

# Engineering With Nature Geographic Project Mapping Tool (EWN ProMap)



**Cynthia Banks**  
Program Manager

**Burton Suedel, PhD**  
Research Biologist

**Michelle Bourne**  
Research Biologist

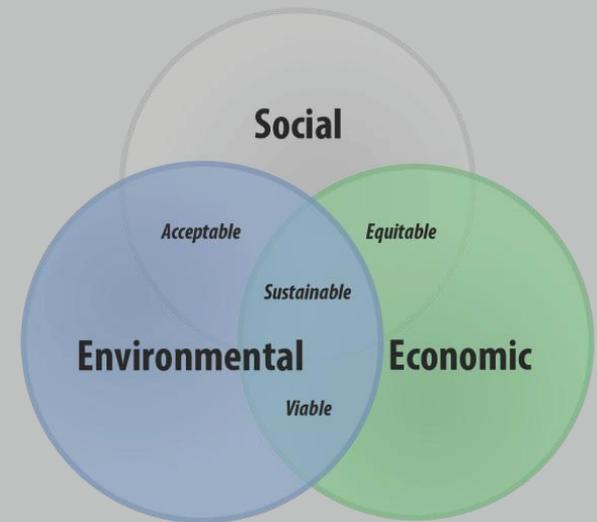
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# Outline

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- EWN ProMap Origin and Evolution
- EWN ProMap Overview
  - Orientation
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# Introduction

The EWN ProMap is an interactive on-line catalog of case studies that apply the EWN concepts for the purpose of informing existing and future water resource infrastructure projects or other project types. The primary objectives of the EWN ProMap are:

- (1) to identify the types and geographic locations of existing projects,
- (2) to assess the level of documentation that was available for projects related to their planning, project goals, design and assessment of success,
- (3) to evaluate how well projects applied a set of criteria that have been developed to characterize EWN projects.

# EWN Key Elements

The four EWN elements have been rephrased as criteria that can be used to describe the degree to which a project applies the EWN concept. These criteria are:



Extent to which the project produces and makes use of efficiencies to contribute to sustainable delivery of project benefits, including consideration of how the project function is sustainable in the broader systematic context (e.g., regional watershed or sediment systems).



Extent to which natural processes are used to produce benefits and outcomes.



Extent to which the project and its configuration broaden the base of benefits provided (economic, social, and environmental).



Extent to which the project makes use of collaborative processes to organize and focus interests, stakeholders, and partners.

# Origin of EWN ProMap

- Initiated in 2010 as Environmental Enhancements and Navigation Infrastructure (EENI)
  - “A Study of Existing Practices, Innovative Ideas, Impediments, and Research Needs”
- Conducted literature and internet searches, telephone interviews, networking at technical meetings and conferences held with key individuals and groups to identify projects that successfully demonstrated EWN
- Particularly, web meetings with USACE district personnel utilizing Google Earth in an interactive mode to locate sites
- All of these efforts resulted in the development of a database of sites and related documentation.

# Origin of EWN ProMap (cont.)

- To allow display and exploration of data and information associated with these projects, site information and location was initially gathered in a Google Earth project.
- The information in the Google Earth project was then developed into the EWN ProMap tool to provide users with greater functionality to screen the information of sites and to enable better search capabilities.



# EWN ProMap Evolution

- Previously based on
  - Esri's ArcGIS Application Programming Interface (API) for Flex 3.0
  - ArcGIS Online
- Currently based on
  - JavaScript architecture
  - ArcGIS Portal
  - Better Photo & Document Capabilities
  - Greater Collaboration Options
  - Easier Maintenance





# Example of EWN ProMap Zoomed to Project Scale

The screenshot displays the EWN ProMap interface. At the top left is the EWN logo with the text 'ENGINEERING WITH NATURE'. To its right is the header 'USACE Engineering With Nature' and the subtitle 'A Look At Engineering With Nature Sites'. Further right are links for 'Submit A New EWN/RSM Case Study', 'User Guide', and 'About'. On the left side, there is a vertical menu with four items: 'Legend', 'Benefit Layers', 'Find Benefit Sites', and 'Measure and Locate XY'. The main area is a satellite map of a coastal area with a long, narrow structure extending into the water. A popup window titled 'Navigation Dredging' is open over the map, displaying the following data:

Navigation Dredging	
OBJECTID	44
SDSID	Null
SDSFEATURENAME	Deer Island Berm
SDSFEATUDESCRPTION	Offshore berm created using dredged channel sediment designed to provide shore protection beach

At the bottom of the popup is a 'Zoom to' link. The map interface also includes a 'Basemaps' dropdown menu in the top right, a scale bar at the bottom left, and the 'POWERED BY esri' logo at the bottom right.

# Site Classifications Used in the Tool Panel

<b>Classification Acronym</b>	<b>Description</b>	<b>Information Content</b>
<b>AIPT</b>	Associated Infrastructure Project Type	Defines the type of water resource project from which additional benefits are provided (Beach, Dike, Breakwater, Chevron, Pier, etc.)
<b>EWNB1</b>	Engineering With Nature Benefit 1	Defines the first EWN benefit intended by project designers (Fish Habitat, Bird Habitat, Recreation, Beach Nourishment, etc.)
<b>EWNB2</b>	Engineering With Nature Benefit 2	Defines the second EWN benefit intended by project designers
<b>EWNB3</b>	Engineering With Nature Benefit 3	Defines the third EWN benefit intended by project designers

# AIPT and EWN Benefit Selections Available in the Tool Panel

<b>Available AIPT Selections</b>	<b>Available EWN Benefit Selections</b>
Breakwater	Aesthetics
Bulkhead	Beach nourishment
Chevron	Bird habitat
Dike	Fish habitat
Groin	Invertebrate habitat
Jetty	Island restoration
Multiple round point	Mammal habitat
Navigation dredging	Recreation
Pier/wharf	Reptile habitat
Revetment	Shore protection
Seawall	Vegetated habitat
Shore protection	

# Tool Panel Site Selection Function

The screenshot displays the USACE Engineering With Nature website interface. The header includes the EWN logo, the text "USACE Engineering With Nature" and "A Look At Engineering With Nature Sites", and navigation links for "Submit A New EWN/RSM Case Study", "User Guide", and "About".

The main content area features a map of the United States and parts of Canada and Mexico. The map is overlaid with numerous blue circular markers, each containing a small image of a site. A "Basemaps" dropdown menu is visible in the top right corner of the map area. A scale bar at the bottom left indicates 1000km and 600mi.

On the left side, there is a "Legend" panel with the following sections:

- Benefit Layers**
  - Case Study Requests
  - EWN AIPT
    - Navigation Dredging
    - Dike
    - Chevron
    - Revetment
    - Breakwater
    - Jetty
    - Multiple Round Point
    - Groin
    - Pier/Wharf
    - Seawall
    - Shore Protection
    - Bulkhead
  - EWN Benefit 1
  - EWN Benefit 2
  - EWN Benefit 3
- Find Benefit Sites** (with a right-pointing arrow)
- Measure and Locate XY** (with a right-pointing arrow)

# Display of Site Name Search Feature

The screenshot displays the USACE Engineering With Nature web application interface. The top navigation bar includes the EWN logo, the text "USACE Engineering With Nature A Look At Engineering With Nature Sites", and links for "Submit A New EWN/RSM Case Study", "User Guide", and "About".

On the left side, there is a sidebar menu with the following sections:

- Legend
- Benefit Layers
- Find Benefit Sites (active)
- Search For Text: ashtabula
- Find Exact Matches Only
- Search (button) Clear (button)
- 1 Result Found
- Result: Ashtabula Breakwater Tern Colony Habitat
- Measure and Locate XY

The main map area shows an aerial view of a coastal area with a long breakwater extending into the water. A popup window titled "Breakwater" is open over a specific point on the breakwater. The popup contains the following information:

- OBJECTID: 31
- docksAndWharfsIDPK: EWN-153
- sdsID: Null
- sdsFeatureName: Ashtabula Breakwater Tern Colony Habitat
- sdsFeatureDescription: Site under development to create gravel nesting beds for the

At the bottom right of the map, there is a "Zoom to" link and the "POWERED BY esri" logo.

# Case Study Submission Process

   
Case Study Request Submittal Form

**Step 1. Fill out the below information**

**Project Name:**

**Project Description:**

**Point Of Contact:**

**Project Start Date:**  **District:**  **USACE Division:**

**Collaboration or leveraging capabilities:**

**Region:**

**Type of environment:**

**Partners and stakeholders:**

**Project Location:**

**Type of Engineering with Nature Project:**

**E-Mail Address**

**Step 2. Please click the location of the study on the map:**

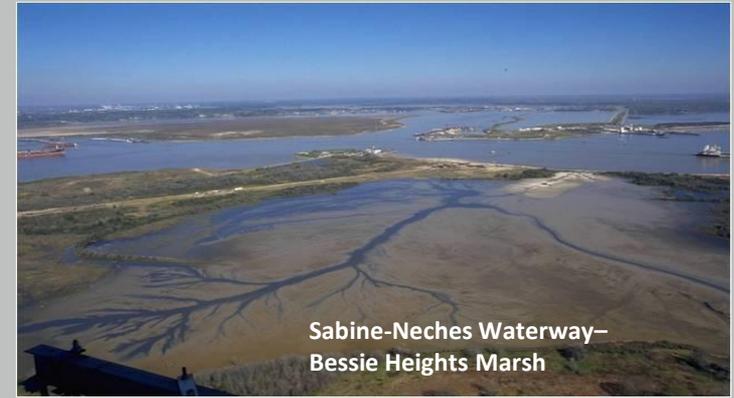
**Step 2. Please click the location of the study on the map:**



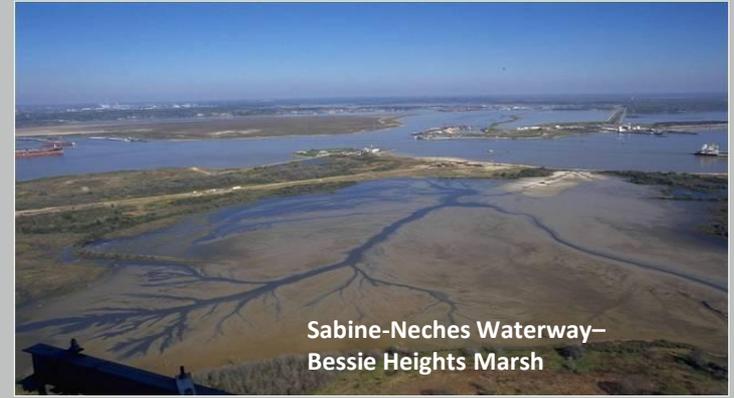
# Case Studies Examples

- There are a multitude of existing projects that exemplify aspects of the EWN approach that meet one or more of the four criteria.
- Projects range from marine to coastal to riverine environments.
- Although multiple projects have been identified that met EWN criteria, documentation of goals and monitoring of success has been scarce.
- The case studies presented are those that best exemplify the EWN concept by meeting most of the EWN criteria.

# Notable Galveston District Beneficial Use Projects



# Notable Galveston District Beneficial Use Projects



# Case Study #1

- Evia Island (Galveston Bay, TX)
- 6-acre island was constructed using sediment dredged during the deepening of the Houston Ship Channel in 1998
- Birds making use of habitat provided by the island
- Producing significant environmental benefits



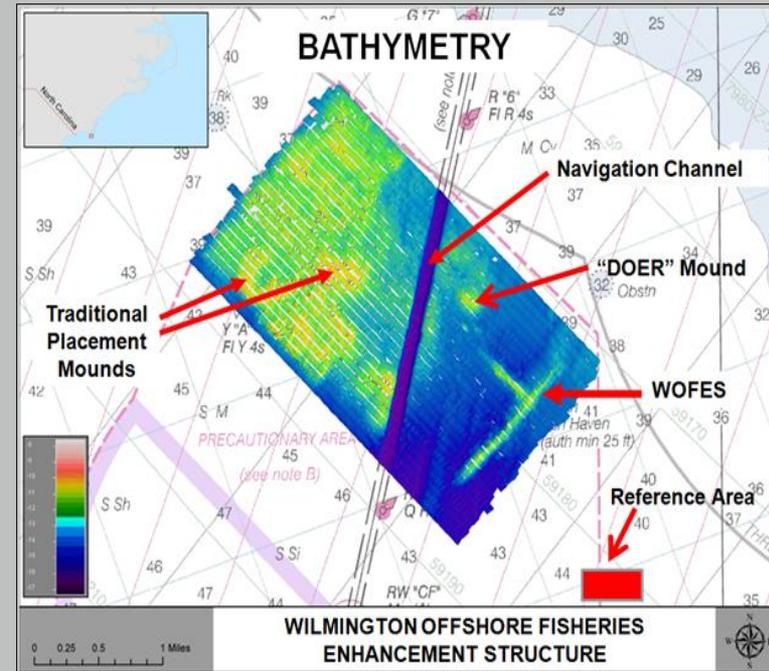
# Case Study #2

- Island Creation along the Atchafalaya River, LA
- As placement sites continue to become exhausted, there was a need for more creative placement alternatives in the Gulf Coast.
- In 2002, strategic placement of the sediment dredged from Horseshoe Bend occurred at the mid-river open water placement area.
- Strategic placement of between 0.5 to 1.8 million cubic yards of sediment was conducted every 1-3 years developing an ~35 ha island mid-river.
- Producing significant environmental and economic benefits



# Case Study #3

- Wilmington Offshore Fisheries Enhancement Structure (Wilmington, NC)
- Created in 1994-1997 from 764,600 cubic meters of limestone dredged as part of the Wilmington channel deepening
- Located three nautical miles off of the mouth of the Cape Fear River in North Carolina
- The location and design of the reef involved extensive participation by stakeholders, and the North Carolina Department of Environment and Natural Resources supported the project as a local sponsor.
- Produced significant social benefits as a popular destination for fishing tournament participants



# Next Steps

- Document, document, document!
- Future enhancements for EWN ProMap include:
  - (1) incorporating the ability to export information to other platforms such as Google Earth
  - (2) Integrate with other USACE enterprise systems such as CorpsMap. The Esri Portal software platform currently being used will facilitate these efforts due to its compatibility with these other systems.

# In Summary

- The EWN ProMap is an evolving tool.
- The EWN ProMap includes ~175 projects.
- We are continuously promoting and fully expect that users will become aware of the EWN ProMap in the future and will submit additional projects via the 'Submit a New Case Study' feature.
- The EWN ProMap is made available to any user with internet access (<http://gis2.sam.usace.army.mil/applications/opj/v013/>) without individuals needing an Esri ArcGIS license.

# Questions?

Cynthia Banks

[Cynthia.J.Banks@usace.army.mil](mailto:Cynthia.J.Banks@usace.army.mil)

601-634-3820

[www.engineeringwithnature.org](http://www.engineeringwithnature.org)

