

Engineering With Nature Project Fact Sheet



Engineering With Nature® (EWN®) Beneficial Use of Dredged Material at Woodtick Peninsula for Coastal Wetland Creation and Protection

Background

Coastal wetlands serve important functions in the Great Lakes, including maintaining water quality, supporting biological diversity of native species, providing recreational opportunities, protecting shorelines from storm damage and flooding, and providing a traditional food source (wild rice) for Tribal communities. The Great Lakes have lost at least half of the approximately one million acres of coastal wetlands thought to exist over a century ago. Woodtick Peninsula in western Lake Erie is a coastal wetland that serves as a barrier peninsula protecting Erie Marsh from natural forces; however, it is slowly losing mass and is at risk of continued. Meanwhile, Toledo Harbor, a deep draft commercial harbor supporting over \$494M in business revenue, is located on Lake Erie just over 2.5 miles away from Woodtick Peninsula. Toledo harbor requires approximately 800,000 cubic yards of dredging every year to maintain the navigation channel. The co-location of these two sites presents an opportunity to create and protect wetlands at Woodtick Peninsula through cost-efficient sediment placement of the dredged materials from the Toledo Harbor navigation channel maintenance. This project also represents a unique opportunity for collaboration between Engineer Research and Development Center (ERDC), USACE Districts, States (Ohio and Michigan) and resource agencies to determine engineering best practices to beneficially use of fine-grained dredged material.



Objectives

The overall objectives of this project are to create additional wetland habitat on and adjacent to the Woodtick Peninsula, protect the recently restored 1,000 acres of coastal marshland habitat of Woodtick Peninsula and adjacent wetlands, and provide cost-efficient placement for dredged sediment from Toledo Harbor federal navigation channel. The project will evaluate construction techniques for placement of fine-grained dredged material in relatively inaccessible areas and will explore incorporation of natural features to enhance habitat value.

Approach

ERDC researchers will provide engineering design support to address challenges of placement and retention of fine-grained dredged material. Consolidation modeling will assess elevation changes over time with respect to project goals and tolerances. ERDC will assist with engineering design of Natural and Nature Based Features (NNBF) techniques for wave protection and will evaluate potential design features to enhance natural features and habitat, improve ecological services, or provide social benefits. A monitoring plan will be developed to assess ecological or social benefits achieved by the project. Project documentation will be provided through various technical transfer outlets.

Outcomes

In addition to creating coastal wetland habitat and providing suitable placement for dredged material, the project will demonstrate construction techniques for placement of fine-grained dredged material in inaccessible areas. Wetland expansion and protection will provide environmental benefits such as increased habitat and social benefits such as additional hunting, fishing and birding opportunities.

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