

EXECUTIVE SUMMARY

Dredging of the New Haven Harbor Channel and five private marine terminals occurred between October 1993 and February 1994. These projects involved removal of an estimated barge volume of 500,000 m³ of unacceptably contaminated dredged material (UDM) from the inner portion of the federal channel and about 90,000 m³ from the five private terminals. The UDM was approved for open water disposal and sediment capping at the Central Long Island Sound Disposal Site (CLIS). A total barge volume of 569,000 m³ (506,000 m³ federal and 63,000 m³ private) of cap dredged material (CDM) was used to establish a sediment cap over the UDM deposit.

A taut-wired, moored Disposal Area Monitoring System (DAMOS) disposal buoy "NHAV" was deployed in the center of a basin-like feature created by a ring of seven historic disposal mounds. The ring of mounds, which required ten years to construct, would serve as a lateral containment measure, limiting the spread of the initial UDM deposit and facilitating efficient capping operations. Deposition of UDM from the federal project was completed at the NHAV buoy, while the privately dredged UDM was disposed at a point to the southwest of the buoy. Capping material was placed at various points surrounding the NHAV buoy to ensure sufficient coverage of the UDM mound. The end result of disposal activity at CLIS was the development of a flat, stable, confined aquatic disposal (CAD) mound.

The decision to cap the material was based on the results of the *Ampelisca* bioassay test using the sediments sampled from the federal channel project. Biological testing of the private marine terminal projects was not pursued due to a cooperative plan for capping both the federal and private projects, providing a cost-efficient method of disposal.

Science Applications International Corporation (SAIC) completed five precision bathymetric surveys (baseline, interim disposal, precap, interim cap, and postcap), two Remote Monitoring of the Seafloor (REMOTS®) surveys, and three geotechnical coring surveys of the NHAV 93 mound. The strategic repetition of survey activity over the NHAV 93 mound has given SAIC and NED an excellent perspective on CAD mound development and insight toward the disposal and oceanographic processes that affect the bottom feature. The bathymetric data provided "snapshots" of the developing mounds, allowing time-series comparisons of the various stages of CAD mound construction. The REMOTS® photographs were used to determine the relative shear strength of the containment ring as well as the areal extent of the UDM deposit. Geotechnical cores and grab samples were used to define the physical characteristics, document the bulk density, and estimate the consolidation of the NHAV 93 mound.

EXECUTIVE SUMMARY (continued)

Comparisons between the baseline, interim disposal, and precap monitoring surveys revealed a UDM deposit 510 m in diameter and 2.5 m in height, containing a volume of 312,000 m³ of new material. A significant amount of consolidation was detected over the apex of the disposal mound before capping operations commenced. The NHAV 93 mound was then capped to a thickness of 0.5 to 1.0 m with CDM from the outer harbor, resulting in a total mound diameter of 600-800 m and height of 2.5 m at the apex. Volume difference calculations based on the baseline, precap, interim cap, and postcap surveys detected 402,000 m³ of cap material overlying the initial UDM deposit and a total mound volume of 714,000 m³.

Although 402,000 m³ of CDM was placed over the initial UDM mound, there was no increase in net mound height at the apex. It has been determined through precision bathymetric surveying and geotechnical coring that consolidation of the UDM deposit and compaction of the basement sediments had occurred during the middle stages of CAD mound construction. As a result, no apparent changes in mound height were detected after the completion of capping operations over the NHAV 93 mound.

Monitoring of the NHAV 93 mound has continued through 1995, including additional precision bathymetric surveys, subbottom profiling, REMOTS[®] sediment-profile photography, sediment surface grab samples for chemical analysis, and geotechnical coring. The long-term focus of these operations has pertained to mound stability and compaction/consolidation of the NHAV 93 mound; REMOTS[®] sediment-profile surveys have determined the recolonization rate of the mound; and additional sediment cores and grab samples investigated the potential for migration of contaminants into the overlying cap material. The results of these datasets have been submitted to NED under separate DAMOS report titles.