Analyzing the Potential Impacts to Cultural Resources at Significant Sand Extraction Areas

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APTIM as a subcontractor to Tidewater Atlantic Research (TAR) participated in a study for BOEM to consider how dredging offshore borrow areas impact nearby cultural resources. The three potential outer continental shelf (OCS) sand resource extraction zones studied include Sabine Bank, Ship Shoal and St. Bernard Shoal. Literature and data were reviewed and evaluated to characterize the cultural resources and physical processes in vicinity of Sabine Bank, Ship Shoal, and St. Bernard Shoal. Remote sensing surveys were conducted at eight Sabine Bank sites, nine Ship Shoal sites and two St. Bernard Shoal sites. Remote sensing equipment included single beam bathymetry, chirp seismic, sidescan sonar, magnetometer and sector scanning sonar. ADCPs were deployed on Sabine Bank and Ship Shoal. Archaeological diver investigations and core samplings were carried out at three sites. Diver investigations identified the source of anomalies and sonar targets at fourteen sites. Archaeological, geophysical and geotechnical data indicate that several sites could serve as valuable sources of data for monitoring the impacts of dredging, weather, currents and sea states. Sufficient data are presently available to develop and calibrate a process-based wave, hydrodynamic, and morphological model, such as Delft3D, to simulate and evaluate the effects of dredging offshore shoals. Numerical model development shall include the creation of appropriate grids that contain and sufficiently resolve and evaluate the borrow areas and adjacent coastal and submerged cultural resources.