

## **GEOPHYSICS IMAGING AND ECOLOGICAL MAPPING OF THE LOWER HACKENSACK RIVER SYSTEM**

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The Meadowlands and the lower Hackensack River form a connected system that is an important asset for the greater New York City metropolitan region because of its economic, environmental, and recreational value. e4sciences|Earthworks LLC produced geophysical images and ecological maps of the lower 14 miles of the Hackensack River, New Jersey, for the Hudson-Raritan Estuary Ecosystem Restoration Study. The mapping program included sub-bottom seismic profiling, orthosonographs, multibeam bathymetry, magnetic field mapping, digital photographs, aerial photographs, cores, sediment profile images, morphology, stratigraphy, sedimentation, biological data, and benthos. The geophysical methods imaged the water-bottom morphology and subsurface stratigraphy to 100 feet depth with 1-foot spatial resolution. Going into these studies, it was presumed that the river bottom would be covered uniformly with recent industrial-age black silt. Our observations demonstrate otherwise. The black silt is concentrated in Harmon Cove and locally in point bars in the north. Elsewhere, there is tremendous variability in the river bottom. The Hackensack River system is a dynamic asset and resource that deserves continued monitoring and management.