EXECUTIVE SUMMARY

A monitoring survey was conducted in 2012 at the Eastern Passage Disposal Site (EPDS) as part of the Disposal Area Monitoring System (DAMOS) Program. The 2012 monitoring effort involved a high-resolution acoustic survey to characterize seafloor topography and dredged material distribution, as well as sediment-profile imaging (SPI) and plan-view imaging (PV) surveys to provide additional physical characterization and to assess benthic recolonization. The results of the 2012 surveys were used to document changes at EPDS since placement of approximately 52,000 m^3 of dredged material at the site.

EPDS is located in a trough in the tidal channel of Blue Hill Bay with hard rocky bottom to the southwest and a slope of soft sediment to the east. The high-resolution acoustic survey consisted of multibeam bathymetric and acoustic backscatter data acquisition. The survey was conducted over a square-shaped area that incorporated the entire disposal site. A reconnaissance acoustic survey was conducted north and south of the disposal site to locate potential reference areas. Four candidate reference areas were selected along the tidal channel. The acoustic survey revealed a small deposit of dredged material near the center of the disposal site in the trough. The peak of the deposit was approximately 5 m above the surrounding seafloor, and the deposit covered an area of approximately 170 $\times$ 80 m.

This deposit was consistent with expectations resulting from placement of a small amount of dredged material ($\sim$52,000 m^3) within a closely spaced series of release locations in over 100 m of water. There is evidence in acoustic backscatter results that dredged material spread in a thin apron over a northeast shoal area within the disposal site due to placement in relatively deep water and potentially strong tidal currents present in the center of the disposal site.

SPI and PV images were collected from EPDS and four candidate reference areas, two suitable reference areas were selected from these candidate areas within the tidal channel of Blue Hill Bay. The suitable reference areas were selected for the presence of soft sediments similar to those located within the trough at EPDS.

The 2012 survey revealed two distinct sedimentary habitats and associated biological communities within EPDS: a fine-grained, soft-bottom infaunal community in the central trough and northeast shoal area, and a hard-bottom epifaunal fouling community in the southwest shoal area. The recent dredged material was placed primarily in the central trough area on fine-grained, soft-bottom substrata. The hard-bottom area was not intended to receive dredged material and stations collected in this area were excluded from comparison with reference area characteristics.

Evidence of Stage 3 successional status was present in all replicate images from all survey stations, suggesting that the benthic community at the disposal site had recovered and was equivalent to reference area benthic communities. Evidence of deep deposit-feeding infauna was present throughout the disposal site, and the aRPD depths within the

disposal site boundary were slightly elevated compared to those found in the ambient sediments.

EPDS has experienced full recovery of the benthic community in the year and a half since cessation of dredged material placement activities. Given the complete recovery of the benthic infaunal community, it is predicted that the effects from any future disposal operations at EPDS would be transient and the infaunal community would quickly reestablish itself within 12–18 months following completion of disposal operations. Future dredged material placement should be limited to the central trough area due to the favorable topography and sediment types observed in this area. Future confirmatory survey work at EPDS is conditional on additional placement of a significant amount of dredged material. Two reference areas, SREF and ALT3REF, are recommended as suitable reference areas for future monitoring surveys.