

## EXECUTIVE SUMMARY

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The Cape Cod Canal serves as a major thoroughfare for recreational and commercial vessels transiting Massachusetts waters. For this reason, maintenance dredging of the east end of the Cape Cod Canal and improvement dredging of the East Mooring Basin were conducted by the U.S. Army Corps of Engineers during the spring of 1990. The fine grained sediments from these projects were released at the Cape Cod Canal Disposal Site (CCDS) and the sandier material was sent to Springhill Beach. The CCDS has been used periodically for similar dredging operations. The objective of disposal at Springhill Beach was to create a small feeder berm.

The optimal management of both sites required pre- and postdisposal bathymetric surveys. These surveys were used to map the areal distribution of the dredged material and measure changes in depth before and after disposal. In addition, a REMOTS® sediment-profile photographic survey was conducted at CCDS to map the dredged material below the resolution of the acoustic bathymetric survey and assess the recolonization status of the historical disposal mound at the site.

The fine grained material released at CCDS formed a mound 1.0 m in height within a 300 m radius of the "CCD" disposal buoy. A comparison of pre- and postdisposal bathymetry generated a volume difference of 21,823 m<sup>3</sup> (95% confidence limits of 10,739 m<sup>3</sup> and 32,908 m<sup>3</sup>). This agreed closely with the barge log volume estimates of 15,296 m<sup>3</sup>. The REMOTS® survey, consisting of a 15 station east-west transect over a historic disposal mound at CCDS, showed recolonization by Stage II infauna near the mound center. No distinct dredged material layers were present anywhere along the transect. However, the continued effect of dredged material disposal was apparent at the center and eastern end of the survey while ambient conditions existed at the western end. Scouring and winnowing were evident at some stations near the mound center.

The depth difference analysis at the Springhill site revealed four distinct disposal mounds, ranging from 2.1 to 2.3 m in height. General shoaling and redistribution of sediments around the area of the individual disposal mounds were apparent. Barge disposal logs estimated 87,628 m<sup>3</sup> of material were deposited at the Springhill site. Volume calculations showed an estimated 83,972 m<sup>3</sup> (95% confidence limits of 67,736 and 98,208 m<sup>3</sup>) of dredged material had accumulated, indicating that barge log records for both the CCDS and Springhill sites were in good agreement with the survey calculations. Additional bathymetric surveys after a period of time (e.g., six months) could provide evidence as to whether or not the Springhill site is serving as a feeder berm for the beach area.