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Community RISES to Occasion

Rockaway Beach Coastal Restoration Project

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By JoAnne Castagna, Ed.D.
Allan Little, a sixty-two-year-old Far Rockaway resident, who is deaf, is sitting next to a beach dune, digging into the sand with his bare hands, under the warm sun. He is planting vegetation to help make Rockaway Beach more resilient to coastal storm erosion and flooding.

It is a far cry from his previous job at McDonald's, where he worked for twenty years in midtown Manhattan before the pandemic. He says his life has a bit more purpose now because he is making a difference in his own community. Plus, it keeps him active, moving, and out in nature – all good things.

He is not alone. Alongside him are other adults and children of all ages. They are all taking part in a dune restoration program being carried out by the nonprofit, RISE (Rockaway Initiative for Sustainability and Equity).

RISE's work is supporting a more extensive coastal restoration project that is being carried out by its longtime partner the U.S. Army Corps of Engineers, New York District. The Army Corps is collaborating with RISE and other partners to make Rockaway Beach more resilient to coastal storm erosion and flooding that has increased due to more frequent and stronger coastal storms.

They are doing this using a combination of hard features with natural and nature-based solutions, such as dune creation and planting, to create a healthy, vibrant beach for Little, his community, and future generations.

Jeanne DuPont, founder, and executive director of RISE said, "The work that Allan and the rest of our Dune Squad is performing is not only helping Rockaway Beach, but it is also making a positive impact on them and giving them a sense of pride. Allan is so excited about what he has been doing that he has even shared it with other deaf people. It's also even encouraged his team to learn sign language."

U.S. Army Corps of Engineers New York District replenishing lost sand on Rockaway Beach, Queens, New York City after Hurricane Sandy in 2012. Credit: USACE.

To create a reinforced dune on Rockaway Beach, Queens, New York City, the U.S. Army Corps of Engineers, New York District first constructed a line of steel sheet piles into the beach. Credit: USACE.

U.S. Army Corps of Engineers, New York District constructing groins on Rockaway Beach, Queens, New York City. Credit: USACE.

RISE's (Rockaway Initiative for Sustainability and Equity) Dune Squad planting vegetation on dunes on Rockway Beach, Queens, New York City. Credit: RISE.

RISE's (Rockaway Initiative for Sustainability and Equity) Dune Squad planting vegetation on dunes on Rockway Beach, Queens, New York City. Credit: RISE.

Allan Little planting vegetation on dunes on Rockaway Beach, Queens, New York City as part of RISE's (Rockaway Initiative for Sustainability and Equity) Dune Squad. Credit: RISE.

Rockaway Beach is a neighborhood located on the Rockaway peninsula in the New York City borough of Queens.

The neighborhood is named for Rockaway Beach and the boardwalk, which is the largest urban beach in the United States.

The Rockaway peninsula stretches approximately ten miles and has the Atlantic Ocean on the south side and Jamaica Bay on its north side.

The area, generally referred to as "the Rockaways," has been a popular summer destination for decades and is home to over 850,000 residents and over 48,000 residential and nonresidential structures, including schools, hospitals, and nursing homes.

The peninsula has been vulnerable to coastal storms for years, which have caused tremendous erosion and sand loss of the beach, making the community vulnerable to flooding.

To reduce the risk of flooding, the Army Corps, since the 1970s has been replenishing this lost sand by dredging sand from the ocean and pumping it onto the beach to increase the height and width of the beach berm.

The berm is the flat area of the beach between the dunes and the ocean where beachgoers typically sunbathe. An enlarged berm acts as a buffer, protecting the structures and infrastructure behind the beach from storm surges and flood damage.

The area has been battered by many storms including a recent Christmas storm in 2022 and historic Hurricane Sandy in 2012.

Sandy's intense winds created an unexpected storm surge that created fourteen-foot-high waves that pushed sand and water up into the community.

Ahmed Radwan, project manager, New York District, U.S. Army Corps of Engineers said, "The Rockaway Beach community was bombarded by the water surge from all directions – the Atlantic Ocean side and the Jamaica Bay side – causing extensive beach erosion and flooding."

As a result, Rockaway Beach lost millions of cubic yards of sand, which the Army Corps has replaced.

With stronger coastal storms occurring more frequently, another Sandy-like storm is likely to happen again, so the Army Corps has been working in collaboration with its partners to develop long-term solutions to help make Rockaway Beach more resilient.

These partners include the New York State Department of Environmental Conservation (non-federal sponsor), New York City Department of Parks and Recreation, New York City Department of Environmental Protection, New York City Department of Transportation, New York City Mayor's Office of Climate and Environmental Justice, New York City Mayor's Office for People with Disabilities, National Park Service, and RISE. RISE's coastal work is being performed as part of its "Greater Rockaway" Coastal Resilience Plan," that's been supported by the National Fish & Wildlife Foundation from 2020-2024 through the Coastal Resilience Fund.

Radwan said, "Ensuring the success of our projects hinges significantly on maintaining strong coordination with key stakeholders from the private sector and nonprofit organizations like RISE.

"These entities play a vital role in assisting the federal government by identifying local needs and leveraging local resources. Moreover, their extensive research capabilities offer valuable insights that can greatly benefit our projects. We are committed to offering full support to encourage and facilitate their involvement in our initiatives."

The Army Corps and RISE have collaborated for over eighteen years to educate schoolchildren about the work they are performing on their beach, and to show them why it is important for their community and wildlife.

This has included performing workshops at PS 43Q The School by the Sea, which is located right next to the boardwalk, and bringing touch tanks filled with sea life to have a show-and-tell for the students.

DuPont values this relationship with the Army Corps, "One time we had an Army Corps workshop on the beach where the kids were watching dredge pipes while the sand was being dredged and placed on the beach.

"I thought, you know, most of the kids in Rockaway Beach didn't really understand what was going on right on their own beach and how this work was helping to conserve our beach. So, it was kind of a great moment for these kids to be able to ask the Army Corps questions and learn. It's also a way for them to find out about different career fields and learn what it means to be an engineer or biologist."

This relationship continues today. The dune restoration work being performed by RISE is supporting the Army Corps' efforts to incorporate natural and nature-based features on the Rockaway Beach Coastal Restoration Project.

Natural and nature-based engineering features are landscape attributes used in combination with hard ones. Natural features occur naturally in the landscape and nature-based features are engineered, constructed, or restored to mimic natural conditions.

Examples of these features include beaches and dunes; vegetated environments, such as maritime forests, salt marshes, freshwater wetlands, fluvial flood plains, and seagrass beds; coral and oyster reefs; and barrier islands.

The Army Corps has become a leader in natural and nature-based features and published the collaboratively written report, *International Guidelines on Natural and Nature-Based Features for Flood Risk Management*, that is used industry-wide.

According to Michael Oseback, a former project manager, New York District, U.S. Army Corps of Engineers, "Nature-based features are sustainable and attenuate typical flooding. These features may also allow the opportunity to strengthen the surrounding ecological environment."

These natural and nature-based features are being implemented on portions of the project where work is being performed in two areas –along the south side of the peninsula on the Atlantic Ocean and along the north side of the peninsula on Jamaica Bay.

On the Atlantic Coast side, a large, reinforced dune is currently under construction.

It is actually not a natural or nature-based dune, but a seawall that looks like a seven-mile dune, which will be covered with beach grass, shrubs, and perennials.

To create this, a thirty-foot steel sheet pile wall was inserted twenty feet into the ground and capped with several feet of concrete. In front of the structure, two layers of heavy armor stone were laid. On top of everything, millions of cubic yards of sand were placed, and the sand was planted with native vegetation and trees.

The root structure of these plants and trees will hold the sand in place and stabilize it on the dune and it reduces erosion.

Rockaway Beach resident Daniel Falt said, “It’s a sand dune with a skeleton inside.” He is also a former project manager, the New York District, U.S. Army Corps of Engineers.

According to the *International Guidelines*, beaches and dunes are valuable to flood risk reduction because they dissipate wave energy, trap sediments, have the potential to grow with rising sea levels, and provide habitat for diverse species.

Dunes are areas of the beach where sand is elevated several feet to act as a buffer between the waves, wind, stormwater levels, and the infrastructure landward on the beach.

In addition, nineteen groins were constructed along the Atlantic Coast. These are structures that extend out perpendicular from the shore into the water interrupt water flow and limit the movement of sand, to reduce the frequency of beach erosion.

As work continues on the Atlantic Ocean side of the project, plans are starting to be worked out for the low-lying coastal area of Jamaica Bay. A variety of flood reduction measures, including natural and nature-based features, are being considered.

RISE’s office is located in the middle of the peninsula, between the ocean and the bay, where, according to DuPont, flooding is a regular problem and not just during coastal storms.

“When it’s high tide in Jamaica Bay,” said DuPont, “the water comes up from the storm drains all along the entire length of the peninsula and floods the streets, including in front of our building. Cars can’t even get through. It’s really bad.”

Nature-based solutions are being considered for this area including the use of rock sills. Sills of rock would be placed parallel to the shore of Jamaica Bay to dampen wave energy and reduce shore erosion.

Other flood risk reduction features are being considered including a variety of wall structures (stone revetments, flood walls, and bulkheads). Stone revetments are walls that protect against erosion caused by wave action, storm surge, and currents. Flood walls keep tidal water from entering a community, and bulkheads or retaining walls help to stabilize a shoreline.

As work continues on the Rockaway Beach Coastal Restoration Project, DuPont says that the partnership that RISE has with the Army Corps is a winning combination for the project’s success.

“With the Army Corps handling the hard infrastructure like the jetties and the front line of defense and RISE handling the soft infrastructure including education, outreach, and employment opportunities, both of our efforts together will help the community understand and appreciate the work the Army Corps is doing for their community.”

RISE looks forward to continuing to support the Army Corps. DuPont says, “We’re open to continuing to have more meetings with the Army Corps and helping in any way we can, whether this is donating native plants from our nursery for planting on the dunes or inviting the Army Corps engineers and biologists for more events to speak to our community’s children.”

DuPont is confident of a positive future because there has already been great progress on the project. “It’s not the same beach it was ten years ago. A lot has changed, since there’s been a lot of focus on improving the beach by the Army Corps.

“The buses, trains, and subways are packed with beachgoers and people coming to see the piping plovers and terns in our new bird sanctuary and nature preserve. Not only are the beaches packed, but our waters are brimming with humpback whales, bottlenose dolphins, sharks, and manta rays. It’s really amazing that in New York City we have a shoreline like this. It’s beautiful. Really beautiful.”

Dr. JoAnne Castagna is a public affairs specialist and writer for the U.S. Army Corps of Engineers, New York District. She can be reached at Joanne.Castagna@usace.army.mil.

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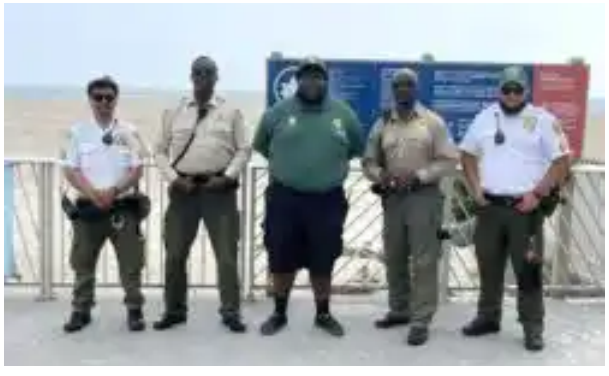

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