

EXECUTIVE SUMMARY

Science Applications International Corporation (SAIC) conducted a monitoring survey at the Western Long Island Sound Disposal Site (WLIS) from 16 to 18 September 1997 and from 5 to 6 March 1998 aboard the M/V *Beavertail* as part of the Disposal Area Monitoring System (DAMOS) Program. Field efforts in September focused on the active southwestern quadrant of WLIS and consisted of precision bathymetry and Remote Ecological Monitoring of the Seafloor (REMOTS®) to monitor the development, stability, and benthic conditions of the disposal mounds. The September 1997 survey documented changes in bottom topography at the disposal area relative to July 1996. Approximately 35,000 m³ of dredged material was disposed on the WLIS seafloor during the 1996-1997 disposal season to form the I mound. Using REMOTS® sediment-profile photography, we evaluated the benthic recolonization status and sediment conditions of the new I mound and the 1996 H mound, relative to reference areas, SOUTH and SW-REF.

Additional field work was conducted from 5 to 6 March 1998 to investigate potential sites for a new reference area and compare seasonal effects on benthic conditions in REMOTS® photographs. At the present time, only two reference areas near WLIS have been accepted to represent ambient conditions for the region. The DAMOS protocol requires that three reference areas be used both for comparing the conditions between ambient environments and dredged material disposal mounds, and for evaluation of dredged sediments for disposal permits at WLIS. For the first time in DAMOS's history, a high-resolution side-scan sonar survey was used as a guide to locate and investigate a potential reference area. The survey, conducted to the southeast of WLIS, proved valuable in defining a large area that was relatively clear of historic dredged material deposits, which are widespread in the regions surrounding WLIS. A 300 m radius region was identified and referred to as SE-REF. To complete the March surveys, we revisited the REMOTS® stations over the WLIS H and I disposal mounds.

Buoys have been deployed to control disposal operations within the boundaries of WLIS since its initiation as a regional dredged material disposal site in 1982 (WLIS III). Since receiving the first volumes of sediment dredged from coastal Connecticut and New York in 1982, WLIS has been monitored on a semi-annual basis for the U.S. Army Corps of Engineers, New England District (NEA). Currently, a total of nine discrete disposal mounds exist on the WLIS seafloor within an east-west trending seafloor depression that extends through the center of the disposal site. The latest monitoring activity was concentrated over the most recent dredged material deposits, the WLIS H and WLIS I mounds, as well as the reference areas.

Depth difference calculations and mapping of bathymetric data depicted the I mound below the buoy location, 40°59.203' N, 73°29.072' W (NAD 27), between the D and G mounds. The mound was 3.7 m high with a diameter of about 150 m. REMOTS® sediment-profile photography indicated benthic recolonization of Stage I organisms in

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September and more advanced Stage III indicators in March. The redox potential discontinuity (RPD) depths, which indicate depth of sediment oxidation, also increased from September to March.

The H mound was developed in the spring of 1996, when the WDA buoy, deployed at 40°59.228' N, 73°28.732' W, received approximately 15,300 m³ of sand, silt, and clay dredged from harbors and creeks along the Connecticut coast and the north shore of Long Island, New York. The deposition of this material formed a 1.5 m high mound, approximately 230 m in width. REMOTS® photography detected a solid Stage I pioneering polychaete community with increased evidence of Stage III activity in September relative to the July 1996 survey. RPD depths were shallower in September than July, but did increase again in March. The number of advanced successional status indicators in the photographs increased in the March surveys.

The widespread presence of historic dredged material in the region surrounding WLIS has complicated our ongoing search for a suitable third reference area for this disposal site. Sediments from shipping ports along the Connecticut and New York coasts have been dredged and disposed in Long Island Sound since the late 1800s, long before a developed management plan was in operation. In 1954, eight disposal sites were in existence for the western Long Island Sound region. WLIS is located between three of these historic sites which received large volumes of dredged materials until the 1980s. Using side-scan sonar survey real-time data as a guide, we identified a new potential reference area (SE-REF) for WLIS (40°59.203' N, 73°29.072' W). Further investigation showed that SE-REF met many of the specified requirements for selection of a reference area. While we recommend SE-REF as a third reference area, we recognize that survey data could not conclusively rule out the presence of historic dredged material. Future monitoring surveys should continue to investigate and confirm the absence of historic dredged material at SE-REF.