

Environmental Studies Program: Studies Development Plan | FY 2023–2024

Title	Geodatabase of Benthic Community Habitat in the Gulf of Mexico (GM-23-02)
Administered by	Gulf of Mexico OCS Regional Office
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Procurement Type(s)	Contract
Conducting Organization(s)	TBD
Total BOEM Cost	TBD
Performance Period	FY 2023-2024
Final Report Due	TBD
Date Revised	August 4, 2022
PICOC Summary	
<i><u>Problem</u></i>	Spatial GIS and other mapped benthic community habitat feature data/information is curated within BOEM’s NOO in disparate formats, within several databases, with non-uniform quality control, and maintained by several different offices within the region. There is no standardized procedure for reporting and/or recording newly discovered features or updating spatial resolution of features.
<i><u>Intervention</u></i>	Develop a public-facing geodatabase for all benthic habitat feature classes in the GOM and standardized procedures for reporting and recording features and associated data, quality assurance, maintenance, and publishing.
<i><u>Comparison</u></i>	BOEM NOO does not maintain a comprehensive geospatial or other database for reporting or recording benthic community habitat features.
<i><u>Outcome</u></i>	The creation of a comprehensive geodatabase of benthic community habitat features.
<i><u>Context</u></i>	Northern Gulf of Mexico

BOEM Information Need(s): BOEM requires accurate information about the seafloor to appropriately mitigate impacts to sensitive, benthic habitats. Currently, BOEM uses an inefficient process to document and review relevant benthic community habitat features, including presence or absence of feature(s), feature type, vertical relief, confirmed organisms, etc. BOEM subject matter experts (SMEs) currently use a practice of “start at the beginning” for review and analysis, meaning that previously documented data and information on proposed activity areas aren’t easily accessible for SMEs to compile or review. This can lead to duplication of efforts by SMEs when conducting reviews, as well as duplication of efforts to identify and document seafloor features by regional offices of environment, resource evaluation, and mapping. This presents a need for a geospatial tool as well as a streamlined, standardized process for recording and accessing spatial data associated with benthic community habitat to reduce waste of valuable resources (e.g., time, effort, ESP funding) and increase quality assurance and control. For example, this geospatial tool could be used to geospatially represent the results of completed or ongoing ESP efforts as well as archive the data for studies such as “Identifying Sensitive Hardbottom

Habitat in Shallow Federal Waters of the Gulf of Mexico (GM-21-x05) (CSA Ocean Sciences Inc. 2021).” Additionally, having the spatial data in this format would allow for larger scale analyses, such as monitoring changes to benthic communities from regional, long-term impacts (e.g., climate change).

The geospatial tool would be made publicly available for use by other Federal agencies and stakeholders as well as operators in the Gulf of Mexico Outer Continental Shelf. Users could identify and avoid known benthic features covered by BOEM lease stipulations and other NTL guidance and subsequently reduce Requests for Information in, for example, the post-lease benthic review process.

Background: BOEM SMEs reference digital spatial data and mapping products depicting benthic community habitat features to inform several mission critical activities, including programmatic NEPA analyses, Post-Lease NEPA analyses, geohazard and risk mitigation, information needs analyses, EFH and ESA interagency consultation, etc. Currently, spatial GIS and other mapped benthic community habitat feature data and associated information is curated within BOEM’s GOMR in disparate formats, within several databases, with non-uniform quality control, and are maintained by several different offices within the region. Additionally, there is no standardized procedure for reporting and/or recording new or legacy (i.e., stored in paper or TIMS .pdf documents) features, updating the spatial resolution and associated data of features, conducting quality assurance and control, or releasing timely spatial mapping information to BOEM, other governmental agencies and stakeholders, or the public. In addition, there is no tool for quickly identifying a lease block as containing no benthic community features. For example, in the above-mentioned study, GM-21-x05, of the 237 lease block high-resolution geophysical surveys reviewed for the presence of hard bottom benthic features, approximately 50% of the lease blocks had no benthic features present. A centralized geodatabase would quickly allow reviewers to note that no benthic features are in the proposed activity area, thus reducing time and resources duplicating effort.

Objectives:

- Create a publishable, working geodatabase of benthic community habitat features identified on the seafloor surface through high-resolution geophysical survey or other ground-truthing methods (e.g., ROV surveys) currently stored in disparate digital formats and databases in BOEM NOO.
- Review and consolidate existing BOEM NOO mapping features, layers, shapefiles, etc. (e.g., topographic features, pinnacles, etc.) into the geodatabase.
- Standardize tabulated data and metadata for all feature class layers.
- Develop standardized procedures for feature addition, revision, or removal to/from the geodatabase.
- Develop a public interface for visualization, access, and use (e.g., through Marine Cadastre [<https://marinecadastre.gov/>], boem.gov, Ocean Reports, etc.).

Methods:

- Review BOEM’s existing databases and libraries to identify spatially referenced benthic community habitat features (e.g., EORS.gdb, BOEM Water Bottom Anomalies, study findings, etc.).
- Create a blueprint for the benthic community habitat feature geodatabase, as well as a draft Standard Operating Procedures (SOP) for reporting and recording updates to the database.

- Develop an inclusive benthic community habitat feature geodatabase using the identified BOEM benthic community habitat features and associated data/information and update SOP(s) as necessary. Digitize a subset of the benthic features provided by BOEM (e.g., N=10) to aid in SOP development and testing for feature digitization and data/metadata creation.
- Provide a tutorial and training session for BOEM SMEs for how to use and incorporate the new benthic community habitat feature geodatabase into BOEM processes (e.g., post-lease benthic reviews).

Specific Research Question(s): N/A

Current Status: N/A

Publications Completed: N/A

Affiliated WWW Sites: N/A

References:

CSA Ocean Sciences Inc. 2021. Identifying sensitive, hardbottom habitat in shallow, Federal waters of the Gulf of Mexico: final report. 135 p. New Orleans (LA): US Department of the Interior, Bureau of Ocean Energy Management. Contract No.: 14OM0120F0010. Report No.: BOEM 2021-069.