



UNITED STATES

Craney Island Eastward Expansion Craney Island, VA



Owner

Virginia Port Authority and U.S. Army Corps of Engineers

Engineer

U.S. Army Corp of Engineers

General contractor

Great Lakes Dredge and Dock

Dates of work

2011/05 2011/11

Description

The Craney Island Dredged Material Management Area was built in the 1950s as a disposal site to maintain deep waterways for maritime traffic at Hampton Roads Harbor in Virginia. To meet the dual purpose of extending the life of Craney Island as a dredged material management area and providing land for the state-of-the-art marine terminal, the Virginia Port Authority and the U.S. Army Corps of Engineers constructed cross dikes to expand Craney Island by 500 acres. To consolidate the underlying clays and accelerate settlement, USW installed 12 million linear feet of prefabricated vertical wick drains.

Ground conditions

An upper unit of thick Norfolk Clay overlaid a lower unit, up to 65 feet thick, of layered Norfolk Clays and sand. Below that were Yorktown Clays and St. Mary's Formation, soft soils extended to depths of 130 feet.

Solution

Wick drains were installed along the cross dikes to facilitate the drainage of water from their soft, saturated subsurface clays, speed up consolidation of the soft clays, and increase the shear strength of the sand fill. The wick drains were installed in open water from a specialized barge with a sophisticated positioning and data collection system. The barge was designed with pipes installed into the deck to match the wick drain's specified spacing. This optimized production by limiting the number of times the barge was re-positioned during installation. More than 100,000 individual wick drains were successfully installed which makes this project the largest and deepest barge installation of wick drains ever completed worldwide.

For the eastward expansion of Craney Island, USW installed 12 million linear feet of wick drains over water off of a specialized barge.

Main figures

Wick drains

12000000 LF