

EXECUTIVE SUMMARY

During January and May 2000, an estimated total of 14,200 m³ of sediment dredged from the U.S. Coast Guard Base in New Haven, CT was placed in a small, man-made depression (borrow pit) in Morris Cove, located in outer New Haven Harbor. A monitoring survey was conducted over the Morris Cove borrow pit in late September 2000 to document the distribution of the dredged material on the seafloor, verify the stability of the sediment deposit, and evaluate recolonization of the deposit by benthic organisms.

The monitoring involved the use of REMOTS[®] sediment-profile imaging, side-scan sonar, single-beam bathymetry, and towed video to evaluate benthic conditions within and adjacent to the borrow pit. Sediment-profile images also were obtained at a reference area located approximately 800 m west of the borrow pit to provide a comparison with ambient seafloor conditions.

The side-scan sonar data showed a clear differentiation between softer sediments within the borrow pit and coarser, more compact sediments comprising the outer walls of the pit. Multiple bottom features with increased vertical relief and surface roughness detected within a 50 m radius of the central disposal point and to the east of this point were attributed to dredged material deposition. Both the side-scan sonar and towed video data suggested that the impacts associated with the deposition of dredged material were contained largely within the southern portion of the Morris Cove borrow pit. The controlled placement of small barge loads of dredged material had facilitated the creation of a small-scale sediment deposit within the confines of the pit.

The REMOTS[®] sediment-profile images served to confirm the presence of dredged material at stations located within the borrow pit. The dredged material was observed at stations in close proximity to the disposal buoy position and extending out 100 to 150 m from this central disposal point. The measured thickness of the dredged material layer typically exceeded the penetration depth of the sediment-profile camera (i.e., greater than about 10 or 15 cm). The dredged material was predominantly fine-grained, consisting of soft, sandy silt.

The presence of methane gas bubbles in the sediment at three stations within the borrow pit suggested that some of the dredged material continues to contain a high inventory of organic matter. Fine-grained sediments having relatively high surface boundary roughness, shell lag deposits, and shallow depth of aeration characterized the reference area. It was hypothesized that the shallow reference area may experience periodic physical disturbance from fishing activities or the scouring action of waves and currents during high wind events.

At the time of the survey (5 months post disposal), it appeared that benthic recolonization of the dredged material deposit was progressing as expected. The sediment-profile images showed that the benthic infauna included primarily Stage I opportunistic

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polychaetes (i.e., pioneering taxa) at the sediment surface. Relatively well-developed redox depths were noted at most stations, and advanced successional stages (Stages II and/or III) were observed at 8 of the 22 stations occupied. Due to the protected nature of the borrow pit and the recent input of organically enriched sediment, overall benthic habitat quality within the borrow pit was considered to be better than that at the nearby, shallow reference area.