



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.

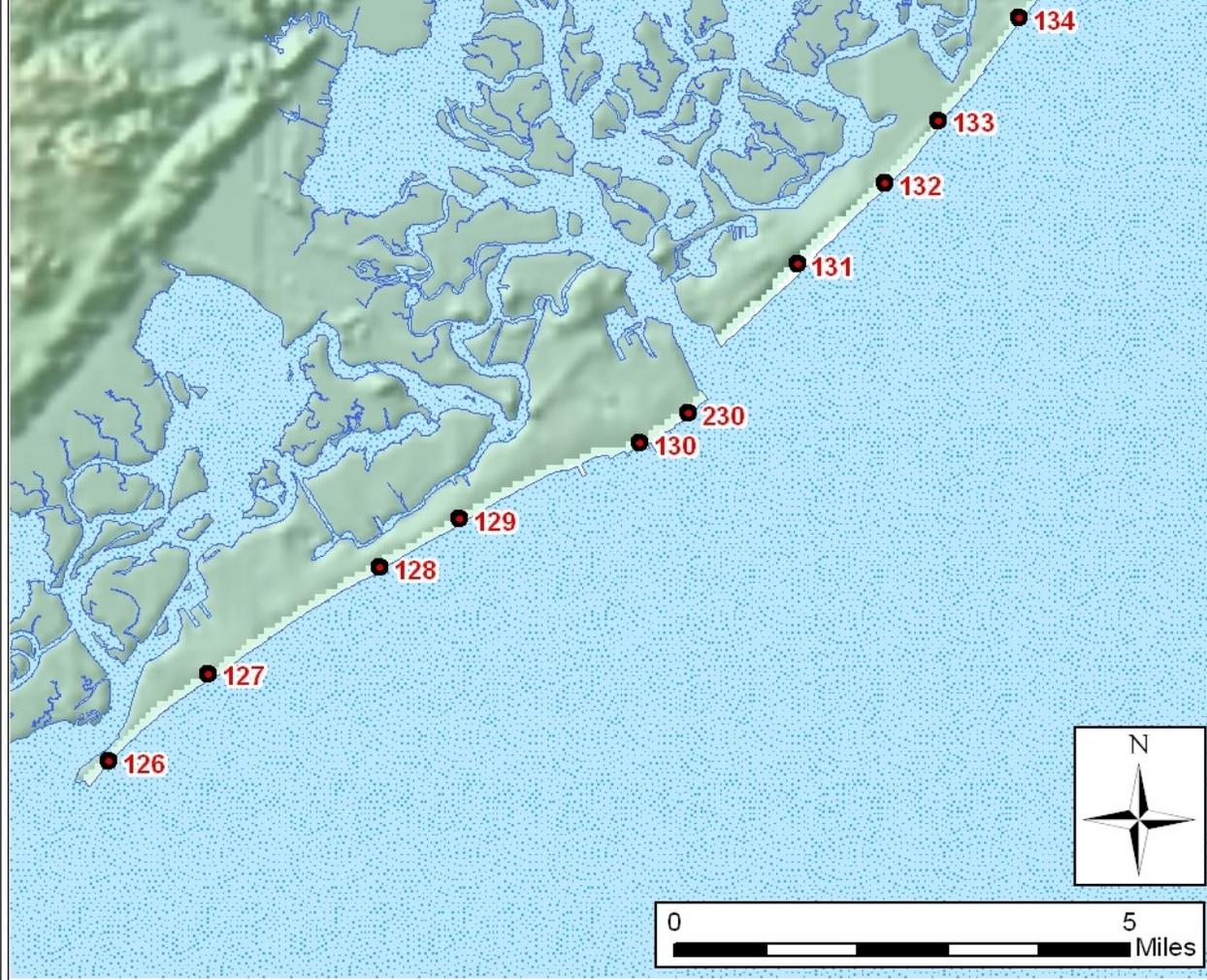


Figure 67. Location map for the 10 NJBPN profile sites in Atlantic County, NJ

Atlantic County Individual Site Descriptions:

Data collected at the 10 oceanfront beach profile locations cover the municipal beaches from the City of Brigantine Beach to the Borough of Longport. Both the Absecon Island and Brigantine Beach US Army Corps of Engineers (ACOE) shore protection projects have been re-supplied with sand from the authorized borrow zones and restored back to each project's design dune and beach cross section using PL 113-2 funding at 100% federal cost. Little Beach on Pullen Island to the north of Brigantine is a natural area and is not included in the NJBPN program. However, starting in 2015 the Forsythe National Wildlife Refuge employed Sandy recovery funding to undertake an island-wide digital ground-lidar scan of the beach and dunes between Brigantine and Little Egg Inlets. The mapping was intended to better define avian environments and determine rates of change among those environments over time.

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 dune crest 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. As an adjunct to the 2012 beach restoration, the Revel Entertainment Casino complex commissioned design of an offshore, submerged breakwater structure constructed between two groins, one was the existing but refurbished groin at Massachusetts Avenue and a new low profile groin constructed just north of the Garden Pier (essentially between Connecticut and New Jersey Avenues). The objective was to more effectively impound the local sand supply for a longer time period at this relatively erosional segment of the Absecon Island coast. A second beach maintenance cycle began in July 2013 and shows in the final survey for that 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. Actual construction started in 2015.

The City of Margate filed litigation in Superior Court seeking relief from having dunes constructed as part of the US Army Corps shore protection project within City oceanfront limits on Absecon Island. The case went to trial in February 2016 with a decision rendered April 11, 2016, affirming the Corps design and the relevance of dunes to the protection levels sought by the project. With this decision, without Margate City's further appeals, the project should go to final completion fairly soon.

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 of 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 as a result of project maintenance funded under PL-113-2. There has been no further beach activity since 2013.

Brigantine;

The northern-most profile site on the Island of Brigantine is located on the undeveloped northern end of the island now part of the State of New Jersey's open space program. 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. Prior to Sandy, the beach was wet to the toe of the rock revetment, so provided little protection. During Sandy, waves crashed over the promenade and flooded Brigantine Boulevard. Dunes and a dry beach begin near the southern end of the promenade where steep dune 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, multi-story building occupies the footprint of the dune. However, south of 15th Street South, the ever-widening beach absorbed Sandy's storm surge and wave energy with no ill effects on any public or private property. Further south, extending to the Absecon Inlet jetty the berm was eroded and sand pushed landward into the seaward-most part of the dune area.

A northeast storm in early October 2015 eroded the beach at the promenade, but left no permanent scars elsewhere. The late January northeast storm also had minimal impact on the Brigantine beachfront.

Atlantic City;

Absecon Island has been under development since its founding in 1852. 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 because the ACOE conducted a maintenance project just prior to Sandy. Restoration during 2013 put the beach width back to the design specifications.

Ventnor City;

Ventnor chose to participate in the 2002-2003 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. The end effect sand losses were significant and a significant reason to complete the project as designed. When this final effort begins, the work would be funded under PL 113-2 at 100% federal cost, a major benefit to both Margate City and Longport.

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 consistent 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 breached 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. During 2015, some street-end oceanfront bulkheads were raised to elevation 13.0 NAVD 1988, but storm water drain scuppers on each side of the street end allow ocean water into the street often flooding curb to curb (Jonas 1-23-2016).

Borough of Longport;

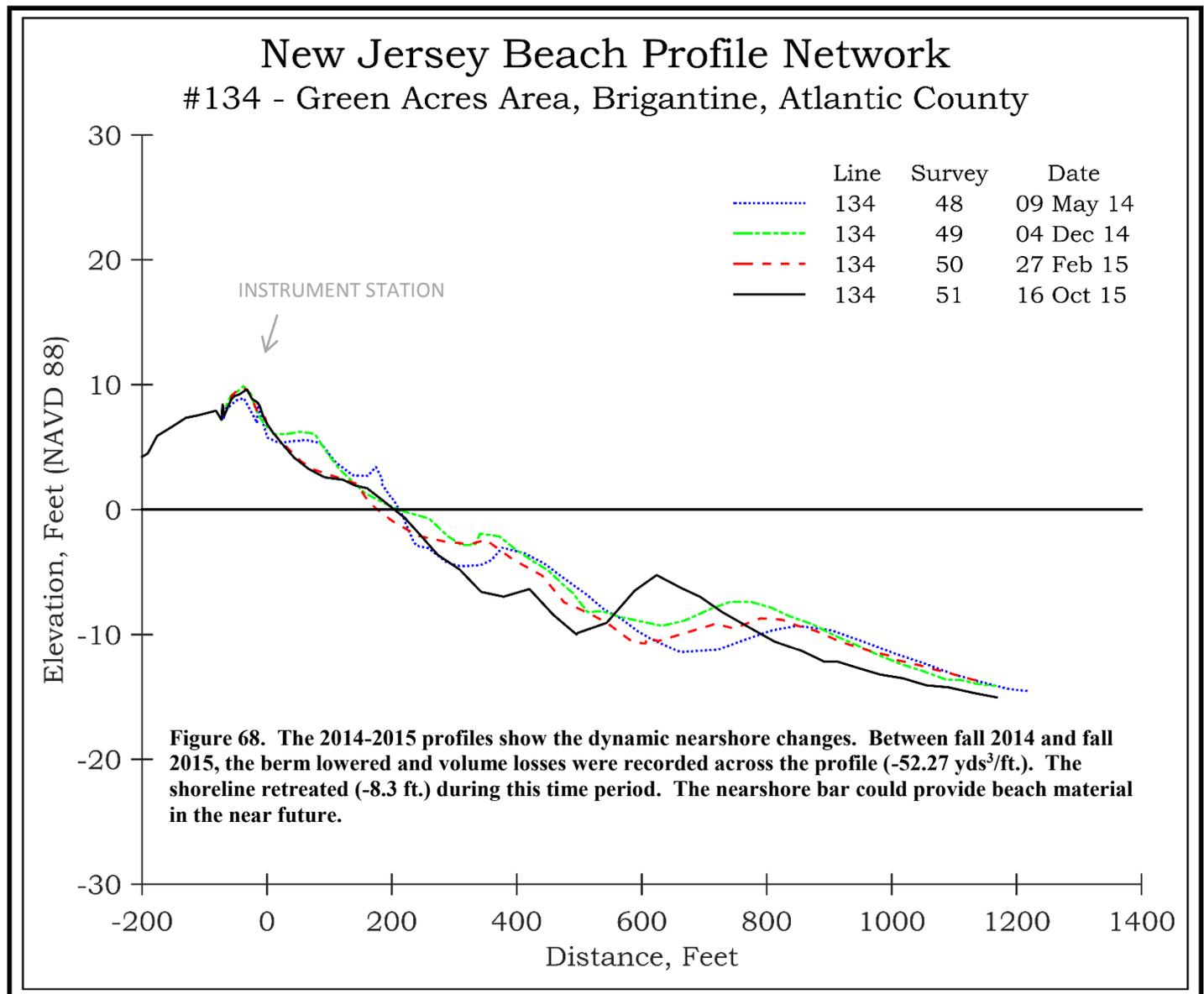
The southern community has an old concrete seawall protecting some of the development with a narrow, low elevation beach seaward. During Sandy waves crashed into the wall and poured over it down most of the Borough streets into Atlantic Avenue. Since the homes are very close to the wall, house damage 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 2016. One issue remains to be decided is the means to affect 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 per ACOE project design. Since the ACOE authorized project ends at the north side of the 11th Street jetty, no plans exist for extending the jetty to better retain 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. This memorandum was reviewed in depth with new offshore and beach survey data provided to allow private interests to establish costs associated with several jetty extension proposals. The ACOE has maintained that any such project would only be considered under "project betterment" regulations to their existing shore protection design for Absecon Island and done at the expense of the local state and municipal non-federal sponsors.

While Atlantic County has a relatively high percentage of undeveloped shoreline, the intensity and density of the existing development makes this the most developed of the NJ coastal counties. Absecon Island has a moderate storm exposure risk, even should the remaining communities join the federal project. The southern two thirds of Brigantine Island has the lowest storm damage risk due to consequences of extending the north jetty at Absecon Inlet well out to sea 60 years ago. Sand redistribution toward the jetty resulted in hundreds of feet in wider beaches and multiple ridges of dunes between 15th Street South and the jetty.

NJBPN 134 – Green Acres Area, Brigantine



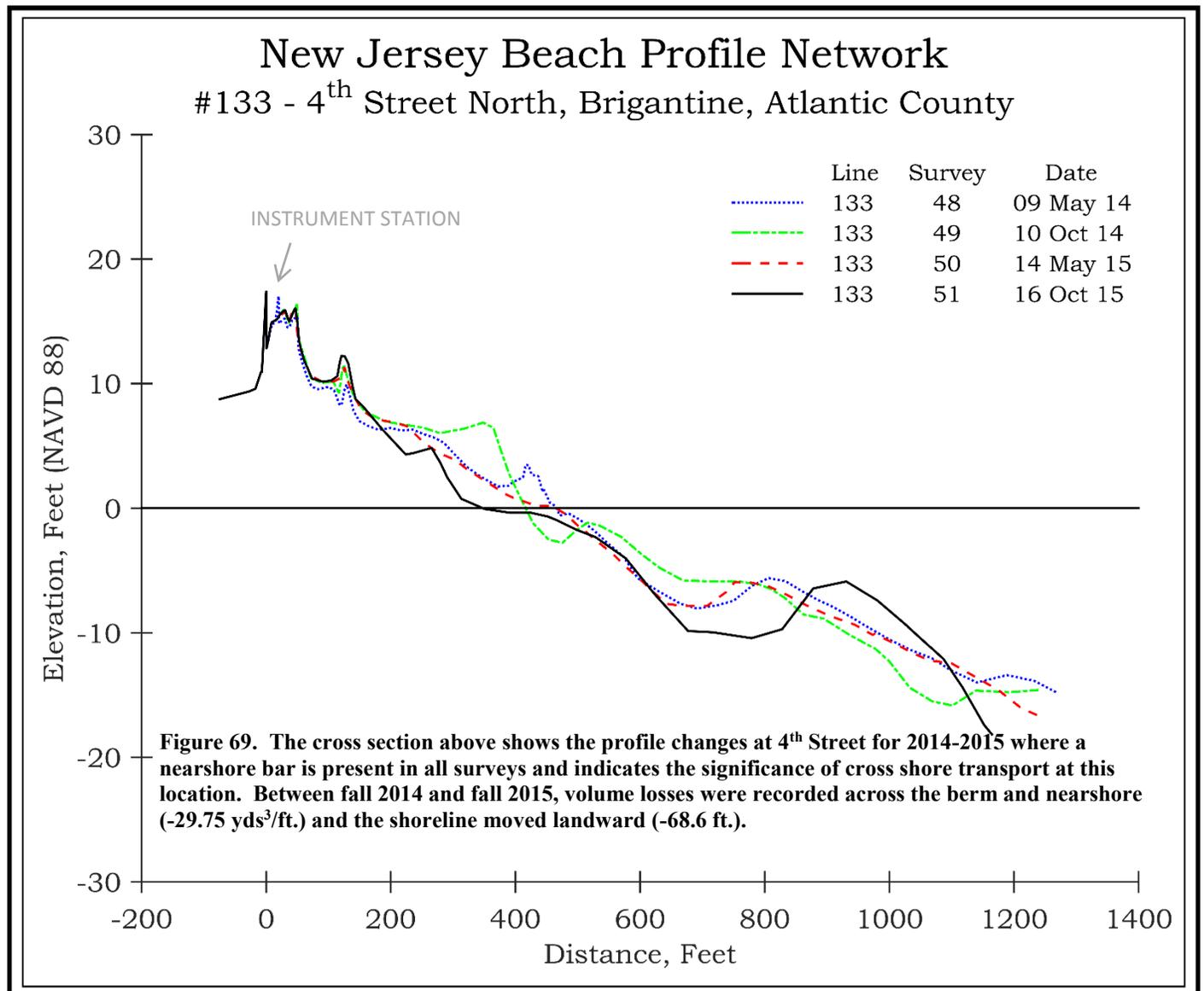
This site is located in the natural area on the northern segment of Brigantine Island and is preserved as public open space. On the left (December 4, 2014) nearly two years after Sandy, the dune has re-vegetated and grown vertically. Right photo taken on October 16, 2015 shows both dune elevation and beach width along this undeveloped shoreline.



NJBPN 133 – 4th Street North, Brigantine



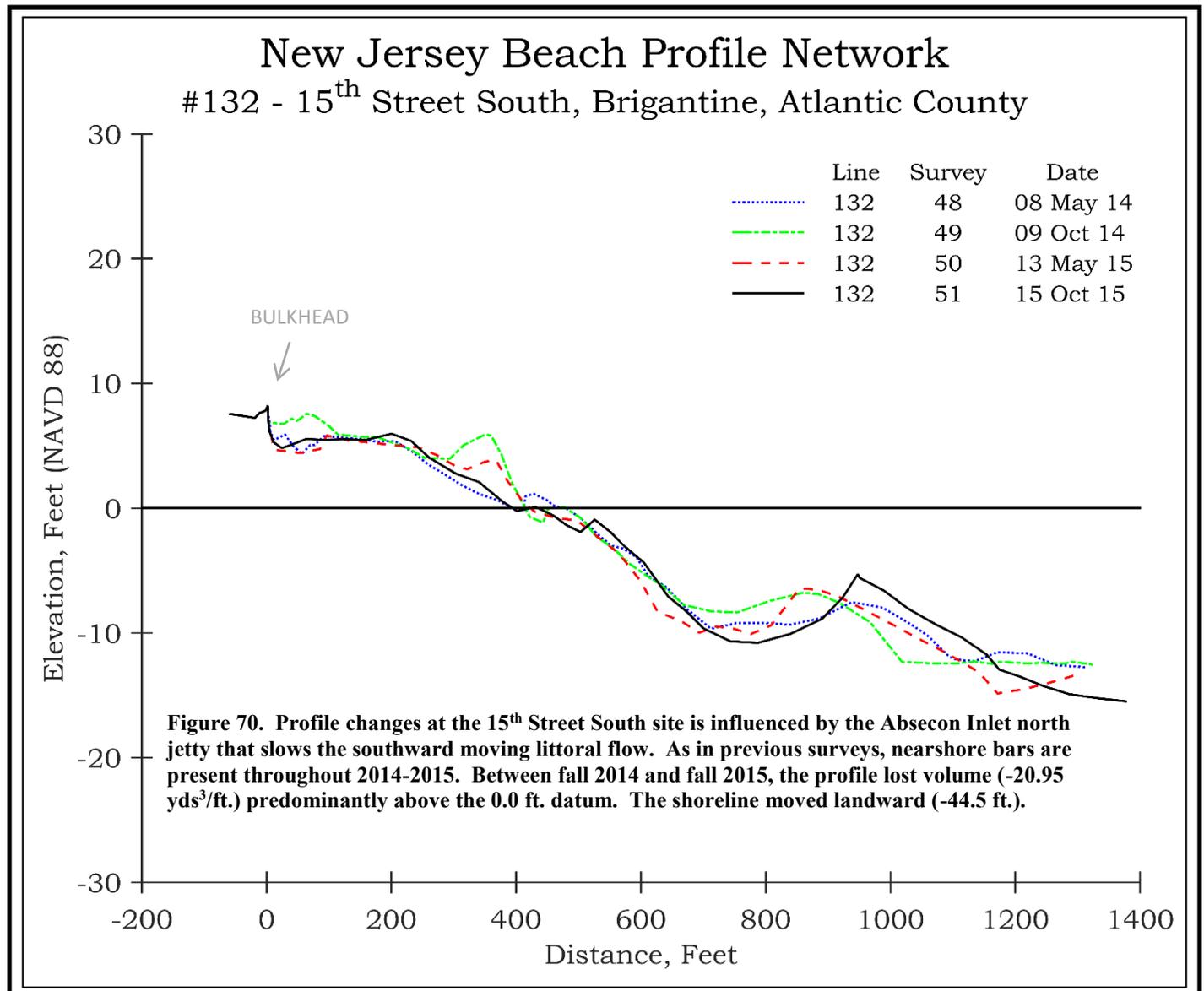
This site is located near the northern limit of development and within the 1997, 2001, 2006 and 2013 beach fill projects. Photo on the left (October 10, 2014) shows a dune ridge that has built up along a row of fencing. On the right (October 16, 2015), is a view down the foredune ridge built naturally from sand extracted from the beach by the wind over time.



NJBPN 132 – 15th Street South, Brigantine



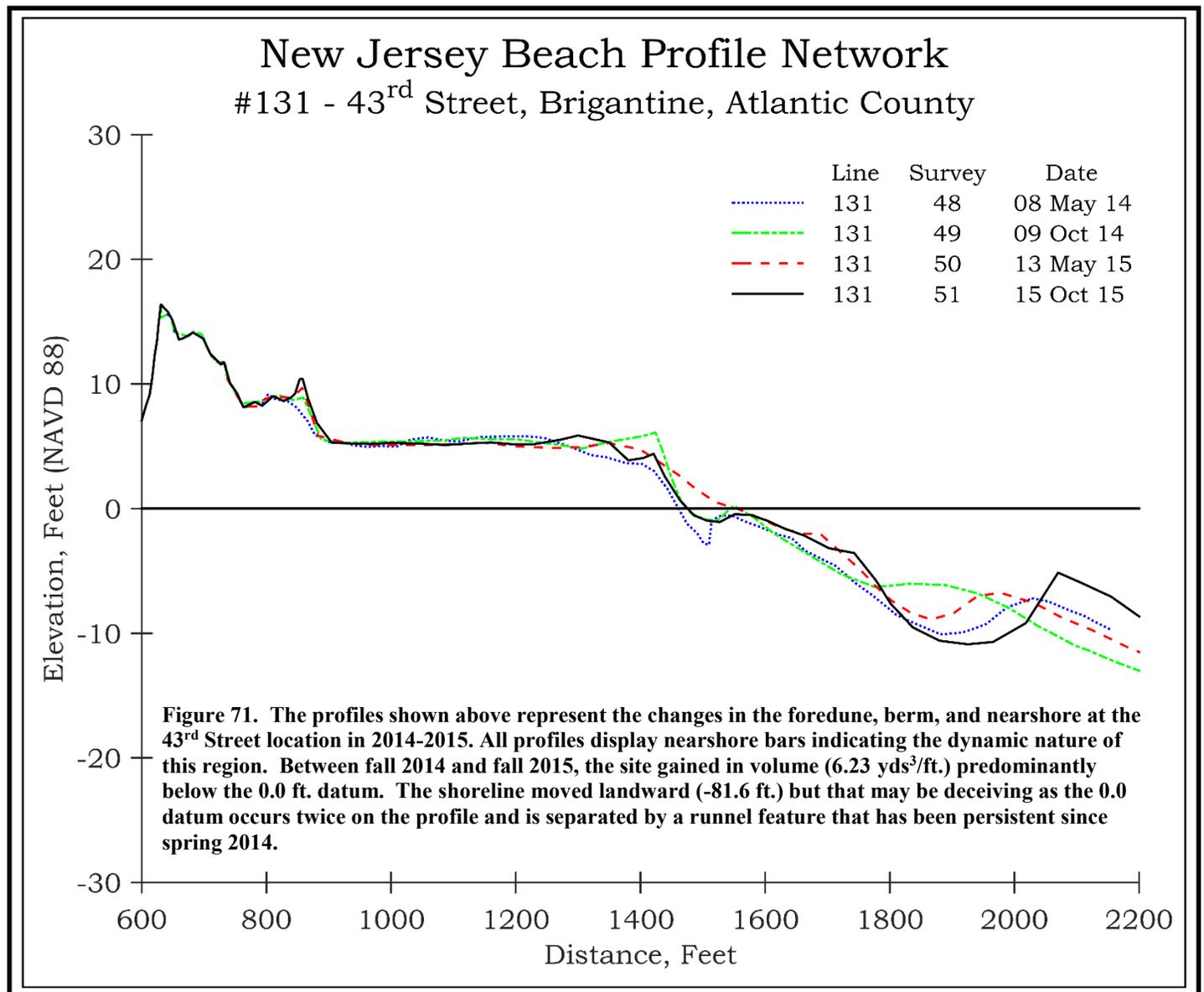
The left photo (October 9, 2014) shows the wide beach that is part of the wedge of sand retained by the inlet jetty far in the distance. Photo on the right taken October 15, 2015, illustrates the rate of sand accretion around the sign pole as an incipient dune over one year's time.



NJBPN 131 – 43rd Street South, Brigantine



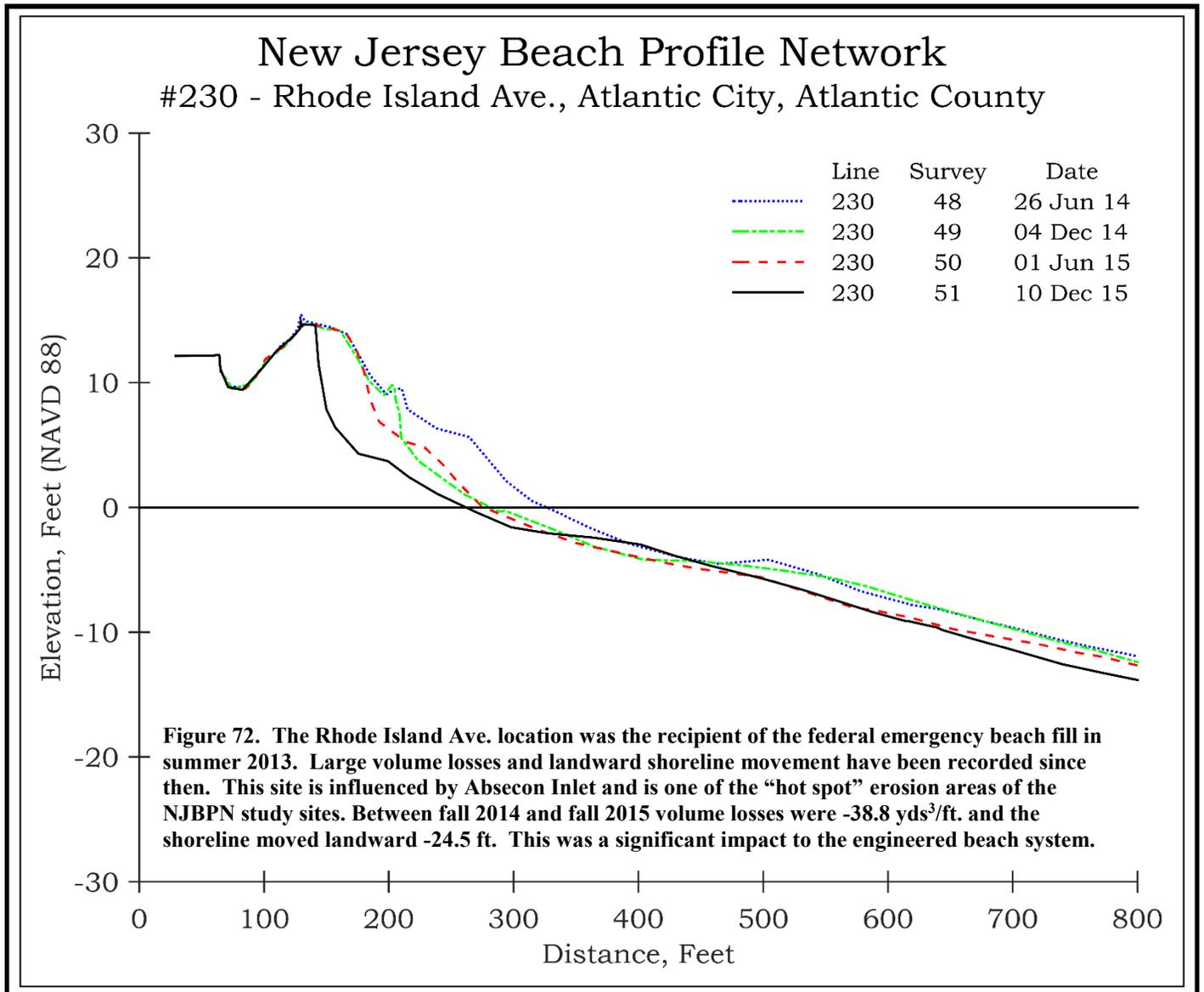
The photo on the left is a view to the south taken from the mid-berm (October 9, 2014) on a 600-foot wide dry beach all placed here since 1986. The right photo was taken on October 15, 2015 and shows the landward segment of the wide back shore environment at the toe of the dune system.



NJBPN 230 – Rhode Island Avenue, Atlantic City



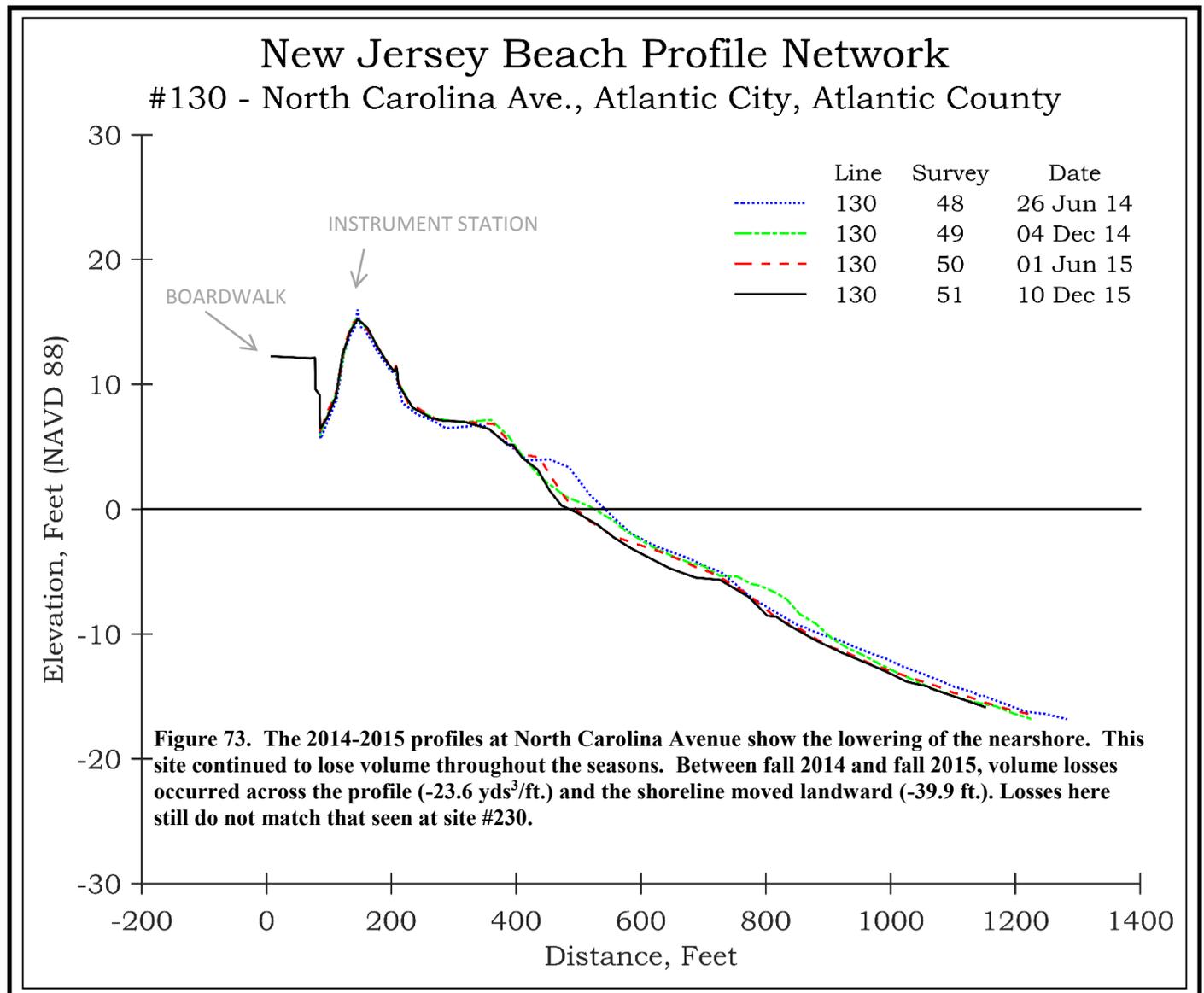
This profile site is located near the Absecon Inlet south jetty. The December 4, 2014 (left, view to the south) shows a scarp cut into the back beach just short of the dune fencing. The right photo (taken December 10, 2015) shows that the fencing is gone and the dune itself has been compromised somewhat by shoreline retreat.



NJBPN 130 – North Carolina Avenue, Atlantic City



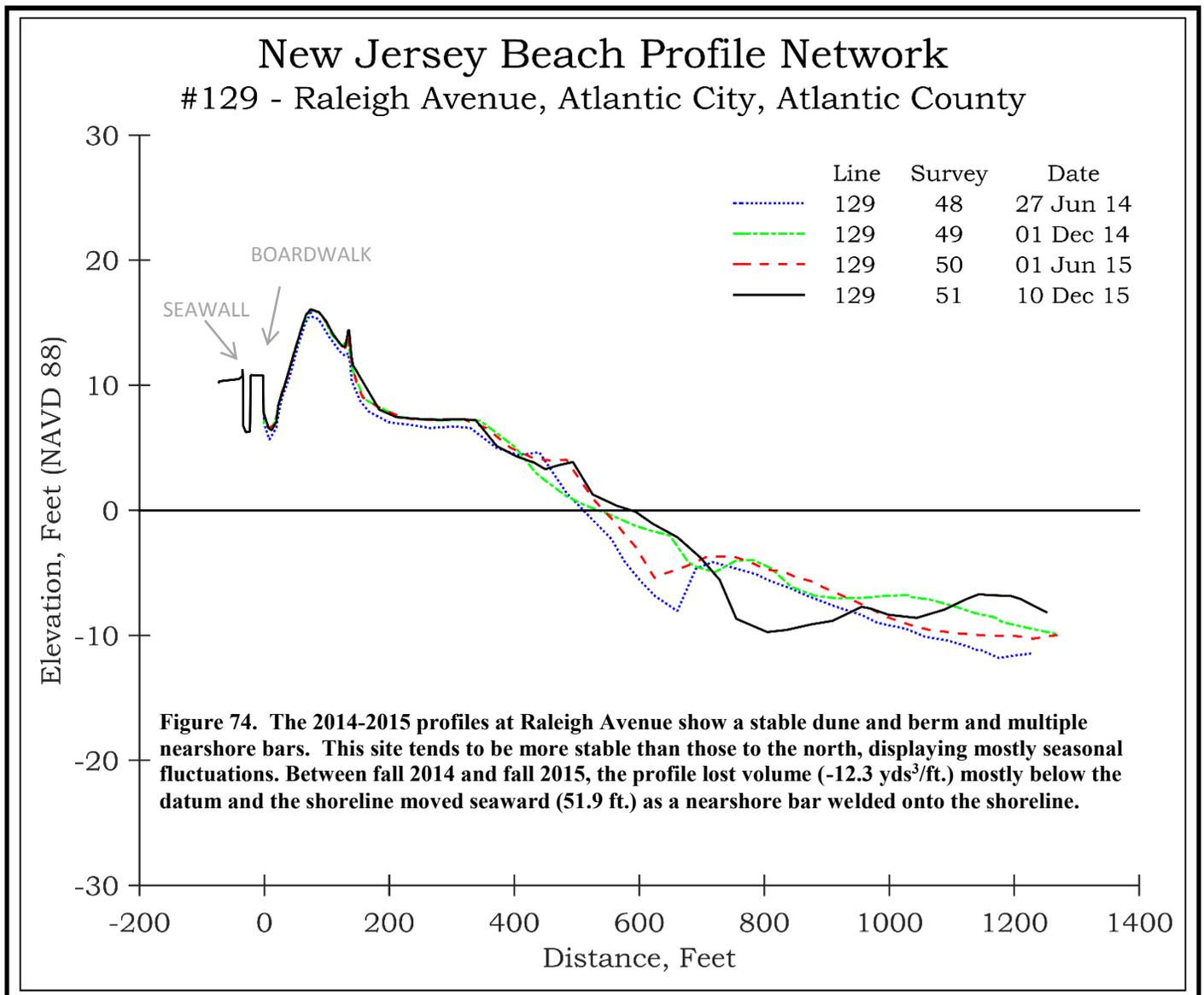
This location is also within the Absecon Island Federal shore protection project just south of Ocean One pier. The left photo (December 4, 2014) shows the beach looking north to the pier. The right photo, taken December 10, 2015, views a beach a little narrower and somewhat lower due to sand losses.



NJBPN 129 – Raleigh Avenue, Atlantic City



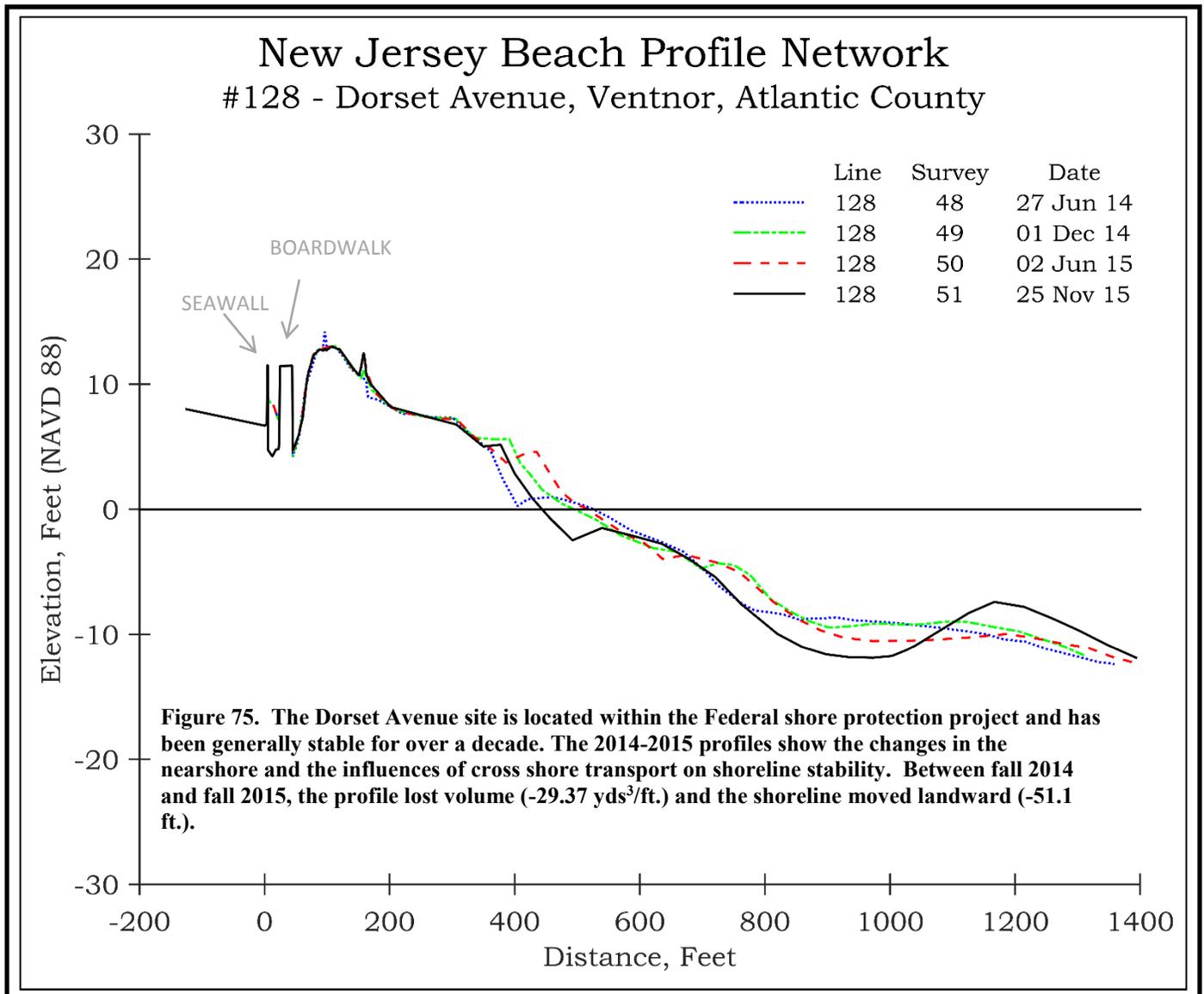
This site lies in the middle of the Federal shore protection project on Absecon Island where erosional loss has been minimal. On the left (December 1, 2014) one is looking north along the dune fencing placed relatively recently. The photo on the right was taken December 10, 2015 and shows that sand accumulated at the fence to half its original 4-foot height.



NJBPN 128 – Dorset Avenue, Ventnor City



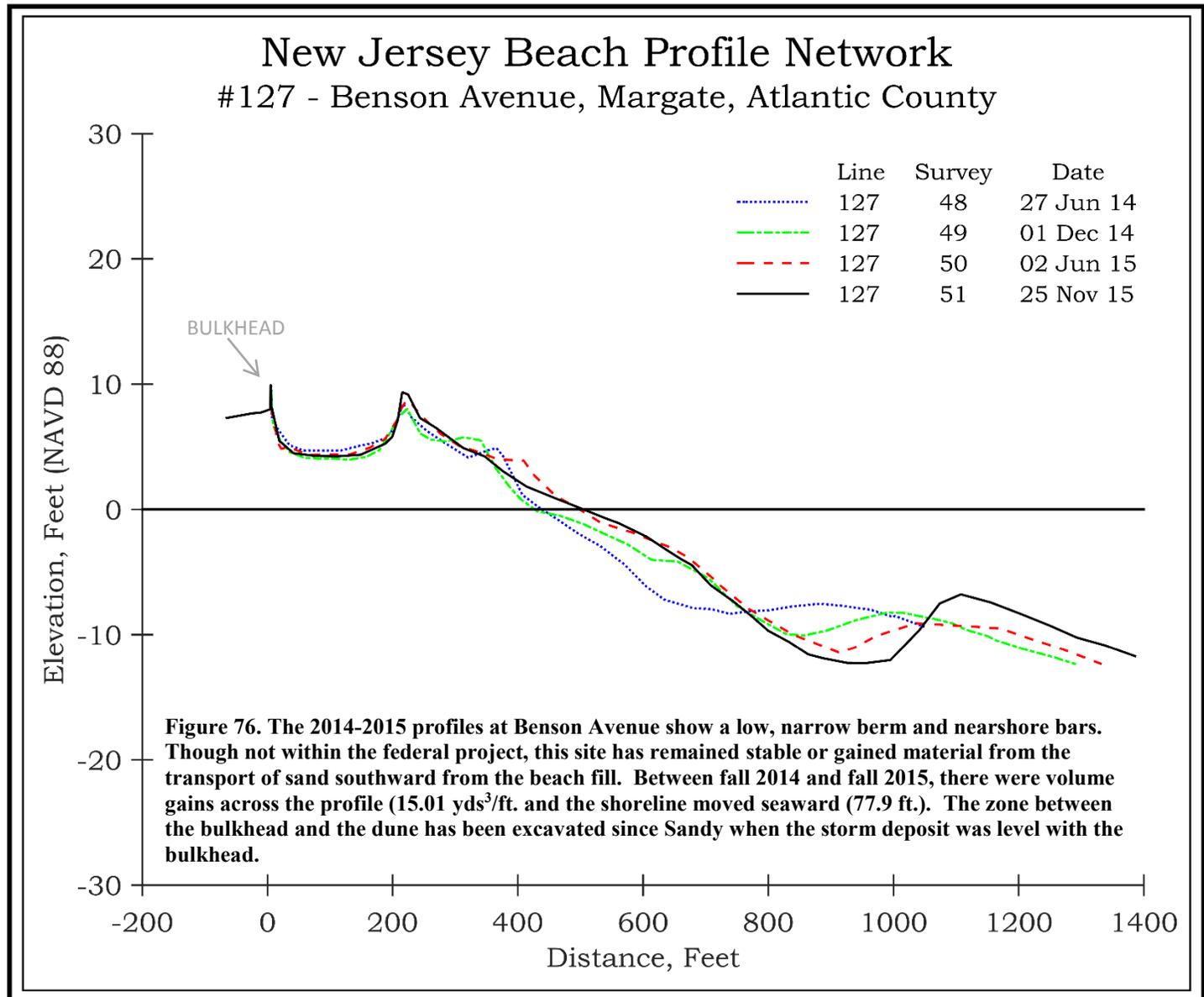
The Dorset Avenue site is positioned south-centrally in the portion of the federal shore protection project that went to construction in 2003. As such, the site is very stable in terms of storm losses, seasonal changes and any long term trend of erosion. Left photo taken December 1, 2014 shows a view north up the beach. The right photo is from November 25, 2015 and shows the low tide terrace, a wide gentle sloped area approximating low tide.



NJBPN 127 – Benson Avenue, Margate City



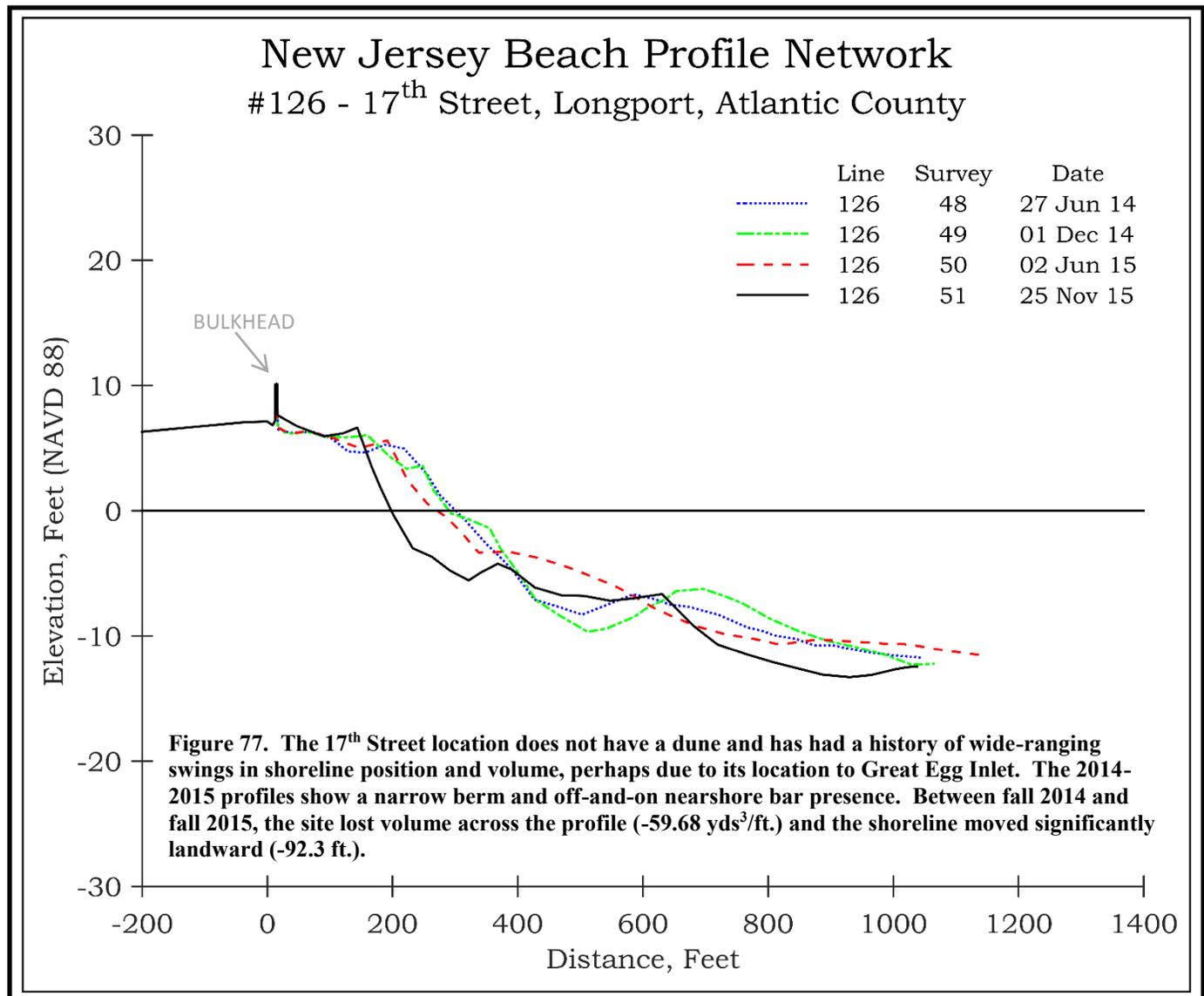
The Benson Avenue site is located approximately one mile south of the Federal shore protection project. The left photograph was taken December 1, 2014 looking south at the berm crest. The right photo was taken November 25, 2015 following a fairly high tide leaving little dry beach.



NJBPN 126 – 17th Street, Longport



The 17th Street profile is located about 6 blocks north of the Great Egg Inlet jetty and well south of the constructed Federal shore protection project. The photo on the left (December 1, 2014) shows a view north up the beach that can vary in width by a factor of 50% of what was then visible. The right photo, taken November 25, 2015, shows a bar just offshore that would provide additional sand.



Summary & Conclusions

Atlantic County received maintenance related to recovery from Hurricane Irene in August 2011 by early 2012. This effort paid dividends during Hurricane Sandy in preventing certain damage 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 convinced Longport to seek inclusion in the ACOE project to continue the work south from Ventnor. The Margate City council is equivocating because multiple oceanfront owners are strongly opposed to any dune as part of the project. They claim the timber bulkhead is sufficient protection for the City. This in spite of the fact that waves during Sandy went over the bulkhead in sufficient force and water volume to move sand into homes, businesses and the general infrastructure all along Atlantic Avenue. As of April 11, 2016 the Superior Court found for the NJ DEP and ACOE defendants that the project specifications and accepted design were not arbitrary and capricious as they applied to the Margate City oceanfront. This decision, if not appealed by the City or others, allows the execution of the remainder of the Absecon Island shore protection effort to proceed. A remaining issue is what to do in terms of dealing with the influx of beach fill sand into Great Egg Inlet around the 11th Avenue Longport jetty. Alternatives exist and have been discussed; however, the ACOE project extent ends at the 11th Avenue jetty in Longport with no plans to participate in any jetty changes or extension of the beach project.

Between the spring of 2014 and the fall of 2015 the Absecon Island average sand volume at the six cross sections lost 8.46 yds³/ft. in sand volume accompanied by a 22-foot average shoreline retreat. These numbers applied to 7 of the 10 sites, so not focused on particular locations.

A massive federal inlet revetment re-construction is underway in Absecon Inlet. This work replaces an aging rock structure and the demolished inlet boardwalk that was located beyond the low tide shoreline. The top of the new revetment will serve as a public walkway to Gardner's Basin. The inlet beach will be re-developed with modest sand placement that would follow revetment construction. An extensive debris removal project took place in 2013 extracting a great variety of ancient construction material from the shoreline.

When the southern segment of Absecon Island is completed with beach nourishment, the stable middle segment of the Absecon Island oceanfront will likely extend south well into Margate City. However, losses from the terminal groin at 11th Street in Longport depositing into Great Egg Inlet will be problematic if no change is made to this terminal groin and jetty system at Longport Point.