EXECUTIVE SUMMARY

An investigation was conducted in May 2004 as part of the Disposal Area Monitoring System (DAMOS) to assess the physical distribution of sediments and chemical profiles in two engineered mounds in Long Island Sound, Stamford New Haven-North (STNH-N) and Cap Site 2 (CS-2). Seven cores were collected from each mound, visually inspected and subsampled for selected metals, PAHs, TPHs and total organic carbon. Visual observations and analytical data were applied to classify horizons into surficial sediments, capping dredged material (CDM), unacceptably contaminated dredged material (UDM), historic dredged material, and native base sediments.

The STNH-N mound is one of two capped mounds created in 1979 as the first engineered open water caps in the United States. The CS-2 mound was created in 1983 as part of an extensively monitored follow-up capping project. Extensive investigations performed during and following formation of these mounds revealed that the contaminated UDM had been successfully capped at both sites. Data from the 2004 investigation was compared to historic data to evaluate the integrity of the caps and assess the continued isolation of chemicals within the UDM horizon.

The cores collected in the 2004 study at STNH-N and CS-2 provided clear and consistent data showing that the CDM over UDM sequence remained intact with a well-defined interface between the intervals at both mounds. At STNH-N, the thickness of the CDM interval compared well with the distribution of the CDM mapped following the original formation of the mound, taking into account the expected long-term consolidation of the hydraulically dredged CDM. At CS-2, the thickness of the CDM was more variable, reflecting the intermittent disposal associated with mechanical dredging that was used in the project, but there was no apparent reduction of CDM thickness over time. At both sites, a surficial layer was noted above the CDM, indicating net deposition since formation of the mounds. The maintenance of the CDM thickness over time and the overlying net deposition provide evidence that the UDM interval remained physically isolated from the overlying waters and unaffected by potential erosive events or other surface disturbances.

The sediment chemistry data supported classification of sediments into the observed horizons in the cores. Concentrations for all constituents were generally at least an order of magnitude higher in the UDM than in the other horizons. Comparison of 1990 and 2004 analytical data indicated similar concentrations were observed in both surveys. The 2004 analytical results did not suggest any vertical migration of chemicals from the UDM into the CDM, supporting previous studies indicating chemical isolation within the UDM.