Engineering With Nature Geographic Project Mapping Tool (EWN ProMap)

Cynthia Banks
Program Manager

Burton Suedel, PhD
Research Biologist

Michelle Bourne
Research Biologist

U.S. Army ERDC
23 June 2015

Dredging Summit & Expo 2015

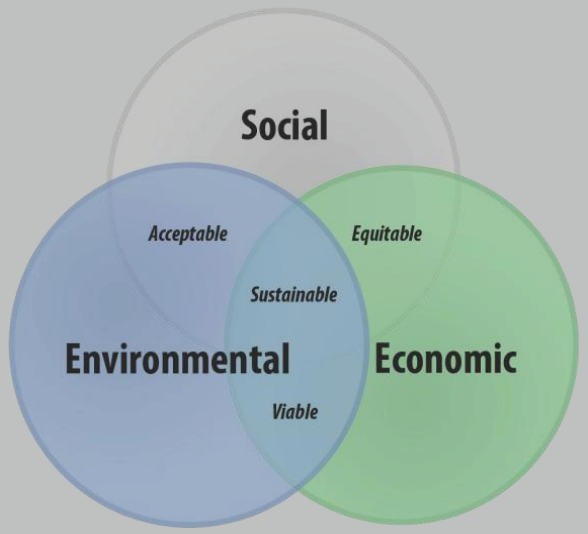
U.S. ARMY

US Army Corps of Engineers

ERDC
Engineer Research and Development Center

Outline

- Introduction
- EWN ProMap Origin and Evolution
- EWN ProMap Overview
  - Orientation
  - Site Tools
  - Site Screening & Searching
  - Submitting a Case Study
  - Case Study Examples
- Next Steps



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.

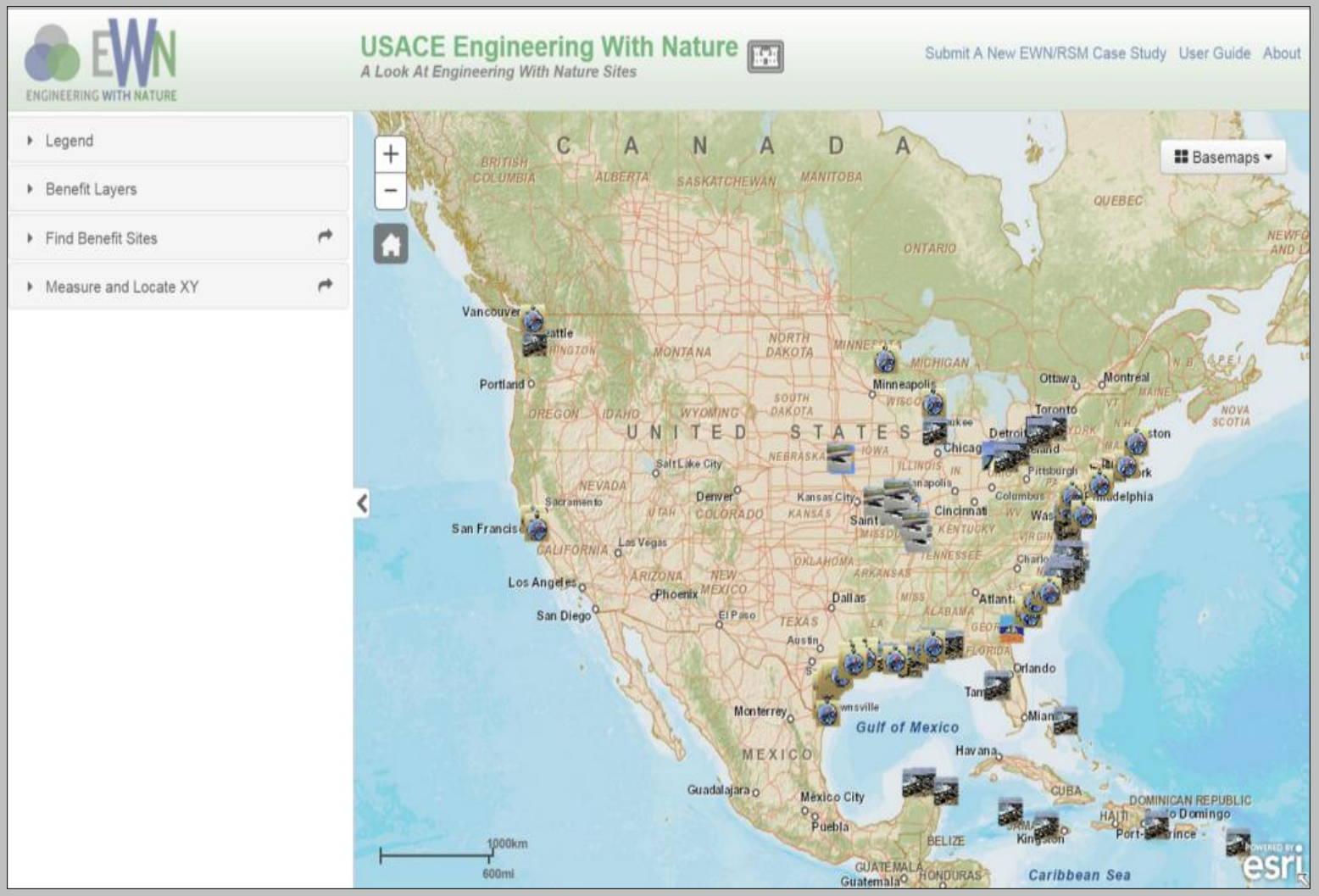
Origin of EWN ProMap (cont.)

- 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.

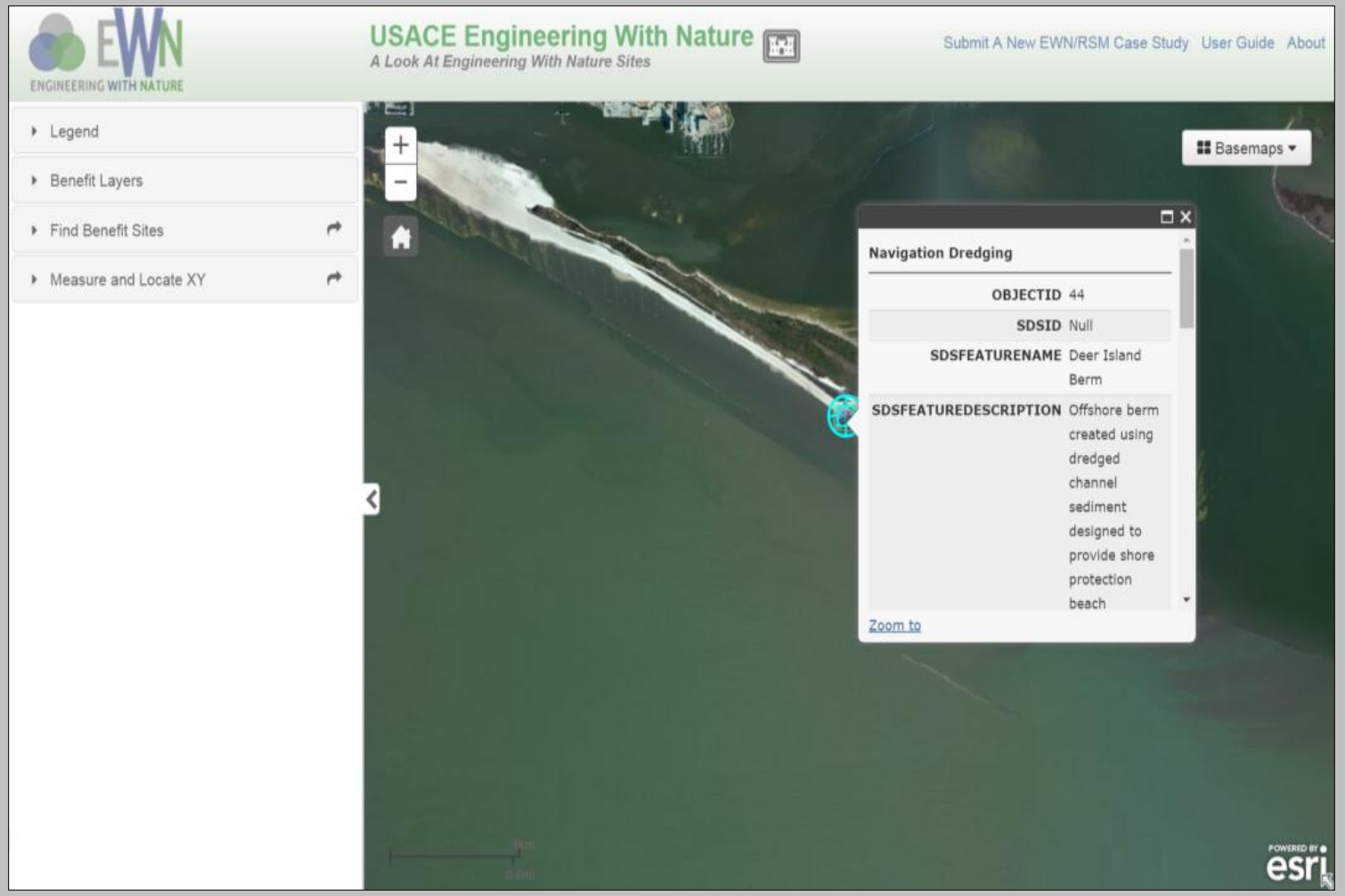
EWN ProMap Evolution

- 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

EWN ProMap Overview



Example of EWN ProMap Zoomed to Project Scale



Site Classifications Used in the Tool Panel

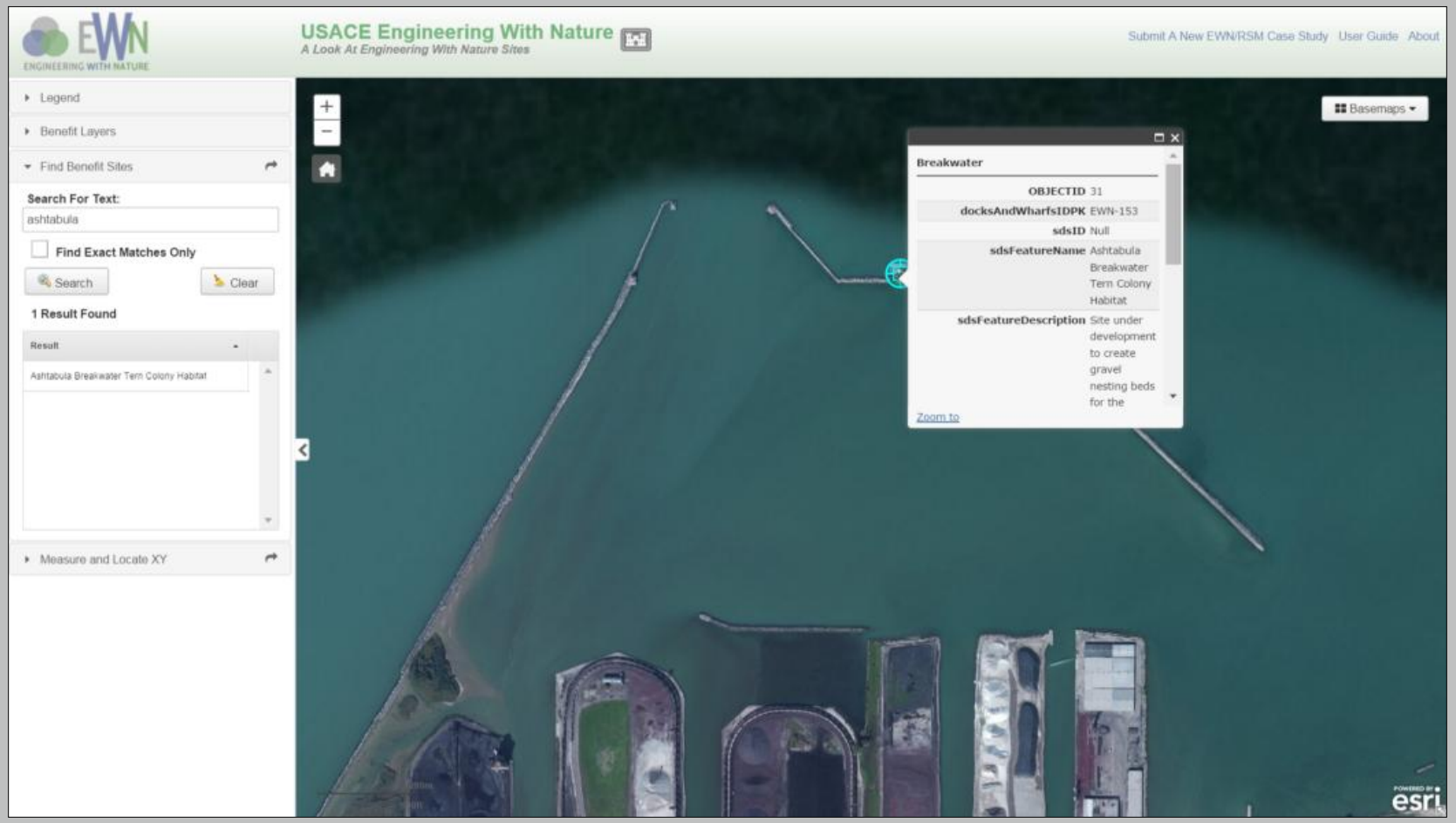
Classification Acronym	Description	Information Content
AIPT	Associated Infrastructure Project Type	Defines the type of water resource project from which additional benefits are provided (Beach, Dike, Breakwater, Chevron, Pier, etc.)
EWNB1	Engineering With Nature Benefit 1	Defines the first EWN benefit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

AIPT and EWN Benefit Selections Available in the Tool Panel

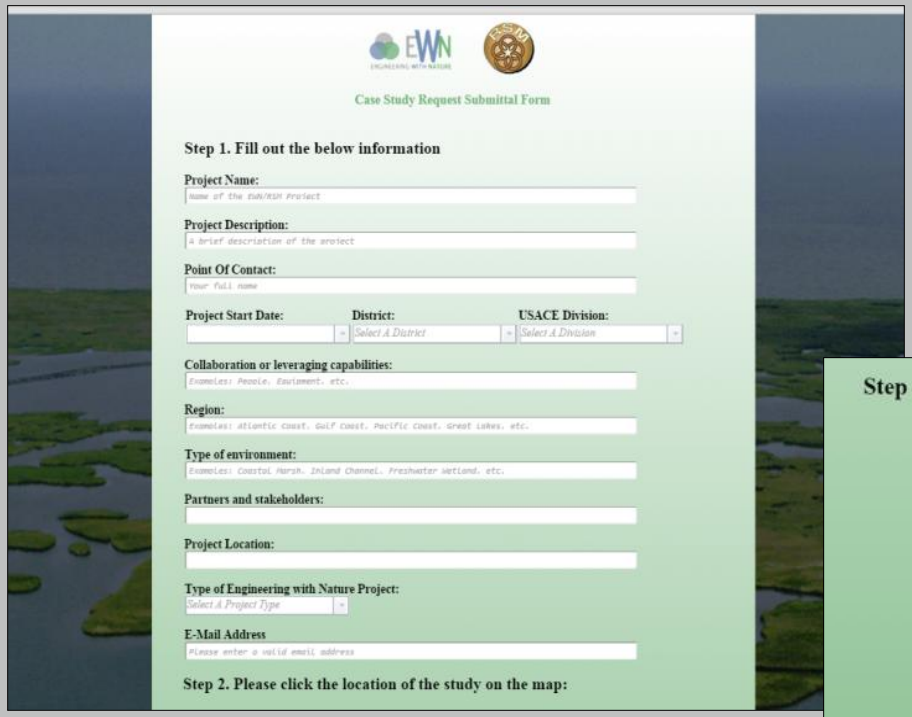
Available AIPT Selections	Available EWN Benefit Selections
Breakwater	Aesthetics
Bulkhead	Beach nourishment
Chevron	Bird habitat
Dike	Fish habitat
Groin	Invertebrate habitat
Jetty	Island restoration
Multiple round point	Mammal habitat
Navigation dredging	Recreation
Pier/wharf	Reptile habitat
Revetment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

Tool Panel Site Selection Function

Display of Site Name Search Feature



Case Study Submission Process



Case Study Request Submittal Form

Step 1. Fill out the below information

Project Name:
Name of the EWN/NSN Project

Project Description:
A brief description of the project

Point Of Contact:
Your full name

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

Collaboration or leveraging capabilities:
Examples: People, Equipment, etc.

Region:
Examples: Atlantic Coast, Gulf Coast, Pacific Coast, Great Lakes, etc.

Type of environment:
Examples: Coastal Marsh, Inland Channel, Freshwater Wetland, etc.

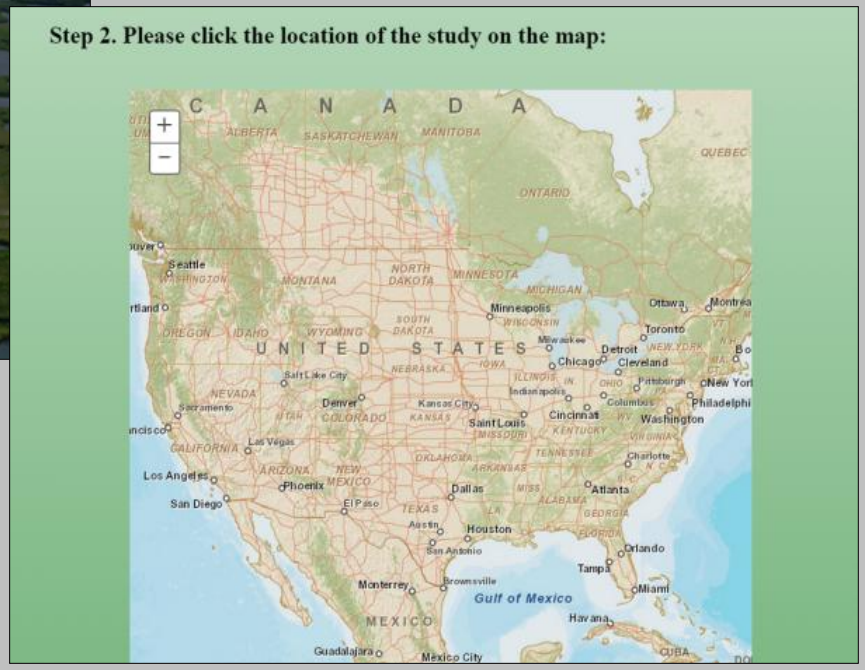
Partners and stakeholders:

Project Location:

Type of Engineering with Nature Project:
Select A Project Type

E-Mail Address
Please enter a valid email address

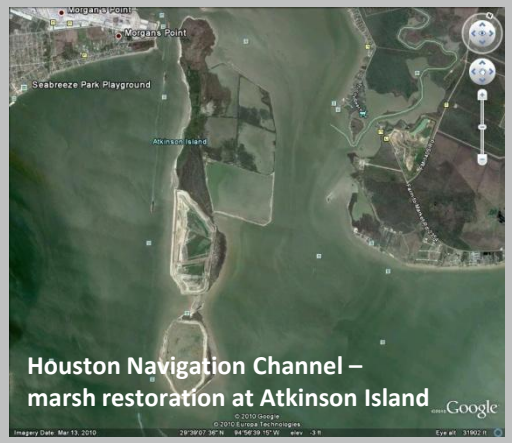
Step 2. Please click the location of the study on the map:



Case Studies Examples

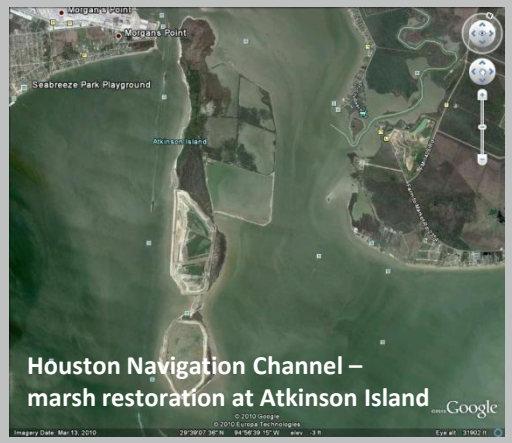
- There are a multitude of existing projects that exemplify aspects of the EWN approach that meet one or more of the four criteria.
- Projects range from marine to coastal to riverine environments.
- Although multiple projects have been identified that met EWN criteria, documentation of goals and monitoring 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



Courtesy of Tricia Campbell

Notable Galveston District Beneficial Use Projects



Courtesy of Tricia Campbell

Case Study #1

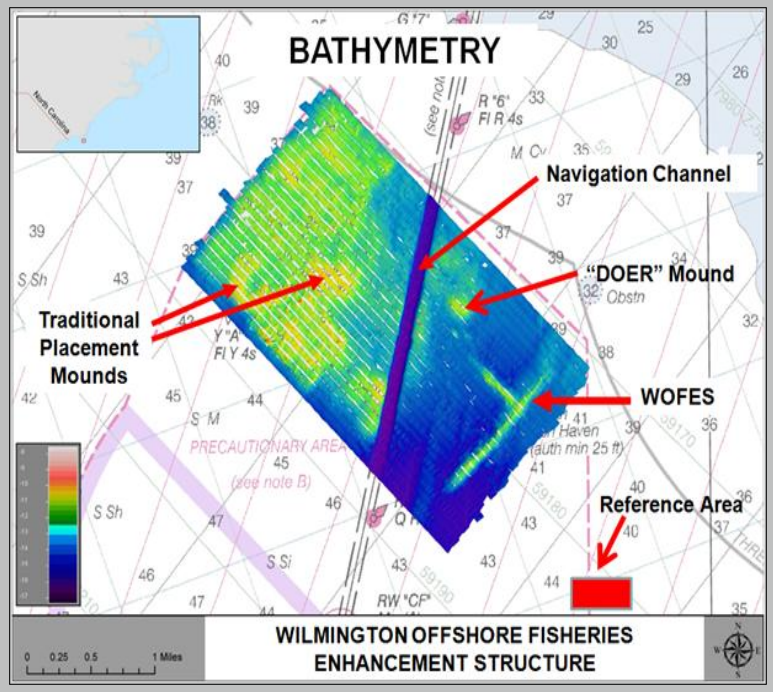
- Evia Island (Galveston Bay, TX)
- 6-acre island was constructed using sediment dredged during the deepening of the Houston Ship Channel in 1998
- Birds making use of habitat provided by the island
- Producing significant environmental benefits

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
601-634-3820

www.engineeringwithnature.org