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National Erosion Control Development and Demonstration Program (Section 227)

Sheldon Marsh Nature Preserve

Background

Sheldon Marsh Nature Preserve is located on the southwestern shore of Lake Erie near Sandusky Bay, Ohio. The Sheldon Marsh project site consists of a 1.8-km- (6,000-ft-) long barrier beach and wetland preserve located at the southeast end of the 10.5-km- (6.5-mile-) long Cedar Point sand spit in Huron, Ohio. Sheldon Marsh is one of three remaining Lake Erie coastal wetlands not restricted by a system of dikes for water level management. The marsh contains many types of habitat such as old-field, hard-wood forest, wood-land swamp, cattail marsh, barrier sand beach, and open water-lake (Ohio Department of Natural Resources 2002). Restoration of the barrier beach is essential to the survival of existing and future plant and animal communities. Sheldon Marsh is a designated nesting site for the piping plover, a federally endangered species.

Wetland preserve is one of few remaining coastal wetlands along Lake Erie

Problem

The beach at Sheldon Marsh receded extensively during the high-water years between 1972 and 1998 at rates up to 19 m (60 ft) per year. Storm waves superimposed on 0.6- to 0.9-m (2.0- to 3.0-ft) surges generated by northeast storm winds readily overtop the barrier, sweeping sand across the barrier into the wetland, thus removing it from the littoral system. Recession of the barrier is further aggravated by impoundment of littoral sediments at the Huron Harbor complex located 4.8 km (3 miles) east of Sheldon Marsh. Continued recession of the barrier is threatening the nature preserve's 1.9 km^2 (0.7 square miles) of coastal wetlands.

Technology

The project will use an innovative system of segmented, wide-crested, submerged breakwaters to provide wave attenuation, shore protection, and minimize sand loss to the open lake due to cross-shore transport. Two types of dune stabilization methods will also be investigated at the site in addition to the submerged breakwaters. These are the Dune Ladder (DL), and Rapidly Deployed Fortification Wall (RDFW).

Status

Applying the results of the physical model study that was completed in November 2003, a three-row staggered submerged breakwater system was recommended as being the most

practical alternative for the demonstration project. This design was discussed with the Ohio Department of Natural Resources in January 2004. A final set of model tests was completed in July 2004 to optimize the proposed design. The final alternative, to be implemented and monitored under the Section 227 Coastal Demonstration Program, will provide direct benefits to a Section 1135 Feasibility Study.

Time Line

A final run on the physical model was completed in July 2004, after which the Alternative Report will be finalized. Plans and Specifications will be prepared in the July/ August time frame. We anticipate that construction will occur in FY 2005. However, the Memorandum of Agreement (MOA) needs to be executed with the Ohio Department of Natural Resources prior to requesting construction funds. National Environmental Policy Act (NEPA) documentation must also be finalized.

Program Manager

William R. Curtis, CEERD-HC-S

Action Officer

Charles B. Chesnutt, CECW-EW

Available Documentation

Draft Design Report.

Additional information can be found at *http://chl.erdc.usace.army.mil/section227*.