



Seven Mile Island Innovation Laboratory Field Data Collection

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Overview

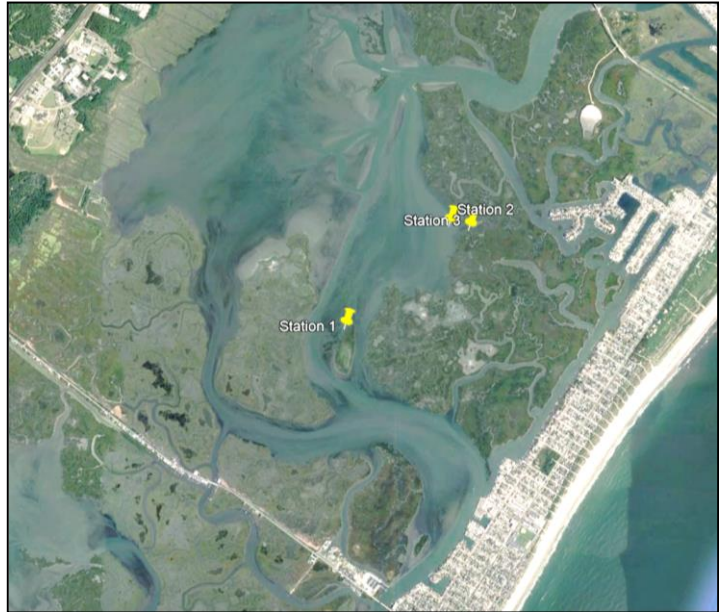
In 2019, the U.S. Army Corps of Engineers (USACE) Philadelphia District partnered with the State of New Jersey, The Wetlands Institute (TWI), and the USACE Engineer Research and Development Center to create the Seven Mile Island Innovation Laboratory (SMIIL). The initiative is designed to advance and improve dredging and marsh restoration techniques in coastal New Jersey through innovative research, collaboration, knowledge sharing and practical application.

SMIIL builds upon the successful completion of several dredging and marsh restoration projects in coastal New Jersey. USACE and partners have completed dredging and marsh restoration projects within SMIIL: Marsh behind Avalon, N.J. in 2015; Ring Island near Stone Harbor, NJ in 2014 and 2018; and Great Flats near Stone Harbor, N.J in 2019. This fact sheet introduces field data collection efforts to inform dredged material placement strategies.

Initial Efforts

USACE and TWI are leading field data collection efforts. USACE began collecting sediment and hydrodynamic data in fall 2019 with the deployment of three sampling platforms to collect wave and current velocity and suspended sediment concentration data. Platforms are located in areas of interest for projects that may be used to attenuate waves and potentially provide a sediment source to increase sediment flux to nourish degraded marshes or bird nesting islands.

Hydrodynamic Instrumentation includes two upward-looking acoustic wave and current (AWAC) profilers, an upward looking acoustic Doppler profiler, turbidity sensors, and a water



Above: Aerial Imagery showing Hydrodynamic Sampling Platforms Deployed by ERDC

Below: NAP and ERDC team members deploying AWAC platform in SMILL study area.



pump sampler. System hydrodynamics, sediment properties and mobility will be assessed to assist with project selection, design and modeling sediment placement effectiveness here and elsewhere. Additional field data collection will be implemented as projects evolve.

Avian Site Usage Data is being collecting by The Wetlands Institute at a potential placement site. When combined with historic site usage data from the New Jersey Division of Fish & Wildlife, potential project goals can be established. Detailed topographic and bathymetric data collected by USACE is being combined with vegetation benchmark data collected by TWI to help inform potential projects. Data will be used to establish baseline conditions, develop initial designs and placement strategies that strive to mimic natural processes, and coordinate with resource agencies, with a goal of completing a placement by early 2021. Monitoring data will be collected throughout all activities.



Top Left: ISCO water sampler platform sampling water flows in a tidal creek.

Top Middle: Performing nest checks on Sturgeon Island.

Top Right: Great Egret chicks at Sturgeon Island.

Bottom: Bottom-Mounted Acoustic Wave and Current Sampler prior to deployment in SMILL system.

Moving Forward

The SMILL team will evaluate hydrodynamic and sediment data to inform potential projects. Biological monitoring data will be combined to set project goals and define outcomes. The USACE, State of New Jersey and The Wetland Institute, as the lead partners in the SMILL, will coordinate frequently and inform the larger Working Group of progress, results and future plans. Updates on SMILL activities will also be shared periodically on USACE and partner websites.