

## EXECUTIVE SUMMARY

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A monitoring survey was conducted in August 2007 at the Massachusetts Bay Disposal Site (MBDS) as part of the Disposal Area Monitoring System (DAMOS). The 2007 field effort consisted of bathymetric and sediment-profile imaging (SPI) surveys and the collection of sediment box cores. The objectives of the surveys were to document the distribution of dredged material across MBDS at historic and recent disposal mounds, to assess the benthic recolonization status of historic disposal mounds MBDS-E and MBDS-F, and to assess baseline sediment characteristics over the southeastern portion of MBDS where a capping demonstration is planned (termed the barrel cap demonstration area or BCDA).

The 2007 multi-beam bathymetric survey covered a 2100 x 3200 m area (approximately 6.7 km<sup>2</sup>) encompassing the disposal mounds in the northern portion of MBDS and the BCDA in the southeastern portion of MBDS. Since the previous survey in 2004, the MBDS-F Mound received approximately 1.5 million m<sup>3</sup> of dredged material, resulting in an increase in mound height from 4 to 7 m above the seafloor. Despite nearly doubling in height, the observed diameter of the MBDS-F Mound did not change significantly since the 2004 survey. The disposal of approximately 550,000 m<sup>3</sup> of dredged material since September 2006 at the newly located disposal buoy resulted in the formation of a seventh distinct mound at the site, MBDS-G. The new mound measured 250 m in diameter and 3 m in height. Overall, there were no major differences in bathymetry over the historical mounds compared with the 2004 survey, and no other significant bathymetric changes were observed between 2004 and 2007.

The 2007 SPI survey was performed at historical disposal mounds MBDS-E and MBDS-F, along with the BCDA and three associated MBDS reference areas. The results of the SPI survey indicated that recolonization at the MBDS-E Mound had continued as expected, and recolonization at the MBDS-F Mound had proceeded faster than expected, with mature, Stage 3 communities found at almost every station on both of these mounds and habitat conditions similar to those found at the reference stations. SPI data from the BCDA indicated that overall, it was very similar to the reference areas in terms of sediment composition and physical characteristics as well as benthic community composition. Disposed dredged material was identified in some of the SPI images, particularly at the stations closer to the recent and active disposal areas in the northern portion of MBDS.

Sediment box cores were collected at the BCDA to further assess baseline sediment characteristics. Samples were collected from four stations, including two stations closer to the recent and active disposal areas and two stations near the southeastern boundary of MBDS farther from recorded disposal activity. Sediment collected from the two cores located closer to the disposal areas were considerably coarser than those near the southeastern boundary of the site that are assumed more similar to native sediments. All

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cores contained a surficial layer of soft, light-colored clay or elastic silt, underlain by dense and darker material.