EXECUTIVE SUMMARY

The New London Disposal Site (NLDS) was monitored by Science Applications International Corporation (SAIC) in June 2001 as part of the Disposal Area Monitoring System (DAMOS) Program. Field operations consisting of sediment coring, sediment-profile imaging, and benthic community sampling were concentrated over the Seawolf disposal mound and three nearby NLDS reference areas. The survey objectives were to evaluate the physical and chemical composition of the deposited sediment comprising the capped Seawolf Mound and the benthic recolonization status of this mound relative to ambient conditions at the reference areas.

Physical and chemical analysis of the June 2001 sediment cores served to verify that the sediment comprising the upper 0.5 m of the Seawolf Mound was capping dredged material (CDM). Seven short cores collected from within the acoustically detectible footprint of the Seawolf Mound verified the presence of at least 0.5 m of CDM. Additionally, three long cores collected from the inner, middle and outer zones of the Seawolf Mound provided further evidence of the presence of between 1 and 2 m of cap material over most of the disposal mound. There was no evidence of migration or release of contaminants from unacceptably-contaminated dredged material (UDM) layers beneath the cap detected in either the short cores (upper 0.5 m of sediment) or long cores (analyzed to 2 m depth in the sediment). Overall, the June 2001 coring results indicate that the cap over the Seawolf Mound was a stable, thick layer that continued to effectively isolate the unsuitable sediments from the environment of eastern Long Island Sound.

Two short cores collected beyond the acoustically detectible footprint of the Seawolf Mound, in areas not included in previous surveys, indicated slightly higher concentrations of some contaminants compared to the remaining Seawolf Mound cores. The concentrations in these samples were less than pre-dredging UDM/CDM concentrations, and may simply reflect variability in the Seawolf CDM. However, based on differences in grain size and chemistry compared to the remainder of the mound, these samples may reflect a non-Seawolf source of dredged material. Possible sources include historic (e.g., pre-Seawolf) dredged material disposal in the region, and dredged material from the Mystic River and Venetian Harbor directed to NDA 95 buoy to the southwest of the Seawolf disposal buoy during the same timeframe as the Seawolf capping activities.

Sediment chemistry results compared to conservative ecological benchmarks indicated negligible potential for adverse effects to benthic infauna that may be in contact with the sediments in the Seawolf Mound, even for the maximum concentrations of contaminants detected in the survey.

In support of these findings pertaining to sediment chemistry, Remote Ecological Monitoring of the Seafloor (REMOTS®) sediment-profile imaging and benthic community analysis both indicated the presence of a stable and biologically active benthic community

at the time of the June 2001 survey. The benthic recolonization over the surface of the mound was relatively advanced, with abundant evidence of a mature or "equilibrium" community. The stations over the disposal mound showed consistent benthic habitat conditions, with median REMOTS® Organism-Sediment Index (OSI) values ranging from moderately disturbed to undisturbed. The overall median OSI of +8.2 (undisturbed benthic habitat quality) reflected moderately-well oxygenated surface sediments (overall RPDof 2.5 cm) and the presence of mainly Stage II and III organisms over the disposal mound. The OSI value for the Seawolf Mound was considerably higher than that observed at the reference areas, where a value of +5.5, attributable to less Stage III activity reflected differences in sediment type.

The sediment-profile images indicated that benthic organisms were abundant over the Seawolf Mound at the time of the June 2001 survey. Dense assemblages of early- to mid-stage colonizers (successional stages I and II) were visible at the sediment surface, and there was ample evidence that larger bodied, deeper dwelling taxa (Stage III) were inhabiting the mound surface in significant numbers. Based on the image interpretation, the community was characterized as representing an advanced, Stage II on III successional status.

Benthic taxonomic data collected at stations across the mound served to verify the sediment-profile image interpretation. Surface-dwelling, Stage I polychaetesand tube-dwelling, Stage II amphipods were ubiquitous and abundant. Subsurface-deposit-feeding and carnivorous polychaetes, indicative of Stage III, also were found in relative abundance. Compared to the results of the September 1997 survey conducted 1.5 years following the creation of the capped mound, the benthic community in June 2001 (five years postcap) was more abundant, had significantly more species present, and had greater diversity and evenness. These results indicate that in the five years since its creation, the Seawolf Mound had become inhabited by an advanced infaunal community comprised of a diverse mix of Stage I, II and III taxa. These results are consistent with expectations based on the standard model of infaunal succession following physical seafloor disturbance in Long Island Sound.