

## New BOEM data on Atlantic offshore sand resources advances coastal preparedness and resilience planning

### *Data collected in offshore areas from Miami to Massachusetts*

To help coastal communities recover from Hurricane Sandy and promote resilient coastal systems, the Bureau of Ocean Energy Management (BOEM) funded offshore surveys in 2015, 2016, and 2017 to identify new sources of sand in federal waters from Miami, Florida to Massachusetts. BOEM initiated the idea for the geological and geophysical research, known as the Atlantic Sand Assessment Project (ASAP), in order to identify and assess new potential sand resources which might be needed in the future.

Storms such as Hurricane Sandy, nor'easters and other strong storms may only last a few days, yet it may take years to recover and rebuild from the erosion and damage they cause. Sea level rise from climate change also poses risks to coastal areas. Sand managed by BOEM on the outer continental shelf (OCS) provides material to support projects and plans designed with federal, state, and local partners to build coastal resilience. Knowing where the material is located, its composition, and potential volume are key to being prepared for future storms.

Using more than \$6.2 million of Hurricane Sandy funds, BOEM contracted the firm CB&I to conduct the ASAP. CB&I performed geophysical surveys in 2015 from 3 to 8 nautical miles offshore, collecting bathymetry, side scan sonar, sub-bottom profile, and magnetometer data offshore Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Delaware, New Jersey, New York, Rhode Island, and Massachusetts. No airguns were used and no dredging was conducted. The maximum depth penetration for the sub-bottom profiler with the type of sediment present in the project area was about 30 meters (100 ft).

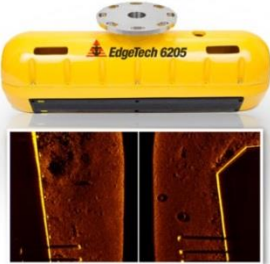
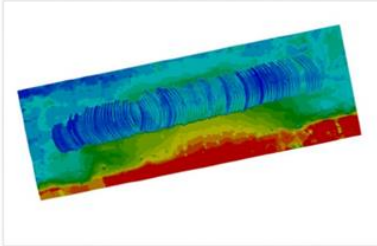
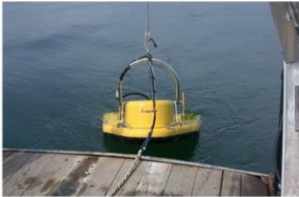
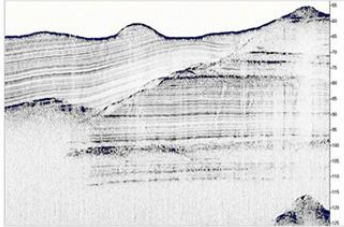

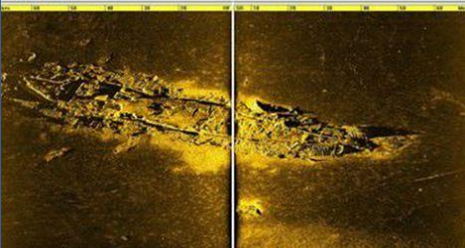

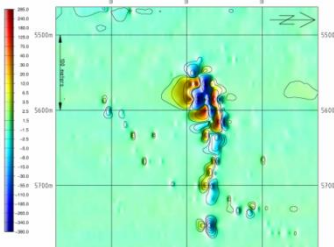
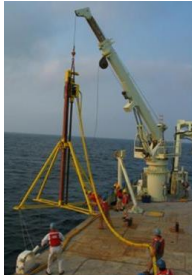



Based on the geophysical surveys, CB&I collected geological samples (vibracores and grab samples) in key locations to characterize sediment grain size and composition. The more detailed 2016 and 2017 geophysical and geological surveys of specific areas off New York, New Jersey, and Delaware determined potential volumes and the extent of potential new sand resources.

A marine archaeologist ensured that the geological sample locations avoided potential submerged cultural resources such as shipwrecks. The vibracores used penetrated up to 20 feet into the sea floor, allowing BOEM to determine the thickness of the suitable sand resource. BOEM's partnership with Columbia University's [Lamont-Doherty Core Repository](#) makes more than 250 archived halves of core samples, 100 grab samples, and associated data available to coastal managers and the broader scientific community to expand our collective knowledge of the ocean and sediments. Ongoing collaboration between BOEM and state and federal scientists and engineers continues to benefit the Nation.

As stewards for sand and gravel resources in Federal waters, BOEM ensures that all of its authorized actions including survey work for sand resources are conducted in a safe and [environmentally](#) sound manner to minimize impacts to the marine, coastal and human environments. BOEM completed a separate [Environmental Assessment](#) and all required consultations such as those required under the Endangered Species Act, and issued a [Finding of No Significant Impact](#) on March 28, 2014, for proposed activities under the ASAP. As a result, certified biological observers were onboard during all survey work to detect the presence of sea turtles and whales with avoidance and stoppage measures in place, in case they were in close proximity to the operations.

## Types of technologies used in the ASAP project

Type of Technology	Output	How it Works
 <p style="text-align: center;"><b>Combined Swath Bathymetry Side-Scan Sonar EdgeTech 6205</b></p>		<p>Sends out an acoustic pulse and captures a return signal to measure the depths of oceans, seas or other large bodies of water. The data is used to compile a topographic map and image of the seafloor, archaeological resources and benthic habitat potential.</p>
 <p style="text-align: center;"><b>Sub-bottom Profiler EdgeTech 3200</b></p>		<p>Towed just above seafloor, emits a chirping sound, and the return signal is collected as reflected and refracted sound through different layers of sediment. Operates between 500 Hz – 24 kHz. Pulse lasts &lt;1 ms (millisecond, or a thousandth of a second.).</p>
 <p style="text-align: center;"><b>Side Scan Sonar Multi-Purpose Survey System EdgeTech 4200</b></p>		<p>Data from acoustic backscatter creates a 2-dimensional image of the seafloor, archaeological resources, benthic habitat potential, and relic landscapes. Operates on a surface tow &gt; 180– 900 kHz. Frequency above hearing range of cetaceans, manatees, seals, sea turtles, and most fish. Pulse lasts &lt;0.5 ms.</p>
 <p style="text-align: center;"><b>Magnetometer Geometrics G-882</b></p>		<p>Measures the magnetic field to detect archaeological resources and potential hazards, including Munitions and Explosives of Concern (MEC), also known as unexploded ordnance (UXO). Map indicates UXO off Hawaii. Images courtesy of Geometrics.</p>
 <p style="text-align: center;"><b>Alpine Vibracore</b></p>		<p>Penetrates a maximum of 20 feet into the sediment to verify geophysical data, determine sediment attributes and beach compatibility, and delineate sand resource areas. On right, BOEM Vibracore samples for the Lamont-Doherty Core Repository. BOEM photo.</p>