

## **Environmental Studies Program: Ongoing Study**

**Study Area(s):** Central GOM

**Administered By:** GOM OCS Region

**Title:** Testing and Assessment of the Effects of an Oil Spill on Coastal Archaeological Sites (GM-14-04)

**BOEM Information Need(s) to be Addressed:** Nearly three years after the DWH oil spill, the immediate and long-term impacts on cultural resources and archaeological sites in the coastal zone remain unknown. It has long been assumed in GOMR EIS analyses that should a spill contact a prehistoric archaeological site, damage might include loss of radiocarbon-dating potential, direct impact from oil-spill cleanup equipment, and/or looting. Other unanticipated effects could occur that might diminish or destroy the site's future research potential. At present, these consequences are based upon pure speculation and an imperfect understanding based upon incomplete research conducted in Alaska over 20 years ago. As a result a serious information gap exists in understanding the full implications of the effects of a reasonably foreseeable accidental event. In addition to providing much-needed information to BOEM for its NEPA analysis, the information is of importance to the State of Louisiana, which has sought information from BOEM in the past on the effects of the offshore program on its coastal archaeological resources and lacks the means through other avenues to obtain data on the effects of the oil spill on these resources. The study will provide the State of Louisiana with critical information relative to resource management and remediation.

**Total BOEM Cost:** \$322,321

**Period of Performance:** FY 2014–2018

**Conducting Organization(s):** University of Louisiana at Lafayette

**Principal Investigator(s):** Dr. Mark Rees ([mark.rees@louisiana.edu](mailto:mark.rees@louisiana.edu)), Scott Sorset ([scott.sorset@boem.gov](mailto:scott.sorset@boem.gov))

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### **Description:**

**Background:** As a result of the cultural resources investigations conducted during the Macondo spill, Spill Clean-up Assessment Team (SCAT) archaeologists surveyed more than 5,000 kilometers of shoreline in the states of Louisiana, Mississippi, Alabama, and Florida (HDR, 2011). The investigations identified 32 previously recorded and 45 newly recorded sites that exhibited signs of oiling; 18 of the previously recorded and 31 of the newly recorded sites (61%) are located in Louisiana. Nearly all of the prehistoric sites effected by the Macondo spill are located in Louisiana; mostly in an around the Mississippi Delta and Barataria Bay in Iberia, Plaquemines, Jefferson, Lafourche, St. Bernard, and Terrebonne parishes. The Louisiana State Historic Preservation Office maintains records of all reported archaeological sites discovered during site assessment and clean-up efforts in the wake of the DWH oil spill in 2010. BOEM uses this data in the NEPA documents to estimate the potential effects of coastal oil spills for a specific

proposed action. While site monitoring and remediation associated with the DWH spill response has documented the presence of oil at many sites, there has been no systematic attempt to assess the effects on archaeological resources, formation processes, or conservation. Restoration of coastal landscapes and ecosystems will further impact archaeological sites, making these finite cultural resources endangered features of an increasingly-altered environment. Previously, the only data on which to base assumptions regarding the effects of a major oil spill on archaeological resources was derived from the Exxon Valdez spill in Alaska in 1989, which is not an analogous environment to the Gulf Coast. By undertaking this study now, the characteristics of coastal oil spills will serve as a baseline to which future effects can be compared. BOEM would be better able to respond to questions about the effects of oil spills on archaeological resources with this study.

**Objectives:** The goals of this project are to assess the effects of oil on prehistoric cultural resources on the southeastern Louisiana dating from the Late Woodland and Mississippi periods (ca. A.D. 700-1700). Sites to be investigated and assessed will be selected from those previously recorded as potentially eligible for listing on the National Register of Historic Places and impacted by the 2010 oil spill. These sites have produced evidence for Bayou Petre phase Mississippian ceramics, as well as local Coles Creek and Plaquemine material culture. Additional previously unknown sites documented by shoreline assessment teams will be considered for investigation.

**Methods:** Means should be developed to assess impacts to prehistoric sites from oiling in terms of site preservation, effects to radio-carbon dating, and implications for research costs. Application of archaeometric techniques such as neutron activation analysis and absorbed residue analysis will examine the effects of oil and other contaminants in the archaeological record. In addition, analysis should be conducted to determine if the oil present at the sites can be fingerprinted to a source after the passage of time. In order to address issues of importance to the Louisiana Division of Archaeology, neutron activation analysis and accelerator mass spectrometry will complement ceramic and lithic analyses in providing a more precise chronology of regional culture history and extra-regional interactions. Field methods will consist of systematic surface collection, mechanized and hand-operated coring and augering, and excavation of 1-by-1-meter test units in up to five (5) previously recorded sites to record stratigraphic profiles and obtain well-provenienced archaeological samples. Excavations will further examine the effects of oil on taphonomic and site formation processes, generating recommendations for site remediation, resource management, and archaeological conservation. The study is proposed as a cooperative agreement with the University of Louisiana at Lafayette (ULL), a member institution of the Gulf Coast Cooperative Ecosystem Studies Unit (GCCESU). ULL, located in southern Louisiana, provides the necessary regional archaeological expertise to accomplish the goals of the project.

**Current Status:** The fieldwork is now complete and work has begun on developing the draft final report.

**Final Report Due:** May 21, 2018

**Publications Completed:**

**Affiliated WWW Sites:** <http://www.ucs.louisiana.edu/~mar4160/taeoscas.html>,  
<https://marinecadastre.gov/epis/#/search/study/100052>

**Revised Date:** January 15, 2018