

Engineering With Nature

Project Fact Sheet



Title

Implementing Sustainable Dredged Sediment Management Practices for Supporting Coastal Wetlands

Background

Many wetlands are subsiding due, in part, to reduced mineral sediment input. Navigation dredged sediment that is not beach quality (>15% fines) has been identified as a resource which can support wetland resilience. Numerous wetlands have been constructed using dredged sediment. However, these construction projects are infrequent, costly, and considered 'targets of opportunity' where dredge schedules must align with construction schedules. Therefore, the majority of dredged sediment continues to be removed from the regional sediment system.

A pilot-scale strategic placement project has been implemented by the University of Florida and the State of Florida to demonstrate the benefits of low-cost, temporary permeable breakwaters to reduce marsh edge recession. Monitoring indicated that not only did recession stop, but sedimentation and natural recruitment in open water at the marsh edge added acreage to the marsh. The semi-quiescent environment created by the breakwater was ideal at permitting low-energy environment for sedimentation while maintaining sufficient water exchange to permit natural plant recruitment. This project will document this pilot study and monitor a larger scale demonstration. If successful, guidance developed through this documentation will increase practice across the US and provide a sustainable (cost-effective) dredged sediment management solution which provides flood risk management (FRM) and ecosystem restoration benefits.

Objectives

The objective of this project is to identify open water placement strategies for dredged sediment coupled with low-cost structural elements which permit placed sediments to consolidate and build foundations for wetland planting or natural recruitment. If properly designed and managed, these nearshore placements can increase wetland acreage and improve coastal resilience without significant added cost or risk to other nearby resources.

Approach

The project will leverage the connection with University of Florida (and other collaborative organizations) to scale up demonstration projects. Two (2) pilot-scale projects that utilize sustainable, dredged material placement strategies would be designed/constructed for the purpose of restoring wetland habitats that are eroding, subsiding, or otherwise being lost to open water habitat. Included in such approaches could be the integration of NNBF concepts to improve the functionality and sustainability of the created/restored wetlands. Current and ongoing coastal wetlands projects and funding in MVN, SWG and NAP will be leveraged to identify prospective projects for implementation. In this way, DOER/EWN funds are leveraged with reimbursable and/or in-kind match with MVN, SWG, and NAP.

Outcomes

Reports and journal articles providing details on how the projects were designed and implemented will be the key deliverables for this RT. For permeable breakwaters, specific products will include: 1) Demonstration project of low-cost permeable breakwater construction to support DM retention near degrading wetland (possibly St Augustine, FL or Orange, TX). 2) Guidance for planning, construction and DMM at these types of sites, 3) evaluation of other alternative cost-effective structures which can be used to support application of DM to construct wetland, 3) Possible demonstration at second site, if District funding can be leveraged.

Points of Contact: Jeff King, Joe Gailani, and Burton Suedel

jeffrey.k.king@usace.army.mil, joe.z.gailani@usace.army.mil, burton.suedel@usace.army.mil

Phone numbers: 202-761-0752, 601-634-4851, 601-634-4578