

DISTRICT OBSERVER



Spring 2013



US Army Corps
of Engineers
Philadelphia District

ON THE COVER

Churned up by Hurricane Sandy, the Atlantic Ocean didn't just crash into Mantoloking. It crashed through the barrier island community, cutting a new channel into the bay where none had existed. The devastation is apparent in this aerial photo taken shortly after the storm passed through. Within days the Army Corps had a contractor on the scene to fill the breach and erect a berm on the ocean side. Protection against a winter nor'easter was in place. For a more heartening, "after" photo of Mantoloking, plus a story on the emergency repairs there, turn to page 6. Throughout this issue, you'll find photos and stories about the Philadelphia District's response to Sandy.

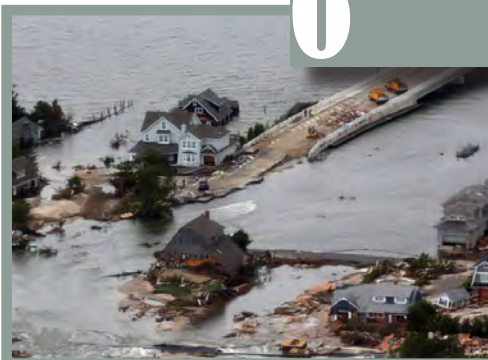
SAVE THE DATE

- Corps Day will be celebrated June 19th, 2013 in the Crystal Tea Room.
- The Philadelphia District picnic will be held June 21st, 2013 at the Neshaminy Shore Picnic Park in Penndel, PA

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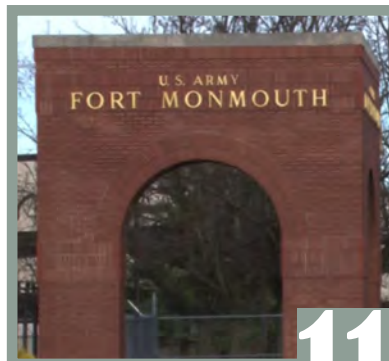
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COMMANDER'S CORNER

Dear Philadelphia Teammates-

I know many of you have heard me say it several times and you may be tired of hearing it, but it is a real joy and pleasure to be working here with you in the Philadelphia District. Since arriving at the District six months ago, I have had the chance to see much of the outstanding work that you all perform on a regular basis. I still have many of you to meet, which is one of my big goals for the coming months. I very much would like to see your work, but getting to know the people doing the work is important.

I have been particularly impressed with the work Philadelphia District did in response to Superstorm Sandy. I hope that you have seen the videos, talked with some of those directly involved, or will take the time to review the articles in this Observer. The teamwork, dedication, and selflessness with which you all approached your duties were truly humbling to watch. To list here all that Philadelphia District accomplished would be impossible; there was just too much! In reading the Sandy coverage in this edition, I hope you get an idea of all the District accomplished; I trust that you will be just as awestruck as I have been.

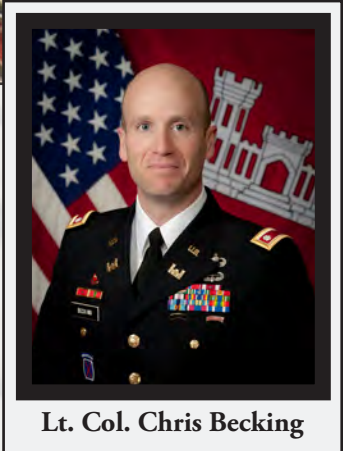
In addition to the conversations about Superstorm Sandy, many folks have expressed concerns over uncertainty in the future. And I can understand this. We now face significant uncertainty in the nation and the world (the economy, the federal budget, Afghanistan, etc). It would be easy to focus on this uncertainty and to allow it to consume our thinking. As I have mentioned to you previously, I am convinced that the way forward for us in the face of all this uncertainty has to do with my KN-IFE.

I have mentioned my KN-IFE a few times. First, "Keeping Nimble" means adapting to changes, figuring out new ways to do things, and finding new uses for the same tools (or parts of the District) we have been using. Second, "Instilling Further Excellence" means continuing to do the same excellent work that has gained Philadelphia such a great reputation already, continuing to develop the talent of our workforce for the future, and doing all of this safely as we care for our workforce.

I can't tell you that anything will remove all uncertainty in the coming months/years. But I know that keeping our focus on those two things (Keeping Nimble and Instilling Further Excellence) will get us through these tough times.

Thanks for all your support after Superstorm Sandy. I look forward to facing future challenges together. Godspeed!

LTC B



Lt. Col. Chris Becking



Sandy Strikes!

Historic Hurricane Sandy developed from a tropical wave in the western Caribbean and eventually became one of the worst hurricanes in decades to affect the east coast of the United States. Several days before it made landfall, Sandy had a diameter of nearly 1000 nautical miles. Sandy made landfall late on Oct. 29 near Atlantic City, N.J. as a record low pressure system, generating intense onshore winds, waves, and a storm surge that was augmented by astronomical spring tides associated with the full moon.

A storm surge of approximately 5 feet impacted Atlantic City during high tide. Further north along the New Jersey shore, Sandy's effects were more devastating. At Sandy Hook, the most northern point along the New Jersey shore, storm surge was 8 feet and rising when tide gauges ceased to function. All together, Sandy set record storm tides at more than 20 sites throughout New Jersey and New York. Back-bay flooding devastated communities as water surged through inlets. Wind speeds exceeded 50 miles per hour along certain stretches of New Jersey causing millions of Americans to lose power.

The most recent tallies show 131 Americans lost their lives as a result of Hurricane Sandy. Economic estimates indicate Sandy was one of the costliest storms in history after adjusting for inflation. Current estimates indicate damages exceed \$60 billion.

President Obama activated the National Response Framework and declared a disaster in 11 states along the East Coast. In the days, weeks and months following the storm, the U.S. Army Corps of Engineers worked to support federal, state and local partners in responding to Hurricane Sandy. 



Photos: Tim Boyle



The Philadelphia District trucked in 86,000 tons of material to help fill the breach at Mantoloking, N.J.

Mantoloking wouldn't wait ...so the District didn't

By Richard Pearsall

Three days after Hurricane Sandy breached the barrier island community on Oct. 29, a group of Army Corps engineers journeyed to the island by boat (the main bridge to the community was cut off) to assess the damage and determine what needed to be done to fix it.

The storm had washed away an entire section of the community, including houses, businesses, roads and utilities.

"Mother Nature made a new inlet here," said Bill Welch, safety officer for the Ocean County Utilities Authority. "I don't know how you guys are even going to begin to fix it."

Led by Rich DePasquale, geotechnical engineer, the Army Corps team that arrived on the island Nov. 2 included engineers Doug Leatherman, Randy Wise and Carl Leunig and was ferried to the site by Steve Farrell, chief of field surveys.

Leatherman, a coastal engineer, explained the team's objective that day.

"Our goal is to come up with plans and quantities and cost estimates and to get a contractor on board as soon as possible," Leatherman said.

Within three days, the team had a local contractor, Sambol Construction, on the scene and working.

"We spent the first day removing the debris that was in the channel," said Eric Sambol, president of the Toms River excavating company. "The next day we began filling it in."

Two weeks and some 3,300 dump truck loads later, the breach had been filled and the land restored to something close to its original contour. It took approximately 86,000 tons of clean fill to do the job.

The New Jersey Department of Transportation helped fill the "ocean end" of the breach, moving in with bulldozers and other heavy machinery to push some of the sand washed off the beach back into the newly-formed inlet.

District engineers also designed a temporary beach template, including a

dune with an elevation of 16-feet above sea level. Executed by Sambol Construction under the watchful eye of project engineer Joe Rossano, the new beach will protect the community this winter and serve as a base for any permanent reconstruction that the town, state and federal government may choose to pursue.

Restoring the buildings, roads and utilities that were washed away, will, of course, take much longer. But now, at least, there is a platform on which to begin that reconstruction, and a level of protection from northeasters, the all too typical winter storms that can take a toll on Jersey shorelines.

The Army Corps project cost \$947,000 and was funded by the Federal Emergency Management Administration.

Project engineer Rossano noted the gratitude residents expressed. "I can't tell you how many residents thanked us for the work we did filling it back in," he said. 

Emergency operations tested like never before with Hurricane Sandy

By Steve Rochette

As historic Hurricane Sandy approached the East Coast of the United States, U.S. Army Corps of Engineers teams worked around the clock to ensure preparations were in place before the storm made landfall. But the busiest days for the Philadelphia District took place after the storm when teams completed project inspections and supported federal, state and local partners.

The Philadelphia District Emergency Operations Center (EOC) shifted to a 24-hour operation with staff from each division and office on Oct. 26, three days before the storm reached New Jersey. The first priority was to establish a plan for employee accountability. EOC staff then worked to ensure the District's property, equipment, field sites, and projects were secured before the storm.

"This was our first ever full-scale EOC activation for a weather event," said Chief of Emergency Management Jim Monsu. "The initial effort was about ramping up and making sure people knew their roles and responsibilities. Then we pivoted and began supporting our partners."

Missions

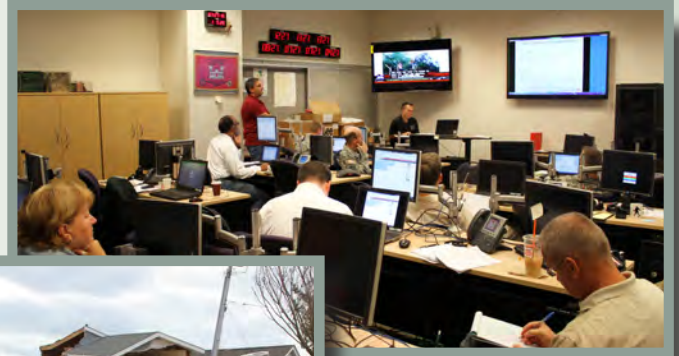
USACE provides public works and engineering support to FEMA as part of the national response framework. In emergencies, Planning and Response Teams from around the country are trained and ready to respond to missions such as debris removal, emergency power and infrastructure assessment. Those teams and the overall response effort are typically managed by an EOC or a Recovery Field Office. Following Hurricane Sandy, the scope of the Philadelphia District's response changed when the District EOC began supporting missions outside of traditional boundaries.

"Initially, we felt as if the District had dodged a bullet in much of our area of responsibility," said Monsu. "But then Division tasked us to oversee every FEMA mission for the state of New Jersey because of the conditions New York District faced in other areas such as Long Island."

Monsu said this completely altered the dynamic of the response. In the weeks and months following the storm, the District responded to 27 FEMA task orders for a total of \$63 million.

Many of the missions involved providing technical assistance to New Jersey by District engineers and subject matter experts. Other missions included de-watering critical public facilities, repairing dunes and breaches along the coastline and refurbishing facilities at Fort Monmouth to serve as temporary housing. Perhaps the most daunting task was filling the breach on the barrier island community of Mantoloking, N.J.

Several weeks after the storm, the North Atlantic Division and the Philadelphia District set up a Recovery Field Office in



The Emergency Operations Center was home to a 24/7 operation before and after Sandy.



Photo: Tim Boyle

North Atlantic Division Commander Col. Kent D. Savre (left), Philadelphia District Commander Lt. Col. Chris Becking (right), and Executive Assistant Julie Ziino discuss the operation to close the breach at Mantoloking, NJ.



Photo: Tim Boyle

The District's Emergency Power Planning and Response Team based operations out of Lakehurst Naval Station, NJ. The team works with contractors to install generators at critical facilities.

Linwood, N.J. The RFO, designed to allow a District to focus on routine responsibilities, stayed active through Thanksgiving, and remaining missions eventually transitioned back to the District's Emergency Management Office.

Throughout this time period, other District employees worked to inspect and assess existing projects, including each of the 12 coastal projects in New Jersey and Delaware.

Lessons Learned

Monsu described the event as trial by fire as he began serving as chief of Emergency Management in April of 2012.

"Although, I've deployed many times, I had never experienced a Philadelphia District EOC activation before. I learned more in the two weeks after the storm than you can in two years without an event," he said.

Ultimately, he felt the District performed admirably under difficult circumstances.

"I felt very fortunate to have a great team, both in Emergency Management and in other offices," he said. "Everybody stepped up their game given the demands placed on us." 

Coastal projects prove invaluable during Sandy

By Steve Rochette

What began as a low pressure system in the western Caribbean and churned up the Atlantic coastline as a hurricane eventually became the most devastating storm to hit the New Jersey coastline in 50 years.

'Superstorm' Sandy made landfall at Atlantic City Oct. 29, causing loss of life and widespread destruction. Recovery efforts began immediately, but months and years of work remain ahead for homeowners, municipalities, the state of New Jersey and the federal government.

National attention was quickly thrust onto the U.S. Army Corps of Engineers and its coastal program, which was credited for saving millions or even billions of dollars in damages.

USACE began supporting immediate efforts to patch dunes on Long Beach Island, Absecon Island and to help the state of New Jersey close a breach at Mantoloking, N.J. In the near term, the Philadelphia District is working to repair damages to projects that have been constructed. And, as for the future, elected officials and the public seemed to agree that the projects provided invaluable protection during a critical time.

"Beachfill works," said Keith Watson, project manager for work on Long Beach Island, Brigantine Island, Absecon Island and 7-Mile Island. "We knew these projects reduce damages from storms of varying intensities and durations, but when you look at areas with a project after an event like Sandy, the difference can be very apparent."

New Jersey Governor Chris Christie came to the same conclusion after flying over the coastline: "If you look up and down the coast, the beaches that were engineered had minimal damage and the others were way worse," he said during a press conference.

Delaware escaped the worst of the storm, although elected officials credited USACE projects for the critical added level of protection during Sandy.

"Over the years, funded by a combination of state and federal dollars, the Corps has built a series of storm

protection projects in Delaware – wide, robust beaches and a strong and healthy dune system. They performed exceptionally well during Sandy, likely sparing us billions of dollars in damage," said U.S. Senator Tom Carper during Congressional testimony.

Sandy in Context

Jeff Gebert, Chief of Coastal Planning, has witnessed a number of storms since his first days with the Philadelphia District in 1981. There was Gloria in '85; the 'Halloween Storm' of '91; Nor'easter Ida in 2009 and a host of others. But Sandy represents the biggest storm of his career.

"I believe we can say unequivocally that Sandy caused the most damage to the New Jersey shore between Manasquan Inlet and Cape May since the 1962 storm," said Gebert. "Other storms caused localized flooding and damages, but Sandy's effects were widespread."

Comparing the damages of Sandy to the 'Ash Wednesday Storm of 1962' is difficult, in part because of modern construction standards for homes and businesses. Further, USACE and the New Jersey Department of Environmental Protection did not have a Coastal Storm Damage Reduction program at the time.

Still, Sandy set a record for the lowest pressures at Atlantic City and Philadelphia as well as the highest mark for storm tide at Sea Bright, NJ.

The Coastal Program

The Philadelphia and New York Districts have built Coastal Storm Damage Reduction Projects, also known as beachfill or beach nourishment projects, on 48 of the 98 miles of developed coastline in New Jersey. Additional stretches of coastline have congressionally authorized projects, but have not yet been built.

Each constructed project was damaged by Sandy, with erosion and sand losses, to varying degrees. In New Jersey, damages were worse further north because of the meteorological characteristics of the storm. Thus,

Long Beach Island (LBI), the District's most northern constructed project, experienced the most damage.

"LBI is a perfect test case," said Gebert. "There, we can observe stretches of a constructed project adjacent to areas without a project and see the difference."

The difference, along some stretches of the island, is staggering. Holgate, the southernmost municipality of the 18 mile-long barrier island, suffered severe damages as numerous homes were ripped from their foundations. Other stretches of Long Beach Island with recently constructed dunes fared much better.

"The dunes of Harvey Cedars were badly damaged, but property damage to homes, businesses, and infrastructure was minimal," said Keith Watson, Project Manager for work on LBI. "The project performed exactly as it was designed."

Repairing the Damages

The process to repair beachfill projects falls under the USACE Flood Control and Coastal Emergency program. In 2009, the District worked to restore several projects following Nor'easter Ida. The process after Hurricane Sandy was similar, although more time critical given the extent of the damages.

A multi-disciplinary team worked countless hours following the storm to prepare reports on each project and damages associated with Sandy. District employees from various sections in Operations, Planning, Engineering and Construction, Programs and Project Management, Resource Management and Contracting participated in the process. The reports inform decision-makers on the extent of damages for each project.

Asked about the District's efforts to complete the reports under a time-crunch, Gebert simply said: "We got it done."

Some repair work has already been approved and funded at Avalon and Stone Harbor. Additional repair work



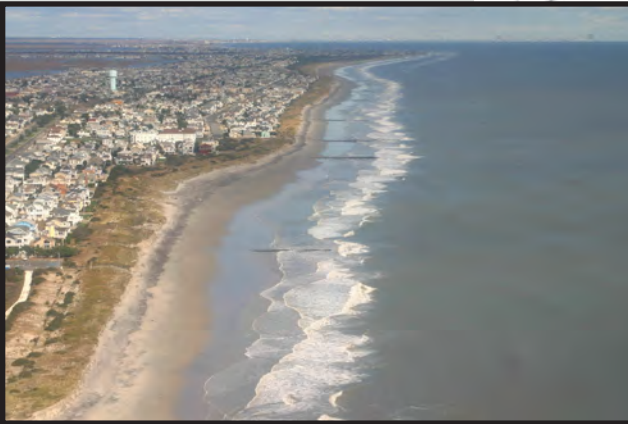
Jeff Gebert, Keith Watson and Richard Pearsall (left to right) observe and document conditions on Long Beach Island.



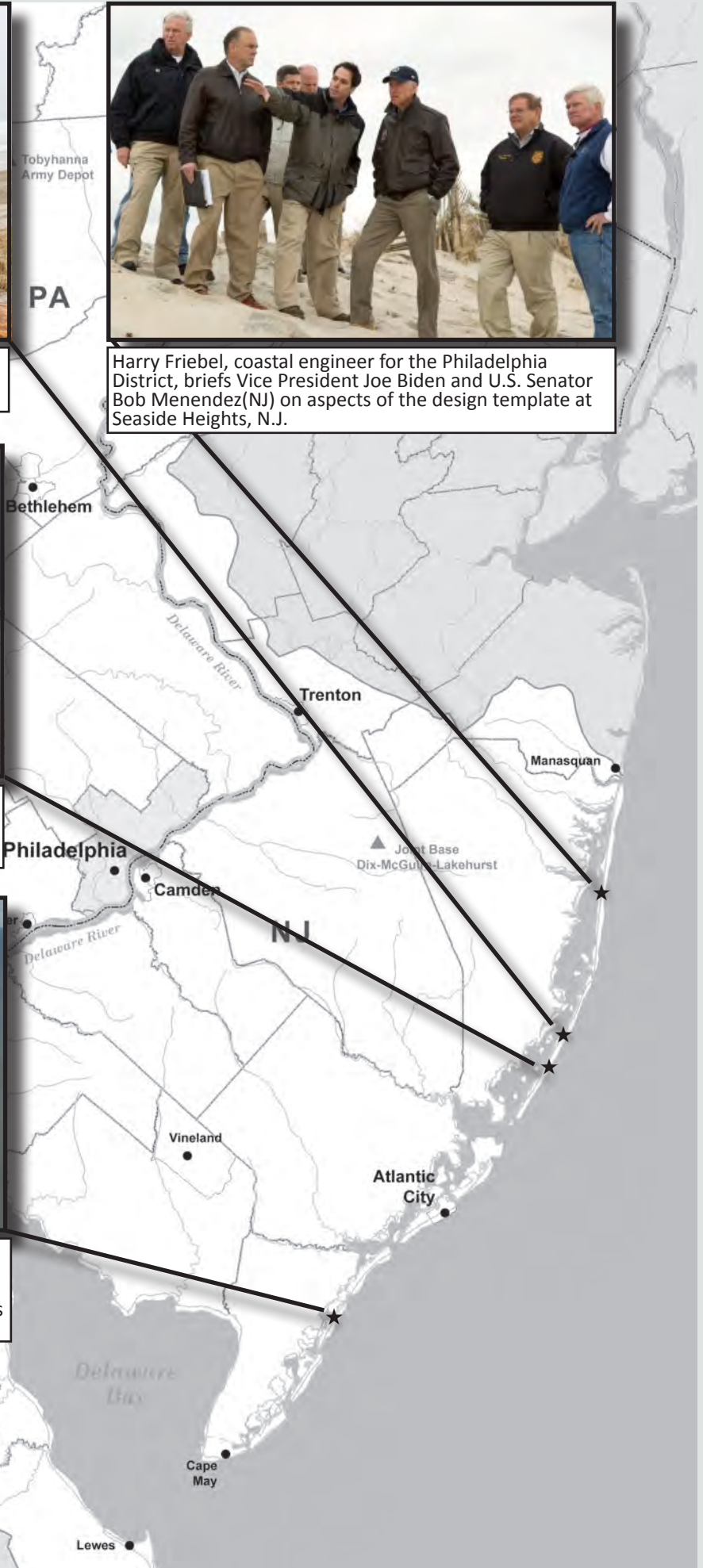
Harry Friebe, coastal engineer for the Philadelphia District, briefs Vice President Joe Biden and U.S. Senator Bob Menendez(NJ) on aspects of the design template at Seaside Heights, N.J.



The Philadelphia District completed construction on Brant Beach, Long Beach Island in 2012. The area experienced little property damage compared to other communities on the island.



Coastal engineers Harry Friebe, Randy Wise and chief of coastal planning Jeff Gebert conducted a flyover of the Delaware and New Jersey coastlines several days after the storm hit. The damages were historic, although not as bad as the 1962 storm in most areas.



and initial construction efforts could take place in 2013 and beyond.

"We can't predict the future, but my guess is we'll do the repair work for our existing projects and this storm event could accelerate the process to construct projects that have not yet been built in New Jersey," said Gebert. 

Newark treatment plant pumped dry

By Richard Pearsall

The Passaic Valley Sewerage Commission's treatment plant in Newark, N.J., is one of the biggest in the nation, handling sewage from five New Jersey counties and part of New York City. So when Hurricane Sandy sent a wall of water up Newark Bay and over the plant Oct. 29, millions of people, not to mention the environment, faced a major dilemma.

The surge submerged the 152-acre plant in four feet of water and, more destructively, filled the cavernous tunnels that wind their way beneath the surface and contain the plant's infrastructure. Tunnels 25 feet high and twice that in width, loaded with pipes and pumps, wires and gauges, had become huge vats full of water. The plant was out of commission.

The Passaic Valley Sewerage Commission had to get its plant up and operating again ---and quickly. "Hold it" is not an option when it comes to sewage.

Coming to the rescue was a team from the Philadelphia District, led by Dan Sirkis, Chief of the Geoenvironmental Section, and Glen Stevens, recently retired Chief of Hydraulics, Hydrology and Coastal Engineering. Working with the PVSC, Sirkis and Stevens developed a plan, mobilized a contractor to implement it and took up residence in the Ironbound section of Newark to oversee its execution.

CDM Smith, headquartered in Cambridge, Mass., arrived with pumps capable of sucking water to the surface from 30 feet down. Within days the tunnels were cleared of water and the drying out and rehabilitation of damaged equipment had begun.

Able to disinfect wastewater again, the PVSC now turned to its next challenge--- how to dispose of the sludge that was building up at the plant. Again, the Army Corps was there to assist, helping the PVSC to craft and



Photo: Richard Pearsall

This is a tunnel beneath the treatment plant, a 25-foot high tunnel that was completely filled with water by Sandy

contract for a three-prong solution:

- Bring in portable centrifuges to begin the process of separating the liquids from the solids
- Repair the storm damage to the plant's current centrifuge system.
- Bring the old, "mothballed" centrifuge system back on line.

Stevens credited Sirkis with spearheading that effort.

"He was on the phone all day, every day, 14 hours a day, talking with the New Jersey Department of Environmental Protection, with the EPA's Region II, with the Army Corps and the contractors," Stevens said of his colleague. "He coordinated the effort with all these people. Me? I just pumped water."

"While we were ramping down the dewatering effort, we were ramping up the solidification, thickening the sludge."

The portable centrifuges were first to come on line, followed by the existing system, called the Zimpro. Eventually all three systems were up and operating and thickening the sludge to the point where it could be effectively moved out by rail car and deposited in landfills. 



Glen Stevens, former Chief of Hydraulics, Hydrology and Coastal Engineering, briefs Maj. Gen. Michael Walsh, Deputy Commanding General for Civil and Emergency Operations, and Karen Durham Aguilera, USACE Director of Contingency Operations, on pumping operations at the Passaic Valley Wastewater Treatment Plant.



Army Corps readies Army housing for families displaced by Sandy

By Richard Pearsall

Fort Monmouth lowered its garrison flag and officially closed in 2011, ending 94 years of service as a military base. But the fort was not out of commission for long. State and federal officials turned to it in their hour of need in the wake of Hurricane Sandy.

Housing on the base is being rehabilitated for use by residents displaced from their homes by the storm, which slammed into the coastline of New Jersey and New York City with particular force at the end of October.

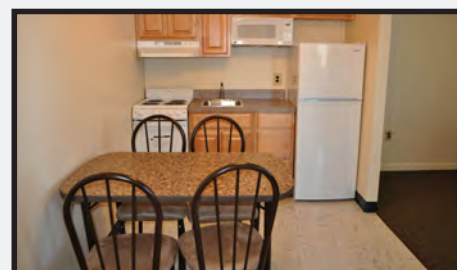
At the direction of the Federal Emergency Management Administration, the Philadelphia District completed the first of what would turn out to be three housing rehabilitation projects in less than a month, in time for the residents to move in for Christmas.

The Army Corps' contractor, Reilly Construction, based in Wrightstown, N.J., worked 12-hour shifts, seven days per week, in order to meet that deadline.

The initial project involved the conversion of an apartment building with 60 single-bedroom units into one with 15 three-bedroom units (formed by combining two of the old units) and 30 single-bedroom residences. All of the units were modernized with new bathroom and kitchen facilities and of the total of 45 new units, nine were made handicapped accessible under the terms of the Americans with Disabilities Act.

The District's design team, under the direction of Stan Wojciechowski, drew up the plans and specifications for the new units, and the District's Central New Jersey Resident Office, under the direction of Fred Angelilli, oversaw construction.

As work on the first building, Building 365, drew to a close, work on two more projects got underway. In nearby Building 360, the Corps' brought 28 more single bedroom units on line, including six units on the first floor that



The Philadelphia District refurbished and modernized more than 100 housing units at Fort Monmouth, N.J. for families displaced by Hurricane Sandy. Above: Danny Doerr, Construction Inspector, and other District employees worked on a tight schedule to expedite completion of the project.

Photos: Richard Pearsall

will be ADA accessible.

As with Building 365, the units in 360 received new carpet and vinyl flooring in addition to new kitchen and bathroom fixtures. The parking lot adjacent to the building was expanded to accommodate the residents of the ADA units.

Construction Control Inspector Danny Doerr worked on the Fort Monmouth projects with Turner. Both men work out of the District's Central New Jersey Office at Fort Dix.

The Corps also rehabilitated 21 duplexes that make up what is known as the Megill Housing complex on the base. These 42 residential units include both three and four-bedroom units, with either two or three bathrooms. The contractor installed new kitchen and laundry appliances and repaired and painted some interior walls. Turner

described this last project as particularly challenging.

"The contract was awarded and a 'notice to proceed' issued on 28 December," Turner said. "That gave us a performance period of 21 days. The holidays and the magnitude of the work proved to be a challenge both for the Corps and the contractor."

"That said," Turner continued, "the Corps team, including the Central New Jersey Resident Office, the Philadelphia design and contracting staffs, and Reilly Construction continued to work together through these challenges. The driving force was knowing that our work is for the benefit of those displaced by Superstorm Sandy."

The cost of rehabilitating Building 365 was \$1,193,000; for Building 360, \$944,000; and for the Megill family housing complex, \$1.2 million. 

Biologists rescue terrapins in path of construction

By Richard Pearsall

Happy as a clam. That old, if somewhat perplexing, analogy sprang to mind at East Point, N.J., this summer as biologists from the Army Corps of Engineers painstakingly pored through sand in search of diamondback terrapins.

There was Dan Caprioli, Chief of the Basin Planning Section, smiling like a new father as he uncovered a hatchling.

There was Mark Eberle, on his hands and knees, excavating by hand lest a rude tool do damage to a nest beneath the surface.

There was Adrian Leary, beaming in spite of himself as he extracted one tiny egg, then several more nearby, gently moving them between thumb and forefinger to a waiting container.

The eggs would eventually be transferred to an incubator at the Wetlands Institute of Stone Harbor (N.J.) where they would be hatched and returned to the wild. The hatchlings were moved to a marsh nearby.

The rescue mission was prelude to a shoreline protection project the Philadelphia District carried out this winter. The District constructed a 350-foot-long revetment to protect Bay Avenue from flooding and the residents of the East Point section of Maurice River Township from being cutoff from the rest of the township and world.

Building this sophisticated wall involved substantial excavation of the existing beach, which would run the risk of wreaking havoc with the nesting patterns of the diamondback terrapin.

Working with its partners in the project, the New Jersey Department of Environmental Protection and Maurice River Township, the Army Corps decided to tread softly and consult thoroughly, which it did, bringing in the Wetlands Institute, a Shore-based non-profit with expertise and experience protecting the diamondback terrapin.

"The Institute discovered substantial evidence of predation," Caprioli said. "So with knowledge that several nests had been uncovered and raided, we knew it was a good bet that there were more nests in the area."

The Corps had a contractor on board to do the work --- Mathis Construction, of Little Egg Harbor, N.J. --- but the details of the contract had



Workers from the Army Corps, the Wetlands Institute and Maurice River Township pause from their labors on the beach in East Point. At left, a terrapin hatchling, recovered from sand and soon to be transplanted to safer territory.

Photos: Richard Pearsall

yet to be finalized so there was time to organize a volunteer effort to rescue the turtles.

Volunteers from the District and the Wetlands Institute, joined by Mayor Kathy Ireland, of Maurice River Township, descended on the beach with rakes and shovels, containers full of vermiculite to cradle the hatchlings and eggs, and lots of sunblock and bug repellent.

Biologists weren't the only District employees to get into the act.

Project manager Bill Mulloy, P.E., while not exactly a human bulldozer out on the beach, uncovered a hatchling or two himself, cradling them with undisguised pleasure.

East Point is located on the Delaware Bay, about 20 miles north of Cape May. Home to an historic lighthouse, built in 1849, it also hosts the last public swimming beach in Maurice River Township. While good for recreation, that beach has also been the site of chronic flooding that washes out Bay Avenue and leaves homeowners stranded.

The Army Corps designed and installed what is called a "gabion revetment" to protect the road from that flooding. The existing sand berm was excavated, the subsurface compacted and a foundation or "mattress" installed. The mattress consists of a flat layer of stone encased in geotextile material.

A series of gabion baskets, large bags of stone held together with a heavy, steel mesh, were then erected upon the foundation, creating a four foot-high, erosion-resistant berm.

Before that excavation took place, however, volunteers were out raking, sifting and rescuing.

Dr. Roger Wood, a retired Stockton professor who is now a research scientist for the Wetlands Institute, headed the search, along with the Corps' Caprioli. Over two days more than a hundred eggs were recovered and sent to the incubator. More than 200 hatchlings were removed from the beach and transported to a nearby wetland.

Corps biologist Steve Allen led the "relocation" effort, looking for spots in the marsh where the hatchlings could dig in and be better protected from predators than they would be on the beach. Fox, raccoon and seagulls all pose major threats to the eggs and newborn terrapins.

The terrapins are a breed of turtle that prefer brackish water, feed themselves on insects and small crustaceans, and grow to anywhere from five to seven inches in size (the diameter of their shells).

"They are not classified as endangered or threatened," Caprioli said, "but we don't really know how many of them are out there."

In addition to natural predators, humans pose a threat to the terrapins. They are highly vulnerable to automobile traffic, particularly in Shore areas, where their breeding habits lead them to cross major roadways just as the tourist season is picking up. 🚗



Photo: Richard Pearsall

Corps' biologist Dan Caprioli uncovers a nest of terrapin eggs.

District completes beachfill at Lower Cape May Meadows

By Dovi Meles

In January of 2013, the U.S. Army Corps of Engineers' Philadelphia District along with its cost sharing partner, the New Jersey Department of Environmental Protection, completed work on an \$8-million beach renourishment project in an area west of Cape May, N.J. known as the 'Meadows.' Weeks Marine, Inc. served as the contractor for the project.

Beach renourishment or replenishment refers to the periodic placement of sand on a beach. Sand is dredged from the ocean floor and pumped through pipes onto the beach, which increases the size of the beach for public use, but more importantly protects against erosion and storm damages.

Initial construction of the Lower Cape May Meadows beach and dune portion of the project was completed in 2005, with additional ecosystem restoration features completed in 2007. USACE plans to return to the site for re-nourishment every four years. The project's primary function is to protect a freshwater ecosystem. Past erosion of the shoreline and dune system in the project area degraded fish and wildlife habitat, reducing the productivity of the Meadows wetland ecosystem. The current cycle of renourishment involved placing approximately 365,000 cubic yards of sand over an area of 2.5 miles of beach.

The project is of particular interest and different from most beach nourishment projects because it wasn't justified based on traditional storm damage reduction benefits. This project was justified as an ecosystem restoration. The Meadows consists of important coastal freshwater wetlands, which are vital resting areas for shorebirds and birds of prey during their seasonal migration along the Atlantic flyway. The project has restored and continues to protect fish and wildlife habitat, and to provide flood and storm damage reduction throughout the entire project area. Without this project and its key features, the freshwater wetland would be jeopardized. Salt water from the ocean would make its way into the wetlands, destroying them and their inhabitants. 🚧



Photo: Dovi Meles

A dredge pumps sand onto the beach as part of the Lower Cape May Meadows ecosystem restoration project.



Glenn Werner, Baltimore District Forester Technician, and Greg Wacik, Philadelphia District ecologist, measure and mark trees as part of the Forest Management Plan on USACE property at the Francis E. Walter Dam near White Haven, PA

District takes on forest management

By Greg Wacik

The trees that are falling at the Philadelphia District's F.E. Walter Reservoir are now definitely being "heard," as the District has embarked on a new program of active forest management. The program is part of the Philadelphia District's responsibility to maintain an ecologically viable land base, with large areas of forest ecosystems and smaller unique habitats in the area surrounding the reservoir and dam.

"Silviculture" is the phase of forestry that deals with forest management. As "silviculturists," District planners and workers are striving to provide a healthy ecosystem and a diversity of wildlife habitats. To guide this effort, the District has developed a Forest Management Plan for the F.E. Walter Reservoir tract, located near White Haven, Penn.

Invasive species have become well established within Pennsylvania's forests in general and require active management to control.

The impact of deer on forest ecosystems, and plant regeneration in particular, have required active hunting management to reduce and control deer numbers. Hemlock stands are dying from hemlock woolly adelgid (an invasive species), and oak stands have suffered decades of bouts with gypsy moth (an invasive species).

Forest management has long been established under

several Federal Regulations and U.S. Army Corps of Engineers regulations. The Forest Cover Act of 1969 requires the preparation of a forest/land management plan for each reservoir facility. ER405-1-12 Section XII Timber Disposal guides the sale of wood products from a civil works facility as a real property action and must follow real estate regulations. ER 1130-2-540 Environmental Stewardship Operations and Maintenance Guidance and Procedures provide guidance for all civil works projects.

The F.E. Walter Reservoir is comprised of nearly 1,900 acres of land and water. Approximately 1,800 acres are upland acres largely dominated by forested areas. Other land types and uses include grassland communities, wetlands, rocky outcrops, recreational areas, and project related structures.

The original forest in the area consisted predominantly of a mixed oak and chestnut forest and an Eastern white pine/hemlock forest. These communities have been changed by many factors, including dam and reservoir construction in the project area, tanning and logging industries regionally, and a chestnut blight. Today the forest is predominantly a northern hardwood and Appalachian Oak mixed forest. Historically, the forests surrounding the F.E. Walter Dam were heavily harvested and have been allowed to naturally regenerate following disturbance. The result has been a forest comprised of mostly oak and maple species and the loss of much of the white pine, hemlock, and spruce forests.



Photos: Tim Boyle

at the F.E. Walter Reservoir

The primary goal of the forest management activities at F.E. Walter Reservoir is to ensure the long term sustainability of healthy forest for wildlife, public recreation, and to support ecosystem and regional biodiversity.

Active forest management at the project will provide a diverse landscape that provides both young forests to support rapidly declining early succession wildlife populations and mature late succession forests that will benefit forest interior wildlife.

Nearly all species can benefit from a mix of forest types, including species such as wood cock, grouse, black bear, whitetail deer, cottontail rabbits, turkey, flying squirrel, migratory birds, and many threatened and endangered species.

The main objectives of the F.E. Walter Dam and Reservoir Forest Management Program are:

- To manage the forest resources of the project lands on a sustainable basis consistent with relevant laws, regulations and ecosystem management principals
- To perpetuate and improve the project forest for wildlife habitat, recreation, aesthetics, timber supply, pest control, and watershed protection
- To protect threatened and endangered species and preserve and enhance ecotypes

- To maintain a diversity of productive habitat for wildlife through the application of forest management techniques such as timber harvesting, tree seedling plantings, and wildlife habitat creation.

An initial forest-stand analysis was performed by a Corps forester from the Baltimore District in cooperation with a representative of the United States Forest Service, the Philadelphia District environmental staff, and the F.E. Walter Reservoir staff. Utilizing this technical forestry management expertise along with onsite knowledge of the project lands, a forest management plan was developed.

The management plan consists of, but is not limited to, commercial timber management, noncommercial timber management, pest management, invasive/nuisance species management, wildlife habitat management, reforestation, and prescribed fire measures. The 10-year forest management plan includes a total of 323 acres of forested areas identified for timber management activities. These areas are further divided into five forested blocks based on proposed forest management techniques being applied and the presence of pre-existing physical boundaries such as access roads.

Harvesting has now commenced. Soon, the District hopes to see the “forest through the trees” at F.E. Walter Reservoir. 🏠

Army Corps repairs canal bulkhead

By Steve Rochette

When the U.S. Army Corps of Engineers needs to repair a dam outlet, marine bulkhead or any other infrastructure submerged in the water, it presents an engineering challenge. The added variable can make repairs more difficult, costly and time-consuming.

Ongoing repair work along the Point Pleasant Canal has been just that – a challenge – but through resourcefulness and innovation, the U.S. Army Corps of Engineers' Philadelphia District and its contractor are nearing completion of work.

The project involves repairing 8900 feet of a steel sheet-pile bulkhead along the canal. Work began in 2010 after the Philadelphia District awarded a \$4.1 million contract to Abhe & Svoboda of Prior Lake, MN with funds from the American Recovery & Reinvestment Act.

The bulkhead repair project, scheduled to be complete in March of 2013, is the last remaining stimulus work still under construction for the U.S. Army Corps of Engineers' Philadelphia District.

"The contractors have been flexible, resourceful and met a number of challenges on this project," said USACE Project Manager Monica Chasten. "And the quality of their work has been very impressive."

Background

The canal, approximately 150 feet wide and 1.7 miles long, was constructed in 1925, connecting the Manasquan River, about one mile from the ocean on the northern end, and Bay Head Harbor and the Metedeconk River on the southern end. It is widely used by pleasure boaters, the U.S. Coast Guard and New Jersey State Police Marine Services.

The sheet-pile bulkhead, installed between 1965 and 1972, retains the sides of the canal and protects the embankment. Bulkheads typically have a 50-year life. Sections of a bulkhead exposed to tide cycles are particularly



Abhe & Svoboda Construction Manager Justin Kotalik points out a corroded section of the steel bulkhead along the Point Pleasant Canal from inside a cofferdam. The U.S. Army Corps of Engineers Philadelphia District is working to repair the bulkhead with innovative techniques rather than replace it.

vulnerable to rust and corrosion because of the daily exposure to sea water and oxygen.

Inspections dating back to 1983 revealed minor corrosion and USACE began analyzing and studying methods to address the issue.

"Through our test case, we found it was significantly cheaper to repair and coat the bulkhead rather than replace it," said Tony DePasquale, chief of Operations Division for the Philadelphia District.

Specifically, the team studying the matter found they could save approximately \$25 million. The hard part, however, was working out the engineering of the project.

"This kind of work has never been done in the United States," said DePasquale. "The hope for us is that this project can be a demonstration for the whole Army Corps of Engineers as

well as local and private interests. We're showing that we can rehabilitate this infrastructure and save money."

Designing a Fix

The work to repair the bulkhead involved moving a barge on site with generators, sand blasting equipment and a desalination station to produce freshwater for washing the steel. The contractor begins the process by maneuvering moveable cofferdams, temporary watertight enclosures, against the bulkhead, and pumping the area dry to expose the length of the steel bulkhead.

The crews use a high pressure wash to remove paint, rust and marine growth. They then check the thickness of the steel sheet-pile with an ultrasonic thickness gauge. Wherever they find spots corroded by more than half of the original thickness, workers weld steel plates to the existing structure. After a round of sand-blasting, the steel sheet-pile is ready for a special coat of marine paint.

Each stretch of bulkhead repair takes several days and the contractors move the cofferdams and progress to other areas.



A contractor checks the thickness of steel with an ultrasonic thickness gauge during repair work of the bulkhead along the Point Pleasant Canal. Wherever crews find spots corroded by more than half of the original thickness, workers weld steel plates to the existing structure.

with innovative project

POINT PLEASANT, NJ ★

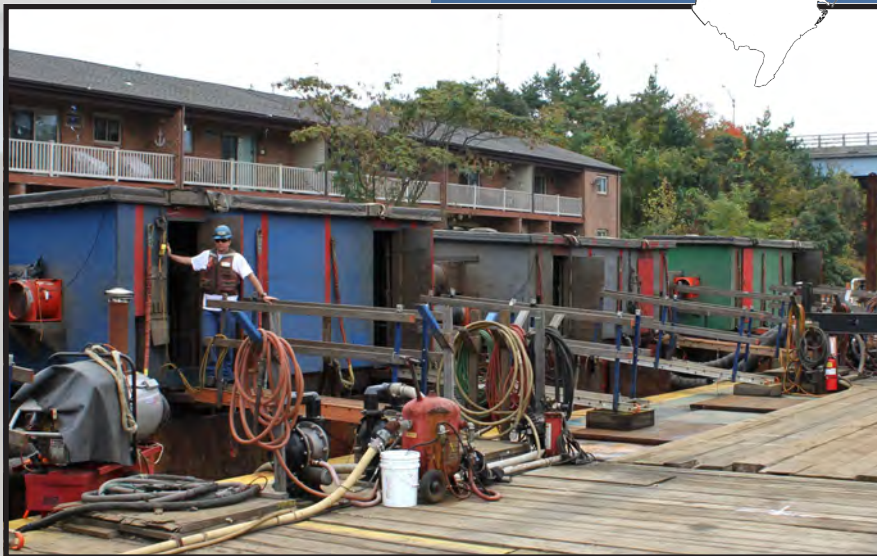
“Our contractor pioneered a number of different features along the way,” said USACE Project Engineer Rich DiMeo, who noted that the canal bulkhead includes three different types of sheet-pile depending on when it was installed. Each type has different interlocking features, requiring the contractor to modify and adjust plans as they progressed.

Two unique aspects of the project included the use of the moveable cofferdams and the application of a marine coat that can cure in wet conditions. Both of these features reduce the time and cost involved with work.

For the contractor, adapting to on-the-ground conditions has been essential.

“Getting everything to work from an engineering standpoint has been a challenge,” said Justin Kotalik, a construction manager for Abhe & Svoboda. “There are a number of variables out here – the weather, tides, boaters, the bridges, along with everything related to the steel bulkhead itself.”

For Rudy Sorrells, an Abhe & Svoboda Safety Inspector who previously worked in the drilling industry, the project is a point of pride.



Moveable coffer dams, temporary watertight enclosures, are positioned against the Point Pleasant Canal bulkhead, and contractors pump the area dry to expose the length of the steel bulkhead and make repairs possible.

“It’s prestigious and we’re all pretty proud to be involved with the work,” he said.

The current contract involves repairing half of the bulkhead along the canal. Moving forward, the Philadelphia District hopes to repair the entire length.

“It’s imperative that we complete the job before the deterioration requires full replacement of the uncoated sections,” said DePasquale. 



Rudy Sorrells, an inspector for Abhe & Svoboda, speaks with Monica Chasten, a project manager for the U.S. Army Corps of Engineers Philadelphia District. Sorrells explains the operation of a desalination station used to produce freshwater for an ultra-high pressure wash of the steel bulkhead along the Point Pleasant Canal.



The U.S. Army Corps of Engineers Philadelphia District and its contractor Abhe & Svoboda Inc. use a barge as a staging area during repair work of the Point Pleasant Canal bulkhead.

Photos: Tim Boyle

Donlon Award goes to ‘true humanitarian’

By Richard Pearsall

Stacy Coppinger is the winner of the 2012 Michael V. Donlon Humanitarian Award.

LTC Chris Becking presented the prestigious award to Stacy in a ceremony in the Main Conference Room in January.

A member of the Emergency Management staff, Stacy has long committed herself to helping others, be that in her professional role as an Emergency Management specialist, in her “extracurricular” role as a member of the District’s Employee Morale Association for 19 years, or in her role outside the District as a dedicated family and community member.

A mother of three, Stacy is a “go-to” Mom --- active in her neighborhood, with the Girl Scouts, with hockey practice, etc. --- and a devoted daughter and sibling who willingly gives of her time and energy to her extended family.

Stacy is most often found working behind the scenes and tends to shun publicity. But her efforts do not go unnoticed.

“Stacy’s commitment to helping others at work, in her community, and in her family improves the lives of everyone with whom she comes in contact,” said Jim Monsu, Chief of Emergency Management, who nominated her for the Donlon Award. 🏠



Photo: Tim Boyle

MDC dredge makes ‘top ten’ list

By Richard Pearsall

The Dredge Murden was recently named one of the ten most significant boats of 2012 by Workboat International magazine.

The split-hull, shallow-draft vessel was designed for the Wilmington (N.C.) District by the Marine Design Center. The MDC developed the initial design then worked with its consultants, Jensen Maritime and Bristol Harbor Group, to complete and execute the project. The dredge was constructed by Conrad Industries, Morgan City, La.

The Murden is designed to dredge low-use, shallow water inlets along the East Coast, as well as the intracoastal waterway. The design challenge was to incorporate enough power to handle dredging and the winds and currents of North Carolina’s Outer Banks in a space small enough to maneuver in shallow waters.

The Murden is 156-feet long, has a 35-foot beam or width and has a draft of 4’3” unloaded and 9’ feet when fully loaded.

The Murden is designed to operate as a day boat so has no living quarters on board.

A model of this award-winning dredge is on display outside the entrance to the Marine Design Center, off the 6th floor lobby of District headquarters in the Wanamaker Building. 🏠



Photo: USACE





Photo: Tim Boyle

DEEPENING THE DELAWARE, PART THREE: The dredge *Illinois*, owned by contractor Great Lakes Dredge & Dock Co., works in "Reach A" of the Delaware River, Philadelphia-to-Sea federal channel near the former Philadelphia Naval Shipyard in September 2012. The \$14.5 million contract--third to date for the Delaware River Main Channel Deepening Project--involves removing an estimated 1.2 million cubic yards of silt, clay, sand and gravel within an 11-mile stretch from the Walt Whitman Bridge to just southwest of Philadelphia International Airport. Once dredging under this contract was completed in early February, the channel had been deepened from 40 to 45 feet along a fourth of its 102.5-mile length. Total project completion is targeted for 2017. 



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