



# WRDA 2016 Section 1122 Beneficial Use of Dredged Material Pilot Program: Beneficial Use Placement Opportunities in New Jersey using Navigation Channel Sediments - Barnegat Inlet

## Project Background and Description

Barnegat Inlet, located in Ocean County, NJ, is a federal navigation channel operated and maintained by the U.S. Army Corps of Engineers (USACE), Philadelphia District. The project is critical to the U.S. Coast Guard and a large fleet consisting of full-time commercial fishing, charter and recreational vessels that contribute to the economic value of the nation and an annual direct fish value of more than \$25 million per year. The District dredges the inlet twice a year with the USACE-owned dredge Currituck or Murden, placing sand just downdrift of the ebb shoal.

## Beneficial Use Description

The Section 1122 project will be constructed in two components. The first component involves dredging the federal navigation channel between the jetties and placing the sand in the nearshore environment of Harvey Cedars, N.J. Harvey Cedars is part of the Long Beach Island dune and beachfill Coastal Storm Risk Management project. The community has several areas that experience chronic erosion. The inlet dredging and nearshore placement is designed to support the beachfill, which has a 7-year periodic nourishment cycle. The USACE Philadelphia District is currently working with the USACE Engineering Research & Development Center to optimize the timing, location and extent of the nearshore placement to benefit the “hot spots” of chronic erosion between nourishments.

The second phase involves dredging the Oyster Creek portion of the Barnegat Inlet channel located in Barnegat Bay, using the sediment innovatively to create natural and nature-based features that add to the system of placement areas for the project. USACE has previously built two islands in Barnegat Bay, which provide high-value habitat for a variety of species. Additionally, USACE has recently completed multiple dredging and marsh restoration projects in New Jersey and will leverage and advance those practices and techniques through the 1122 efforts.

## Status

The Decision Document for the Barnegat Inlet NJ 1122 Project was approved in December 2020, quickly followed by construction of the first lift of the new island in Barnegat Bay using Oyster Creek channel sediments. Work was accomplished under a maintenance dredging contract with Barnegat Bay Dredging Company of Harvey Cedars, NJ and is being monitored, with a potential second lift planned in Fall 2021. Dredging of approximately 200,000 cubic yards from the inlet entrance channel by the Government Dredge Murden with nearshore placement in the vicinity of Harvey Cedars will be constructed in July and August 2021. The USACE Philadelphia District continues to partner with the Engineering Research & Development Center for pre-, during and post-construction monitoring efforts on both the island and nearshore placement components.



**Above:** The first component of the project involves dredging between the jetties and placing the sand in the nearshore of Harvey Cedars, NJ to support the federal beach project. **Below:** Looking east at Barnegat Inlet with previously created island in foreground.





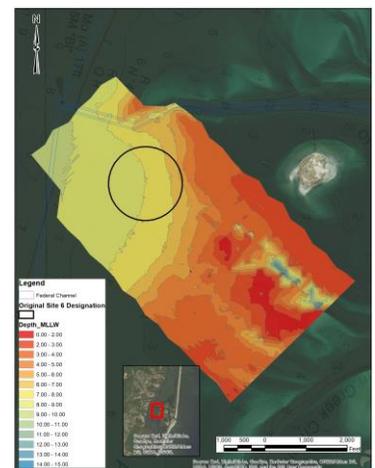
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## Anticipated Successes and Lessons Learned

The first component of the Barnegat Inlet 1122 project involves placing sand in the nearshore zone to supplement an area that experiences chronic erosion between periodic nourishment cycles. Given the costly nature of mobilizing an ocean-going hopper dredge to conduct periodic nourishment on Long Beach Island every 7 years, this project represents a more targeted effort using the dredge Murden between cycles. It aims to improve nearshore placement techniques that utilize natural processes to cost effectively move dredged sediments with minimal environmental impacts while supporting beaches. Although several nearshore berms have previously been constructed, none have been placed and monitored with the objective of alleviating hot spots of erosion between nourishments and/or increasing the longevity between direct nourishments.

## Innovative Concepts

The objective of the second component of the Barnegat Inlet project is to advance practices for building natural infrastructure with dredged channel sediments in a targeted way, developing lessons learned and optimizing construction techniques that effectively create or enhance habitat and produce protective features. Monitoring efforts will help develop improved design criteria, performance metrics and inform life cycle benefits for natural infrastructure such as islands and shoreline placements using navigation channel sediments. Placement alternatives were designed in a way to reduce sediment entering the navigation channel and test construction, monitoring and maintenance techniques that will enhance valuable habitats such as submerged aquatic vegetation around islands and protect shorelines and natural infrastructure in back bay environments.



**Multi-beam hydrographic surveys show depths surrounding the new island creation site, existing island with SAV habitat and navigation channel vicinity.**

## Projected Benefits Cost Savings Value Added

The Barnegat Inlet pilot program will dredge channel shoals and use sediment effectively, support innovative placements across multiple mission areas, improve design criteria for natural infrastructure, develop lessons learned for cost-effective construction techniques and document successful partnerships practices. USACE plans to monitor the project and partner with the non-federal sponsor to quantify all benefits and develop future strategies that seek to revolutionize practices that support sustainable sediment management and enhance coastal resilience in New Jersey and nationally.

## Estimated Cost

Estimated cost for this project is \$350,000 for planning and decision documentation and \$1.5M for construction in addition to O&M costs of the navigation project.

## Non-Federal Sponsor

New Jersey Department of Environmental Protection (NJDEP)

## Points of Contact

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