



New Jersey Beach Profile Network

Atlantic County

Little Egg Inlet
to Great Egg Harbor Inlet

NJBPN Profile #'s
134 - 126

New Jersey Beach Profile Network: Atlantic County Site Locations

There are 10 NJBPN survey sites on the Atlantic County shoreline. The beach profile sites are located in the City of Brigantine, Atlantic City, the City of Ventnor, the City of Margate, and the Borough of Longport. The Atlantic County coastline consists of three barrier islands. Little Beach is part of the Forsythe National Wildlife Refuge and is not surveyed. Brigantine Island is south of Brigantine Inlet, the northern third of which remains undeveloped as part of the New Jersey Green Acres program. The Absecon Island communities, Atlantic City, Ventnor, Margate, and Longport, are all highly developed. There are six beach profile survey sites in the communities of Absecon Island.

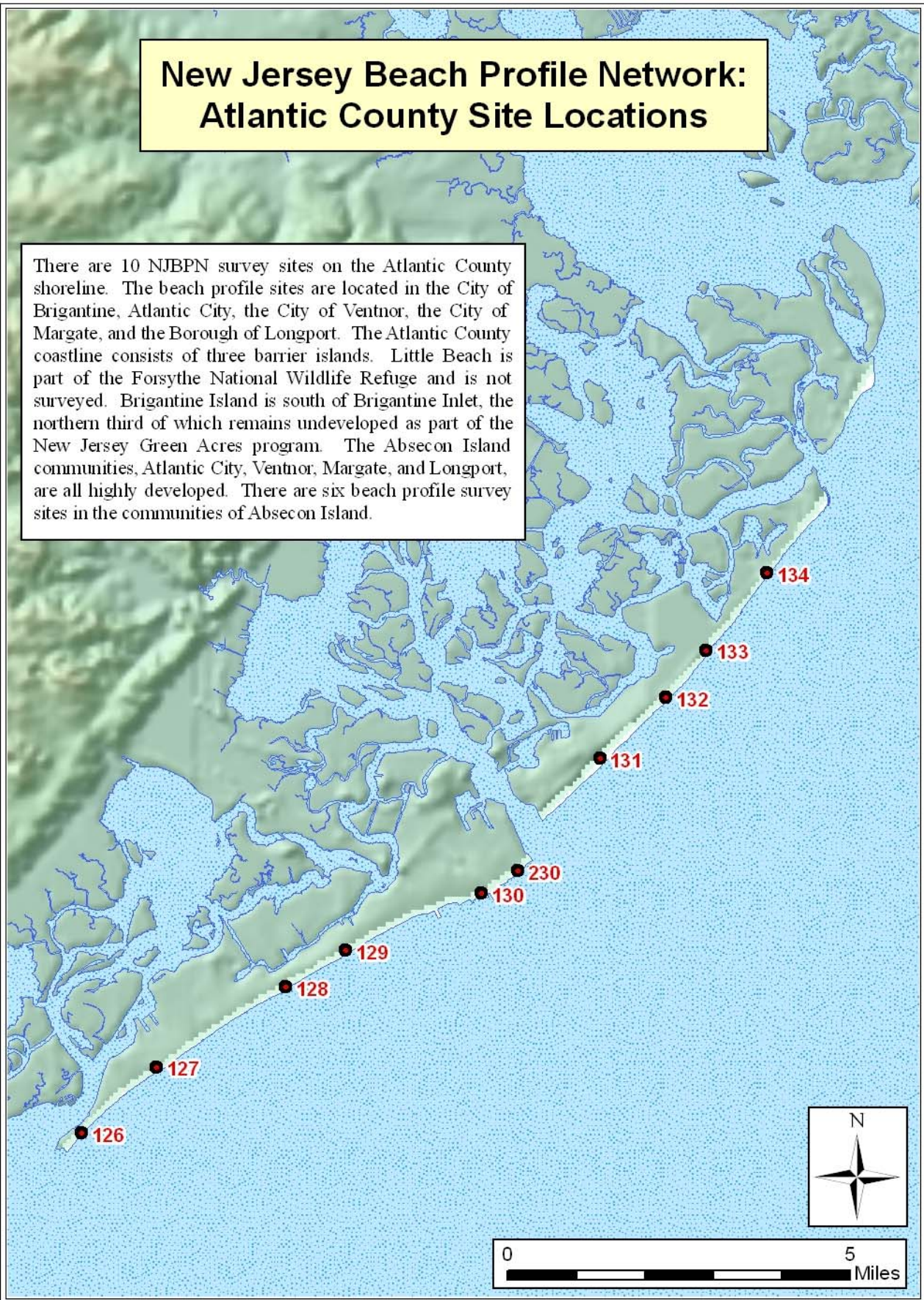


Figure 67. Location map for the 10 NJBPN profile sites in Atlantic County, NJ

Atlantic County Individual Site Descriptions:

The spring and fall surveys of 2013 were essential in determining the quantitative impact of Hurricane Sandy. All Brigantine sites were surveyed immediately prior to Sandy in October 2012 while Absecon Island's five locations were done in December, after the storm. Data collected at the 10 oceanfront beach profile locations cover the municipal beaches from the City of Brigantine Beach to the Borough of Longport. Little Beach on Pullen Island to the north of Brigantine is a natural area and is not included in the NJBPN program. Aerial photography post-Sandy does show overwash of the Little Beach Island's central portion with shoreline retreat now at a dune system that first developed in the 1880's and had remained well inland since then.

Federal or NJ State Coastal Projects;

In 2002-3 the US Army Corps of Engineers, Philadelphia District, conducted a Shore Protection project from Absecon Inlet, south to the Ventnor City/Margate City boundary on Absecon Island. The design was for a 150-foot wide beach in Atlantic City and a 100-foot beach width in Ventnor backed up by a 14.5-foot elevation at the crest dune that was vegetated and fenced with sand fencing and pedestrian access pathways to the beach. Since Margate and Longport declined to participate, their municipal shorelines did not receive direct sand placement. The maintenance cycles were delayed until 2011 when the ACOE returned to place sand on the northern portion of the Atlantic City shoreline. Fortunately, this task was very recently completed (June 2012) when Sandy came ashore. A second maintenance cycle began in July 2013 and shows in the final survey for the fall. An Absecon Inlet project to rebuild the inlet rock revetment to a uniform standard and remove over a century of accumulated debris from earlier shore protection efforts along the inlet sand beach moved to construction under ACOE jurisdiction and was essentially complete as to debris removal in May 2014.

The ACOE project for Brigantine was focused on the northern third of the developed shoreline. A feeder beach was designed into the project at the southern 1,600 feet of the natural area north of development. The project extends south to 5th Street South in the City. In 2006 the initial Federal beach restoration was completed and extended to the south the footprint of two prior State and local projects from 1997 and 2001. In 2011 an emergency maintenance was completed under the Flood Control and Coastal Emergencies funding program using trucked-in sand. By February 2013 the Brigantine portion of Atlantic County's recovery was complete.

Brigantine;

The northern-most profile site on the Island of Brigantine is located on the undeveloped northern end of the island now in the possession of the State of New Jersey. This location was overwashed by waves from the ocean to the bay marshes by Sandy. The vegetation survived behind the dune ridge, so re-growth is assured, but at a more landward location. The northeast storm of 1992 was the last time this occurred.

Where development begins, the beach has been erosional due to the orientation difference between the physical infrastructure and the long-term changes in the shoreline. The Federal project includes a part of the natural shoreline where sand is placed to act as a feeder beach to the worst of the erosional segment. Waves crashed over the promenade and flooded Brigantine Boulevard. Prior to Sandy, the beach was wet to the toe of the rock revetment, so provided little protection. Dunes and a dry beach appear near the southern end of the promenade where steep scarps were in evidence going south to approximately 25th Street South. The dune-defended section did much better in stopping the storm waves except at 15th Street South where a large, multistory building occupies the footprint of the dune. Both the 15th and 14th Street ends and the building's parking lot were overrun by waves and sand was transported into Ocean Avenue. However, south of 15th Street South, the ever-widening beach absorbed the storm surge and the wave energy with no ill effects on any public or private property. The berm was eroded and sand pushed landward into the seaward-most part of the dune area.

Atlantic City;

Absecon Island has been under development since 1852 when Atlantic City was founded. Beach nourishment has been a part of the shoreline management strategy since the 1930's with a Federal project in place since 2003. Most of the material has been placed between Absecon Inlet and Iowa Avenue. In 2003 the ACOE placed sand between Absecon Inlet and the Ventnor City/Margate City boundary. The towns of Margate and Longport declined to participate in the Federal project and the last beach material applied to either was 190,000 cubic yards deposited in Longport in 1990. The dunes were constructed to an elevation of 14.5 feet NAVD88 and were just high enough to withstand the wave run-up during Sandy. The oceanfront beach lost width and elevation, but the dunes prevented damage to the City's famous boardwalk. Restoration during 2013 put the beach width back to the design specifications and plans are moving toward completing the Absecon Island project into Margate and Longport.

Ventnor City;

Ventnor chose to participate in the 2003-2004 Federal beach restoration project. The Dorset Avenue site saw no serious impact from Sandy other than beach elevation loss and a narrower berm width. Further south toward Margate, the end-effect losses to the Federal project allowed waves to reach the timber bulkhead protecting the upland development and water came over the bulkhead at a variety of locations.

Margate City;

Margate City had significant amounts of water wash over the timber bulkhead at the development limit and inundate the streets and properties immediately landward. At the Benson Avenue site a lack of dunes, but a very wide beach permitted wave energy to deposit sand to the very top of the bulkhead, over it and into the street. Some spots did have "island" dunes that acted to protect from the overwash process, but in many cases the water came into the City. Sand recovered from inland was hauled back to the beach, but since the federal project has yet to start there has been no organized dune building in Margate City.

Borough of Longport;

The southern community has an old concrete seawall protecting some of the development with a narrow, low elevation beach to the seaward. Waves crashed into the wall and poured over it down most of the Borough streets into Atlantic Avenue. Since the homes are very close to the wall, house damage was evident as well. Local agreement has resulted in Longport's eventual inclusion in the Absecon Island shore protection design plan with construction expected in late 2014. One issue remains to be decided is the means to effect a better stability for the southernmost point of the oceanfront at Point Drive located just south of the 11th Street jetty that effectively defines the north entrance into Great Egg Inlet. This jetty is too short to retain the large volume of new sand proposed to be deposited along the Longport shoreline. Since the ACOE authorized project ends at the north side of the 11th Street jetty, no plans exist for extending the jetty or better retaining sand before it moves out into the inlet mouth. Compounding this problem is the lack of serious protection afforded to about seven homes arrayed along the Point Drive at the very southern tip of the island. A low rock revetment and aging timber bulkhead are the only coastal protection elements these homes have. In 2001 the ACOE published a memorandum presenting alternatives to protect the Point Drive properties that included offshore breakwaters, extending the existing jetty, or building a new jetty at the very tip of the Longport spur jetty extending into Great Egg Inlet.

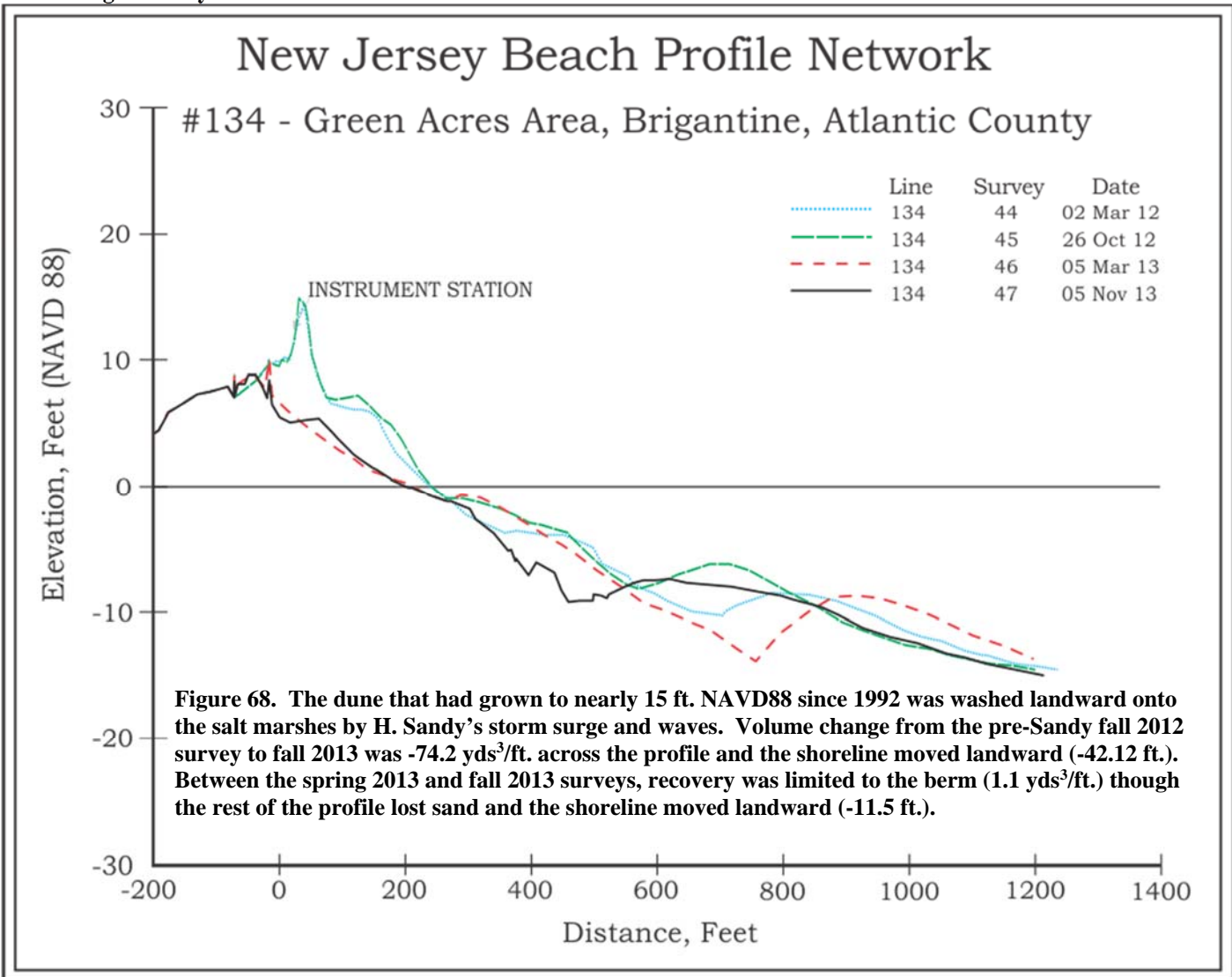
Not all Atlantic County sites had been visited earlier in the fall of 2012, so required site visits as soon as possible following the storm. The photographs show the spring or fall, pre-Sandy beach conditions as compared to the photographs taken on the day the site was surveyed following the storm. The normal activity showed that just prior to Hurricane Sandy, the county beaches all had decent width berms with as wide a beach

as could be expected following a benign summer of constructional waves. There had been no storm activity for exactly one year between events that resulted in Federal Disaster declarations. Hurricane Irene in late August 2011 had a significant impact on beach widths and sand volume resident on many beaches. It was fortunate that post-storm emergency work in early 2012 had put sand on northern Absecon Island with a modest trunked-in fill accomplished on the Brigantine erosional hot spot prior to Hurricane Sandy. All such work helped but did not prevent the storm from removing nearly all the material. Wholesale overwash only occurred in the north natural area on Brigantine Island with some damage from overwash occurring south for four blocks on Brigantine's vulnerable north end development. Overwash damage was seen in Margate and Longport largely due to low elevation bulkheads and the ease with which waves came over the concrete seawall in Longport.

NJBPN 134 – Green Acres Area, Brigantine



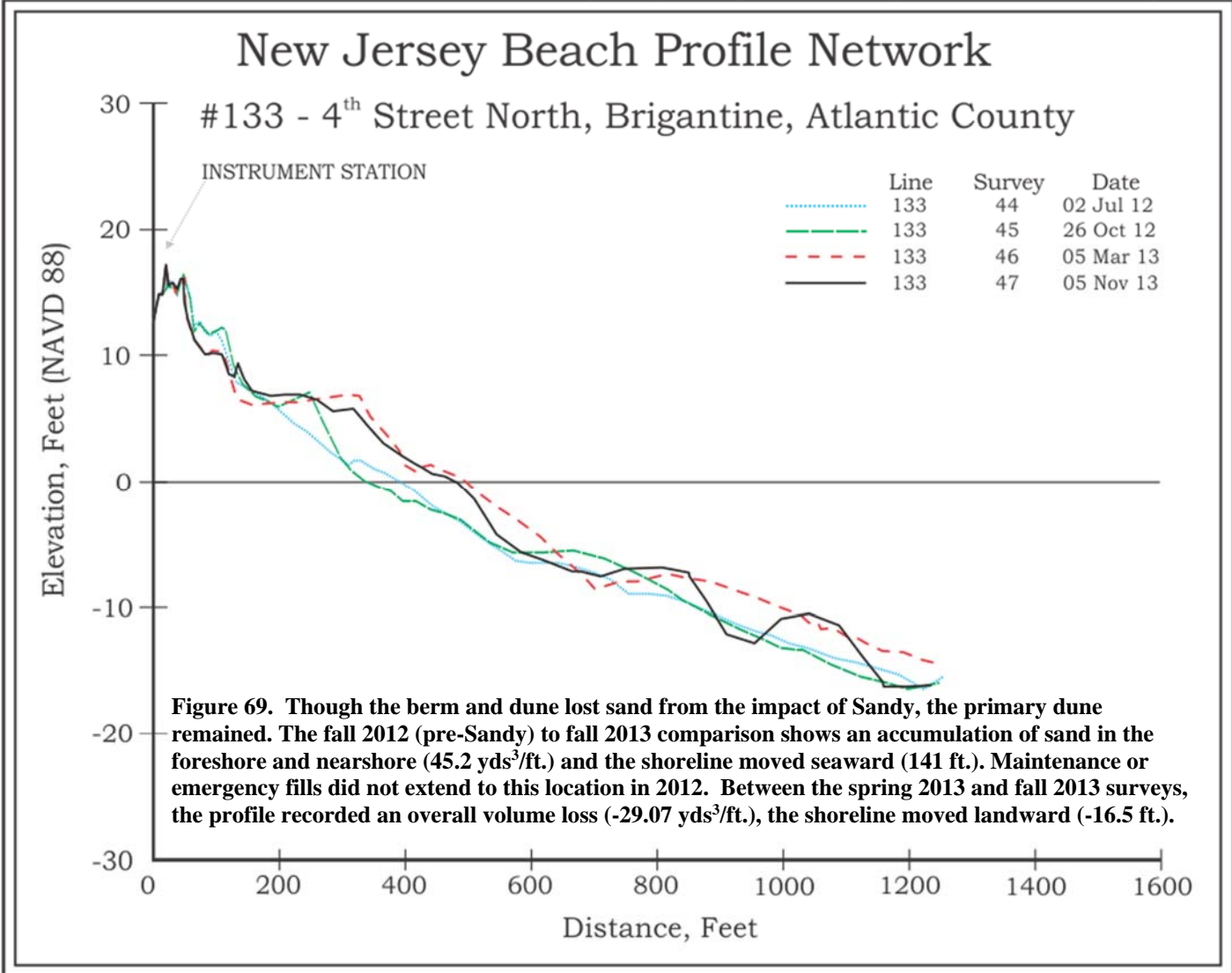
This site is located in the natural area on the northern segment of Brigantine Island and is preserved as public open space. The left photo (October 26, 2012) and survey (below) were taken just days before H. Sandy landfall. On the right (November 5, 2013) nearly a year later, the shoreline remained in about the same position, though the elevation of the berm had been lowered significantly.



NJBPN 133 – 4th Street North, Brigantine



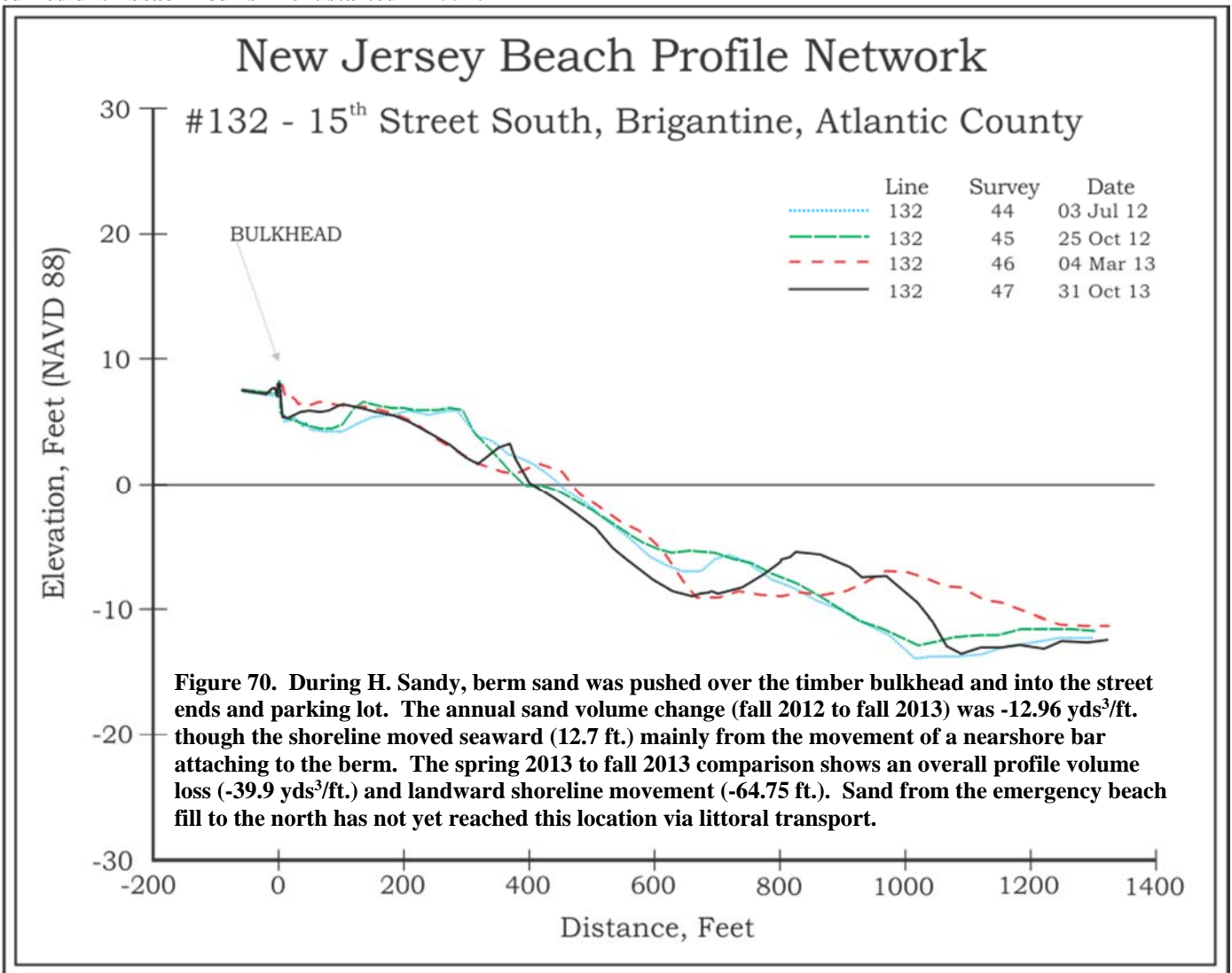
This site is located near the northern limit of development and within the 1997, 2001, and 2006 beach fill projects. The left photo (October 26, 2012) shows a relatively well developed dune just prior to H. Sandy landfall. On the right (November 5, 2013), the backshore and dune area that was eroded during Sandy was replanted with vegetation in an effort to trap sand.



NJBPN 132 – 15th Street South, Brigantine



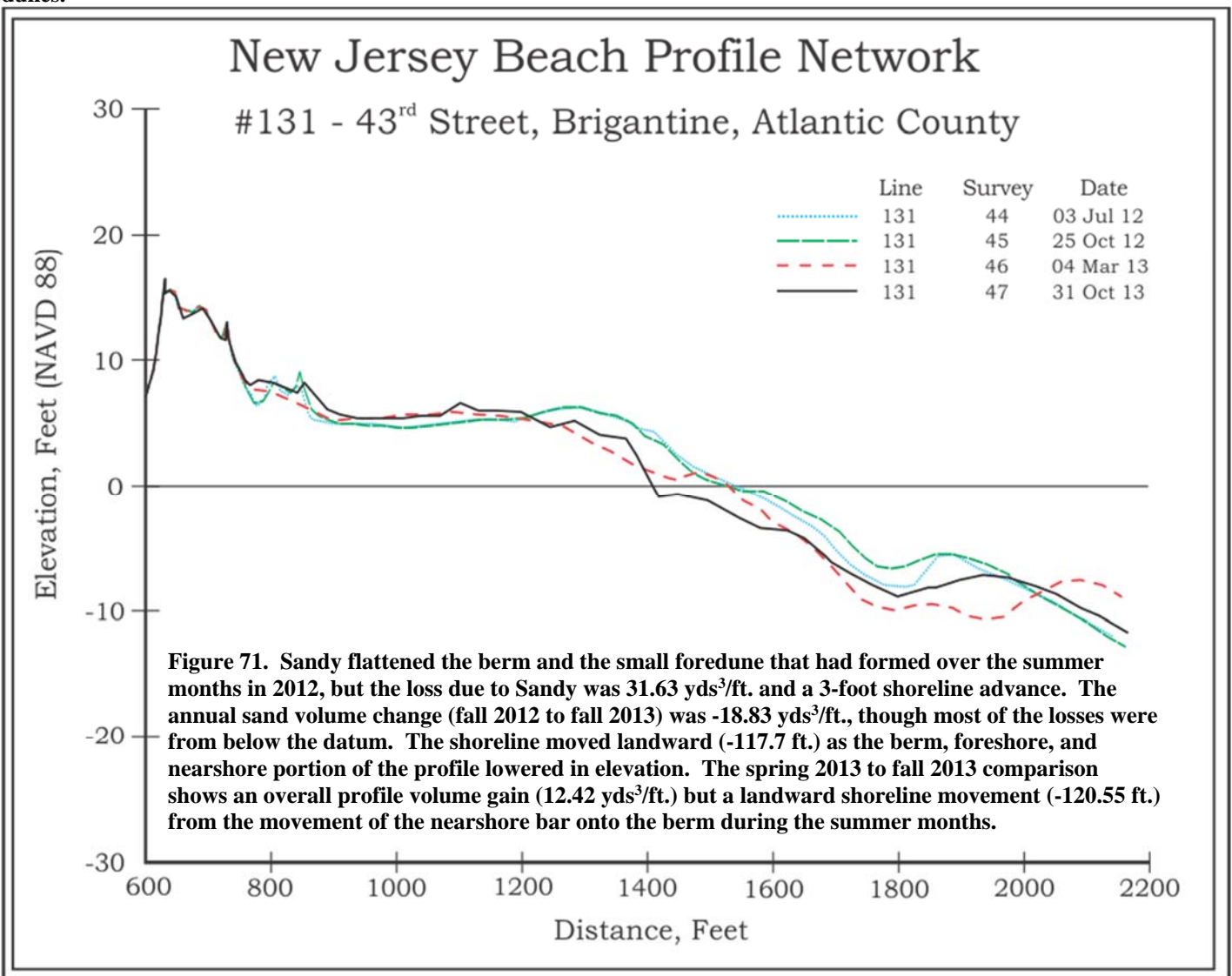
The October 25, 2012 (left) photo shows the low, flat beach and dune development north of the profile line prior to H. Sandy. Though the right photo (October 31, 2013) may not seem much different from the prior year, the cross section below shows some gain in elevation in the backshore area. This part of the beach lies in a zone where little erosion or accretion had occurred until beach nourishment started in 1997.



NJBPN 131 – 43rd Street South, Brigantine

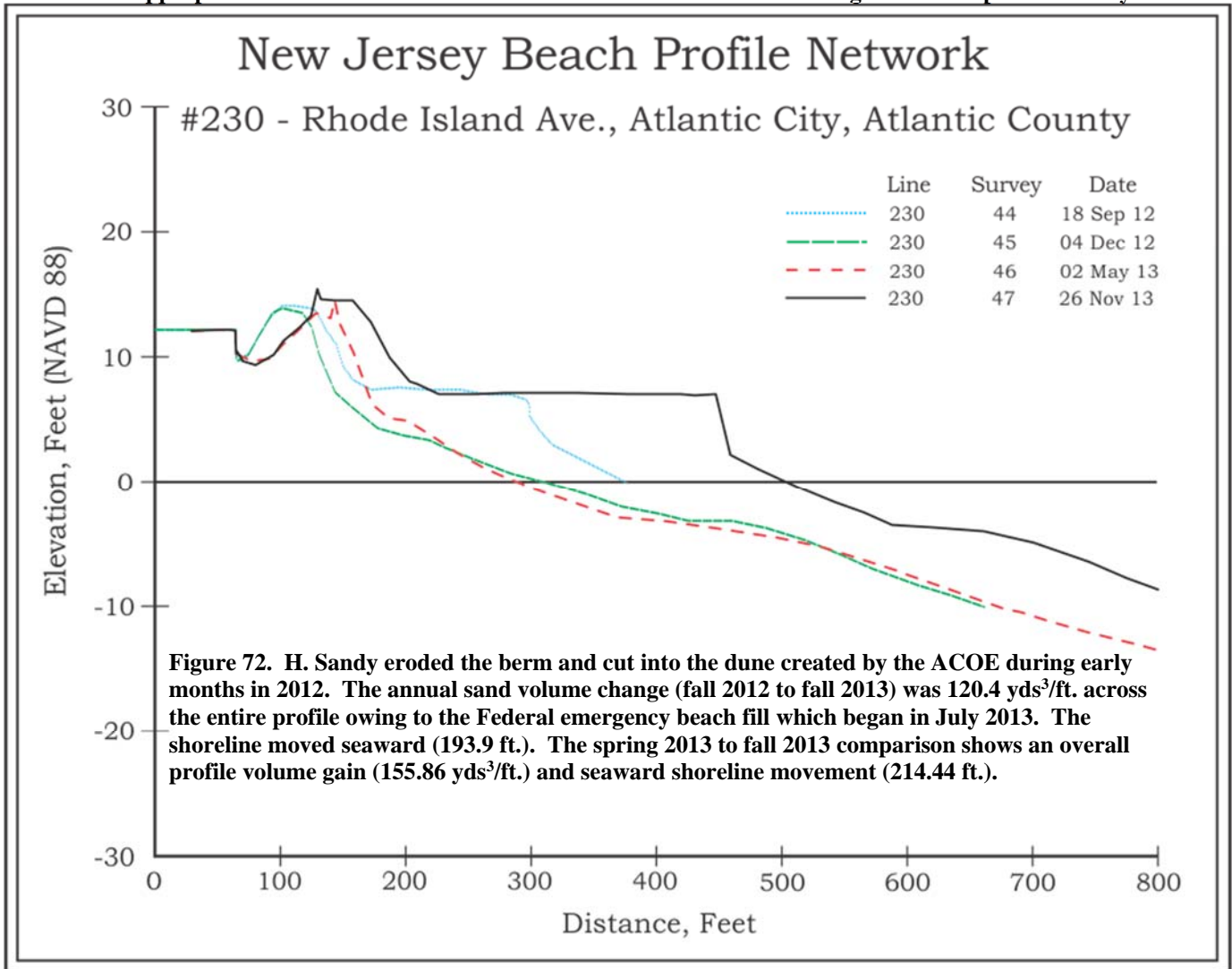


In both of the photos October 25, 2012 (left) and October 31, 2013 (right), the profile shows a wide beach and continuous, multi-ridge dune field. This area is influenced by the north Absecon Inlet jetty which traps the sand that is moving from the north to the south. H. Sandy storm surge had little effect on the development in this section of town due to the wide beach and dunes.





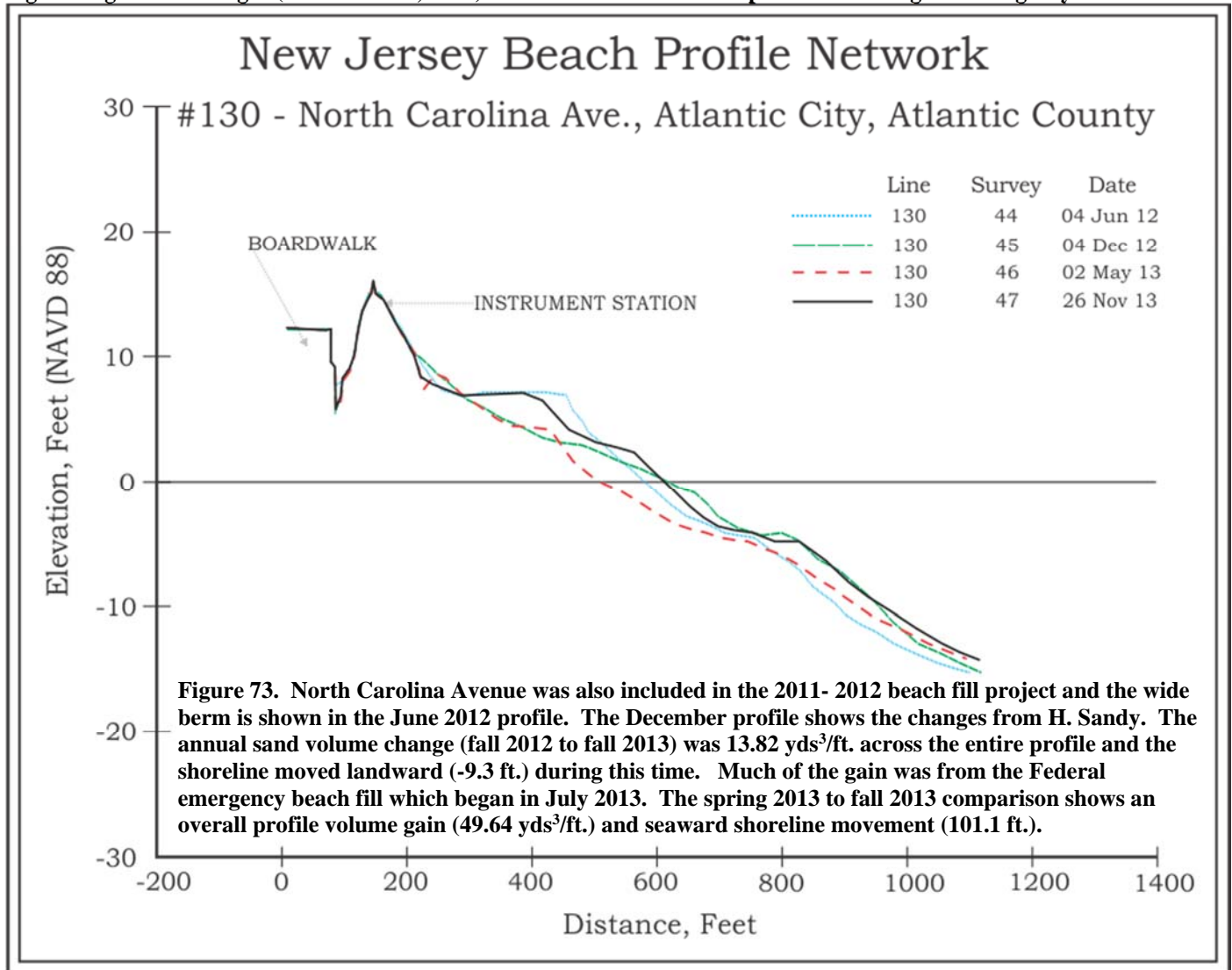
This profile site is located near the Absecon Inlet south jetty. The December 4, 2012 (left, view to the north) shows the profile site as a staging area for the construction of the shore-parallel nearshore sill located between the Massachusetts and Vermont Avenue groins in northern Atlantic City. This structure had been under construction prior to H. Sandy’s landfall. The November 26, 2013 (right) photo shows the flat berm created by the Federal emergency beach fill that was funded from the Disaster Relief Appropriations Act of 2013 at the same elevation as the berm remaining from work prior to Sandy.



NJBPN 130 – North Carolina Avenue, Atlantic City



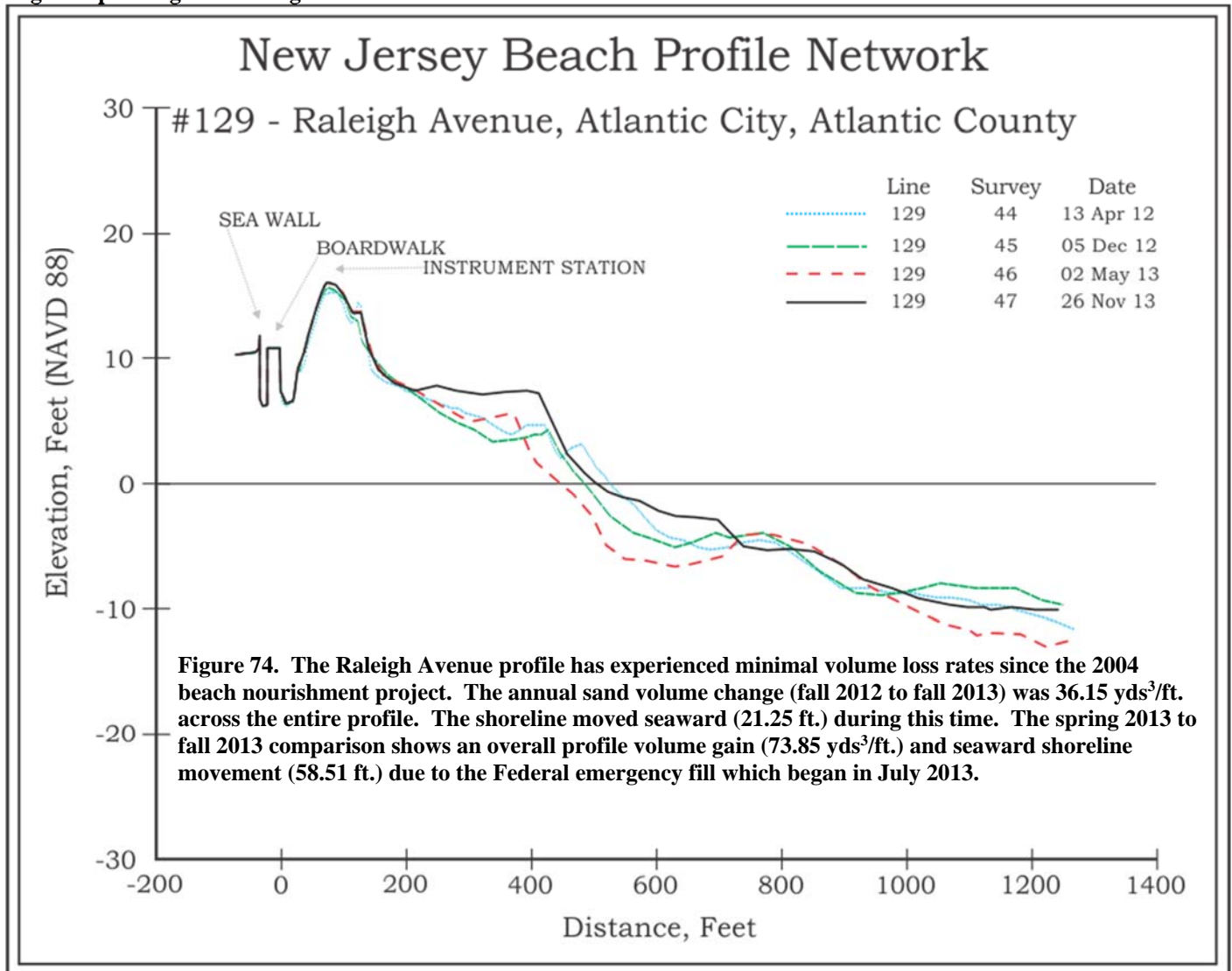
This location is also within the Absecon Island Federal shore protection project. The left photo (December 4, 2012) shows the profile site a few weeks after H. Sandy. The beach lost much of the berm sand volume, but the dune survived by being just high enough. On the right (November 26, 2013) the dune area had been replanted following the emergency fill.



NJBPN 129 – Raleigh Avenue, Atlantic City



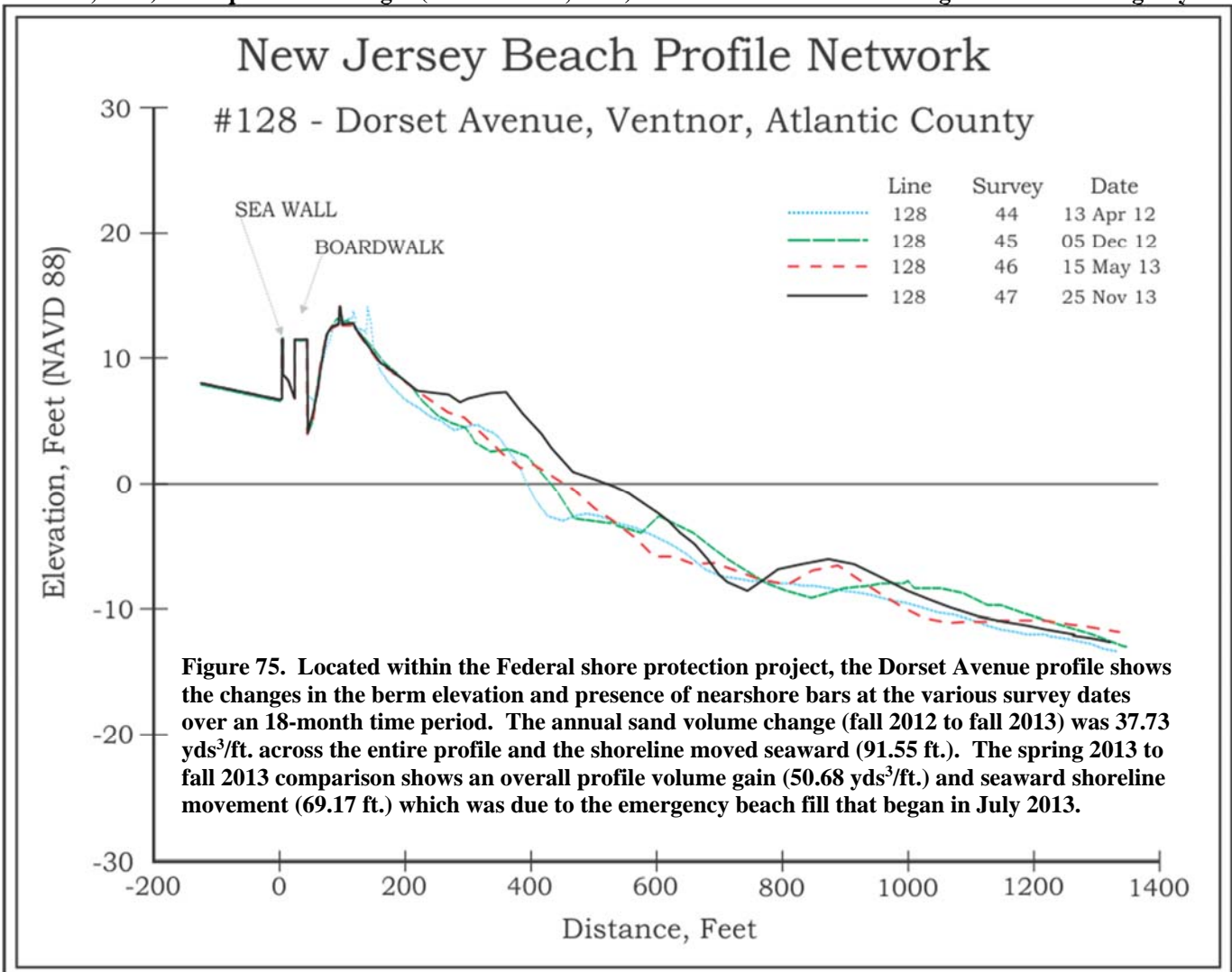
This site lies in the middle of the Federal shore protection project. On the left (December 5, 2012), the wide beach and dunes helped prevent storm surge damage to any structures. By November 26, 2013 (right) the emergency beach fill was complete along with planting of dune vegetation.



NJBPN 128 – Dorset Avenue, Ventnor City



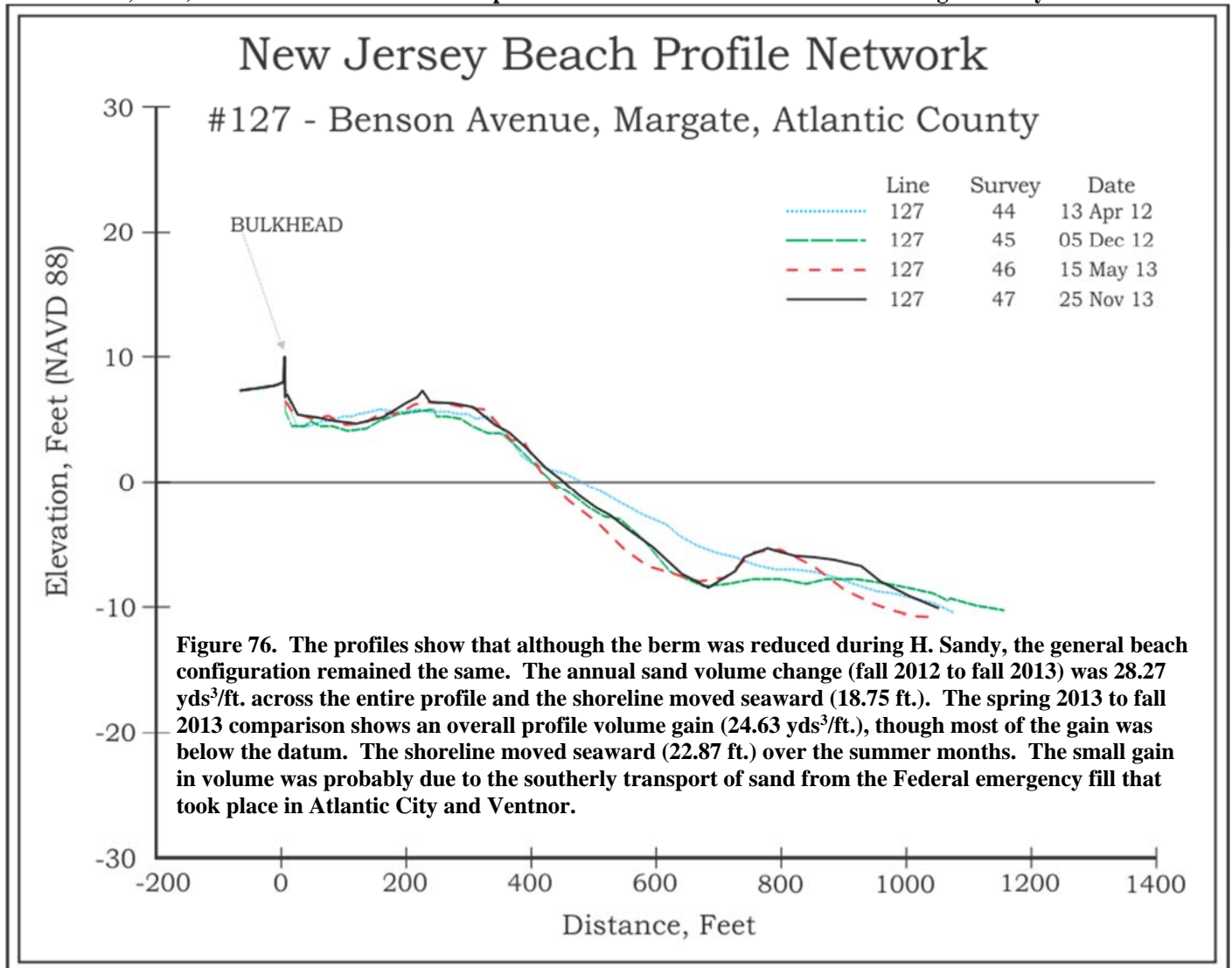
Dorset Avenue site was only minimally impacted by H. Sandy. The losses were within the range of all seasonal changes (left-December 5, 2012). The photo on the right (November 25, 2013) shows the conditions following the Federal emergency fill



NJBPN 127 – Benson Avenue, Margate City



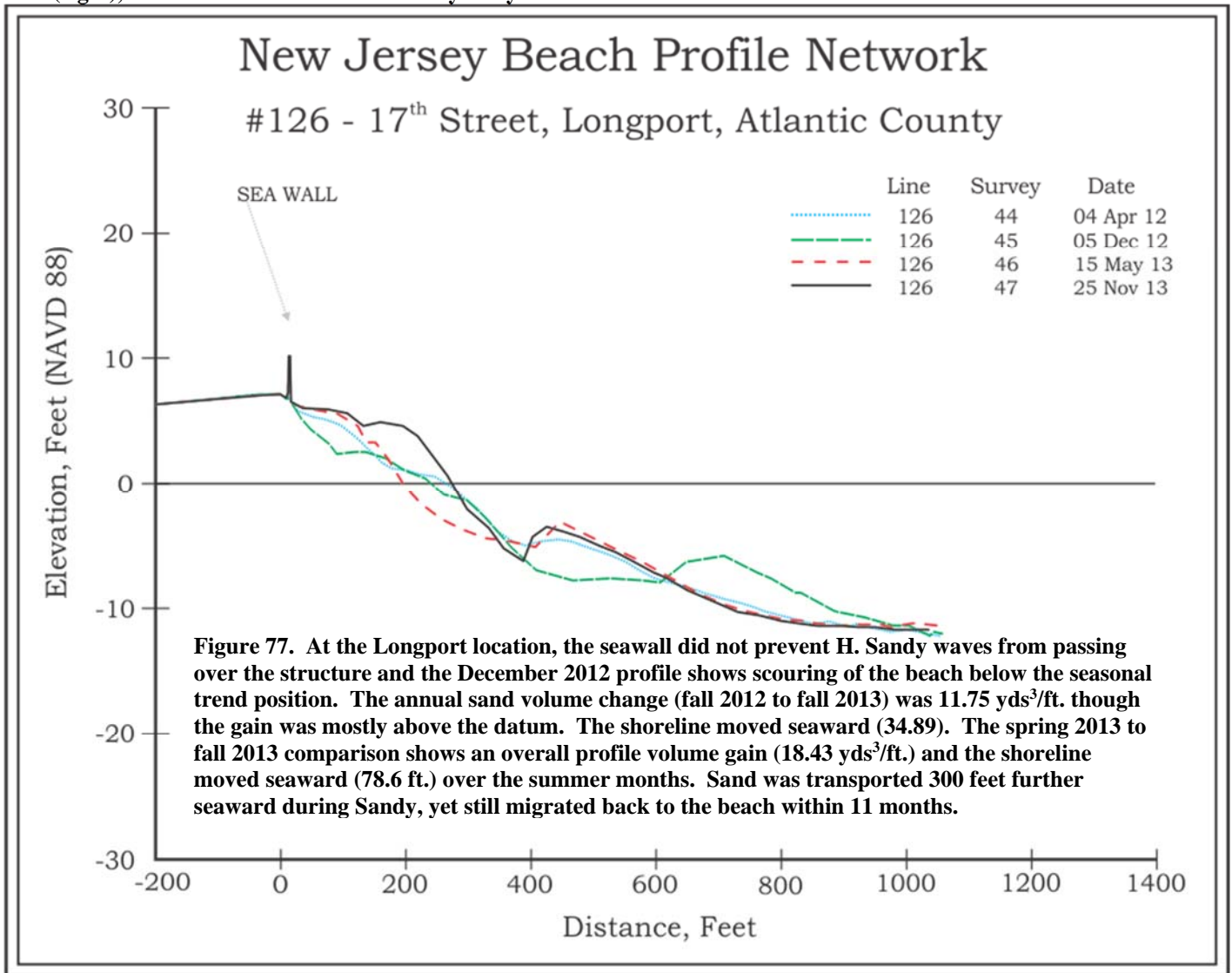
The Benson Avenue site is located approximately one mile south of the Federal shore protection project. Though difficult to determine from the photos, the December 5, 2012 (left) shows a lower elevation profile than that shown in the right photo (November 25, 2013). Much of the berm sand was pushed landward onto Benson Avenue during H. Sandy.



NJBPN 126 – 17th Street, Longport



The 17th Street profile is located about 15 blocks north of the Great Egg Inlet jetty and south of the Federal shore protection project. The photo on the left (December 5, 2012) shows a low flat berm following H. Sandy. Street end flooding, sand deposition to Atlantic Avenue, and structural damages were spread along the Longport shoreline. The November 25, 2013 photo (right), shows the berm conditions nearly one year later.



Summary & Conclusions

Atlantic County did receive work related to recovery from Hurricane Irene in August 2011 by early in 2012. This effort paid dividends during Hurricane Sandy in preventing certain damage to the surrounding appurtenances to the new Revel Entertainment project at the north end of Atlantic City and mitigating some overwash damage in Brigantine's north end hot spot. The damage done in Longport and Margate did swing some opinions on the benefits associated with beach nourishment and dune development to allow serious consideration by both towns to participate in the ACOE program going forward. It also helped that the Christie administration made dune development a mandatory option for the NJ coastline.

After reviewing the 10 Atlantic County profiles for sand transport offshore in similar fashion to the review done in Monmouth and Ocean Counties, the level of intensity was far less in terms of both the volume and the distance seaward that Hurricane Sandy deposited sand eroded from the beaches. Dune erosion was limited to that seen in the natural area of northern Brigantine, so the transition observed at Longport was not duplicated elsewhere with regularity.

Longport, spring 2012 to fall 2012	Beach loss = -22.39 yds³/ft.	Offshore gain = 26.56 yds³/ft.
Longport, fall 2012 to spring 2013	Recovery = 22.15 yds³/ft.	Offshore loss = -27.53 yds³/ft.

Post-storm recovery returned as much sand to the beach in Longport as Hurricane Sandy eroded and deposited offshore. So, **the post-storm beach recovery was 98.9%** of the sand volume lost with the offshore bar created by Sandy supplying 104% of the sand volume deposited during the storm. However, with the ACOE work completed prior to the fall 2013 surveys on Absecon Island and northern Brigantine, this was the only site that duplicated the observations in the northern two counties.