

4 MINUTE READ

Long Beach Island Coastal Storm Damage Reduction



from **Engineering With Nature: An Atlas, Volume 1.**

by **US Army Engineer Research and Development Center**



Long Beach Island, New Jersey, United States

Long Beach Island (LBI) is an eighteen-mile-long barrier island that reaches from Barnegat Inlet to Little Egg Inlet, along the Atlantic coast of southern Ocean County, New Jersey. Coastal storms, hurricanes, and northeasters regularly impact this area. This project consisted of creating a berm and dune extending along the oceanside of the island; these nature-based features were designed to minimize flooding and coastal storm damage for the island's communities. The features were built with sand obtained from an offshore borrow source. Incorporated into the Natural and Nature-Based Features project plans were periodic sand nourishments every 7 years for 50 years. A joint effort by the U.S. Army Corps of Engineers (USACE) Philadelphia District (NAP), and the New Jersey Department of Environmental Protection (NJDEP), this project's initial construction at LBI's Surf City was completed in 2006, at Harvey Cedars in 2010, and at Brant Beach in 2012. Portions of the LBI were refurbished by NAP in 2012 and 2013 following Hurricane Irene and Hurricane Sandy, respectively. In 2016, the Great Lakes Dredge and Dock Company completed initial construction of the project.

Article cover: The USACE Philadelphia District pumps sand onto Brant Beach, NJ, in 2013. The work is part of an effort to restore the coastal storm risk management project from damages associated with Hurricane Sandy. (Photo by USACE Philadelphia District)

Producing Efficiencies

Sand was obtained from nearby offshore sources to construct a berm and a dune for the purpose of protecting the communities on the island from wave and storm damage. The overall length of the berm and dune system is approximately 16 miles. A berm is a raised shelf-like barrier; the berm in this project was 8 feet above sea level, 125 feet long, and 300-400 feet wide, depending on which part of the island's beach the section was situated upon. The dune was built to measure 22 feet above sea level at its highest elevation and 30 feet wide at its crest. Three hundred forty-seven acres of planted dune grasses and 540,000 linear feet of sand fencing were included as part of the project to stabilize the dune, protect it from wind and water, and keep it from migrating, thereby minimizing the amount of sand renourishment that has to take place in the future.

Using Natural Processes

Both dunes and berms are features that are created on beaches as a result of natural processes involving sand and wind (in the case of dunes) and sand and sea (in the case of berms). In this project, these features protect the island from wave and storm damage by diminishing ocean wave energy and storm surge during extreme weather events. In particular, the berm and dune prevent erosive processes from reaching areas further inland.





USACE and its contractor, Great Lakes Dredge and Dock Company, are building a dune and berm system on Long Beach Island. Work is designed to reduce storm damage to infrastructure.

(Photo by USACE Philadelphia District)

Broadening Benefits

This project has tremendous social and economic value, as it was designed to mitigate erosion, flooding, and property damage that can result from storms, hurricanes, and other extreme weather events. The revitalized beach will also improve recreational opportunities for the island's inhabitants and visitors. The plantings will provide habitat for wildlife— an environmental benefit.



The creation of the dunes included measures such as planting dune grasses and installing sand fencing to stabilize the dune, protect it from wind and wave action, and prevent migration, thereby minimizing future sand renourishment.

(Photo by USACE Philadelphia District)

Promoting Collaboration

This project was a joint effort between the USACE and the project sponsor and cost-sharing non-federal partner, NJDEP. In 2014 USACE awarded a contract to the Great Lakes Dredge and Dock Company to complete initial construction of the project.



The USACE Philadelphia District and its contractor, Great Lakes Dredge and Dock Company, are pumping approximately 8 million cubic yards of sand onto Long Beach Island, NJ. The Dredge Dodge Island is shown in the distance. Work is designed to complete the dune and berm system and reduce future storm damage.

(Photo by USACE)



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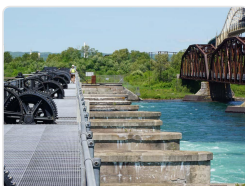
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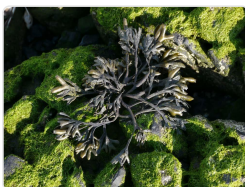
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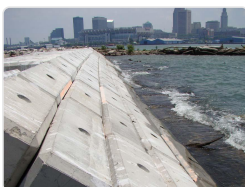
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