



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Facility

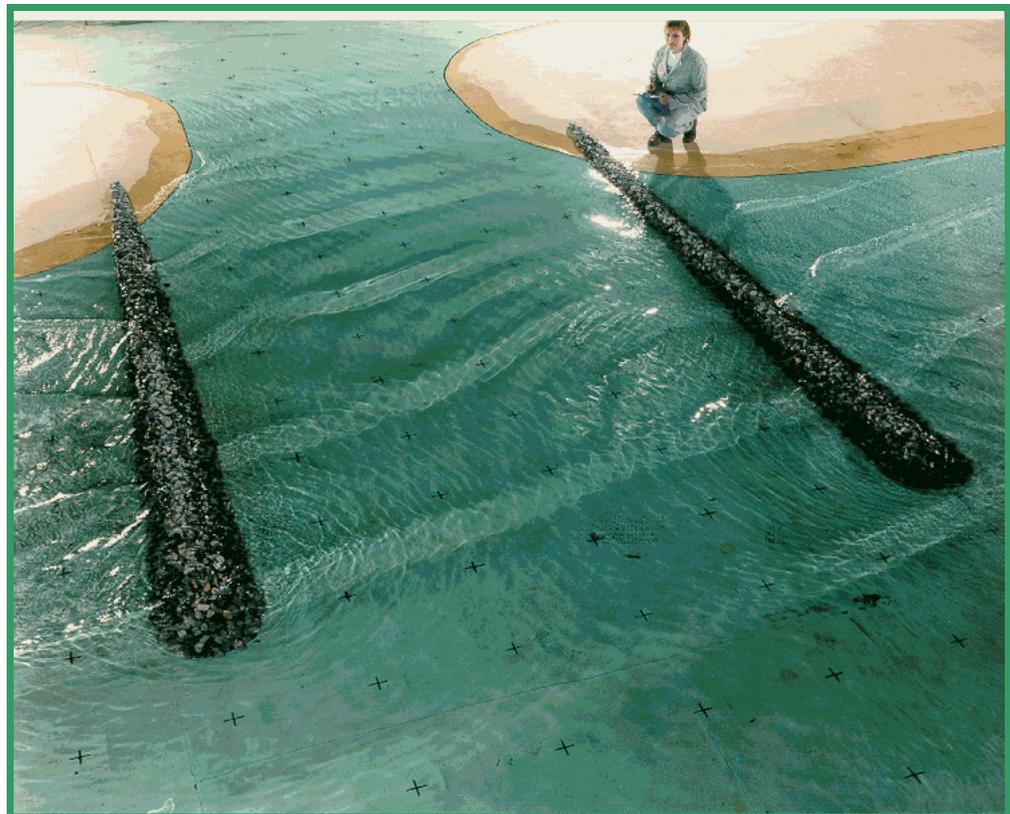
Coastal Inlet Model Facility

Purpose

The Coastal Inlet Model Facility, as part of the [Coastal Inlets Research Program \(CIRP\)](#), is an idealized inlet dedicated to the study of coastal inlets, which are regions connecting two or more large bodies of water by a short narrow channel. The water bodies may be an ocean and lagoon, a large lake and a bay, or a river entering a sea or lake. The facility, located in Vicksburg, Mississippi, is equipped to represent the most significant physical processes at and around inlets. Experts at ERDC's [Coastal and Hydraulics Laboratory \(CHL\)](#) produced the facility to develop an understanding of inlet inner-bank erosion, inlet equilibrium area, wave-current interaction in the navigation channel, sediment pathway alteration with jetty spurs and jetty weirs, and wave diffraction-refraction effects at coastal inlets. The facility is available for specific projects by U.S. Army Corps of Engineers District offices, other governmental agencies, and private consultants when interactive with CIRP.

Specifications

The facility consists of a 46-m- (150-ft-) wide by 99-m- (325-ft-) long concrete basin with 0.6-m- (2-ft-) high walls. It is connected to a large sump (volume of 1.98x10⁶ liters (523,000 gal)) for water exchange so that tides may be produced in the facility's ocean to drive tidal currents into and out of the inlet bay. Steady-state flood and ebb currents through the inlet may also be created.



Idealized inlet entrance channel with oblique wave approaching inlet in Coastal Inlet Model Facility

A 24.4-m- (80-ft-) long unidirectional wave generator located in the ocean produces either irregular or monochromatic waves. Incident wave direction can be varied for specific experiments by moving the generator to different locations. Wave height, water level, tidal currents, and wave-generated currents are all measured with state-of-the-art instrumentation. A ceiling mounted Web camera can be used on all studies and is remotely accessible and configurable. In addition, the Web camera can be zoomed in to a particular location and video recordings can be made.

Benefits

Coastal inlet project features and processes may be easily focused on and examined in detail with respect to tidal currents, wave-generated currents and sediment pathways. Many processes at inlets can be examined in a thorough and efficient manner in a dedicated inlet physical model. Cost savings in dredging may be found by alteration of sediment pathways and safety problems with regard to the effects of waves and currents on navigation may be investigated.

Success Stories

The facility has been used in both research and site-specific modes and can be quickly adapted for specific inlet problems. Wave heights, wave and tide-generated currents have been measured in the inlet model to aid in the calibration of new numerical model codes. The U.S. Army Engineer District, Seattle, used the model basin to aid in the design of a jetty termination structure at Grays Harbor, Washington, for reduction of inner-bank erosion. In another project, the inlet was modified to represent Johns Pass, Florida, to check the design of a small jetty construction project's effect on currents near a bridge that spanned the inlet. Both studies were performed in a short time frame (a period of months).

Point of Contact

William C. Seabergh, CEERD-HC-PH, 3909 Halls Ferry Road, Vicksburg, MS 39180, phone (601) 634-3788, e-mail, William.C.Seabergh@usace.army.mil