



# Innovative Engineering with Nature (EWN) Construction Techniques

## Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

### Focus Area

Dredged Material Management

### Problem

Engineering with Nature (EWN) projects are constructed using a range of techniques. Common EWN projects use dredged material (DM) placement to bolster elevation of the marsh platform for subsiding marshes, or to restore wetlands or mudflats that have converted to open water. Unconfined placement without any form of containment may not be able to achieve sediment elevation goals. Construction of EWN projects require innovative and adaptive techniques, especially in tidal or marsh environments.



### Study Description

This effort will host a EWN construction techniques workshop and invite participants from industry, government agencies, and academia. The goal for the workshop is to synthesize current innovative construction techniques and equipment, and to identify future needs. It is expected that multiple research initiatives and statements of need will be derived from the workshop discussions. Additionally, previous DOER supported investigations into DM consolidation in tidal environments conducted in the laboratory, and field monitoring of DM consolidation on a vegetation marsh will have analysis completed and will be documented in technical reports.

### Products

1) Workshop on EWN Construction Techniques, 2) White paper describing the current state of EWN construction techniques and future needs, 3) Technical report on the influence of water level on the consolidation of DM, 4) Technical report on the field consolidation of DM at Avalon, NJ.

### Summary

A range of unique construction techniques are needed to perform EWN projects. This project will provide insight as to the current state of the science regarding EWN construction techniques and will inform future research needs. Information will also be provided as to how dredged material consolidation impacts EWN construction.



*Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.*



Susan Bailey

ERDC Environmental Laboratory • Susan.E.Bailey@usace.army.mil

January 2022