




NEW ENGLAND

OSV *Bold* Ocean Disposal Site Monitoring

U.S. EPA | SCIENCE AT THE EPA NEW ENGLAND REGIONAL OFFICE

SCIENCE lies at the heart of the mission of the U.S. Environmental Protection Agency (EPA). The Agency must rely on cutting edge research, accurate measurements and effective technology to implement its programs to protect the environment and human health. Without sound science and credible data, EPA can not wisely set environmental and health standards, clean up contaminated sites, measure ambient air and water quality conditions, or identify the new technologies or practices that will reduce releases to the environment. These fact sheets share with you some of our EPA New England's laboratory capabilities and exemplify some of the very best science we do to meet our agency mission.

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GOAL:

One of EPA's mandates is to designate ocean dredged material disposal sites and monitor their use to ensure that adverse impacts are not occurring to the marine environment. To maintain continued use as well as shipping and boating safety, the Army Corps of Engineers (ACOE) and private applicants routinely dredge navigation channels and marinas. The dredged sediments sometimes contain chemicals associated with urban runoff, historic pollution or harbor activities. Most dredged material is placed in one of New England's five EPA-designated ocean disposal sites once it has been tested rigorously under EPA and ACOE guidelines.

PROGRESS:

EPA New England's regional scientists use the 224'-long converted U.S. Navy ship Ocean Survey Vessel BOLD to monitor these disposal sites and compare them to reference areas. The vessel is equipped with digital side scan sonar, underwater video and water and sediment sampling devices, including a sediment profile imaging system, or sediment camera. These instruments help scientists "see" and map the ocean floor to analyze the characteristics of bottom sediments, monitor benthic health and diversity at disposal sites, and determine whether dredged material is disposed at intended locations. Side scan sonar can help identify geological features, shipwrecks and man-made objects. Sediment grabs are used to collect sediments and measure concentrations of contaminants and the sediment camera provides a cross-sectional view of the condition of the marine sediment below the surface.

In 2006, scientists collected sediments and analyzed side scan sonar images at the 300'-deep Massachusetts Bay Disposal Site (MBDS). Sediment contaminant levels were elevated above the reference areas, but not at levels expected to cause adverse impacts. Side scan images confirmed the presence of over 1,000 waste containers at the inactive Industrial Waste Site adjacent to the MBDS. In 2007 and 2009, sediment chemistry and side scan sonar images were collected at two disposal sites and their corresponding reference areas

in eastern Long Island Sound (LIS). Contaminant levels at these sites also were elevated above the reference areas, but not at levels that will cause adverse impacts. Side scan sonar imaging confirmed that one disposal site was primarily sandy, with high-energy sediment features (such as sand waves), and the other exhibited fine-grained sediments characteristic of a less energetic environment. In 2010, EPA scientists used the OSV BOLD to collect additional sediments at reference areas in Long Island Sound and to further evaluate the extent of historically disposed waste containers at the Industrial Waste Site.

BENEFITS:

Both EPA and the Army Corps use the data collected to ensure dredged material at ocean disposal sites does not cause adverse impacts to the marine environment. Knowledge of sediment properties helps guide scientists in their effort to determine the types of dredged material appropriate for disposal at each site. Reference area data are used to evaluate the suitability of dredged material for disposal. And knowledge of the location of historically disposed waste containers helps the agency protect public health. These sampling results help EPA New England continue its mission to monitor and manage dredged material disposal and existing disposal sites, and designate new disposal sites when necessary.