RESTORE Council Proposal Document

General Information

Proposal Sponsor: U.S. Department of the Interior (DOI)

Title:
State and Offshore Sediment Resources Inventory

Project Abstract:
The U.S. Department of the Interior, through the Bureau of Ocean Energy Management (BOEM), is requesting $15M in Council-Selected Restoration Component funding, for the proposed State and Offshore Sediment Resources Inventory program. This would include implementation funds as FPL Category 1. The program will support the primary RESTORE Comprehensive Plan goal to restore and conserve habitat by providing a regional, ecosystem-based mapping tool to manage offshore State and Federal sediment essential for restoration of coastal shorelines across the Gulf. Surveys will be conducted to identify potential sediment resources, and information on sediment sources, characteristics, and volumes will be assembled and available in a comprehensive database for use by Gulf resource managers.

The Gulf's beach and barrier island restoration efforts have historically been implemented on a project-by-project basis, without comprehensive consideration of scope, type and quantity of this finite resource. Yet obtaining the right type of sediment with appropriate characteristics for a specific project is critical to a project's success and could provide positive environmental impact and could save States time and matching monies in future U.S. Army Corps projects. Program duration is 3 years.

FPL Category: Cat1: Implementation Only

Activity Type: Program

Program: State and Offshore Sediment Resources Inventory (DOI/BOEM)

Co-sponsoring Agency(ies):
COE

Is this a construction project?:
No

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.

Priority Criteria Justification:
The sediment resources inventory would:

1. Determine the availability and location of sediment, including sand and gravel, for the management of barrier islands, beaches, and other coastal habitats necessary for State and Federal projects;

2. Significantly reduce restoration uncertainty, timing, and cost associated with determining strategic features of sediment necessary for projects, significantly reducing cost of restoration projects;

3. Support engineering and design for a variety of projects that will:
- restore, protect, and enhance long-term resiliency to barrier island, interior wetland, and estuarine

ecosystems and habitats while serving as the first line of defense of the mainland during storms and;
- restore beaches that protect the shoreline and/or support coastal tourism economy.

4. Identify sensitive bottom habitats that should be protected from dredging and other bottom disturbing activities.

Project Duration (in years): 3

Goals

Primary Comprehensive Plan Goal:
Restore and Conserve Habitat

Primary Comprehensive Plan Objective:
Improve Science-Based Decision Making Process

Secondary Comprehensive Plan Objectives:
Restore and Enhance Natural Processes and Shorelines

Secondary Comprehensive Plan Goals:
Enhance Community Resilience

PF Restoration Technique(s):
Improve science-based decision-making processes: Develop tools for planning and evaluation

Location

Location:
Gulf-wide in State and Federal Waters (Figure 1).

HUC8 Watershed(s):
Please see the RESTORE Council Gulfwide location information available at:
https://restorethegulf.gov/sites/default/files/Gulfwide%20Watersheds_Counties_CongessionalDistricts.pdf

State(s):
Texas
Alabama
Mississippi
Louisiana
Florida

County/Parish(es):
Please see the RESTORE Council Gulfwide location information available at:
https://restorethegulf.gov/sites/default/files/Gulfwide%20Watersheds_Counties_CongessionalDistricts.pdf
Congressional District(s):
Please see the RESTORE Council Gulfwide location information available at:
https://restorethegulf.gov/sites/default/files/Gulfwide%20Watersheds_Counties_CongessionalDistricts.pdf

Narratives

Introduction and Overview:

The objective of this program is to provide a regional, ecosystem-based mapping tool to manage offshore State and Federal sediment critical to the success of a multitude of coastal restoration projects anticipated along the Gulf of Mexico shoreline This tool would collect, analyze and map data on the type and availability of State & Federal offshore sediment resources. BOEM would place collected data in the Marine Minerals Information System (MMIS) and link to the state-housed databases [e.g., LASARD, OASIS (Alabama), TXSED, and ROSSI]. This data can be used by project managers to inform choices for sediment. By collecting and analyzing these geological and geophysical data in advance of specific projects, BOEM, in cooperation with the Gulf of Mexico States and other Federal agencies, can develop a more comprehensive understanding of available sediment resources. This knowledge will help States better manage sediment resources within their jurisdictional boundaries, and proactively identify sediment resources for project planning purposes.

The program would also identify and delineate areas to be protected for the long term as significant State and Outer Continental Shelf (OCS) sediment resources. To date, the States of Florida, Mississippi, and Louisiana have used offshore sediment resources to construct barrier islands and renourish beaches off their coasts. With the increased need for sediment resources, it is critical to understand the scope, type, and quantity of the finite resource so that it is managed sustainably (Cousins 2019). This program will directly contribute to those future projects identified by the Gulf Regional Sediment Management Master Plan by providing regional information on coastal sediment along northern Gulf of Mexico shorelines (Khalil et al. 2012). Also, because sediment resources would be mapped across the region, the database produced would identify alternative sediment sources. It would allow for increased options when environmental considerations, such as biological or archaeological sensitive areas could inhibit the use of some potential sediment resources. Following additional environmental review, those sediment resources could be made available to local, State, and Federal agencies to recover from storm damage caused by severe storms, to enhance and preserve coastal habitat, and to stem chronic erosion such as the Mississippi Coastal Improvement Program. At the conclusion of this sediment inventory program, BOEM will have collected and analyzed sediment data and placed this information into an interactive database that can be accessed by state and federal resource managers to research and identify potential sediment resources for their projects.

Proposed Methods:

The proposed program is a set of comprehensive sediment survey activities using state-of-the-art technology and methods to identify, delineate, monitor, and research State and Outer Continental Shelf (OCS) sediment resources. Sand survey equipment types and techniques used to support these activities were presented in previous BOEM documents (BOEM 2014a, BOEM 2014b, BOEM 2017). The proposed program would include three components: (1) reconnaissance-scale surveys to identify and delineate State and OCS sediment resources; (2) site-specific, high resolution geophysical surveys to further delineate borrow areas and investigate the presence of objects of archaeological significance, munitions of explosive concern (MEC), and hard bottom or other sensitive benthic habitat in the vicinity of potential borrow areas; and (3) research and/or monitoring surveys to detect geologic and morphological changes in sediment resource areas. In some States, reconnaissance studies are still needed as a first step to identify potential sediment resources. Reconnaissance studies use wider spaced survey lines over comparatively large areas (i.e., regional in scope) to identify sand bodies and characterize the shallow geological framework and surficial geology of potential sediment resources. These surveys will help to ascertain if sediment resources are of a certain quality (sediment type) and quantity to warrant further exploration. Site-specific studies use tighter line spacing over a smaller area to delineate the lateral and vertical extent of borrow areas and to determine the resource use limitations (e.g., cultural resources, sensitive habitat, etc.). Additionally, surveys may occur before and after a dredge event to monitor any changes to a sediment resource and/or conduct specific research to understand the complexities of the environment (e.g., physical, biological, geological, etc.) and potential implications, in accordance with BOEM's stewardship responsibilities. Surveying would not be continuous; rather, most surveys would be small in spatial scale and short in duration. It is anticipated that approximately 70–85 percent of the

survey work conducted under this proposal would be reconnaissance in nature and that 15–30 percent would be site-specific, high-resolution surveys based on the State's priority areas and needs. Sediment survey activities, whether reconnaissance or site-specific, could be conducted simultaneously or in sequence, depending upon the information needs, field conditions, and efficiency factors. Two general survey types would be employed: geophysical surveys for mapping the geologic framework and seafloor condition and geological surveys to collect sediment samples and shallow sediment cores (20 ft [6.1 m] maximum length) (BOEM 2019). The geophysical surveys obtain information about sedimentary architecture, shallow hazards (e.g., MEC or buried cables), archaeological resources, and sensitive benthic habitats, and they do not impact the seafloor. Geological surveys collect information on sediment composition and textural properties and do impact the seafloor (BOEM 2019). The end result would be the development of a tool that BOEM would continually update with new information as sediment resources are used or as new ones are identified. This tool would be employed by State and Federal agency project managers early in the design phase to identify and secure suitable sediment resources (e.g., sediment color and grain size for each restoration project).

On average, up to about 70 line-miles (113 line-km) of geophysical data could be collected per day, assuming that site-specific survey data is not collected simultaneously with reconnaissance-level data. It is anticipated that up to 4,000-8,000 line-miles of geophysical surveys could be collected for the entire Study Area in one year. Actual surveys would be discontinuous in time and geography, where the typical individual survey is smaller in terms of contiguous survey area (< 100-1000 km2). For sediment samples, which are primarily used to ground-truth the geophysical data, approximately 15 vibracores (method of sampling sediment) and up to 50 benthic grabs per day could be collected, although it is anticipated that most would be vibracores, with a small portion being grab samples. Up to 1,000-1,500 geological samples could be collected in one year. All estimates are based on one vessel completing the surveys; however, more than one vessel could be used. For a given survey, a vessel and crew would mobilize, though frequency would depend on the location and scope of activities.

BOEM can work with States and USACE to help to restore:
-160,000 acres of ecosystem restoration (beaches, dunes, and wetlands) in Texas;
-1,250 linemiles of geophysical data to cover the Panhandle (state and federal waters) in Florida;
-the entire coastlines of Mississippi and Alabama, and
-designated areas in Louisiana.

Environmental Benefits:
The program would carefully manage the use of sediment while supporting coastal resiliency initiatives to nourish eroded beaches, conserve sensitive wildlife areas, and restore barrier islands and wetlands that provide natural protection from storms. By proactively developing an inventory of OCS and State sediment resources, BOEM will help manage use conflicts and foster ecosystem health while supporting the following national interests:

- provide resources to Federal and state agencies and localities to reduce damages to coastal infrastructure;
- respond to emergency requests for use of OCS sediment resources following storm events; and
- restore parkland, wildlife refuges and habitat, and other areas, which can promote the long-term sustainability of communities and ecosystems.

The sediment resources are generally based on sediment grain size, shape, sorting, color, mineralogy, sediment deposit volume and geometry, and proximity to project sites. To determine which State or OCS areas contain compatible sediment resources and facilitate stewardship responsibilities, BOEM is proposing to conduct, fund, or authorize sediment survey activities to identify, delineate, monitor, and research potential sediment resources for future restoration projects.

Metrics:

Metric Title: PRM012 : Tool development for decision-making - # tools developed
Target: 1
Narrative: One tool will be developed as a strategic framework for Gulf sediment resource management that identifies sources, volumes and characteristic of sediment to aid decisionmakers in their project planning. BOEM is anticipating in executing five cooperative agreements over the life of the program to conduct the reconnaissance scale surveys and to conduct the study on geologic and morphological changes in sediment resource areas. The source data will be collected via a cooperative agreement with the States. Once the source data is submitted to BOEM, BOEM will QA/QC the data and data will be incorporated in MMIS for the resource managers use. MMIS database is geospatial viewer that helps manage multiple uses on the OCS such as sand resource assessment, environment assessments, sand leasing, and project placement. As the shoreline, marshes, or barrier islands are restored, we will be able to know how many miles of shoreline have been restored, and the amount of on-land infrastructure (military installations, homes, beaches) that has been protected.

Metric Title: PRM009 : Research - # studies reported to mgmt.
Target: 7
Narrative: These studies would include one reconnaissance scale survey for each of the Gulf states and OCS + one high resolution benthic assessment of potential sites + one study on geologic and morphological changes in sediment resource areas. The Study Area lies within the GOM state and federal waters out to 50 meters (m) (164 feet [ft]) deep. Sediment survey activities would not occur simultaneously across the entire Study Area, but the survey activities would be of limited spatial extent at any one time. The Study Area includes adjacent transit corridors used for vessel mobilization, demobilization, and access to support bases.

Risk and Uncertainties:
Surveys would aim to decrease the overall number of vessel mobilizations and reduce redundant data collection. The survey design and selection of technologies, deployment modes, and timing would balance data quality needs, while avoiding and minimizing potential environmental impacts.

The threat of storms and high demand of survey companies may delay some of the surveys. This risk would be mitigated by working with survey companies to help establish a schedule to leverage ship time with other local, state, and federal agencies for projects. This collaborative effort has worked in the past and those efforts can be utilized in the future.

Monitoring and Adaptive Management:
The data collection and data analysis will stand in perpetuity, with an evaluation of accuracy of the data collected and analyzed and with routine updates to the Marine Minerals Information System (MMIS), and state-funded sediment databases.

Data Management:
BOEM has managed and archived large volumes of geoscientific data through MMIS. To manage these large volumes of diverse data, BOEM has developed standard operating procedures so that coastal and offshore geoscientific, environmental, and associated data are presented uniformly, thus, making it easier for future datasets to be loaded into state-funded databases and MMIS and reviewed by State and Federal users. The end result would be the development of a tool that is continually updated with new information as sand resources are used or as new ones are identified. This tool would be employed by State and Federal agency project managers early in the design phase to identify and secure suitable sand resources for each restoration project.

Collaboration:
This program requires a high degree of collaboration and planning with Federal and State agencies, municipalities, and local communities. The U.S. Army Corps of Engineers is a partner because the

development of the sediment inventory enables coastal projects to achieve a post-disaster readiness. They can execute access to appropriate sediment that are proximate to coastal communities and have critical infrastructure at exposure. The sediment inventory also supports an increased need for material in USACE authorized project recovery activities associated with: the Texas Coastal Storm Risk Management (CSRM) and ecosystem restoration (ER); South Atlantic Coastal Study (SACS) which includes Florida, Alabama, and Mississippi; and projects sponsored entirely by local and state governments (e.g., Texas Coastal Master Plan CSRM/ER, Collier County, Florida). This tool potentially provides a tremendous cost and time saving for the states when dealing with future USACE projects. With accessibility to the sediment information, state resource managers will save at least six months of planning time and would save the GOM States' at least $200,000 in matching monies per USACE project. The tool would also help restoration projects across various funding sources in the Gulf such as Natural Resource Damage Assessment and Gulf Environmental Benefit Fund.

Public Engagement, Outreach, and Education:
As the States decide on which areas will be restored or renourished, BOEM will work closely with the States for any outreach or public engagement for those restoration projects.

Leveraging:

Funds: $700,000.00
Type: Bldg on Others
Status: Received
Source Type: Other Federal
Description: Depending on the State-defined needs and appropriations, BOEM may have limited funds to participate in, fund, or authorize sediment survey activities in a cooperative agreement. The purpose of these nationwide funds is to characterize and map these resources, so that they may be effectively managed into the future. Acquiring the nationwide funds can be challenging and is a highly competitive process. For the limited funds, there are other BOEM regions and programs competing for the same funds. As a result, less than 5% of the OCS in water depths of <100 ft, where dredging typically occurs with today's technology, has been surveyed due to the amount of limited funding.

Environmental Compliance:
The Department of the Interior (DOI) believes that the Gulf-wide Sediment Inventory activities would be fully covered by BOEM's National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment (EA). The EA will fully cover the Federal Environmental Consultations for these activities, which have also been addressed in the EA.

Bibliography:

BOEM. 2014a. Atlantic OCS proposed geological and geophysical activities: Mid-Atlantic and South Atlantic Planning Areas; final programmatic environmental impact statement. 3 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2014-001.

BOEM. 2014b. Proposed geophysical and geological activities in the Atlantic OCS to identify sand resources and borrow areas: North Atlantic, Mid-Atlantic, and South Atlantic-Straits of Florida Planning Areas; final environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, Herndon, VA. OCS EIS/EA BOEM 2013-219.

BOEM. 2017. Gulf of Mexico OCS proposed geological and geophysical activities: Western, Central, and Eastern Planning Areas; final programmatic environmental impact statement. 4 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2017-051.

Cousins, S. 2019. Shifting sand: Why we're running out of aggregate, Construction Research and Innovation, 10:3, 69-71, DOI: 10.1080/20450249.2019.1656448.

Khalil, S.M., Parson, L.E., and Waters, J.P. (eds.). 2012. Technical Framework for the Gulf Regional Sediment Management Master Plan (GRSMMP), Journal of Coastal Research, Special Issue No. 60, 72–124.

U.S. Dept. of the Interior. Bureau of Ocean Energy Management. 2019. Finding of no significant impact: Proposed sand survey activities for BOEM's Marine Minerals Program; Atlantic and Gulf of Mexico—final environmental assessment. EA published in April 2019; FONSI signed on May 1, 2019. OCS EIS/EA BOEM 2019-022. Internet website: https://www.boem.gov/MMP-Sand-EA-FONSI/. Accessed on April 1, 2020.

Budget

Project Budget Narrative:
BOEM is seeking a request of $15,000,000. Development of the Gulfwide Sediment Inventory includes: (1) geophysical and geological data acquisition; and (2) data evaluation and interpretation. For this effort, BOEM would leverage work through state cooperative agreements and interagency agreements as well as academia and private contractor opportunities. BOEM will maximize partnering opportunities to acquire data. Even though the various States have different coastline miles, the survey, collection needs, and collection methods are same. The variation in shoreline special extent is based upon balancing individual state priorities with a budget that is divided evenly across states.
Based on the priorities determined by the States, data acquisition would include up to 2,500 km of new geophysical surveys (e.g., bathymetry, sub-bottom, and side-scan sonar) and/or up to 550 geological samples (e.g., vibracores), most likely a combination of the two in each of the Gulf States.

Total FPL 3 Project/Program Budget Request:
$ 15,000,000.00

Estimated Percent Monitoring and Adaptive Management: N/A
Estimated Percent Planning: 5 %
Estimated Percent Implementation: 70 %
Estimated Percent Project Management: 5 %
Estimated Percent Data Management: 20 %
Estimated Percent Contingency: 0 %

Is the Project Scalable?:
Yes

If yes, provide a short description regarding scalability.:
This Gulf-wide program, which would provide $3M to each interested State for data collection can be scaled, if needed. The amount of money for the program will depend on the number of States interested in having the data collected in their State. If only one State is interested in the program, then only $3M will be expended for the program.
Sites can be prioritized based on data gaps and data analysis in State and Federal waters that need to be filled.

Environmental Compliance[1]

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g.,title and date of document, permit number, weblink etc.)
National Environmental Policy Act	Yes	BOEM's National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment will fully cover the Federal Environmental Consultations for all of the activities identified as yes below. The EA and FONSI can be found at https://www.boem.gov/sites/default/files/non-energy-minerals/MMP-Sand-EA-FONSI.pdf; The description of equipment; EFH assessment; finding of no historic properties effects; and consultation coordination can be found in the uploaded PDF.
Endangered Species Act	Yes	See documents upload under NEPA
National Historic Preservation Act	Yes	See documents upload under NEPA
Magnuson-Stevens Act	Yes	See documents upload under NEPA
Fish and Wildlife Conservation Act	Yes	See documents upload under NEPA
Coastal Zone Management Act	Yes	See documents upload under NEPA
Coastal Barrier Resources Act	Yes	See documents upload under NEPA
Farmland Protection Policy Act	N/A	Note not provided.
Clean Water Act (Section 404)	Yes	See documents upload under NEPA
River and Harbors Act (Section 10)	Yes	See documents upload under NEPA
Marine Protection, Research and Sanctuaries Act	Yes	See documents upload under NEPA
Marine Mammal Protection Act	Yes	See documents upload under NEPA
National Marine Sanctuaries Act	Yes	See documents upload under NEPA
Migratory Bird Treaty Act	Yes	See documents upload under NEPA
Bald and Golden Eagle Protection Act	N/A	Note not provided.
Clean Air Act	Yes	See documents upload under NEPA
Other Applicable Environmental Compliance Laws or Regulations	N/A	Note not provided.

1 Environmental Compliance documents available by request (restorecouncil@restorethegulf.gov).

Maps, Charts, Figures

Figure 1: State and offshore sediment resources program location