Dredge Sediment Reuse: Expanded Approach with Broad Applications

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Background/Objectives. An increase in the size of cargo ships has required construction of deeper and wider ship channels resulting in the generation of large volumes of dredged sediments. Coupled with the limited suitable shoreline sites to build new containment facilities and restrictions on ocean dumping, this has resulted in the need to collaborate with many stakeholders to manage economically viable and large scale innovative dredge material reuse projects. In addition, stream and river sediment is more frequently being managed as a pollutant by the EPA, particularly in East Coast fish habitats such as the Chesapeake Bay, further complicating dredging disturbance and reuse placement.

Approach/Activities. The team conducted an in-depth review of tidal and non-tidal sediment characteristics in the Mid-Atlantic Region, EPA and State dredge material reuse regulations and guidance documents, and the various geographic environments for the purpose of developing innovative dredged sediments reuse plans and partners. Critically, these plans and partners are designed to leverage detailed cost-benefit analyses and local expertise to maximize the economic benefit of dredge material reuse.

In order to effectively manage dredged sediments with varying physical and chemical characteristics within a defined water body, a wide variety of sediment reuses are typically necessary. Reuse partners identified for fine grain sediments are very different from the many reuse options available for predominantly sand-sized sediments. In addition, sediment generated from projects in the Mid-Atlantic often contain both “clean” sediments suitable for many reuse applications and contaminated sediments with limited reuse applications, prompting the need for a diversified reuse plan. Establishing these varied reuse partners is the foundation of successful and economically sustainable projects.

In addition to reuse partners, partnerships with dredging and dewatering companies were created to allow for effective identification and implementation of the dredging and dewatering techniques best suited to specific follow-on reuse applications. Minimizing the disturbance of sediment, chemicals and nutrients in the water, along with a well-designed dewatering system, is critical to the success of a long term sediment removal and reuse operation. Accordingly, plans and partners for innovative dredged sediments reuse were developed to account for this complexity

Results/Lessons Learned. The New York and New Jersey model of establishing a single large volume reuse that can address all types of sediment and contaminants is not economically viable for many jurisdictions with varying degrees of contamination nor is it flexible enough to withstand a changing product marketplace. An in-depth understanding of the numerous physical, regulatory and stakeholder considerations is required for innovative reuse to be successful. Additionally, this work highlights the need for the establishment of a team of environmental professionals and contractors working together to quickly respond to and solve the complex problems associated with the removal and reuse of dredge materials from Mid-Atlantic water bodies.