



**US Army Corps  
of Engineers®**

Engineer Research and  
Development Center

# Arthur Kill Sedimentation Numerical Model Study

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**Description** Arthur Kill borders the western end of Staten Island, NY. It is bounded on its southern end by Raritan Bay and on its northern end it connects to Kill Van Kull and Newark Bay. Currently, no dikes or other sedimentation control structures exist along the North of Shooters Island Reach of the Arthur Kill channel.

**Issue** Significant shoaling occurs in the channel north and northwest of Shooters Island. Historically, a dike was constructed on the north side of the channel in an attempt to reduce flow off the flats to the north from moving sediment into the channel. There is evidence that this may have been effective, given the historical siltation that has occurred on the flats north of the dike. With progressive deepening of the Arthur Kill channel maintenance dredging requirements have increased. The new deepening is expected to further increase the volume of dredging. These sediments have a high unit disposal cost due to the presence of contaminants. Any reductions in dredging will save significant maintenance costs over the life of the project.

The model study was developed to assist in the design of alternatives to reduce shoaling in the North of Shooters Island Reach and surrounding channels.

**Products** The model study provided shoaling indices throughout the study area for the design alternatives developed by ERDC and CENAN. The results showed that significant reduction in shoaling would be achieved using a dike north of the North of Shooters Island reach coupled with a shoaling basin at the dike's western end.

**Supporting Technology** Arthur Kill was modeled using TABS-MD, the 3-dimensional hydrodynamic/sediment model of the Corps' TAB-MDS modeling system.

**Benefits** The study provided an efficient means to assess alternatives, leading to an economical design.

**Sponsors** Army Corps of Engineers, New York (CENAN)

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**Partners** ERDC; US Army Corps of Engineers, New York District