Dredging and Dredged Material Management Decision Support, Natural Infrastructure Opportunities Tool

Dredging Operations Environmental Research (DOER) Program

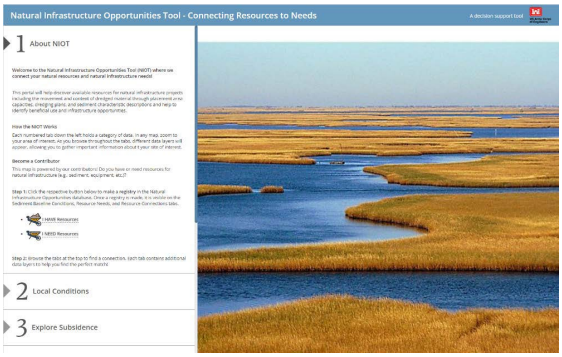
U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

Focus Area

Dredged Material Management

Problem

District opportunities for improving the management and use of dredged material are often missed and decisions are made using less than optimal available data because a comprehensive understanding of available data and knowledge is not available. In addition, there has been an increased emphasis and interest in the development of natural infrastructure projects within and outside of the USACE. There is an urgent need for modern, user friendly evaluation tools which access USACE enterprise databases to improve dredged material management decision making for USACE Districts, Researchers, and non-USACE collaborators.



Study Description

The public facing Natural Infrastructure Opportunities Tool (NIOT), developed in collaboration with the Natural Infrastructure Initiative, focuses on identifying natural infrastructure and beneficial use opportunities. Through map-based visualizations of environmental, geomorphic, and sediment conditions, as well as upcoming USACE projects, and an interface for users to add their resource needs and resource availability, this portal will help discover natural infrastructure connections and inspire innovative opportunities.

The NIOT viewer was developed through iterative collaboration with representatives from Caterpillar Inc., The Nature Conservancy, Great Lakes Dredge and Dock, AECOM, USACE ERDC and USACE Mobile District. The aim of the viewer is to provide a data informed perspective for multiple stakeholders with the goal of finding mutually beneficial strategies to improve and increase investment in the use and creation of natural infrastructure. The viewer is intended to be used in collaboration, as a platform to generate new ideas about natural infrastructure projects during the planning stages.

Products

The CE-Dredge Natural Infrastructure Opportunities Tool (NIOT), currently available on the Engineering with Nature website (http://www.engineeringwithnature.org) through collaboration with the Caterpillar Natural Infrastructure Initiative (NII), builds on the NDIF and CE-Dredge DST to incorporate public data and information in order to identify and evaluate collaborative opportunities for beneficial use. The NOIT has been developed as a beta tool that can be adapted and evolve to meet the needs of future stake holders.

The NIOT viewer brings together datasets from multiple sources all in one place. The tool displays data describing local conditions such as shoaling rates, shoreline change, geomorphic and dune features, hurricane tracks, and sediment budgets and subsidence. Data layers are pulled from National and local data sources such as USACE, NOAA, and the Texas General Lands Office.
Data tools developed by the USACE include data from the National Channel Framework, eHydro, Channel Shoaling and Analysis Tool (CSAT), National Coastal Mapping Program (NCMP) elevation, imagery, and landscape metric data, Dredging Information System, Sediment Analysis and GeoApp (SAGA), Sediment Budget and Analysis System (SBAS), Channel Portfolio Tool (CPT), and the Ecological Data Synthesis Tool.

Summary

In addition to viewing local data, the tool allows users to identify current infrastructure projects, and directly add resource or project needs through the completion of a short form. Resource connections, as well as points of contact, are integrated into supporting databases and appear on the viewer map. While the viewer includes national and regional datasets, it also provides users the option to request the addition of user-identified geospatial data layers, allowing NIOT to be adapted for regional use and fine-tuned for local application.

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

POC: Safra Altman
ERDC Environmental Laboratory Safra.Altman@usace.army.mil

December 2019