990 (OPA) and the corresponding Natural Resource Damage Assessment (NRDA); (2) the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act); and (3) the National Fish and Wildlife Foundation (NFWF) Gulf Environmental Benefit Fund (GEBF).

The Executive Director of the Mississippi Department of Environmental Quality (MDEQ) is the designated natural resource trustee under OPA and the Governor’s designee for the RESTORE Act and NFWF GEBF for the State of Mississippi.

RESTORE Act

On July 6, 2012, the President signed into law the RESTORE Act, Subtitle F of Public Law 112-141. The RESTORE Act makes available 80% of the Clean Water Act (CWA) civil and administrative penalties paid by the responsible parties for the Spill (i.e., BP and Transocean) for programs, projects and activities that restore and protect the environment and economy of the Gulf Coast region through the Gulf Coast Restoration Trust Fund established in the U.S. Department of the Treasury (Treasury). Within the RESTORE Act, there are five funding components (commonly referred to as “buckets”), which make funds available to each of the Gulf States in accordance with certain legal parameters. These components are:

- Direct Component (Bucket 1)
- Comprehensive Plan Component (Bucket 2)
- Oil Spill Impact Component (Bucket 3)
- National Oceanic and Atmospheric Administration (NOAA) Science Program (Bucket 4)
- Centers of Excellence Research Grants Program (Bucket 5)

The Oil Spill Impact Component, also referred to as Bucket 3, accounts for 30% of the funds available in the Gulf Coast Restoration Trust Fund. In accordance with the requirements of the RESTORE Act and as set out in the allocation regulation at 40 CFR 1800.500, the state of Mississippi will receive 19.07% of the 30% allocation of the Oil Spill Impact Component. The amount currently available to Mississippi under the Oil Spill Impact Component is approximately \$80 Million. The RESTORE Act requires Mississippi,

through MDEQ, to prepare a Mississippi State Expenditure Plan (MSEP) describing each activity, project, or program for which Mississippi seeks funding under the Oil Spill Impact Component.

As defined in 31 C.F.R. § 34.503, the MSEP includes a narrative description for each activity, project, or program for which Oil Spill Impact Component funding is being sought. The narrative description for each activity in the MSEP contains the following information:

- The need, purpose, and objectives of the activity;
- How the activity is eligible for funding and meets all requirements of § 34.203 and § 34.503;
- Location of the activity;
- Budget for the activity;
- Milestones for the activity;
- Projected completion dates for the activity;
- Criteria MDEQ will use to evaluate the success of each activity in helping restore and protect the Gulf Coast Region;
- If funding has been requested from other sources, including other components of the Act, the plan identifies the source, states how much funding was requested, and provides the current status of the request;
- How the activities in the plan contribute to the overall economic and ecological recovery of the Gulf Coast; and
- How each activity, that would restore and protect natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands or the economy of the Gulf Coast, is based on the best available science.

New and/or amended MSEP(s) may be written as additional funds become available and as additional projects are identified for funding.

Eligible Activities for the Oil Spill Impact Component

The RESTORE Act dedicates 80% of any civil and administrative penalties paid under the Clean Water Act by responsible parties in connection with the Deepwater Horizon oil spill to the Gulf Coast Ecosystem Trust Fund or ecosystem restoration (environmental), economic recovery, and tourism promotion in the Gulf Coast region. The RESTORE Act differs from other restoration funding sources (i.e., NFWF, NRDA) in that it specifically allows and anticipates that restoration projects will be developed for the restoration of natural resources and the restoration of the economy, both of which were affected as a result of the Spill.

The eligible activities for the Oil Spill Impact Component cover both ecological and economic projects. The RESTORE Act defines eligible activities for which the Oil Spill Impact Component funds may be used. The eligible activities, projects, and programs as defined in 31 C.F.R. § 34.203 are:

1. Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast Region;
2. Mitigation of damage to fish, wildlife, and natural resources;
3. Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring;
4. Workforce development and job creation;
5. Improvements to or on state parks located in coastal areas affected by the Deepwater Horizon Oil Spill;
6. Infrastructure projects benefitting the economy or ecological resources, including port infrastructure;
7. Coastal flood protection and related infrastructure;
8. Planning assistance;

9. Administrative costs;
10. Promotion of tourism in the Gulf Coast Region, including recreational fishing; and
11. Promotion of the consumption of seafood harvested from the Gulf Coast Region.

Designated State Entity

The State of Mississippi, Office of the Governor, is the entity designated under the Oil Spill Impact Component of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act) to develop the required State Expenditure Plan. The Office of the Governor appointed Gary C. Rikard, the Executive Director of the Mississippi Department of Environmental Quality, as his appointee.

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Section I: State Certification of RESTORE Act Compliance

Certifications of RESTORE Act Compliance

The Mississippi Department of Environmental Quality hereby certifies to the following:

- Pursuant to the RESTORE Act, 33 U.S.C. § 1321(t)(3)(B)(i)(I), the MSEP includes projects, programs, and activities which will be implemented with the Gulf Coast Region and are eligible for funding under the RESTORE Act.
- Pursuant to the RESTORE Act, 33 U.S.C. § 1321(t)(3)(B)(i)(II), the projects, programs, and activities in the MSEP contribute to the overall economic and ecological recovery of the Gulf Coast.
- Pursuant to the RESTORE Act, 33 U.S.C. § 1321(t)(3)(B)(i)(III), the MSEP takes into consideration and is consistent with the goals and objectives of the Comprehensive Plan adopted by the RESTORE Council.
- Pursuant to the RESTORE Act, 33 U.S.C. § 1321(t)(2)(B)(i), the projects and programs that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast included on the MSEP will be based on the best available science as defined by the RESTORE Act.
- Pursuant to the RESTORE Act, 33 U.S.C. § 1321(t)(3)(B)(ii), not more than 25% of the funds will be used for infrastructure projects for the eligible activities described in 33 U.S.C. § 1321(t)(1)(B)(i)(VI-VII).
- Issues crossing Gulf State boundaries have been evaluated to ensure that a comprehensive, collaborative ecological and economic recovery is furthered by the MSEP.

Process Used to Verify Compliance

The development of the MSEP involves a series of activities that create an iterative process while maintaining transparency to stakeholders, and are designed to achieve the following criteria:

- Identify eligible projects, programs and activities for inclusion on the MSEP;
- Ensure that eligible projects, programs and activities included on the MSEP contribute to overall ecological and economic recovery of the Gulf Coast;
- Ensure the MSEP takes into consideration and is consistent with the goals, objectives and commitments of the RESTORE Council's Comprehensive Plan; and
- Promote funded projects to be as successful and sustainable as possible.

In 2016 and 2017, Mississippi's MSEP planning effort included five phases:

- Phase 1: Establishing a Foundation
- Phase 2: Project Contribution, Benefit, and Coordination
- Phase 3: Project Filtering
- Phase 4: Project Vetting
- Phase 5: Project Selection and MSEP development

This five-phase process, and the engagement and input derived from it, was used as the foundation for development of this 2018 MSEP Amendment.

2018 Results of the Process Used to Verify Compliance

Since 2016, MDEQ has solicited significant feedback specific to the development of the MSEP. Engagement with the stakeholder community including private citizens, non-governmental organizations, and the economic community has informed the priorities for restoration. The priorities identified during Phase I and Phase II planning activities for the 2016 and 2017 MSEPs were the following:

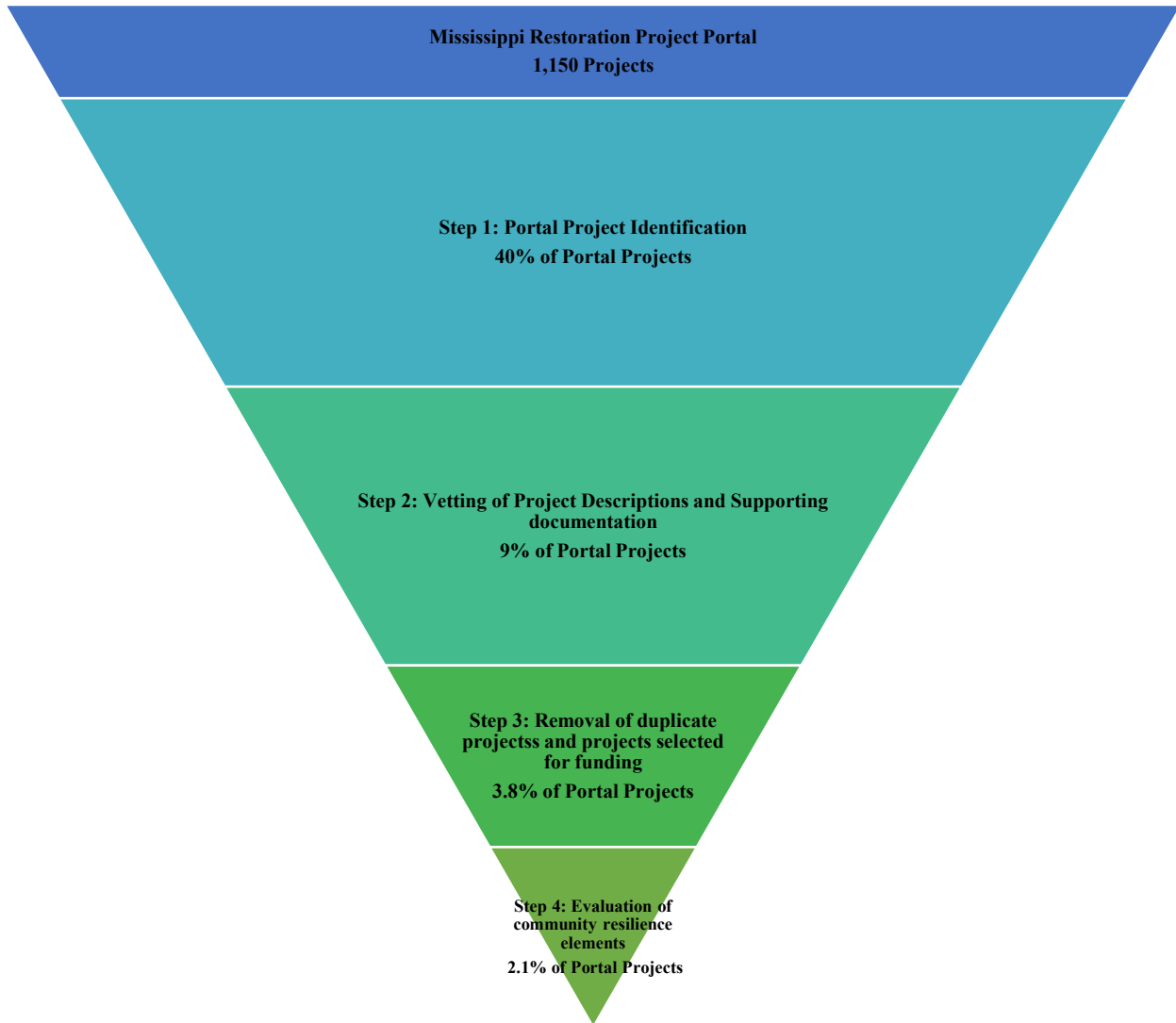
- **Goals: Restore** Water Quality and Restore and Revitalize the Economy. Projects should contribute to both water quality and economic goals.
- **Contributions:** Projects should contribute towards improving marine ecosystems and/ or decrease water pollution.
- **Benefits:** All projects should promote ecosystem health.
- **Consideration:** Community resilience for all proposed and existing projects.

As planning commenced for the 2018 MSEP Amendment, MDEQ received input from stakeholders regarding restoration priorities beginning at the 2017 Restoration Summit. The stakeholders reaffirmed the priorities of water quality, restoring and revitalizing the economy, and community resilience. During the 2018 MSEP planning process, stakeholders indicated that there should be a focus on enhancing “Community Resilience” as a priority rather than just as a consideration. Therefore, MDEQ adopted the definition of community resilience as provided by the RESTORE Council’s Comprehensive Plan, which is defined as a goal to build and sustain communities with capacity to adapt to short- and long-term changes. Furthermore, the objective to promote community resilience should be tied to ecosystem restoration or protection.

2018 Planning Process

As of June 2018, the Mississippi Restoration Portal had 1,150 projects. The 2018 planning and project review process included reviewing all portal projects, as well as currently implemented projects, against the identified priority of Community Resilience. The filtering process for all portal projects is represented in the following table and figure:

Process	Factors Considered
Step 1: Portal Project Identification	Whether a project was identified as a community resilience activity; and/or prioritized community resilience as either a primary or secondary goal.
Step 2: Vetting of project descriptions	Evaluation of project description and supporting documentation to determine whether a project supports Community Resilience as a goal and activity classification.
Step 3: Duplicate projects of existing projects already selected for funding	Whether a project description was already selected for funding.
Step 4: Evaluation of community resilience project elements	Determine whether a project element promoted community resilience and, if implemented, would improve marine ecosystems, promote ecosystem health, and/ or decrease water pollution.
Step 5: Supports Community Resilience	Evaluation of existing and proposed project ideas towards <i>Community Resilience</i> .



The final evaluation process included reviewing existing and proposed projects that had both environmental and economic benefits to determine if additional resilience elements could be added to support building and sustaining communities with the capacity to adapt to short- and long-term changes.

Following the project filtering process, remaining project ideas were evaluated for eligibility under the Oil Spill Impact Component; specifically: 1) eligibility of proposed activities with requirements of the RESTORE Act; and 2) review of proposed activity against applicable regulations, federal law compliance and OMB guidance. Additionally, preliminary environmental compliance requirements were considered. All of the remaining 2.1% project ideas conformed to eligibility requirements.

As a result of the above filtering process, the following projects remained and have been selected for funding.

After project vetting, 25 portal project ideas remained. These 25 portal project ideas were incorporated into two programs. The two programs are the Mississippi Sound Oyster Shell Recycling Program and the Beneficial Use of Dredge Material for Marsh Creation and Restoration in Mississippi.

Mississippi Sound Oyster Shell Recycling Program

- This is a new project proposed for the 2018 MSEP Amendment. The purpose of this project is to provide resilience to the oyster fishery as well as the community by recycling shells from restaurants, festivals, and processors and placing those shells back onto reefs to serve as cultch material to grow more oysters.

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

- This is a new project proposed for the 2018 MSEP Amendment. The purpose of this project is to provide resilience to Mississippi's coastal marsh ecosystem and the ecosystem services supported by marshes by supporting the state of Mississippi's beneficial use dredging program that maximizes marsh creation and restoration from dredging projects within Hancock, Harrison, and Jackson Counties.

The filtering process also included an evaluation of existing and proposed projects/project ideas across the Mississippi restoration landscape (funded through RESTORE, NFWF or NRDA), towards Community Resilience. Through such evaluation the following two projects were identified through the filtering process as projects that provide resilience or would be appropriate for the addition of resilience elements.

Hancock County Marsh Living Shoreline

- This is a new project proposed for the 2018 MSEP Amendment. The purpose of this project would be to add resilience elements to the existing NRDA Early Restoration Hancock County Marsh Living Shoreline project, which resulted in the construction of 6 miles of living shoreline in Hancock County, 46 acres of oyster reef, and 46 acres of marsh to protect and expand the largest contiguous marsh complex in the Mississippi coastal system, as well as an area experiencing the largest marsh loss along our coastal shoreline. Anticipated components funded under this MSEP amendment could include, an additional 1.5 miles (estimate) of living shoreline to extend the current living shoreline to Bayou Caddy, as well as additional marsh creation/restoration.

Mississippi Gulf Coast Water Quality Improvement Program

- The Mississippi Gulf Coast Water Quality Improvement Program was identified through the 2018 filtering process as a project for the addition of resilience elements. However, given that \$60 million has been allocated to the Mississippi Gulf Coast Water Quality Improvement Program under the 2016 and 2017 MSEP as well as the 2016 MIP Amendment, and work under the program has recently begun, the State has decided not to allocate additional funds to the program on the 2018 MSEP Amendment.

Section II: Public Participation Statement

There were multiple phases of public engagement for the 2018 MSEP Amendment in order to gather the appropriate public participation necessary to conform with the public participation requirements outlined in 31 C.F.R. § 34.503(g). In accordance with 31 C.F.R. § 34.503(g), the MSEP will be available for public

review and comment for a minimum of forty-five (45) days. Each activity on the MSEP will only be adopted after consideration of all meaningful input. MDEQ made the MSEP available for public comment and review in a manner that is consistent with other MDEQ-administered public comment periods related to the Deepwater Horizon oil spill. See the attached “The State of Mississippi’s Response to Comments Regarding the 2018 Amended Mississippi State Expenditure Plan (MSEP)” for addition information.

Section III: Financial Integrity

On behalf of the State of Mississippi, MDEQ understands its fiduciary responsibilities under the RESTORE Act and is committed to maintaining the highest level of fiscal accountability and transparency to assure the public and Congress that funds have been managed appropriately to further the purposes of the RESTORE Act. These responsibilities include RESTORE Act project administration functions, such as maintaining financial records and ensuring complete and accurate reporting through project oversight. MDEQ’s financial system was developed around the basic principles of sound financial management. These principles are internationally accepted accounting and financial management practices recognized worldwide by leading public and private sector organizations. The basic principles of sound financial management include, among others, principles of transparency, internal checks and balances, and independent external auditing.

Transparency – MDEQ is committed to maintaining transparency with the public and to reporting on RESTORE Act projects, programs, and activities.

Internal checks and balances – To maintain effective controls, MDEQ properly segregates duties among state personnel performing financial functions for RESTORE Act projects, programs, and activities.

Independent external auditing – All state agencies are subject to annual audits to be conducted by the Office of the State Auditor or its contracted designee as prescribed by state law. Agency audits are performed at the fund level in conjunction with the State Auditor’s annual audit of the State’s Comprehensive Annual Financial Report (CAFR).

These principles of sound financial management are designed to:

- Prevent corruption and reduce or eliminate financial risk and loss;
- Ensure that funds are spent in accordance with the respective grant awards, state law and federal law, as applicable;
- Ensure that personnel responsible for implementing the activities in the project work plans have the resources needed to support the job; and
- Assist state personnel in spending funds efficiently and effectively and report expenditures accurately.

MDEQ is responsible for:

- Fiscally managing and safeguarding RESTORE Act project funds;
- Disbursing funds to sub-recipients in a timely manner for reimbursement of eligible project expenditures;
- Keeping accurate and up-to-date records of all financial transactions related to project activities;
- Providing accurate financial reports as requested or required;
- Assisting state personnel with financial planning, budgeting, monitoring, and evaluation; and

- Assisting state personnel in understanding and complying with financial policies and procedures needed to ensure efficient and effective stewardship of RESTORE Act funds.

Effective financial operations depend on clear policies and procedures for different areas of activity, such as:

- Cash management policies (e.g., project budgets, requests for funds, and disbursement of funds);
- Personnel policies;
- Policies regarding delegation of signature authority for expenditures or reimbursements in excess of established thresholds;
- Purchasing and procurement laws, regulations, and policies;
- Policies regarding reimbursement of administrative expenses;
- Policies regarding supporting documentation required for disbursement of funds; and
- Policies establishing financial reporting requirements and schedules, including documented review processes by appropriate supervisory personnel.

Financial Controls

Financial controls are designed to enable state agencies to accomplish fiduciary responsibilities. These controls also reduce the risk of asset loss, ensure that RESTORE Act project documentation is complete and accurate, that financial reports are reliable, and ensure compliance with laws and regulations. A financial control system includes both preventative controls (designed to discourage errors or fraud) and detective controls (designed to identify an error or fraud after it has occurred).

Mississippi law requires each agency, through its governing board or executive head, maintain continuous internal audit covering the activities of such agency affecting its revenue and expenditures, and maintain an adequate internal system of pre-auditing claims, demands and accounts to ensure that only valid claims, demands and accounts will be paid (Miss. Code Ann. § 7-7-3(6)(d), (2016)). Consistent with the RESTORE Act and the MSEP, sub-recipients must operate and use resources with minimal potential for waste, fraud, and mismanagement. The State's financial control system provides assurance that significant weaknesses that could affect the State's ability to meet its objectives would be prevented or detected in a timely manner.

Project management, other personnel, and those charged with governance will apply internal control processes that are designed to provide reasonable assurance in the reliability of project financial reporting. The system includes characteristics such as:

- Policies and procedures that provide for appropriate segregation of duties to reduce the likelihood of deliberate fraud;
- Personnel training materials that ensure employees are qualified to perform their assigned responsibilities;
- Sound practices to be followed by personnel in performing their duties and functions; and
- Proper authorization and recording procedures for financial transactions.

MDEQ's internal control system has been modeled after the Committee of Sponsoring Organizations (COSO) internal control framework and the following five inter-related components. Annually, each state agency is required to certify it has performed an internal control risk assessment, identify weaknesses, and describe a corrective action plan, if applicable.

Control Environment – In Mississippi, responsibility for implementing internal controls at each state agency begins with the chief executive officer and extends to everyone in the agency. Each agency director personally holds those in leadership positions responsible for helping to design, implement, maintain, and champion an internal control program that encompasses all agency fiscal programs and related activities. Each agency’s chief financial officer shares this leadership role, yet ultimate accountability remains with the agency head.

Only qualified, competent individuals are employed. These personnel are adequately trained to carry out their responsibilities and are required to explicitly and implicitly understand their responsibilities. State management provides its employees with the authority to perform the tasks assigned to them.

Risk Assessment – As part of establishing proper controls and procedures, an assessment is performed to identify, analyze, and manage risks relevant to achieving the state’s goals and objectives for RESTORE Act projects. This assessment identifies internal and external events or circumstances that could adversely affect the state’s ability to carry out its fiduciary responsibilities. Identified risks according to potential impact on the RESTORE Act projects and the likelihood of occurrence will be considered. The MSEP is considered in performing the risk assessment, incorporating the goals and objectives for the RESTORE Act activities while assessing the control environment, the overall financial management process, the role of the accounting system, and other financial management activities.

Identification of component systems comprising the complete accounting system is also included in the risk assessment process. Transaction cycles were identified and considered along with inherent risks. These will be continuously reviewed and strategies will be updated as needed to manage the risks.

Control Activities – MDEQ’s internal control activities include written policies, procedures, techniques, and mechanisms that help ensure management’s directives are carried out in compliance with the RESTORE Act criteria. Control activities help identify, prevent, or reduce the risks that can impede accomplishment of state objectives. Control activities occur throughout the financial department, at all levels and in all functions; control activities include things such as approvals, authorizations, verifications, reconciliations, documentation, separation of duties, and safeguarding of assets.

For each transaction cycle identified in the risk assessment, the flow of information through the process and the internal control activities taken will be documented and analyzed.

Documentation will include organizational charts, standard operation procedures, manuals, flowcharts, decision tables, questionnaires, and/or review checklists.

Communication and Information – The state’s financial system provides adequate processes and procedures to ensure that each agency or department has relevant, valid, reliable, and timely communications related to internal and external events to effectively run and control its operations. Agency directors are able to obtain reliable information to make informed business decisions, determine their risks, and communicate policies and other important information to those who need it.

Communication is vital to effective project management, and MDEQ’s financial information system has mechanisms in place to properly capture and communicate RESTORE Act project financial data at the level appropriate for sound financial management. Policy manuals, accounting and financial reporting manuals, internal memoranda, verbal directives, and management actions are a few of the means of communicating across state agencies.

Monitoring – Monitoring of the internal control system will be performed to assess whether controls are effective and operating as intended. Monitoring is built into normal, recurring operations, is performed on

a real-time basis, reacts dynamically to changing conditions, and is ingrained in each state agency. Ongoing monitoring occurs through routine managerial activities such as supervision, reconciliations, checklists, comparisons, performance evaluations, and status reports. Monitoring may also occur through separate internal evaluations (e.g., internal audits/reviews) or from external evaluations (e.g., independent audits, comparison to industry standards, surveys). Any deficiencies found during monitoring will be reported to the appropriate authority.

MDEQ requires prompt evaluation of any findings and recommendations. Formal procedures are documented for responding to findings and recommendations. Those that generate action items are properly outlined for timely response and resolution. Responsible parties are required to complete action items to correct or otherwise resolve the deficiencies within an established timeframe. The monitoring process also includes analysis of whether exceptions are reported and resolved quickly.

Accountability

While each state employee has personal internal control responsibility, the state director holds ultimate responsibility and assumes ownership for internal control over financial reporting of RESTORE Act funds. Other directors and managers support the state's internal control philosophy, promote compliance, and maintain control within their areas of responsibility. Chief financial officers have key oversight and policy enforcement roles over fiscal matters. Other state personnel hold lead responsibility for compliance with nonfinancial aspects of laws, directives, policies, procedures, and codes of ethics.

The state director has designated a senior manager as the RESTORE Act project manager specialist who is responsible for coordinating the overall state-wide effort of evaluating, improving, and reporting on internal controls over RESTORE Act project management. A risk assessment of project internal control systems will be performed annually. If the risk assessment indicates a high level of risk associated with the financial control system, internal controls will be evaluated. Any serious deficiencies will be reported to the appropriate authority.

Key Controls

MDEQ applies key controls for financial operating functions that serve as strategic risk mitigation tools within each area. These key controls are developed around financial management policies of segregation of duties, systematic reviews and reconciliations, and documented approval processes. These key controls serve as the framework for financial processes used in the flow of information for capturing and reporting financial data.

Other Financial Integrity Mechanisms

MDEQ has developed detailed written policies and procedures as part of its financial control systems and financial control system plan. The plan, policies, and procedures provide assurance that RESTORE Act funds are being safeguarded and that applicable statutes, rules, and regulations are being followed while also ensuring that the goals and objectives of the RESTORE Act are being met.

The financial control system plan is more than just a list of procedures or flowcharts of how activities operate. Rather, the plan is a comprehensive document that encompasses all components of internal controls. Likewise, the plan documents the financial control structure as it relates to those functions. Key financial integrity mechanisms of internal control over financial reporting are described in the following paragraphs.

Risk assessments of sub-recipients – Pursuant to the Uniform Guidance requirements in 2 C.F.R. § 200, MDEQ will emphasize components of sub-recipients' financial system internal checks and balances that address fraud, waste, and performance. MDEQ's financial management system is designed for the

prevention of fraud, waste, and abuse. As such, risk assessments of all sub-recipients' financial management systems will be conducted before awarding RESTORE funding.

Project budgets – Project budgets represent the financial plans for projects throughout their lifespans. The budgets match planned expenditures with revenues that the state expects to receive, which is essential for effective cash flow planning and management. Budgets also help us prevent the misuse of project funds and control spending.

Segregation of duties – MDEQ employs several levels of control to achieve proper segregation of duties in financial processes. Departmental controls allow for proper segregation among functions related to the recording and reporting of project transactions. Supervisory approval is required for all expenditures by personnel independent of the recording process. Stewardship over project funds is essential for proper fiduciary accountability, and the State has established the framework to achieve this component of internal control.

Safeguarding of assets – Access to financial project information is restricted to essential personnel. Passwords and other physical safeguards are employed by the State to restrict access to financial data. By restricting access, risk of misappropriation and fraud is reduced because only the personnel who will be working on the financial data for the projects have access to those functions. Regular backups of financial information are done and stored off-site to minimize loss of data due to an unforeseen occurrence.

Sub-recipient monitoring – MDEQ developed a process for sub-recipient monitoring using an effective risk assessment model. As part of the initial risk assessment process, sub-recipients are required to complete an Organizational Self-Assessment (OSA) questionnaire and provide copies of standard financial policies and procedures that the state evaluates as part of designing the sub-recipient monitoring program. The OSA is required to be updated annually by each sub-recipient. On-site assistance and reviews for a sub-recipient based on appropriate risk levels will be provided throughout the life of the projects. MDEQ will require and review financial and progress reports for accuracy, completeness, and alignment with RESTORE goals. Budget reports may also be required for comparison to actual expenditures, in detail if necessary.

MDEQ may also employ other financial integrity mechanisms if necessary or for specific RESTORE Act project types. Modifications will be based on updated risk assessments for the RESTORE Act financial control system.

Conflict of Interest

The processes that MDEQ uses to prevent conflicts of interest in the development and implementation of the MSEP, as required by 31 C.F.R. § 34.503(b)(3), are guided by Mississippi law. Under Mississippi Code § 25-4-1 *et seq.*, “it is the policy of the state that public officials and employees be independent and impartial, that governmental decisions and public policy be made on the proper channels of the government structure; that public office not be used for private gain other than the remuneration provided by law; that there be public confidence in the integrity of government; and that public officials be assisted in determinations of conflicts of interest.”

Further, MDEQ requires, where applicable, the completion of a non-collusion and conflict of interest affidavit certifying that there are no present or currently planned interests (financial, contractual, organizational, or otherwise) relating to the work to be performed under any contract resulting from the proposed work that would create any actual or potential conflict of interest (or apparent conflicts of interest) (including conflicts of interest for immediate family members: spouses, parents, children) that would

impinge on its ability to render impartial, technically sound, and objective assistance or advice or result in it being given an unfair competitive advantage. MDEQ also requires sub-recipients and contractors to notify MDEQ immediately of any potential or actual conflicts that may arise. If any potential or actual conflict cannot be resolved to MDEQ's satisfaction, MDEQ reserves the right to terminate the sub-award agreement or contract in place pursuant to the Termination for Convenience clause of the sub-award agreement or contract.

Section IV: Overall Consistency with the Goals and Objectives of the Comprehensive Plan

Mississippi's 2018 MSEP Amendment focuses on three of the goals identified in the Comprehensive Plan:

- Restore Water Quality – Restore and protect water quality of the Gulf Coast region's fresh, estuarine, and marine waters.
- Restore and Revitalize the Gulf Economy – Enhance the sustainability and resiliency of the Gulf economy.
- Enhance Community Resilience – build upon and sustain communities with capacity to adapt to short- and long-term changes.

Mississippi's 2018 MSEP Amendment focuses on four objectives identified in the Comprehensive Plan:

- Promote community resilience.
- Restore, improve, and protect water resources.
- Protect and restore living and coastal marine resources.
- Restore, enhance, and protect habitats.

Section V: Projects, Programs, and Activities

	<i>Project Title</i>	<i>Estimated Cost</i>	<i>Infrastructure (Yes/No)</i>	<i>Start Date</i>	<i>End Date</i>	<i>Primary Eligible Activity (number 1-11; see section 4.1.1 of Submittal Guidelines)</i>	<i>Informed by Best Available Science (Yes/No)</i>	<i>Status</i>
1	Mississippi Gulf Coast Water Quality Improvement Program	\$49 Million	No	08/01/2018	07/31/2023	1	Yes	Activity Approved (2016 Initial MSEP). Activity Amended (2017 MSEP Amendment).
2	Pascagoula Oyster Reef Complex Relay and Enhancement	\$4.1 Million	No	08/01/2018	07/31/2023	1	Yes	Activity Approved (2016 Initial MSEP). Activity Amended (2017 MSEP Amendment).
3	Compatibility, Coordination, and Restoration Planning	\$1.8 Million	No	08/01/2018	07/31/2022	8	No	Activity Approved (2016 Initial MSEP). Activity Amended (2017 MSEP Amendment). Scope clarification (2018 MSEP Amendment).
4	Gulf of Mexico Citizen Led Initiative (GMCLI)	\$1.9 Million	No	08/01/2018	7/31/2023	1	Yes	Activity Approved (2017 MSEP Amendment)

5	Remote Oyster Setting Facility	\$9.36 Million	No	01/01/2019	12/31/2023	1	Yes	Activity Approved (2017 MSEP Amendment).
6	Coastal Headwater Land Conservation Program	\$8 Million	No	08/01/2018	12/31/2021	1	Yes	Activity Approved (2017 MSEP Amendment).
7	Round Island Living Shoreline Demonstration and Protection Project (Planning)	\$2.2 Million	No	08/01/2018	12/31/2020	8	Yes	Activity Approved (2017 MSEP Amendment).
8	Mississippi Sound Oyster Shell Recycling Program	\$650,000	No	12/01/2019	11/30/2021	1	Yes	New Activity (2018 MSEP Amendment).
9	Beneficial Use of Dredge Material for Marsh Creation and Restoration in Mississippi	\$12 Million	No	12/01/2019	11/30/2024	1	Yes	New Activity (2018 MSEP Amendment).
10	Hancock County Marsh Living Shoreline Extension	\$6 Million	No	10/01/2019	09/30/2021	1	Yes	New Activity (2018 MSEP Amendment).

Activity #3: Compatibility, Coordination, and Restoration Planning

Project Summary

The Compatibility, Coordination, and Restoration Planning project was approved in the 2016 MSEP and amended on the 2017 MSEP Amendment. This project will provide planning assistance to support MDEQ's coordinated restoration planning effort to maximize the effectiveness of coordination of restoration in the Gulf Coast Region and the development of new and/or amended State Expenditure Plan(s). Additional information about the approved scope of work for this program can be found in the 2016 MSEP and 2017 MSEP Amendment.

Project Modifications - 2018 MSEP Amendment

The 2018 MSEP Amendment clarifies the scope of work of this activity, specifically that activities may also include program oversight and management for this planning project, as well as the development, coordination, and execution of the grant awards between MDEQ and the RESTORE Council for projects listed on the MSEP. No additional funds are being proposed at this time.

The approved 2016 MSEP and 2017 MSEP Amendment can be found at the following links:

[2016 MSEP Amendment](#)

[2017 MSEP Amendment](#)

Activity #8: Mississippi Sound Oyster Shell Recycling Program

Project Summary

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 through the collection and utilization of discarded oyster shells for oyster cultch placement in the Mississippi Sound. Additionally, this program will include an economic sustainability analysis.

Oyster populations and subsequent harvests have decreased over time throughout the Gulf of Mexico as well as in the Mississippi Sound. There are several reasons scientists and managers have hypothesized to the lack of oyster populations including overharvesting, natural and anthropogenic disasters, water quality, as well as a reduction in oyster reef habitat. Oyster reef habitat is comprised of cultch. Cultch is a hard substrate often made up of oyster hash, shell, and other hard bottom features on which oyster larvae can attach. Managers often supplement the availability of hard substrates with additional cultch materials including limestone, crushed concrete, fossilized oyster shells, and oyster shells when available. Based on best available science, as well as anecdotal information from oyster fisherman, oyster shell is the best cultch material to use to maximize oyster larvae adherence and recruitment. However, oyster shell is a limited resource and expensive to procure.

Oyster shell recycling programs have been implemented throughout the coastal United States in an effort to reuse discarded oyster shells from restaurants, festivals, and other venues. The program objective is to avoid discarding oyster shells by collecting them from these venues and reusing them as cultch material for oyster reefs in the future. However, all oyster shell recycling programs from Maryland to Louisiana have to consider mechanisms to ensure that the program can be sustainable after an initial start-up period. Thus, it's imperative to conduct an economic sustainability analysis that will determine the potential number of shells available for re-use across the spectrum of sources in the area, evaluate costs of hauling, storing, and deploying shell, and inform the economics of the program for viability and sustainability.

This program will follow the following phases through implementation:

1. Economic sustainability analysis of sustaining an oyster shell recycling program;
2. Implementation of the program;

Activities may also include program oversight and management, development, coordination, and execution of the sub-award between MDEQ and any sub-recipients.

Need: Oyster shell cultch is an effective type of cultch that can be placed in the water for oyster larvae adherence and recruitment. However, oyster shells are being discarded without reuse and being lost as a resource, thus there is a need to capture used oyster shells for reuse from consumptive venues.

Purpose: Evaluate and implement the oyster shell recycling program on the Mississippi Gulf Coast.

Objective: Develop an oyster shell recycling program for Mississippi Gulf Coast.

Location: This project will take place in the Gulf Coast Region.

Timeline: This project is anticipated to start 12/01/2019 and end 11/30/2021.

Additional Information: The project will be administered by MDEQ.

Overall Economic or Ecological Contribution to the Recovery of the Gulf Coast: This project will contribute to the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region through the collection of discarded oyster shells and utilizing those shells in oyster cultch placement in the Mississippi Sound. This project specifically addresses enhancing community resilience by establishing a program that is anticipated to provide a supply of oyster shell / cultch material that is critical to the restoration and resilience of a living marine resource and the oyster fisheries economy.

Eligibility and Statutory Requirements: This project is located in the Gulf Coast Region as defined by 31 C.F.R. § 34.2. This project qualifies as an eligible activity for Oil Spill Impact Component funding through 31 C.F.R. § 34.201(a) – restoration and protection of the natural resources, ecosystems, fisheries, marine, and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region, and 33 U.S.C. § 1321(t)(1)(B)(i)(I) of the RESTORE Act. The primary purpose of the project is restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region. This project will collect, accumulate, and deploy discarded oyster shells onto an oyster reef in Mississippi coastal waters.

Comprehensive Plan Goals and Objectives:

This project aligns with the following Comprehensive Plan goals:

- Enhance Community Resilience – build upon and sustain community with capacity to adapt to short- and long-term changes;
- Restore Water Quality – Restore and protect water quality of the Gulf Coast region’s fresh, estuarine, and marine waters; and
- Restore and Revitalize the Gulf Economy – Enhance the sustainability and resiliency of the Gulf economy.

This project supports the following Comprehensive Plan objectives:

- Protect and Restore Living Coastal and Marine Resources;
- Promote Community Resilience; and
- Restore, Improve, and Protect Water Resources.

Major Milestones:

Milestone – Economic Sustainability Analysis. The completion of the economic sustainability analysis.

Milestone – Oyster Shell Accumulation. The program will begin to accumulate oyster shell and ground truth values, numbers, and consumptive use venue engagement against results from economic sustainability analysis.

Milestone – Oyster Shell Contribution. TBD. Accumulated oyster shells could be deployed, sold to vendors (public and private), or stockpiled. The best course of action will be determined through the economic sustainability analysis.

Success Criteria/Metrics/Outcomes:

The anticipated outcomes of the oyster shell recycling program include:

- An analysis of the economic sustainability of an oyster shell recycling program in coastal Mississippi.
- An accumulation of oyster shell.
- Contribution of Oyster shells to habitat restoration in Mississippi coastal waters.

Activity	Anticipated Project Success Criteria/Metrics/ Outcomes:	Short-term outcome	Long-term outcome
Economic Sustainability	Economic sustainability analysis and report on oyster shell recycling program	Mechanisms of cost, funding need, and sustainability of oyster shell recycling program	Continuation of program through sustainable mechanisms
Program Implementation	Oyster shell accumulation	Recovery of oyster shells in the community	Building of oyster reef acreage with accumulated oyster shells

Monitoring and Evaluation: The amount of oyster shell collected and accumulated by the program will be monitored through time. Similarly, the amount of oyster shell deployed and placed on an oyster reef will be monitored through time. An evaluation of cost, to shells accumulated, and deployed will be conducted to understand future operations and logistics associated with the program.

Best Available Science: Oyster reefs are of particular significance to the diverse ecology of the marine environment and the state’s fisheries economy. These habitats provide refuge and food source for numerous commercially and ecologically important species, as well as filter contaminants and sediments, improve water quality, and regenerate and recycle nutrients. Over the last century, Mississippi oyster reefs have been impacted by many factors. The first half of the century there was intensive fisheries extraction (Kirby 2004) followed by concentrated dredging of reefs (1951-1973) for building blocks, poultry feed, and other products (Demoran 1979). This impact was exacerbated by coastal degradation from urban and industrial development and altered hydrological regimes. In a review of historic abundance of oyster reefs compared to current abundance remaining, Beck et.al., (2009) estimated that the Mississippi Sound has lost at least 90% of their oyster reefs.

Building back habitat is a critical restoration action available to managers to restoring oyster populations. Given its structural nature oyster shell has been shown to add bathymetric complexity to the ecosystem and has been shown to be the best cultch material if available. Other cultch materials vary in degree of complexity. The common hypothesis that smaller more uniform materials will create vertically indistinct cultch beds that will consolidate with very little differentiation of relief from their surroundings. Due to a lack of natural shell material available and the rising price of oyster shell resource that is available, alternative reef restoration substrates are often used.

Budget/Funding

Estimated Cost of the Project and Amount to be Requested from Oil Spill Impact Component

Funds: \$650,000 (25% - 35% Planning; 65-75% Implementation)

Partnerships/Collaboration:

- The Nature Conservancy

Leveraged Resources: None currently anticipated.

Funds Used as Non-Federal Match: None currently anticipated.

Other: None currently anticipated.

References:

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Activity #9: Beneficial Use of Dredge Material for Marsh Creation and Restoration in Mississippi

Project Summary

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 new marsh and restoring and enhancing existing marsh through the beneficial use (BU) of dredge materials. This program will support the dredging needs in the three coastal counties and may utilize accumulated spoil materials to facilitate the material necessary for marsh restoration.

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), and specifically, within Mississippi, 10,000 acres of coastal wetlands were lost in the last 60 years (MDEQ, 2007). Coastal marshes are effectively keystone habitats within the coastal environment providing the base for a host of ecosystem services and benefits such as serving as natural buffers to protect shorelines from eroding, storm surge protection, fisheries production, water quality enhancement by trapping and holding sediment and creating biogeochemical conditions for nutrient assimilation and transformation, faunal support, carbon sequestration, and habitat for a multitude of trophic levels within the ecosystem (Barbier et al., 2011; Mendelsohn et al., 2012).

The State of Mississippi has prioritized the restoration, protection, and conservation of marsh based on significant stakeholder engagement which pointed to the multiple ecosystem service benefits this specific restoration action would generate in coastal Mississippi waters. This project seeks to create new, and/or restore existing marsh through the use of BU dredge materials. In order to accelerate marsh creation and restoration, this program will assist local dredging operations as well as potentially utilize stockpiled dredge materials for marsh creation. In order to receive any materials for marsh creation and restoration all applicable environmental permitting, testing, and compliance will need to be cleared, including sediment testing.

Additional activities may also include, but are not limited to, any necessary permitting, engineering and design, environmental compliance testing of sediments, dredging, transport and marsh construction, monitoring, program oversight and management, development, coordination, and execution of the sub-award between MDEQ and any sub-recipients.

Need: Marsh creation and restoration using BU sediments is an effective way to restore the ecological integrity of any coastal bay and estuary system. Mississippi has lost numerous acres due to coastal erosion (over 10,000 acres over the last 50 years, and more specifically over 1000 ft of marsh loss in the Heron Bay / St Joe Point over the last 50 years) and there is a significant need for funding to help pay for local dredging needs to facilitate material for marsh restoration.

Purpose: Maximize and accelerate marsh creation and restoration by pairing the use of BU materials with local dredging needs in each of the three coastal counties.

Objective: The program will create and restore marsh in the Mississippi Gulf Coast Region by using beneficial dredge sediments from available local spoil sites and/or dedicated dredging activities.

Location: This project will take place in the Gulf Coast Region.

Timeline: This project is anticipated to start 12/01/2019 and end 11/30/2024.

Additional Information: The project will be administered by MDEQ.

Overall Economic or Ecological Contribution to the Recovery of the Gulf Coast: This project will allow MDEQ and MDMR to increase the acreage of marsh restoration in priority bays and estuaries of coastal Mississippi. This project specifically addresses enhancing community resilience by restoring critical habitat that supports a variety of living coastal marine resources, providing storm-protection, mitigating coastal erosion, and may support a reduction in coastal community flooding through the removal of accumulated materials in waterways.

Eligibility and Statutory Requirements: This project is located in the Gulf Coast Region as defined by 31 C.F.R. § 34.2. This project qualifies as an eligible activity for funding under the Oil Spill Impact Component funding through 31 C.F.R. § 34.201(a) – restoration and protection of the natural resources, ecosystems, fisheries, marine, and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region, and 33 U.S.C. § 1321(t)(1)(B)(i)(I) of the RESTORE Act. The primary purpose of the project is restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region. This project will enhance marsh habitat in Mississippi coastal waters.

Comprehensive Plan Goals and Objectives:

This project aligns with the following Comprehensive Plan goals:

- Enhance Community Resilience – build upon and sustain community with capacity to adapt to short- and long-term changes; and
- Restore and Conserve Habitat – restore and conserve the health, diversity, and resilience of key coastal, estuarine, and marine habitats.

This project supports the following Comprehensive Plan objectives:

- Promote Community Resilience;
- Protect and Restore Living Coastal and Marine Resources; and
- Restore, Enhance, and Protect Habitats.

Major Milestones:

Milestone – Material plans completed. The three coastal counties complete material removal and receipt plans.

Milestone – Marsh creation and restoration completed. Marsh will be created and restored through the BU of dredge sediments.

Milestone – Monitoring marsh progress. Monitoring success tied to marsh dimension and vegetation density to ensure a sustainable marsh restoration and creation project.

Success Criteria/Metrics/Outcomes:

The anticipated success criteria that will be measured are:

- A material removal and receipt plan per county to maximize marsh creation and restoration; and
- Creation of marsh and restoration of marsh with use of BU sediments.

Activity	Anticipated Project Success Criteria/Metrics/ Outcomes:	Short-term outcome	Long-term outcome
Material Planning	Dredge / BU planning document specific to each County	Identify short term dredging needs and marsh creation sites	Strategy to maximize receipt of dredge materials for marsh creation and restoration
Marsh Creation and Restoration	Created and Restored Marsh acres	Create and restore critical marsh habitat	Mitigate marsh loss within the Mississippi coastal landscape

Monitoring and Evaluation: Beneficial use of dredge sediments will be used to create and restore marsh. The core components to be determine whether marsh restoration and creation was successful include dimension, which includes marsh elevation and spatial extent, as well as vegetation density, which includes abundance and species composition. By monitoring these two core parameters success of marsh restoration is tracked, sustainability of restoration is monitored, and if needed, adaptively managed.

Best Available Science: Coastal marshes not only play a vital role in the ecological integrity of open shoreline habitats but also, and perhaps more critically, are vital components of ecosystem health within a broader landscape context of coastal ecosystems (USEPA, 2000). They are keystone habitats within the coastal environment as they provide the base for a host of ecosystem services and benefits such as serving as natural buffers to protect shorelines from eroding, storm surge protection, fisheries production, water quality enhancement by trapping and holding sediment and creating biogeochemical conditions for nutrient assimilation and transformation, faunal support, carbon sequestration, and habitat for a multitude of trophic levels within the ecosystem (Barbier et al., 2011; Mendelssohn et al., 2012). Furthermore, coastal marshes are located at the ecotone between land and open water habitats and thus interact in quantitatively important ways within both adjoining units of the coastal landscape (Valiela et al., 2000). MDEQ has been investing in marsh restoration through the beneficial use (BU) of dredge materials since 2014. There have been three projects that have focused on BU through restoration. Initial efforts focused on understanding locations for BU materials to be received, opportunities to capitalize on federal dredging efforts, and engineering and design on selected BU capacity building sites. MDEQ, in collaboration with the Port of Pascagoula, MDMR, NFWF, and USACE, capitalized on a federal dredging opportunity and created approximately 220 acres of marsh. Currently the marsh system is dewatering, but the containment and marsh has already had indirect impacts on solitary and colonial coastal birds, improved fisheries, and overall recreational opportunities. By linking sediment management and marsh creation/restoration, the state of Mississippi is addressing marsh loss through sustainable resource management, and indirectly enhancing multiple other ecosystem services in the coastal environment. Beneficial use site selection will be guided by best available science and ecological principles, as well as economic constraints related to the logistics of material transportation and proximity to material sources. Furthermore, MDEQ will prioritize and support beneficial use site designs which maximize direct and indirect ecological benefits to the extent practicable based on individual site dynamics.

Budget/Funding**Estimated Cost of the Project and Amount to be Requested from Oil Spill Impact Component**

Funds: \$12 million (10% - 25% Planning; 75-90% Implementation)

Partnerships/Collaboration:

- Hancock, Harrison, and Jackson Counties and Municipalities
- Mississippi Department of Marine Resources

Leveraged Resources: *Building on existing work.* MDEQ has invested over \$44 million in for marsh creation through two project phases through the National Fish and Wildlife Foundation, Gulf Environmental Benefit Fund. These two projects have worked with state and federal partners to identify priority sites for marsh creation, and has invested in engineering, design, and permitting for these sites. There is also future funding obligated for the construction of containment structures in order to make sites ready for the receipt of materials.

Funds Used as Non-Federal Match: None currently anticipated.

Other: None currently anticipated.

References:

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Activity #10: Hancock County Marsh Living Shoreline

Project Summary

This project 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 adding additional components to the current Hancock County Marsh Living Shoreline project.

In 2013, the State of Mississippi began implementation of the Hancock County Marsh Living Shoreline (HCMLS) project through early restoration funding under the Natural Resource Damage Assessment (NRDA) process. The project has almost 6 miles of living shorelines and 46 acres of oyster reefs constructed, and additionally will construct 46 acres of marsh. This project located between Bayou Caddy and the mouth of the East Pearl River is protecting the largest contiguous marsh complex in coastal Mississippi. The purpose of that project was to employ living shoreline techniques including natural and artificial breakwater material and marsh creation to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region. An area that was not covered by the existing HCMLS project was the Bayou Caddy section of shoreline. The Bayou Caddy shoreline had the third largest shoreline loss rate at 5.3 ft/year, suggesting that an extension of the HCMLS project from its current location to Bayou Caddy will complete and maximize protection of this sensitive marsh complex. Additionally, given the extensive marsh loss in this area, there remains opportunity to build back marsh in areas.

Activities within this project may also include, but are not limited to, any necessary permitting, engineering and design, environmental compliance testing of sediments, dredging, living shoreline construction, monitoring, and program oversight and management.

Need: The Hancock County marsh complex is the largest contiguous marsh complex that is remaining in the State of Mississippi and thus there is a need to ensure the resilience and protection of this system. The State of Mississippi has already invested in living shoreline, marsh and oyster reef habitat creation protecting this marsh complex, but there is approximately 1.5 miles of marsh shoreline that warrants protection, as well as opportunities for more marsh creation.

Purpose: Mitigate the loss of the Hancock County marsh complex by extending the current living shoreline to Bayou Caddy, and potentially building additional marsh back in certain areas.

Objective: The project will add additional living shoreline and marsh creation components in Hancock County adjacent to the Hancock Marsh Living shoreline project.

Location: This project will take place in the Gulf Coast Region.

Timeline: This project is anticipated to start 10/01/2019 and end 09/30/2021.

Additional Information: The project will be administered by MDEQ.

Overall Economic or Ecological Contribution to the Recovery of the Gulf Coast: This project will allow MDEQ and MDMR to increase the acreage of marsh protected in Hancock County. Furthermore, this project will provide additional hard substrate for oysters and other secondary benthic producers to colonize. This project specifically addresses enhancing community resilience by mitigating further coastal erosion of one of the largest contiguous marsh complexes in coastal Mississippi, providing storm surge and wind/wave erosion protection for coastal ecosystems and coastal communities, as well as providing habitat for coastal birds.

Eligibility and Statutory Requirements: This project is located in the Gulf Coast Region as defined by 31 C.F.R. § 34.2. This project qualifies as an eligible activity for funding under the Oil Spill Impact Component funding through 31 C.F.R. § 34.201(a) – restoration and protection of the natural resources, ecosystems, fisheries, marine, and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region, and 33 U.S.C. § 1321(t)(1)(B)(i)(I) of the RESTORE Act. The primary purpose of the project is restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region. This project will protect coastal marsh in Mississippi coastal waters and enhance substrate for oysters and other secondary producers.

Comprehensive Plan Goals and Objectives:

This project aligns with the following Comprehensive Plan goals:

- Enhance Community Resilience – build upon and sustain community with capacity to adapt to short- and long-term changes; and
- Restore and Conserve Habitat – restore and conserve the health, diversity, and resilience of key coastal, estuarine, and marine habitats.

This project supports the following Comprehensive Plan objectives:

- Promote Community Resilience;
- Protect and Restore Living Coastal and Marine Resources; and
- Restore, Enhance, and Protect Habitats.

Major Milestones:

Milestone – Engineering and Design plans completed. Engineering and design plan for the living shoreline extension.

Milestone – Living shoreline construction completed. Living shoreline will be constructed.

Milestone – Monitoring of short- and long-term restoration outcomes.

Success Criteria/Metrics/Outcomes:

The anticipated success criteria of the living shoreline that will be measured are:

- Engineering and Design documents;
- Creation of habitat for oysters and other secondary productivity; and
- Shoreline erosion reduction.

Activity	Anticipated Project Success Criteria/Metrics/ Outcomes:	Short-term outcome	Long-term outcome
Engineering and Design	Design documents for HCMLS extension	E&D Documents for living shoreline construction	Sustainable project design
Living Shoreline Construction	Living shoreline	Create hard structure habitat for secondary benthic production	Mitigate marsh loss within the Mississippi coastal landscape
Monitoring	Secondary benthic production; living shoreline design changes;	Short term outcomes of secondary benthic productivity	Changes to shoreline compared to baseline changes as a result of living shoreline implementation.

Monitoring and Evaluation: Living shorelines and marsh will be used to protect existing marsh shorelines as well as enhance secondary benthic productivity. The living shoreline will be monitored for: 1) design specifications through time to ensure sustainability of design heights, 2) secondary benthic production, and 3) shoreline position through time. If created, the marsh component will be monitored for 1) dimension through time, and 2) vegetation composition including diversity and abundance.

Best Available Science: Coastal marshes not only play a vital role in the ecological integrity of open shoreline habitats but also, and perhaps more critically, are vital components of ecosystem health within a broader landscape context of coastal ecosystems (USEPA, 2000). They are keystone habitats within the coastal environment as they provide the base for a host of ecosystem services and benefits such as serving as natural buffers to protect shorelines from eroding, storm surge protection, fisheries production, water quality enhancement by trapping and holding sediment and creating biogeochemical conditions for nutrient assimilation and transformation, faunal support, carbon sequestration, and habitat for a multitude of trophic levels within the ecosystem (Barbier et al., 2011; Mendelsohn et al., 2012). Protection of those habitats comes through physical acquisition from development pressures, elevation increases through shallow water disposal of sediments, the creation of marsh through the beneficial use of dredge materials, as well as the use of living shorelines to mitigate shoreline erosion (Swann, 2008; Bilkovic et al., 2016), and allow for sediment accumulation. Living shorelines have multiple ecosystem service benefits beyond shoreline and coastal habitat protection including enhancements to secondary benthic production (Bilkovic and Mitchell, 2013), fisheries productivity (Gittman et al., 2016), as well as cultural benefits tied to recreation (NOAA, 2015).

Budget/Funding

Estimated Cost of the Project and Amount to be Requested from Oil Spill Impact Component

Funds: \$6 million (10% - 15% Planning; 85-90% Implementation)

Partnerships/Collaboration:

- Mississippi Department of Marine Resources
- Mississippi Secretary of State

Leveraged Resources: *Building on existing work.* This project adds additional restoration components (e.g., marsh and living shoreline) to the existing NRDA Hancock County Marsh Living Shoreline project.

Funds Used as Non-Federal Match: None currently anticipated.

Other: None currently anticipated.

References:

Barbier E.B., Hacker, S.D., Kennedy, C., Koch, E.W., Stier, A.C., Silliman, B.R. 2011. The value of estuarine and coastal ecosystem services. *Ecological Monographs* 81(2): 169-193.

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