



# Tillamook Bay and Estuary General Investigation Feasibility Study

Tillamook County has been devastated by numerous flood events in the past several years. The Portland District, U.S. Army Corps of Engineers began a study to identify projects to reduce the impact of flood events, while also restoring salmon habitat, reducing sedimentation, and decreasing bacterial contamination in Tillamook Bay. WEST Consultants, Inc., was tasked by the Portland District, under an existing IDIQ contract, to develop and calibrate one-dimensional, unsteady flow, MIKE11 and HEC-RAS models of the Trask, and Wilson Rivers, and simulate alternative scenarios to meet the above goals.

WEST first created three separate models of the Wilson, Trask, and Tillamook systems. These were then combined with the Hall, Dougherty, and Hoquarten Sloughs, in addition to other minor channels, to create one model of the entire valley. The resulting model consisted of approximately 80 miles of 40 different river and overbank branches. Boundary conditions for the unsteady model included upstream flow hydrographs, downstream tide, and local inflows along the river reaches.

WEST originally conducted the modeling using MIKE11. WEST added bridges to the model using the tools available in the MIKE11 program. MIKE11 “link channels” were included in the model to simulate levee overtopping and culvert flow through tide gates. The final constructed MIKE11 model was calibrated to two events; the in-bank May 2001, and the out-of-bank November 1999 storms.

WEST then converted the MIKE11 models to HEC-RAS upon request by the Portland District. The HEC-RAS model includes the same 80 miles of the three main rivers and overbank branches. Bridges, culverts, storage areas, levees (lateral structures), inline structures, and local runoff inflows are also included in the model. The HEC-RAS models were calibrated to four observed events.

**Project Owner:**

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