



New Jersey Intracoastal Waterway Mordecai Island Beneficial Use

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Background

After Superstorm Sandy, the USACE Philadelphia District partnered with the U.S. Army Engineer Research & Development Center, the state of New Jersey and several non-profit organizations on multiple dredging and marsh restoration projects along the New Jersey Intracoastal Waterway. This methodology is a departure from the traditional practice of dredging and placing material in confined disposal sites that remove sediment from coastal processes. A lack of capacity within the confined disposal sites throughout southern New Jersey, as well as the need to restore marsh and build coastal resilience, necessitated a change in practice.



Mordecai Island is a 45-acre uninhabited coastal salt marsh located west of Beach Haven, N.J. In 2015, USACE and partners placed dredge material to restore marsh on the northern side of the island

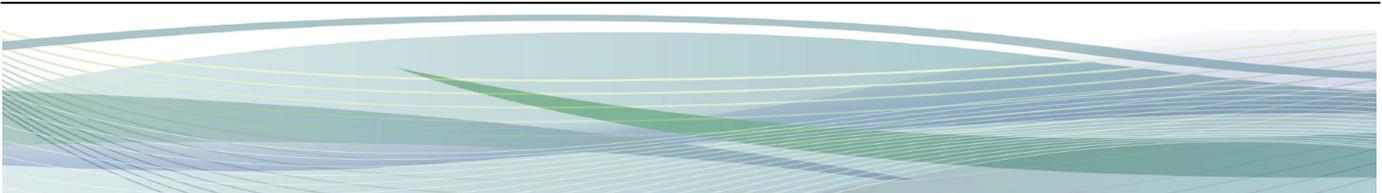
One of the beneficial use placement sites is Mordecai Island, which is located behind Beach Haven, N.J. in Barnegat Bay. The island serves several important purposes – it provides habitat for numerous species of wildlife and it augments overall coastal resiliency for the back-bay communities of Long Beach Island. The island, owned by the Mordecai Island Land Trust, is an important recreational and educational resource for the community.

Site Description

Mordecai Island is a 45-acre uninhabited coastal salt marsh island. It supports a variety of breeding and migratory bird species, including the American Oystercatcher and the Black Skimmer. The island has significantly eroded, particularly on its northern side as a large cut developed. The island is adjacent to a section of the New Jersey Intracoastal Waterway that required dredging due to shoaling.



Barnegat Bay Dredging Company dredged the federal channel of the New Jersey Intracoastal Waterway and place the material on Mordecai Island near Beach Haven, NJ.



Construction Details

The USACE Philadelphia District contracted with Barnegat Bay Dredging Company of Harvey Cedars, N.J. to dredge approximately 25,000 cubic yards of sediment from a critical shoal in the federal channel of the Intracoastal Waterway. In the winter of 2015, the dredge *Fullerton* was used to dredge the material, which was pumped and placed in a section of Mordecai where a breach had occurred, splitting the island into two sections. Contractors used dredging techniques and a turbidity curtain to hold material in place.

In the spring of 2016, USACE contractor GreenVest LLC planted different varieties of marsh grass based on the topography of the site. The lowest zone was planted with saltmarsh cordgrass (*Spartina alterniflora*). The next highest zone was planted with saltmeadow hay (*Spartina patens*) and salt grass (*Distichlis spicata*). The third zone is the highest zone above the intertidal influence was originally deemed to receive coastal shrub plantings, however, this zone along with the shell cover developed into beach nesting bird habitat.



Contractors from GreenVest LLC planted different varieties of salt marsh grasses based on the topography of the site.

In the summer of 2017, the team determined that specific areas of the restored marsh areas should be elevated in order to sustain the growth of submerged aquatic vegetation and enhance the bird nesting habitat that was originally created. In December 2017, the adaptive management strategy was achieved by placing an additional 3000 cubic yards of dredged sediment within the existing project footprint. Partners, including ERDC, NOAA and the Land Trust, are continuing to monitor the island and placement area.

Monitoring & Lessons Learned

USACE and partner organizations are monitoring the site for ecological benefits. Initial reports have been positive as American oystercatchers and other bird species have nested at the site. The long-term results will help inform future dredging and beneficial use efforts. The team identified a number of lessons learned, including:

- The success of the project required partnership at all levels (federal, state, local, private)
- The importance of testing sediment to determine suitable placement opportunities
- The value of working with the dredging industry to understand limitations and challenges associated with marsh restoration work
- Relying on hard data and science to work through regulatory requirements

