

Sediment Remediation Project Study Area 7, Hackensack River

*Honeywell — Environ
Jersey City, NJ*

Princeton Hydro is providing permitting and habitat enhancement design services in support of a project to ameliorate historic sediment contamination in an urban waterway. Through a court-ordered settlement process, Princeton Hydro's role is to develop habitat enhancements that will add "uplift" components to the primary objective of reducing biologic exposure to potentially toxic levels of contaminants in sediment. A secondary objective is to create a biological filter to reduce pollutant loadings that emanate from a combined sewer overflow (CSO) outfall into a sheltered cove.

Much of the sediment remedy encompasses placement of capping materials; our concept for habitat enhancement is to exploit such caps through lateral expansion and elevation adjustments in order to maximize shoreline area that is well-suited for colonization by native salt marsh cordgrass (*Spartina* sp.). Presently, a narrow margin of salt marsh cordgrass persists along the waterfront; however, the landward side is prone to invasion by exotic common reed (*Phragmites australis*) and other noxious weeds and the water-ward side is subject to erosion. At the shoreline, our design concept includes placement of clean substrate material followed by plant stock additions; a stone revetment will provide stability.

Also, a series of "breaker reef" segments will be installed parallel to and several hundred feet off-shore of the salt marsh community zone. The intent of the "breaker reef" segments is to reduce incident wave energy and to provide habitat for fish and invertebrate organisms. Aggregates of complex objects will be positioned in deeper water to vary habitat further and connect a mosaic of depth settings.

Our design intent for the CSO biologic filter is to increase hard substrate surface area and add a salt marsh margin within the cove. We expect hard substrate will be colonized by sessile bivalves and other filter-feeding organisms. In general, salt marsh communities are well-recognized for suspended solid filtration and nutrient uptake.

