ENGINEERING WITH NATURE AND THE GREAT LAKES:
AN ACHIEVABLE PATH TO SUSTAINABLE PROJECTS AND BENEFITS

EWN Great Lakes RESTORATION

US Army Corps of Engineers® Buffalo District

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Coastal Resiliency: Natural and Nature-based Features

Project: Braddock Bay Ecosystem Restoration

Location: Braddock Bay, NY

Funding: Great Lakes Restoration Initiative

Scope: At Braddock Bay an augmented stone breakwater adds features for the restoration of a barrier beach. The goal of this project is to reduce erosion behind the breakwater where additional restoration measures will increase habitat diversity, extent of emergent wetlands, and ultimately increase the system's suitability for wildlife.

The restored barrier beach will help return Braddock Bay to a low energy system; as a result reductions in wetland erosion will be accompanied by natural expansion of submerged aquatic vegetation.

Project: Green Breakwaters

Location: Cleveland Harbor, OH

Funding: Great Lakes Restoration Initiative & Energy and Water

Scope: The Cleveland Harbor Breakwater demonstration project involved modifying the design of the standard concrete toe blocks used for breakwater maintenance.
The goal was to provide features that could create habitat opportunities for Great Lakes fish and invertebrates that would not otherwise be present.

Successful implementation of the project has already led to additional projects on Great Lakes Breakwaters. These have considerable potential for breakwaters across the Nation. Results have already been replicated in Ashtabula, OH and designs can easily be replicated at other federal and non-federal breakwaters.

This project was included in the EWN portfolio that received the national recognition in the forms of FY13 Chief of Engineers Environmental Award for Natural Resources Conservation & FY14 USACE Green Innovation Award.

In addition, this project has been recognized by the World Association of Waterborne Transport Infrastructure (PIANC) through a certificate of recognition as an official case study demonstrating one or more elements of Working with Nature.

Beneficial Use of Dredged Sediment

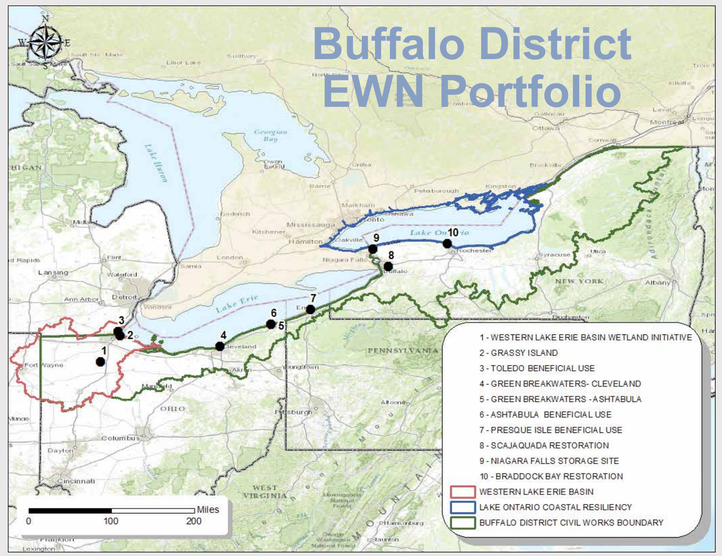
Project: Toledo Harbor

Location: Toledo, OH

Funding: Energy and Water

Scope: In the past, USACE has placed approximately 800,000 cubic yards of sediment in an open lake placement site 12 miles away. Repair of stone coastal structures is typically done on top of existing damaged stone, but shallow water in Maumee Bay will necessitate dredging an access channel. By moving the new stone protection further east, an emergent wetland created with Toledo Harbor sediment can be constructed in the quiescent area behind the new structure.

Buffalo District EWN Portfolio



Project: Presque Isle Bay

Location: Presque Isle Bay, PA

Funding: Energy and Water

Scope: This demonstration project involves the placement of Erie Harbor sediment at locations near the end of Presque Isle. The goal of the project is to contribute to the growth and maintenance of Gull Point, a habitat critical to breeding populations of piping plover and other species.

The project will monitor, analyze, and evaluate the fate and transport of sand and silty clay fractions based on results of a tracer study to be performed as part of Erie Harbor dredging in 2015.

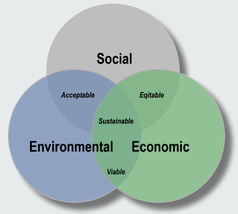
"We need to change the perception of dredged material from a spoil to a valuable resource."

BG Kaiser,
Great Lakes and Ohio River Division Commander.

Sustainable Development of Water Resources Infrastructure

Engineering With Nature (EWN) is the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaborative processes. The key four elements of the EWN approach are:

- Science and engineering that produces operational efficiencies
- Using natural process to maximum benefit
- Broaden and extend the benefits provided by projects
- Science-based collaborative rocesses to organize and focus interests, stakeholders, and partners.



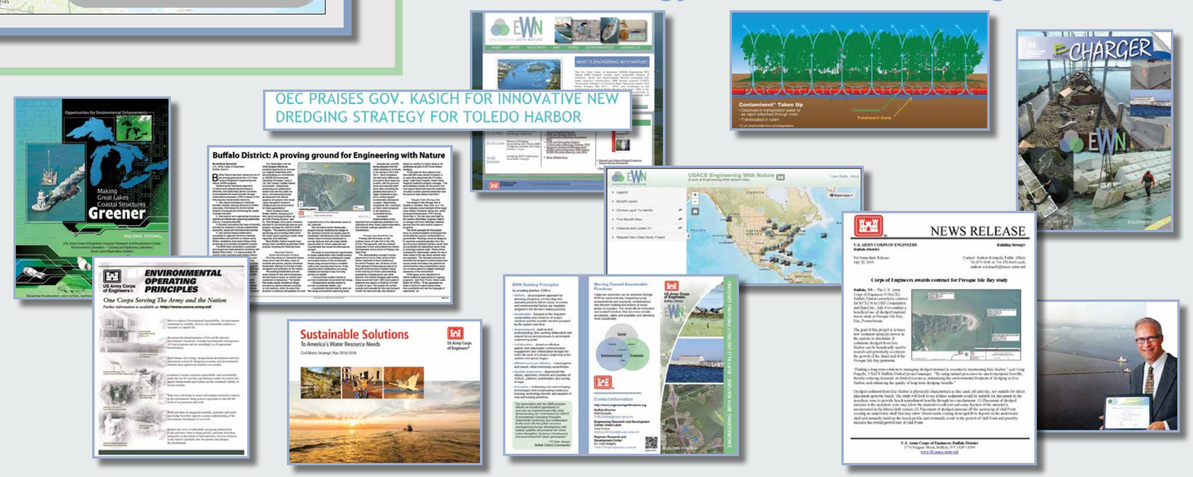
EWN 'Proving Grounds'

USACE Buffalo and Galveston Districts have committed to serve as EWN "proving grounds" for district-wide implementation of principles and practices. Recent efforts included an implementation workshop with each district conducted by the EWN Leadership Team. At each workshop, participants shared information about EWN, ongoing projects, and worked in collaborative teams to identify opportunities to implement principles and practices in current and future district projects. The Buffalo District has initiated five projects demonstrating EWN.

"Our association with the EWN program affords an excellent opportunity to exercise our regional leadership while demonstrating our commitment to USACE Environmental Operating Principles."

LTC Karl Jansen,
USACE Buffalo District Commander

Technology Transfer and Recognition



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