

Oak Island Geophysical Surveys



Project Highlights

- HRG sediment borrow area assessment conducted over the 2021-22 field seasons aboard the *R/V Chinook* (Geodynamics) utilizing a Kongsberg 2040C dual head MBES, Edgetech 4205 SSS, Innomar Med-100 SBP, and twin Geometrics G-882 magnetometers (TVG).
- Two discretely located survey areas in State and federal waters with different survey requirements and environmental guidances.
- Geodynamics coordinated the archaeological and cultural assessment as well, and when coupled with the HRG report findings, will be used for a future geotechnical campaign.

Project Description

Geodynamics was retained by Moffatt & Nichol to conduct a High Resolution Geophysical (HRG) survey of two potential sediment borrow areas — one entirely within the 3 nautical mile (nmi) State water limit and a separate area seaward of the 3nmi demarcation in federal waters. Collectively the areas represented a 2.3 sq. nmi footprint within the Frying Pan Shoal complex near Cape Fear, presenting challenging operational conditions with detailed, multifaceted State and federal requirements for surveying activities and associated environmental commitments.

A HRG array including multibeam echosounder sonar (MBES), side-scan sonar (SSS), twin magnetometers installed in a Transverse Gradiometer frame (TVG), and a parametric sub-bottom profiler (SBP) was employed for the project over the course of two field seasons to help assess sand resources for the Town of Oak Island's future beach re-nourishment efforts. All survey activities were conducted aboard Geodynamics' *R/V Chinook*.

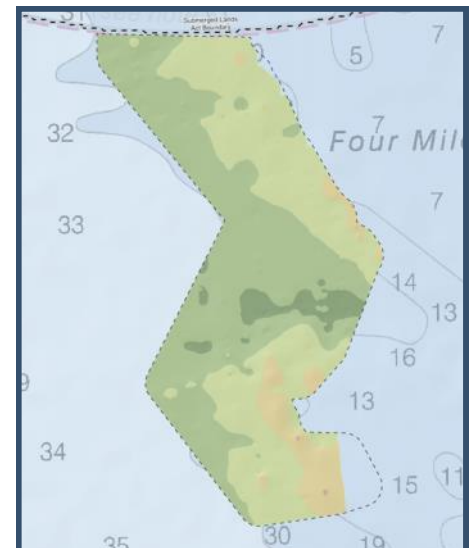
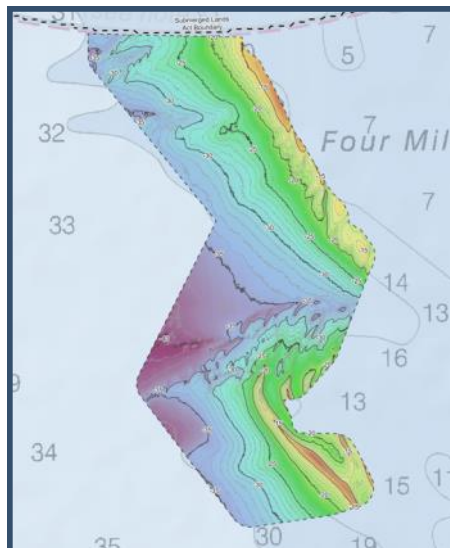
Morphological features such as detached, subaqueous shoals extending from the Cape Fear foreland and discrete areas of erosional scours/depressions were identified and quantified as part of the delivery products in addition to isopach maps generated from consistent reflectors discerned from the SBP dataset. These data, coupled with the SSS and TVG data, were also utilized for archaeological and cultural investigations coordinated by Geodynamics to aid in the planning of a future geotechnical/vibracoring campaign.

Project Location

Frying Pan Shoals, N.C.

Client

Town of Oak Island / Moffatt & Nichol



Federal survey area bathymetric surface (left) and SBP reflector isopach map (right).

