



New Jersey Beach Profile Network

Cape May County

Great Egg Harbor Inlet
to Stow Creek

NJBPN Profile #'s
225 - 100

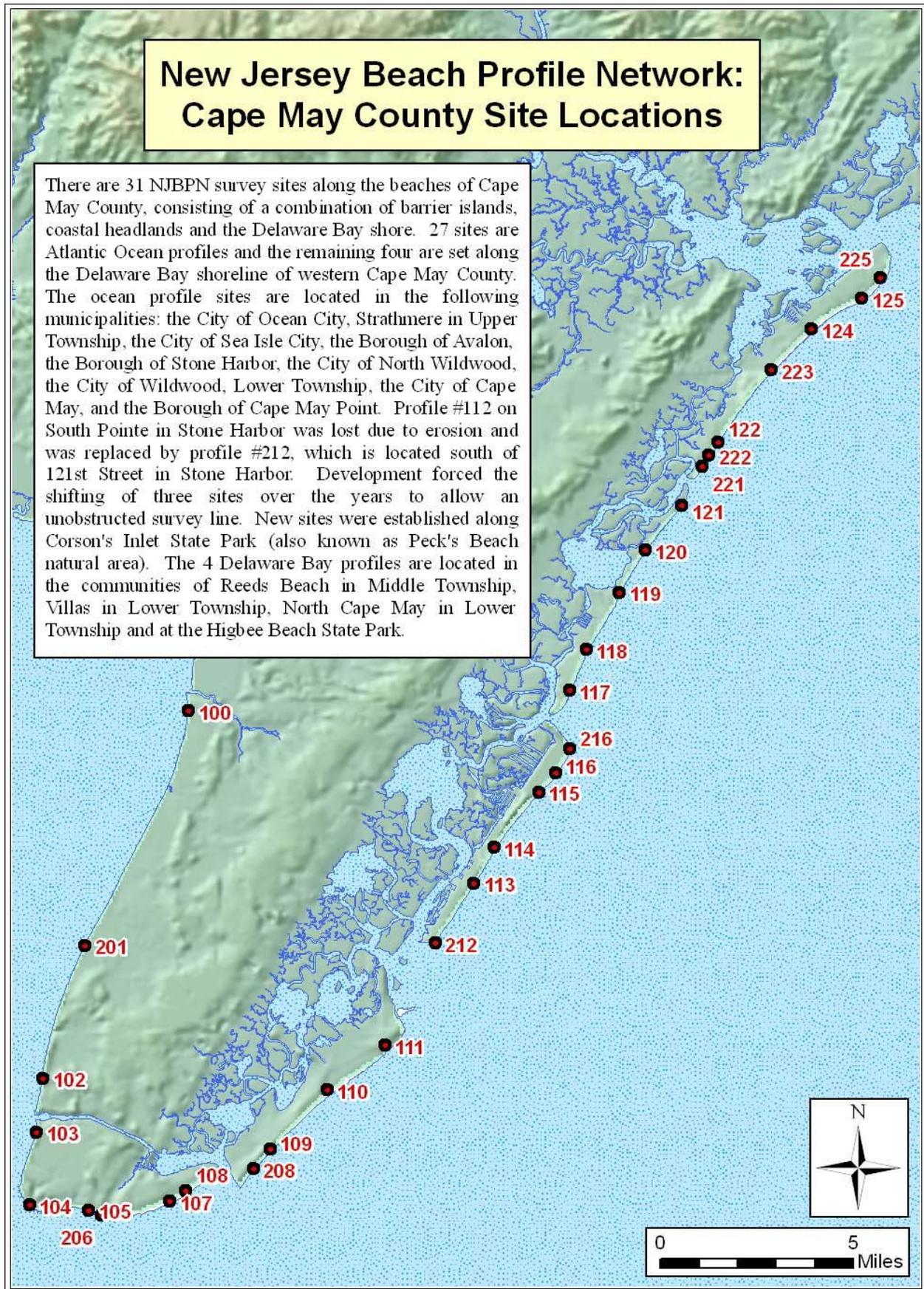


Figure 88. Map of Cape May County showing the locations of the 31 profile sites in the county.

Cape May County Storm Damage Report:

Cape May County has 31 survey stations between Reeds Beach on the Western Cape May County shoreline, around Cape May Point and up the ocean coastline to Great Egg Inlet in Ocean City. This county has five tidal inlets separating four barrier islands and a complex coastal geomorphic compartment that is the site of Cape May City, a US Coast Guard base and Cape May Point. The complexity is related to yet unknown geologic relationships among the sediments of the Cape May Formation comprising the county mainland, the older sand barrier deposits comprising the land at the west end of Cape May Harbor and the recent barrier segment used by the USCG base and most of the oceanfront portion of Cape May City.

Cape May County has been the focus of multiple US Army Corps of Engineers (ACOE) shore protection projects since 1989 and two major NJ State and local projects as well. The Federal project list includes Ocean City, Avalon, Stone Harbor and Cape May City. The State projects include Upper Township (Strathmere), Sea Isle City and North Wildwood. Both of these barrier islands are also authorized Federal projects working toward construction under Federal project status. The Federal project authorization also included an environmental restoration that included the Cape May Nature Conservancy plus the tip of Cape May Point to Lake Drive. Between 2002 and 2005 Cape May Point was also the location of a Federal 227 Experimental Project Design where different styles of submerged reef breakwaters were built in two Point groin cells. The placement of sand coincided with the construction of the experimental perched beach sills.

The reporting season commenced with the recovery following Hurricane Irene in August 2011. A northeast storm occurred near the end of October that garnered a Federal Disaster Declaration (DR-NJ-4021) due to significant beach erosion and some dune damage. Most projects subject to FEMA reimbursement rolled the Irene losses into the new declaration and took the combined loss as one payment. Some Federal money became available to cover the ACOE projects as well (Brigantine, Absecon Island and Seven-Mile Island). All was quiet from October 2011 through to Hurricane Sandy exactly a year later. The summer of 2012 saw excellent sand accumulation along the NJ oceanfront. Damage from the prior year was restored in many places to the limit of the regionally available sand in the offshore bar system. The coastal environment was in pretty good shape when Hurricane Sandy came ashore on Sunday October 29, 2012.

Using the data from the fall 2012 NJBPN survey, completed in Cape May County by October 19, 2012, provides a good baseline for damages that occurred during the hurricane. Data collected at the 31 beach profile locations was done between November 12 and 26, 2012 using RTK GPS and extended from the reference location, across the dunes, beach and into the surf to wader depth. By Nov. 12th, it was clear that sand recovery was well under way as a berm had been deposited on the erosional surface generated by Sandy with a substantial offshore bar present in water less than 5 feet deep offshore. Very little sand in the oceanfront locations had been washed inland beyond the dunes. Exceptions were found in Ocean City, Sea Isle City, and at the Reeds Beach site. A gap in the dunes at the point where Cape May City borders the Nature Conservancy lands also saw wave damage to a few structures.

Western Delaware Bay Shoreline of Cape May County;

Between Reeds Beach and Cape May Point, the western shoreline of Cape May County suffered from the back-side of Hurricane Sandy after the storm made landfall on the New Jersey shoreline. The wind direction reversed and came across the storm-surge flooded Delaware Bay with 4-foot waves with very short periods. Due to the high water levels these waves pounded dunes and made low-lying areas subject to inundation, wave damage and loss of some structures.

Reeds Beach was hit hard because there was no bluff, and a minimal dune system. The region is basically a narrow sand beach with a low dune acting as a barrier seaward of the salt marshes. Sand was pushed across the

road to Bidwell Creek and the majority of the dredge material pumped from the creek project two years ago was moved inland onto the salt marsh lying between Reeds Beach homes and the Cape May County mainland.

To the south, the bluff of the county uplands is mantled with dune sand and made a better barrier. Erosion took some dune and moved the zero elevation position toward the bay because the beach/dune slope was reduced in gradient allowing sand to deposit on the terrace that extends over 1,000 feet into the Delaware Bay from Villas and North Cape May. This wide terrace is the geological result of long, slow bluff erosion by bay waves.

Higbee Beach, a natural area, suffered bluff erosion and beach retreat, but on a minimal scale. Cape May Point had sand moved up onto the highest parts of the dry beach and suffered minimal dune losses from the bay side around to the oceanfront beach. The Borough shoreline actually gained 175,000 cubic yards of new sand as a result of Hurricane Sandy.

Separate site surveys in Cape May Point showed that over 175,000 cubic yards of sand were added to that community's beachfront between April 2012 and April 2013, making it the only shore community to benefit from Hurricane Sandy.

Cape May City;

The approach direction of the ocean waves, deflected somewhat by Cold Springs Inlet jetties and the south, southwest orientation of the shoreline acted to pile sand from the beachface landward onto the backshore beach into the dune vegetation. The Cape May beaches all gained berm sand at the expense of beachface retreat. Only the short segment between the Third Avenue groin and the Nature Conservancy suffered inundation largely because building a decent sized dune was resisted by the adjacent property owners.

The Wildwoods;

The same process appeared to be working at 3 of 4 cross sections between the natural area and North Wildwood, with the 15th Street site not performing as did the Wildwood site at Cresse Avenue. The Cresse berm became 2 feet higher with a ridge over 100 feet wide created from beachface sand pushed up on top of the back berm region of the beach. At the 15th Avenue site in North Wildwood another signature result from Sandy appeared with the deposition of a sand ramp deposited up the seaward slope of the primary dune. It appears that when the dry beach is deeply flooded by a storm surge, the waves break on the submerged beachface slope, excavating abundant sand that the broken wave bores transport across the berm, and deposit it where they run up the dune slope. If the waves do not breach the dunes, they deposit beach sand as a ramp at the seaward toe of the dune. Where a hard structure presents an effective wave barrier, this ramp was likewise deposited and in some cases effectively enabled the waves to run-up and over the hard structure. The example of this was seen at the Sea Bright seawall in Monmouth County.

Avalon & Stone Harbor;

These two communities have been leaders in shore protection by having successfully managed to have Federal shore protection projects constructed and have for years, promoted wider, higher dunes with coordinated development of pedestrian access pathways that do not make a breach easier at street end access points. No instance of dune breaching occurred in either Borough; no waves washed sand into streets or under homes. Dune erosion did occur, but in some cases, the extraordinary width of the dune area allowed Sandy's wave energy to be absorbed within the swales and vegetation of the foredunes arrayed along the mid-section of the barrier island. Elsewhere a wide, relatively high primary dune blocked wave over-topping by just enough to be successful. A major hard structure improvement to the Townsend's Inlet shoreline in Avalon paid dividends by reducing the damage from Sandy to considerably less than what occurred during the December 1992 northeast storm. The worst wave damage occurred to the highway leading to the Townsend's Inlet draw bridge to Sea

Isle City. Waves over-topped the rock revetment protecting the highway and ripped up the pavement, scouring the underlying road base.

Sea Isle City & Strathmere;

A 2009 NJ State and locally sponsored shore protection project saved these two communities substantial damage expense as well. Previous storms of far less intensity had made a shambles out of the Commonwealth Avenue highway leading through northern Sea Isle City into Strathmere. Sandy produced minor breaching and over-topping, but not nearly the extent of overwash seen previously (1998 for example). There were instances of dune breaching in Sea Isle City, extensive tidal flooding, but no catastrophic structural damage. The project protected Strathmere only allowing a couple of minor instances of waves cresting the dunes. The Corson's Inlet shoreline, a crisis situation in 2008, was un-damaged in spite of being flooded by tidal surge.

Ocean City;

The shore protection was a Federal project (Great Egg Inlet to 34th Street) and a local/State partnership (34th Street to the Corson's Inlet State Park). Two decades of sand redistribution produced results ranging from fantastic through fair to poor. The mid-section of the island had vegetation covering 450 feet of dunes before reaching the dry beach. These areas saw absolutely no wave damage with the storm's energy totally absorbed within the foredune region lying seaward of the primary dune. This was a welcome change from the October 1991 northeast storm where just the boardwalk suffered \$4 million in damage in the 15th to 20th Street region. There has been no damage to this structure since (the initial fill was completed in the summer of 1992 and resulted in no damage in December of 1992 when a worse event than 1991 hit Ocean City).

To the north the recently maintained Federal project had a narrow beach between a dune system and the direct frontal assault of the northeast waves during Sandy. With little or no beach to break on, and roll across, the waves pounded with full fury on the dunes immediately. Eroding at rates up to 12 feet horizontally per hour, many sections lost the protection the dune afforded. Sand was washed into the streets; storm surge flooding was made worse by every wave crossing into the city. Structural damage occurred, but not at catastrophic levels. At the southern end of development, the beach had not been maintained as frequently and there was only one fairly narrow line of dunes protecting property. Sandy crossed this line easily and waves flowed against, around and beneath 10 blocks of homes. Damage was considerable with early clean-up focused on moving thousands of cubic yards of sand back to the beach in early November.

The Corson's Inlet State Park shoreline south of development in Ocean City suffered dune loss of considerable magnitude. These losses were major increases in the loss rate that had commenced in 2011 with the series of modest northeast storms that commenced in November 2009. The beach had been narrow with spring high tides reaching the near-vertical scarp in the dunes. This slow rate of retreat was greatly accelerated during Hurricane Sandy.

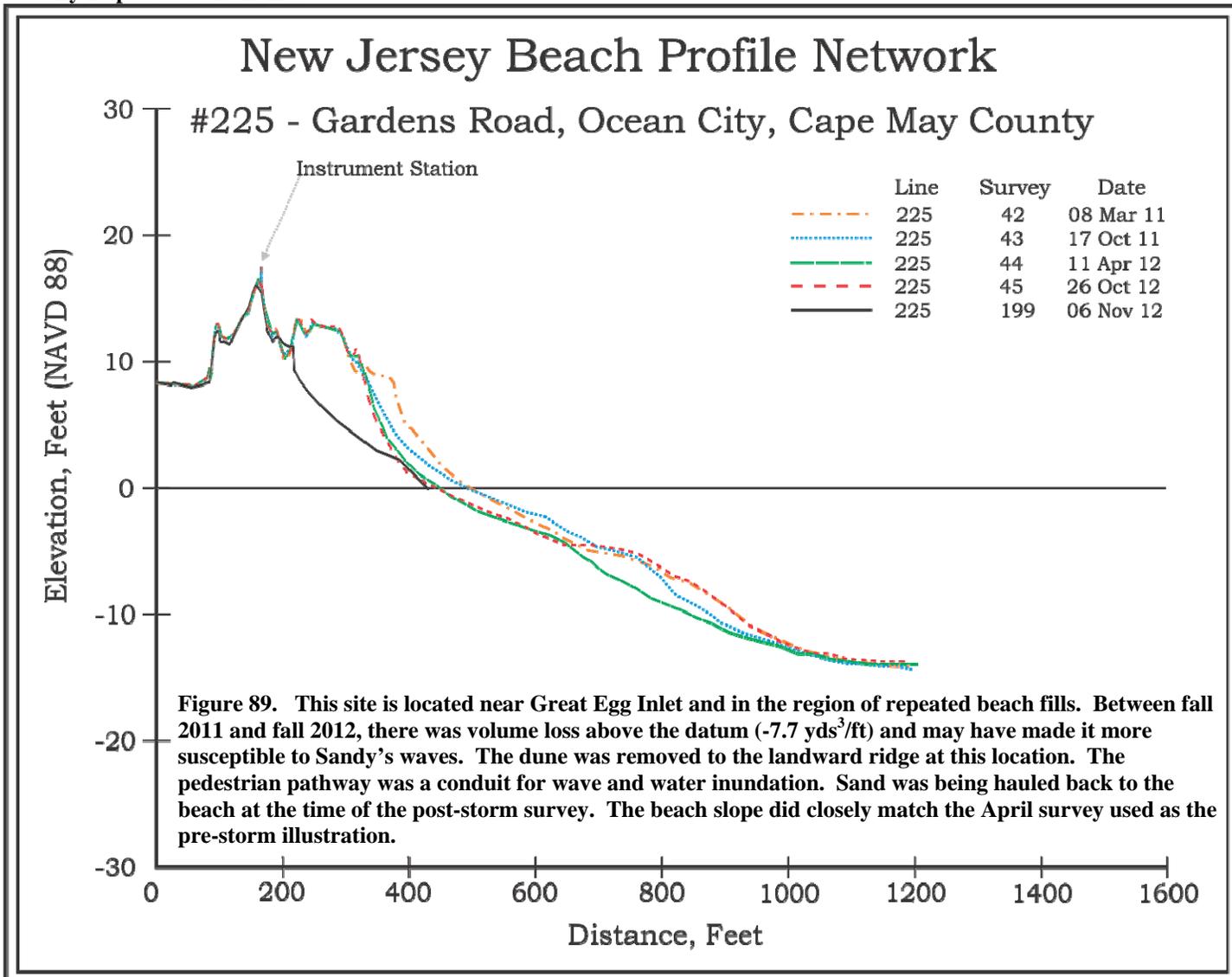
Individual Site Descriptions:

Each site will display a photograph from the earlier fall 2012 survey several weeks prior to Sandy. The second picture was taken during the survey at each site to show the extent and nature of storm damages. The profile cross section displays the longer, early fall survey and the post-Sandy assessment to illustrate where and the magnitude of storm erosion. Since the natural areas in the wildlife refuge, Corson's Inlet State Park and Higbee Beach State Park were left un-surveyed until after Sandy, those cross sections will be of normal length. The Cape May County natural areas performed quite well except for the Corson's Inlet Park shoreline on the Peck's beach side of the inlet.

Gardens Road, Ocean City, Cape May County, Site #225;



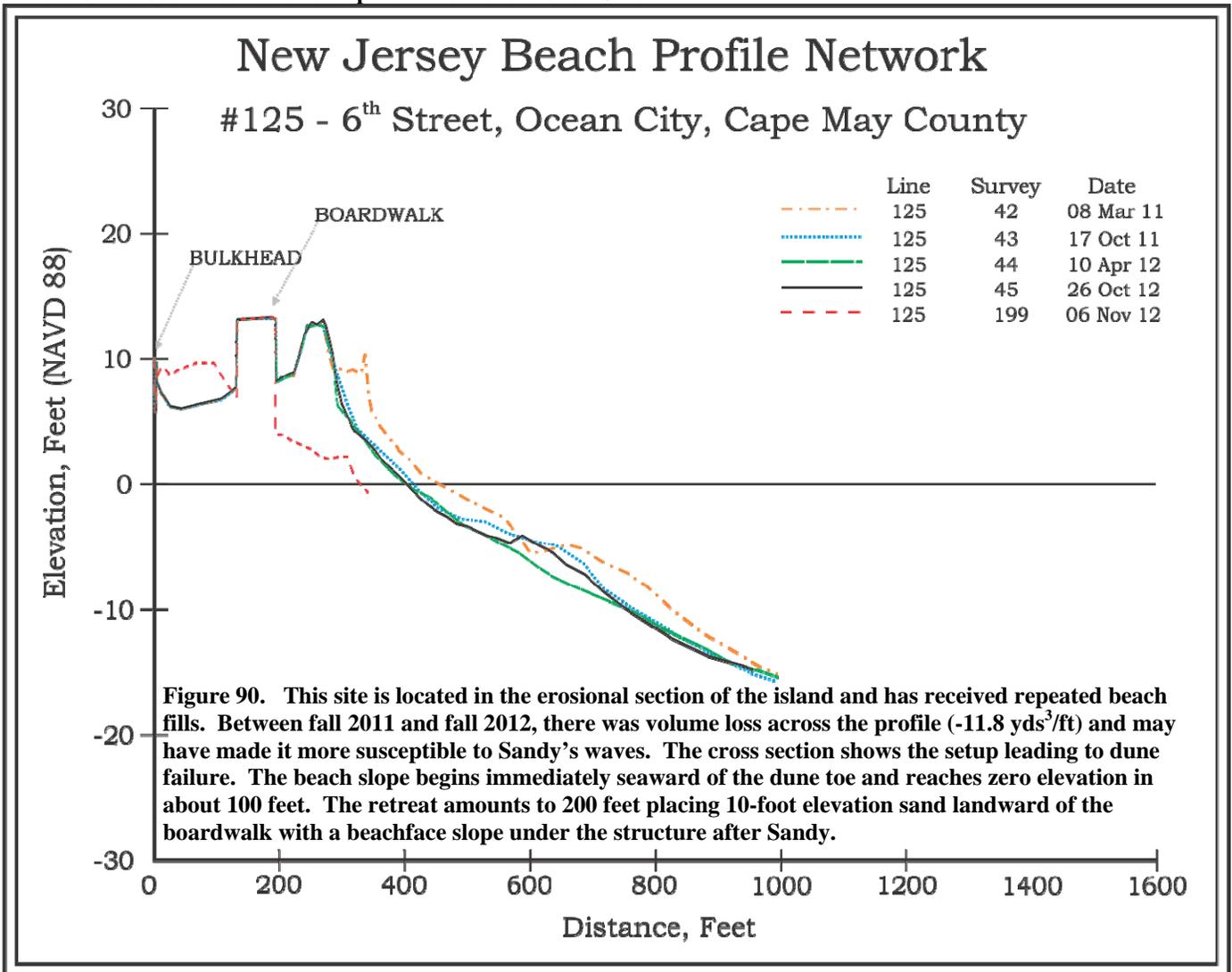
Between October 26 and November 6, 2012 Hurricane Sandy removed 125 feet of dune vegetation at elevation 12.0 NAVD 88 or higher. The beach was not wide and occupied just 50 feet between the seaward dune toe and the zero elevation position. The home in both pictures was impacted with water inside due to wave surges, but could be repaired. The large pine trees actually helped save the home.



6th Street, Ocean City, Cape May County, Site #125;



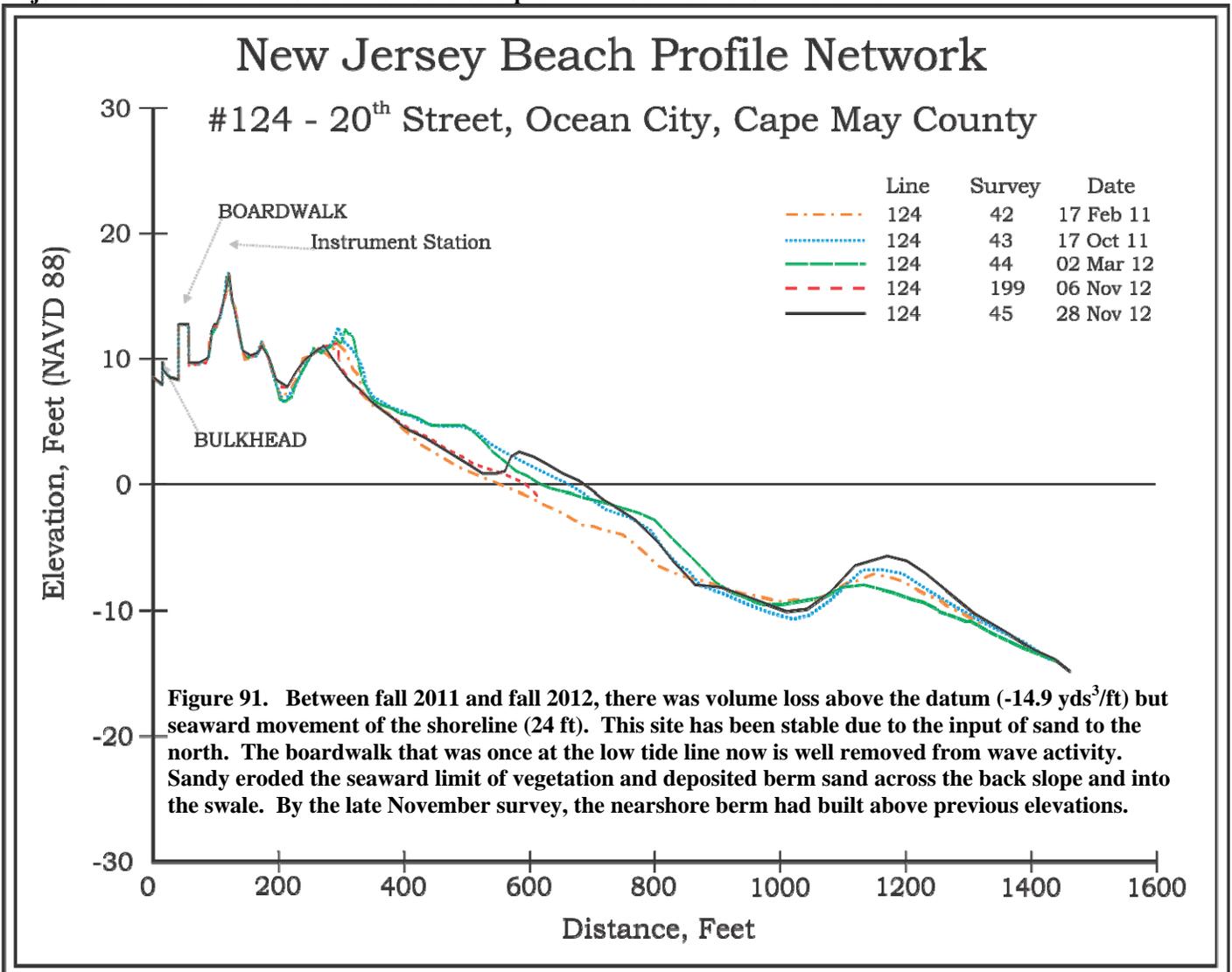
The left photograph was taken October 26, 2012 just prior to the storm. The dune was intact, but the beach was extremely narrow so the initial storm action was able to attack the dune. The right photograph was taken November 6, 2012 from the back shot position standing on the street end paving that had been excavated of sand, looking seaward to the boardwalk about 120 feet distant. The sand had been deposited to the top of the timber by the storm surge. The wedge of sand was swept landward of the boardwalk and had spilled into the end of 6th Street.



20th Street, Ocean City, Cape May County, Site #124;



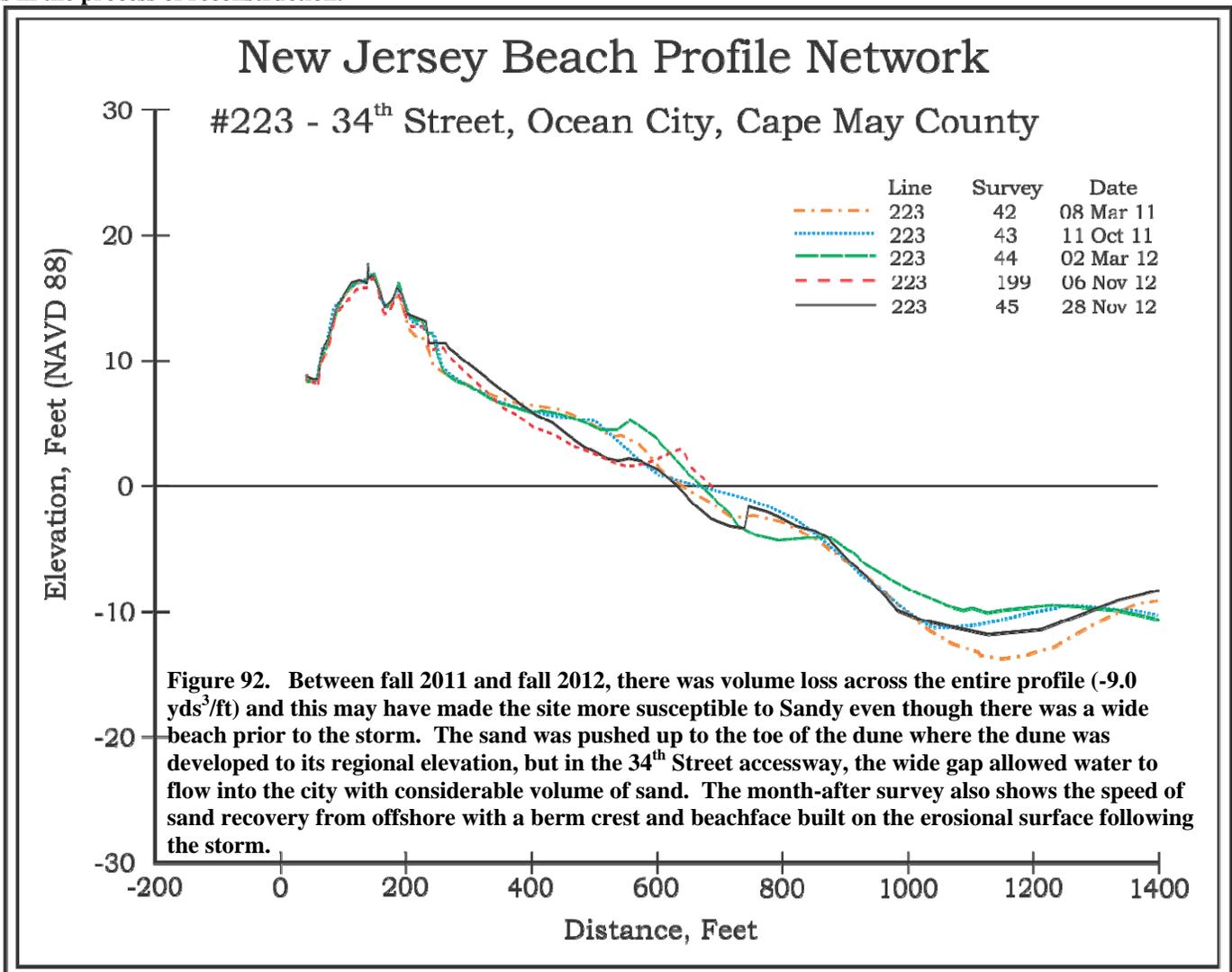
The 20th Street site is at the maximum retention of beach restoration sand anywhere along the oceanfront. This site has seen the shoreline move seaward by 600 feet since the 1980's with 460 feet of dunes. The photograph on the left was taken March 2, 2012 showing the beach and gentle gradient into the seaward-most dune ridge. Following Sandy on November 6, 2012 (right photo) the zone of about 150 feet in width had been inundated by the storm surge with sand pushed landward into the first major swale. The berm was lowered as would be expected without much shoreline retreat.



34th Street, Ocean City, Cape May County, Site #223;



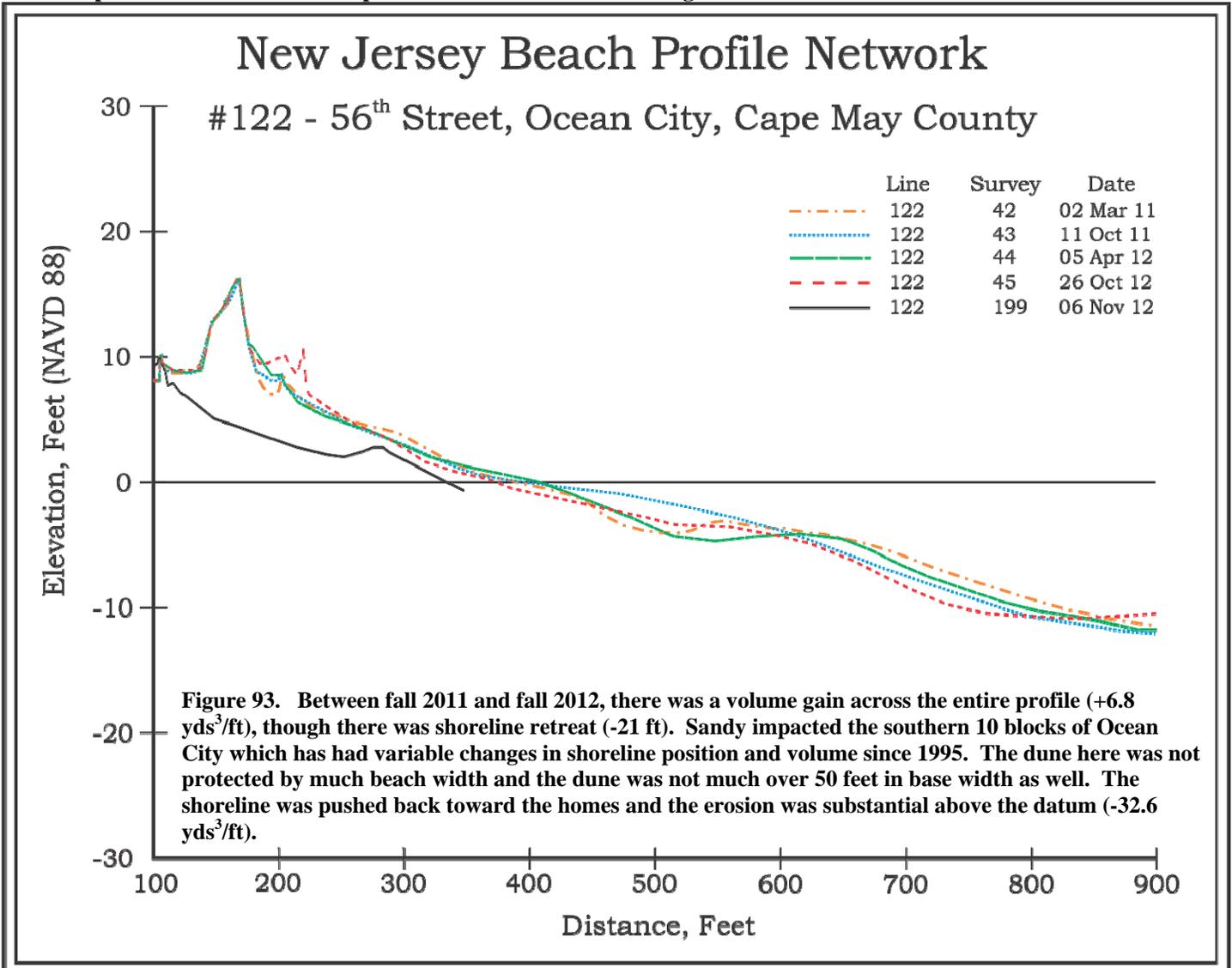
The 34th Street site has always possessed a low threshold dune that really is little more than a mound with a wide access path for both vehicles and pedestrians. The March 2, 2012 view (left) shows the relatively wide dunes north of the site, but the storm barreled through the pathway into 34th Street. The piles of sand on the right picture were transported back to the beach as of November 28th. The beach berm was cut back, but since this site was surveyed a month following the storm a new berm was in the process of reconstruction.



56th Street, Ocean City, Cape May County, Site #122;



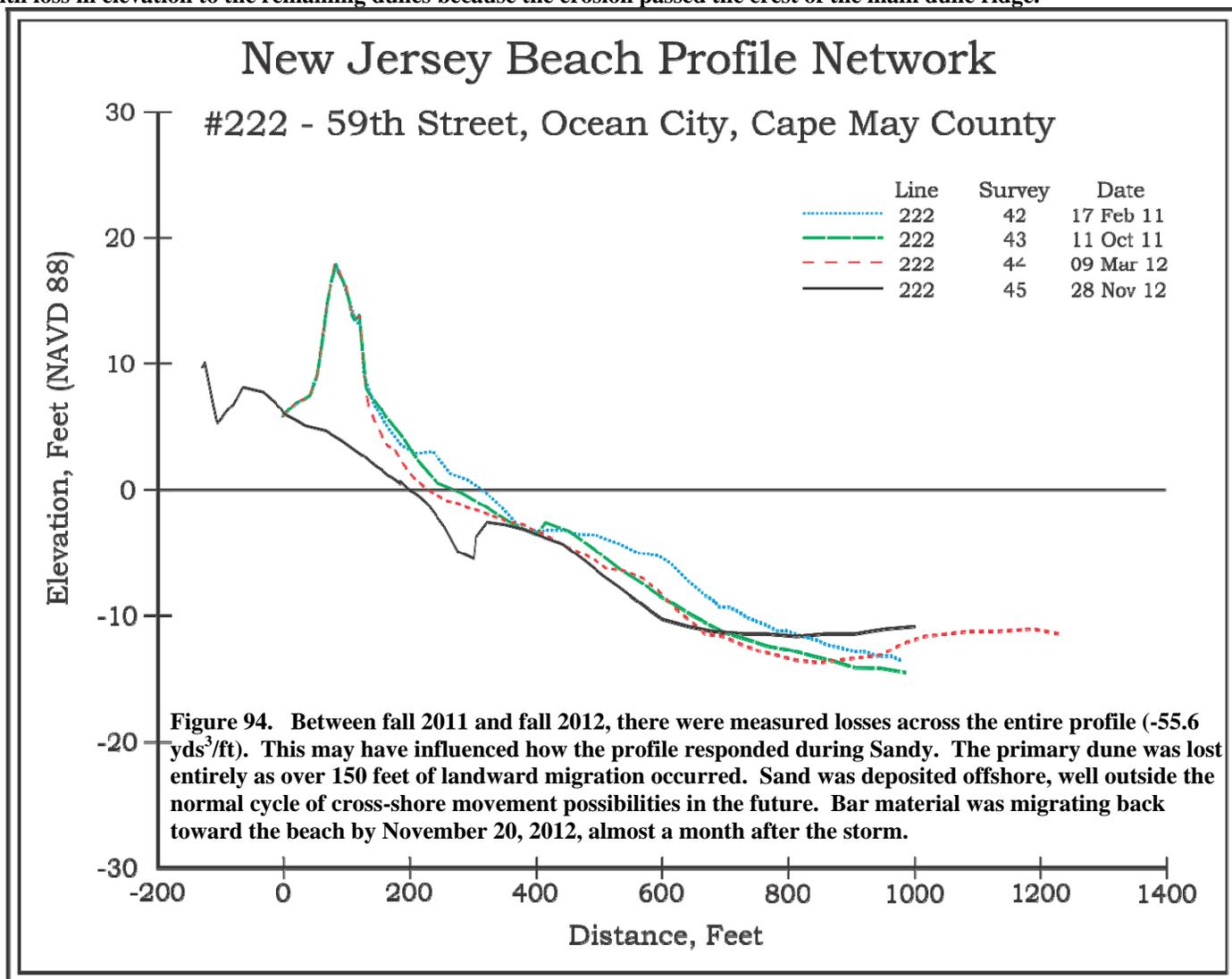
The left photograph was taken October 26, as Sandy was approaching NJ. Machines were deployed pushing up a ridge of sand seaward of the existing dunes at this site. Sandy overwhelmed the shore protection, jumped the old bulkhead and washed well inland producing damage and flooding. The right picture was taken November 6th and shows recent bulldozing efforts to provide a small measure of protection for homes with nothing between them and the sea.



59th Street, Ocean City, Cape May County, Site #222;



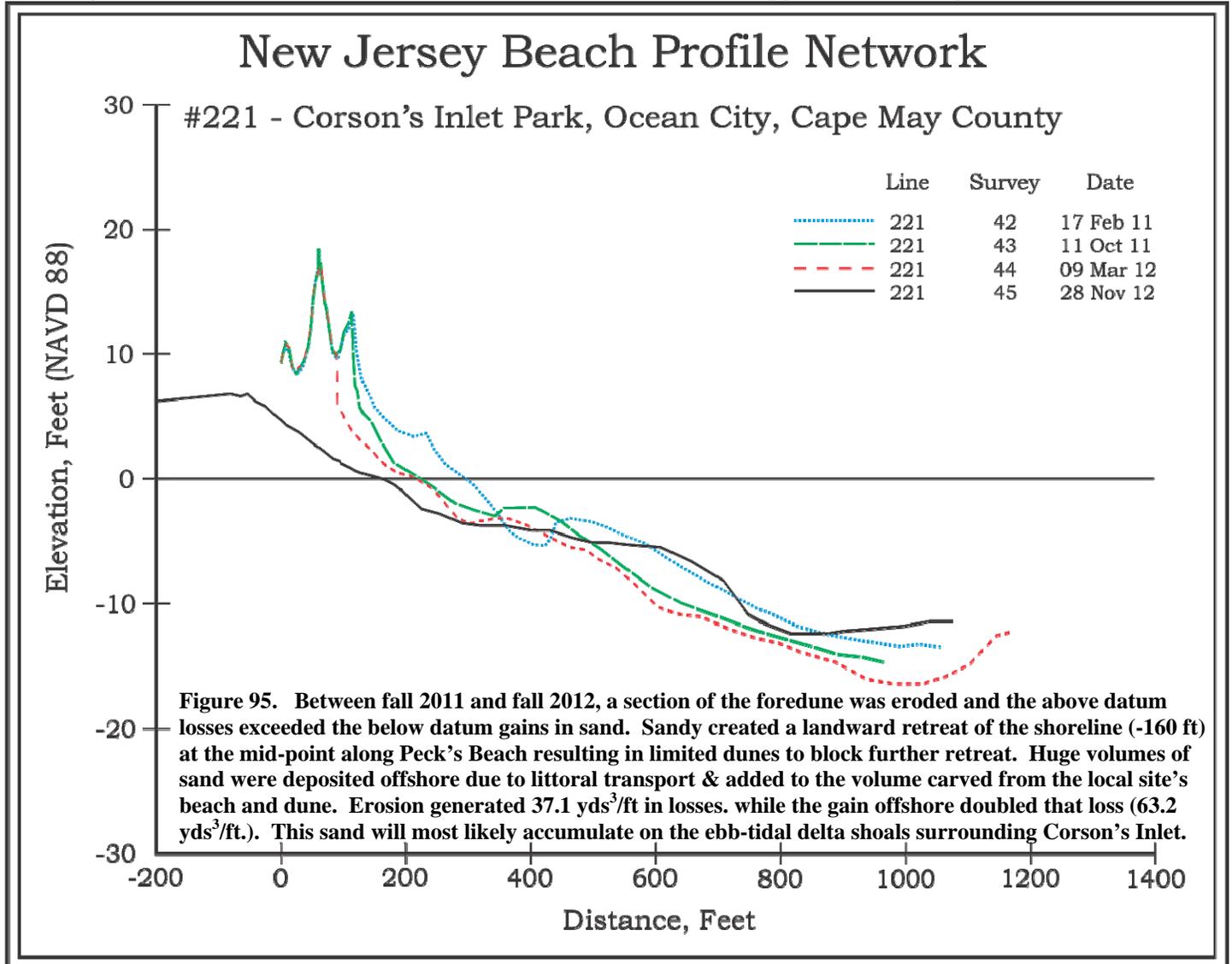
The left picture, taken March 9, 2012, shows an erosional scarp in the spring of 2012. This condition did not change during the summer and the waves during Sandy carved deeply into the remaining dunes. The erosion reflected up the beach into the southernmost development in Ocean City as well. The right picture was taken November 28, 2012 and shows large scale overwash and inundation of the lower sections of the dune system. The scarp was pushed landward a minimum of 155 feet with loss in elevation to the remaining dunes because the erosion passed the crest of the main dune ridge.



Corson's Inlet State Park, Ocean City, Cape May County, Site #221;



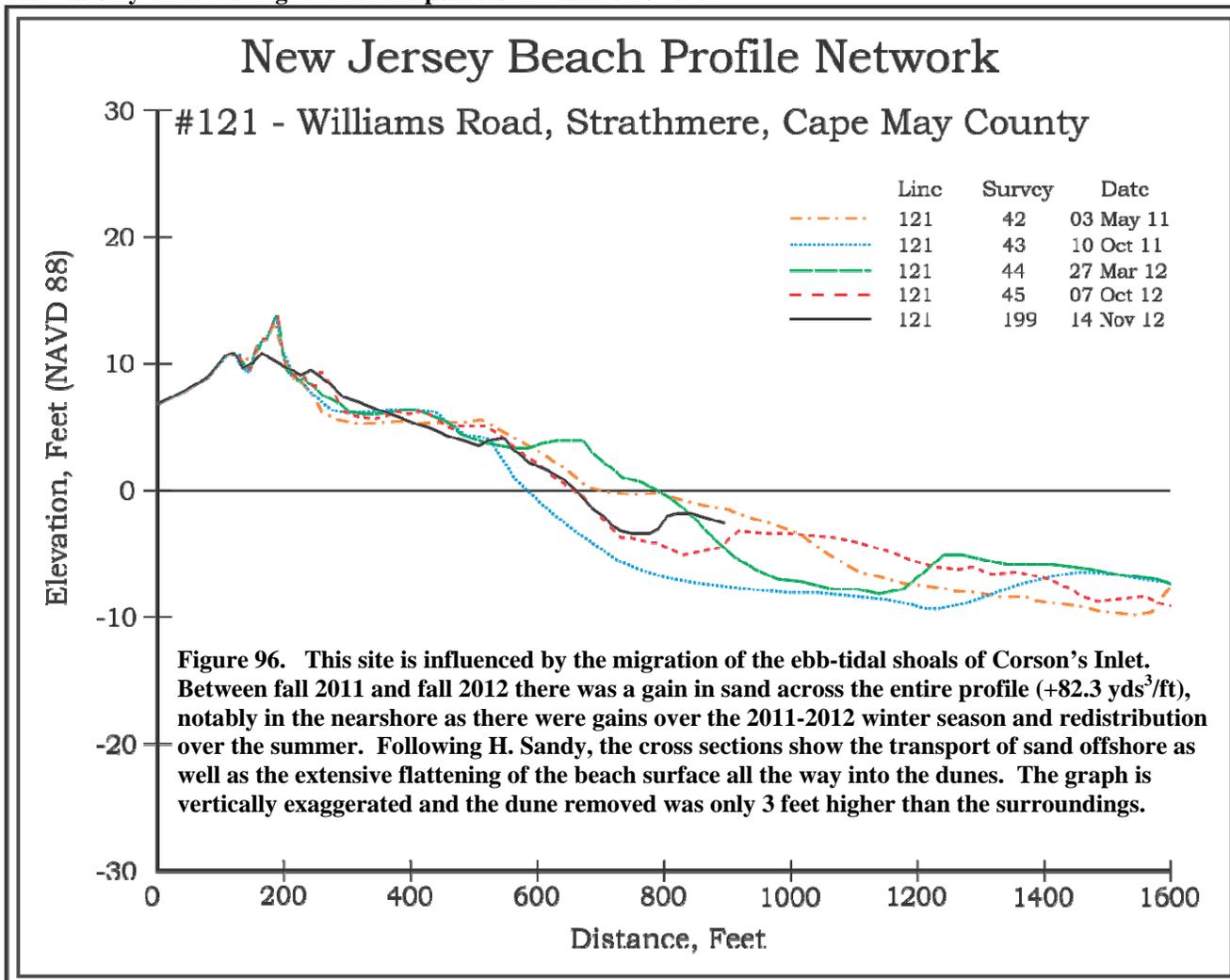
Positioned about a half-mile south of the development in Ocean City, the dune has been repeatedly eroded since the spring of 2012. Sandy hit this site pretty hard as a result of a narrow, low elevation beach. The November 28, 2012 picture on the right shows that the higher elevation dune was removed and the water pushed inland over lower elevation vegetation. There is an older, vegetated dune line over a hundred feet further landward that finally stopped the storm surge.



Williams Road, Strathmere, Cape May County, Site #121;



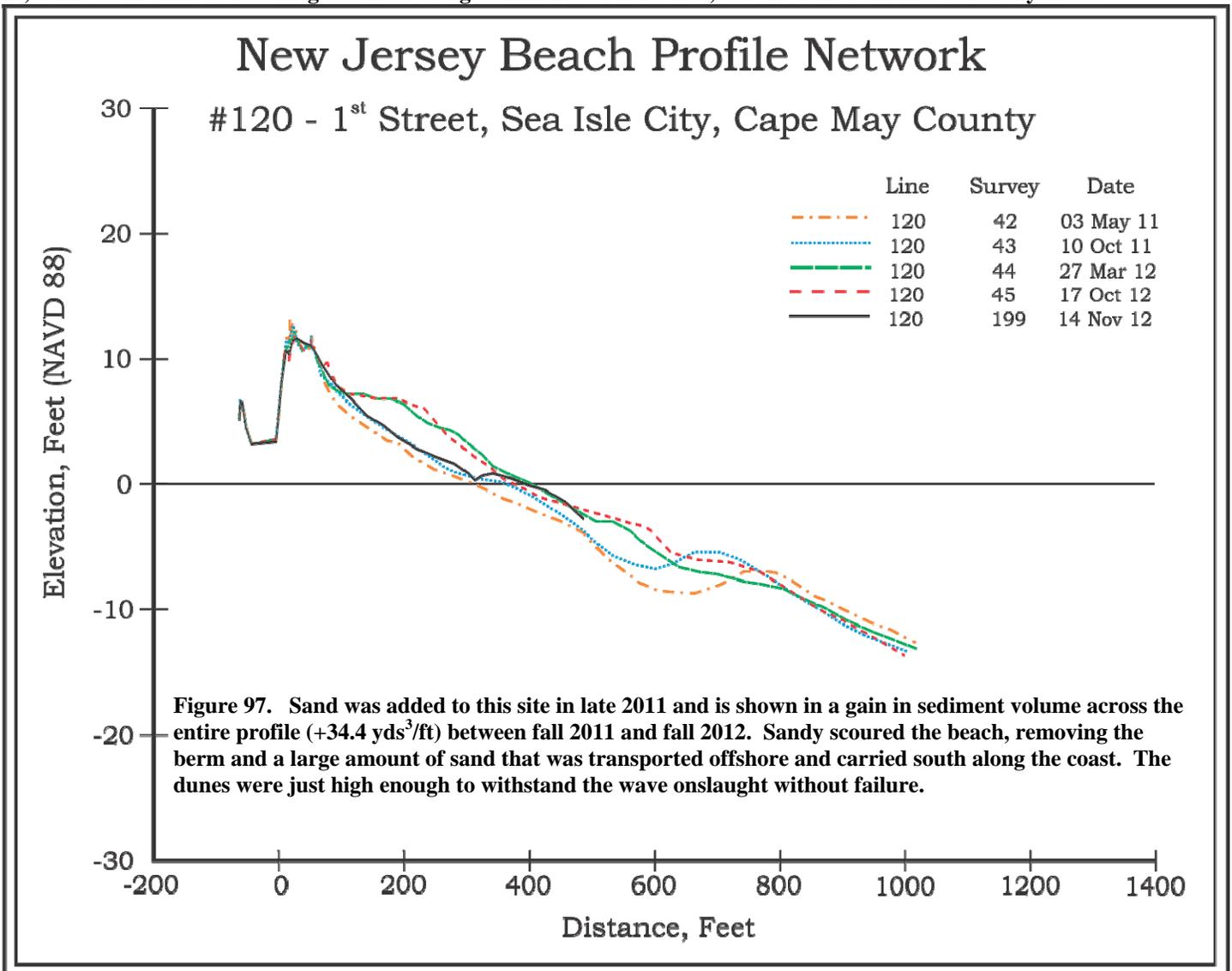
The left picture was taken October 17, 2012 looking across the wide dune zone area seaward of the primary feature. On November 5, 2012 the same view following Sandy shows that the area was flooded by waves that knocked down the highest primary dune, but did not flood the immediate landward area. The beach was flattened by the storm surge. The dune removed was only three feet higher than the post-storm feature however.



1st Street, Sea Isle City, Cape May County, Site #120;



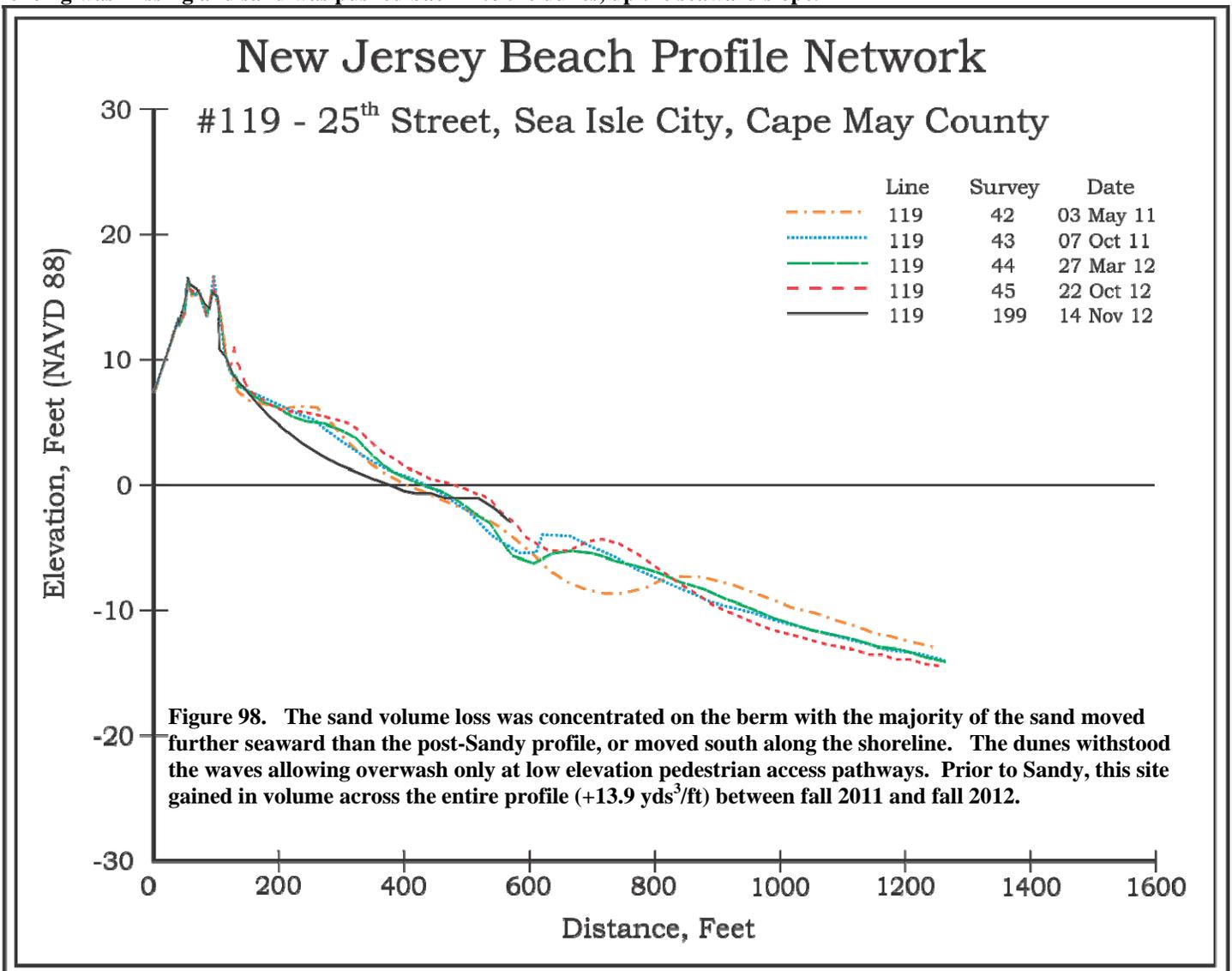
This location is on the boundary between Sea Isle City and Strathmere along the main (and only) road parallel to the ocean. The sand transported into the dune by October 17, 2012 was washed across by Sandy as seen on the left picture on November 14, 2012. Some minor breaching occurred along Commonwealth Avenue, but the dune remained relatively intact.



25th Street, Sea Isle City, Cape May County, Site #119;



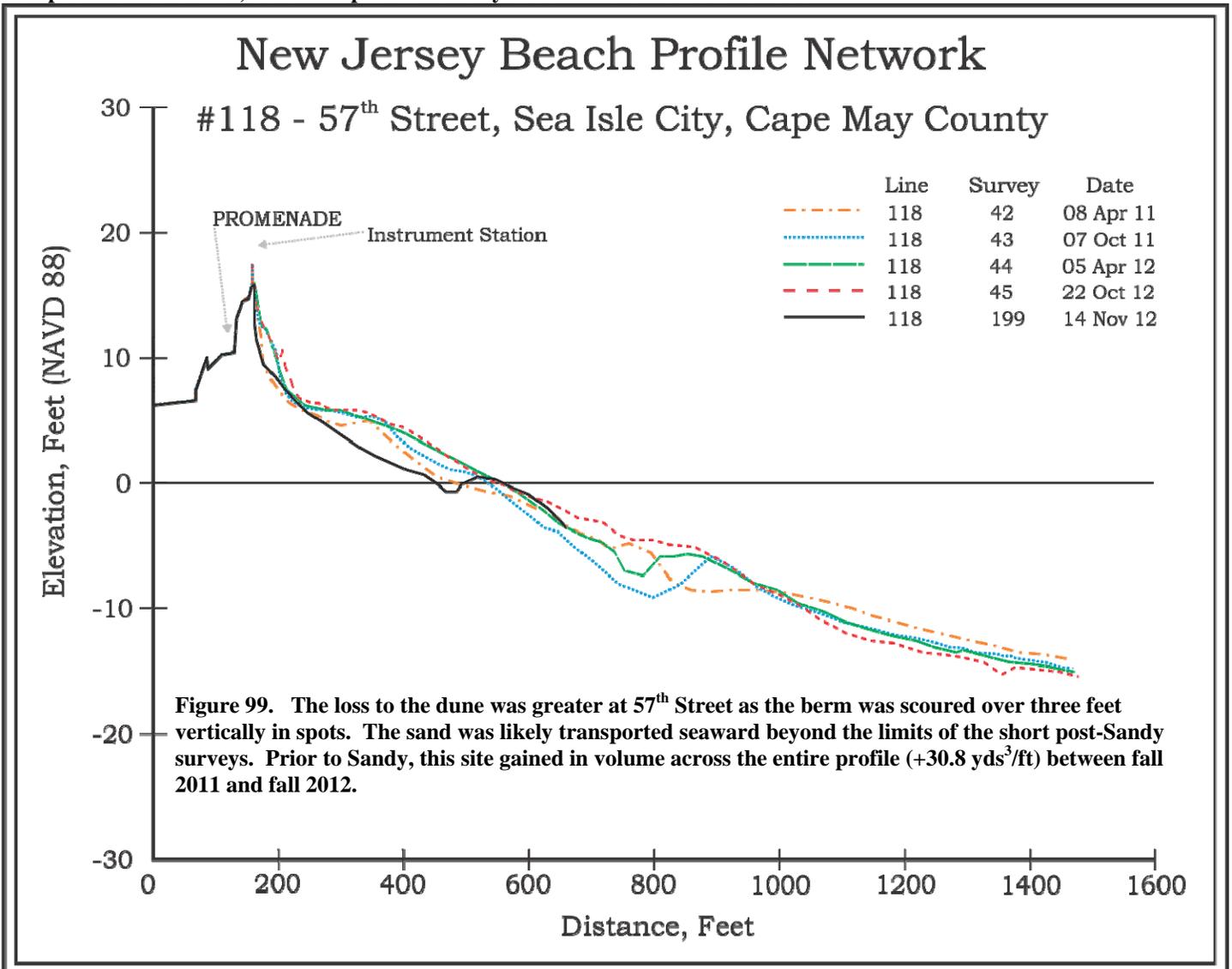
On October 22, 2012, the beach was relatively wide and dry with a decent new deposit of sand along the recent fencing installed at the seaward toe of the dune system. After Sandy on November 14, 2012 the beach was lower in elevation, all the fencing was missing and sand was pushed back into the dunes, up the seaward slope.



57th Street, Sea Isle City, Cape May County, Site #118;



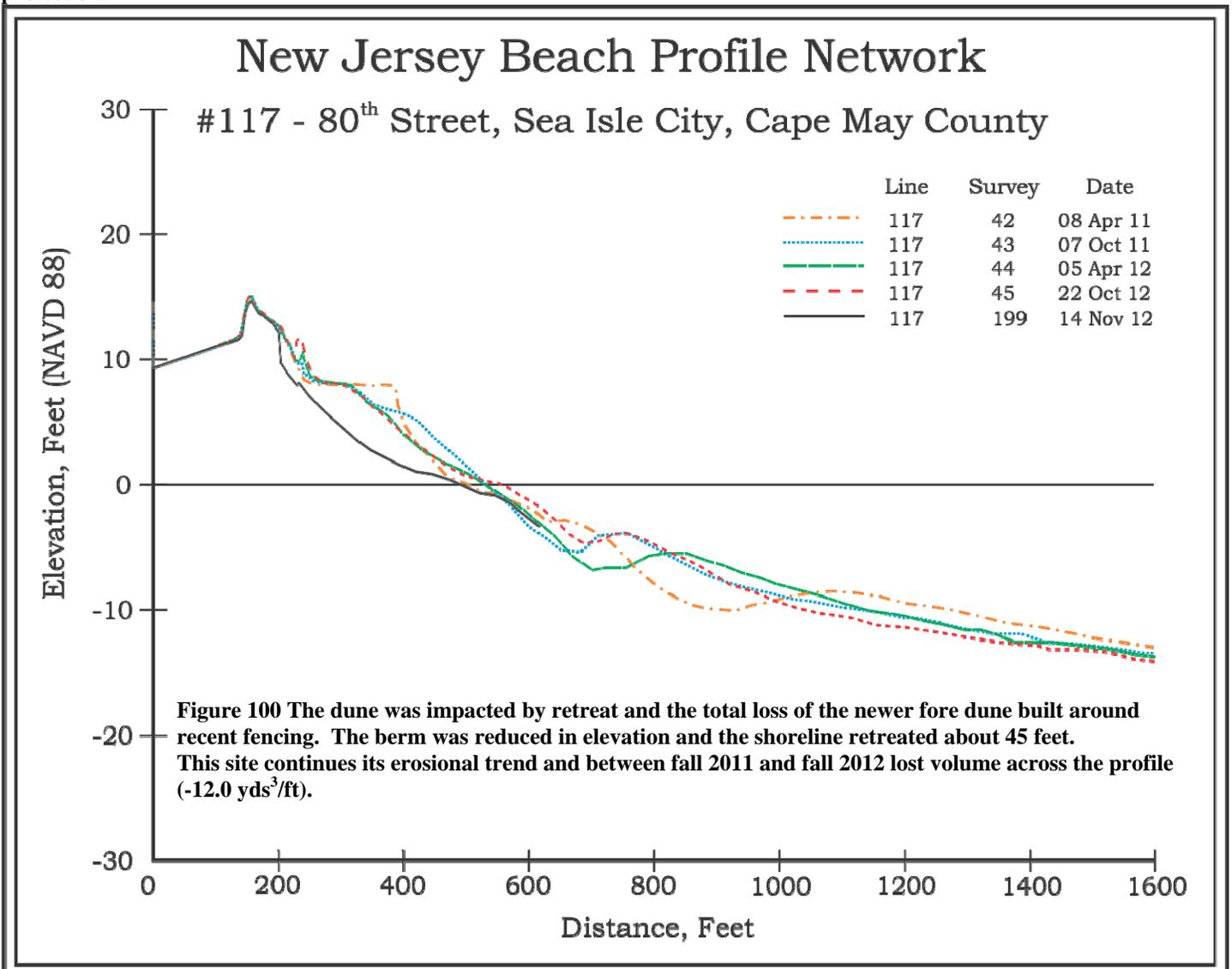
The left picture was taken October 22, 2012 and shows the dune system landward of a wide, dry beach. Following Sandy on November 14, 2012, the beach was much lower in elevation and the dune was carved away nearly to the crest. The scarp had slumped two weeks later, but the impact can clearly be seen in the cross section below.



80th Street, Sea Isle City, Cape May County, Site #117;



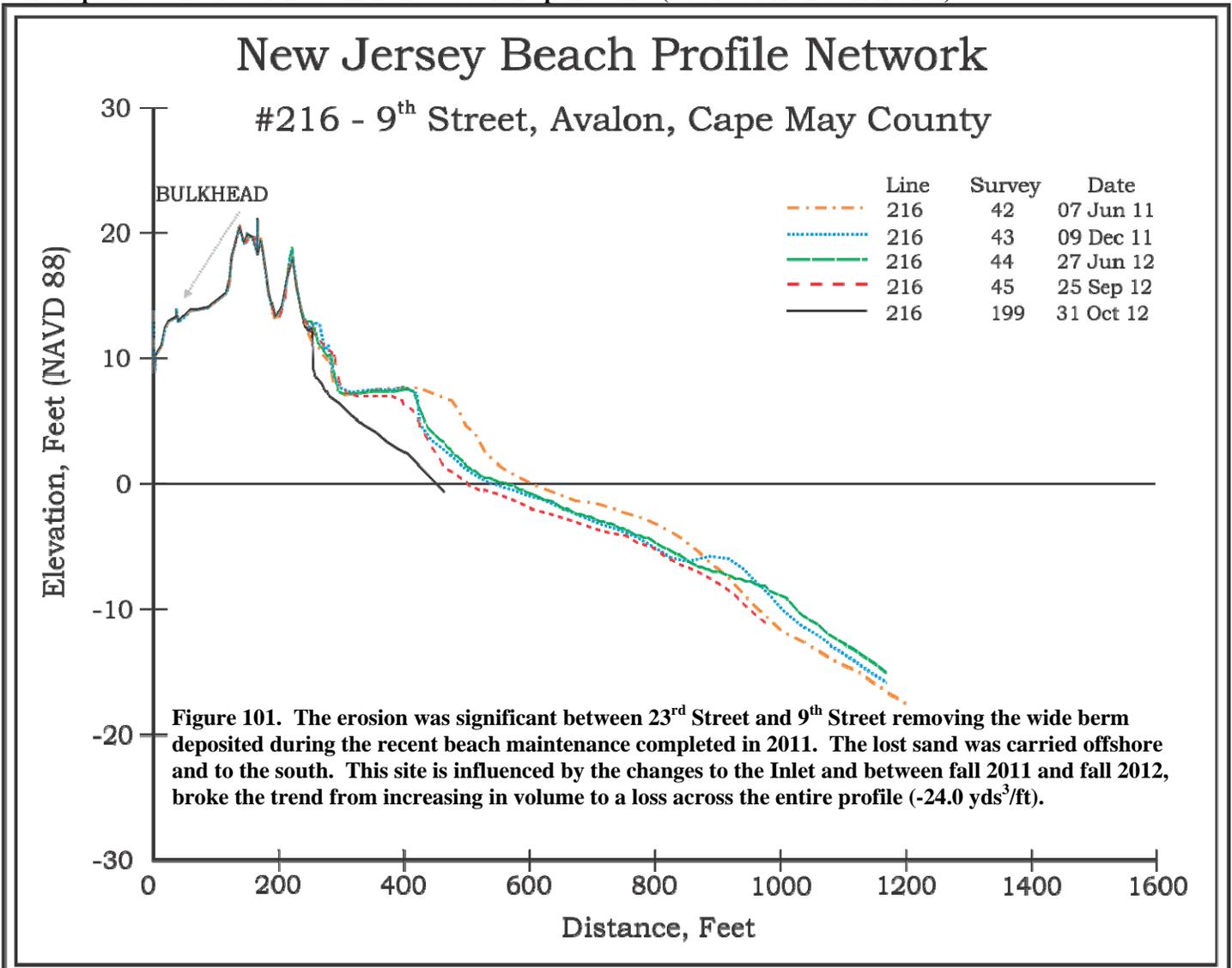
On October 22, 2012 the beach possessed a recently deposited foredune developed at fencing installed in the past year. The beach was wider and higher than the scene following the storm. On the right, the post-Sandy clean-up was responsible for the deposition of sand, washed inland, having been hauled back to the beach to form a linear ridge to help with future storm protection.



9th Street, Avalon, Cape May County, Site #216;



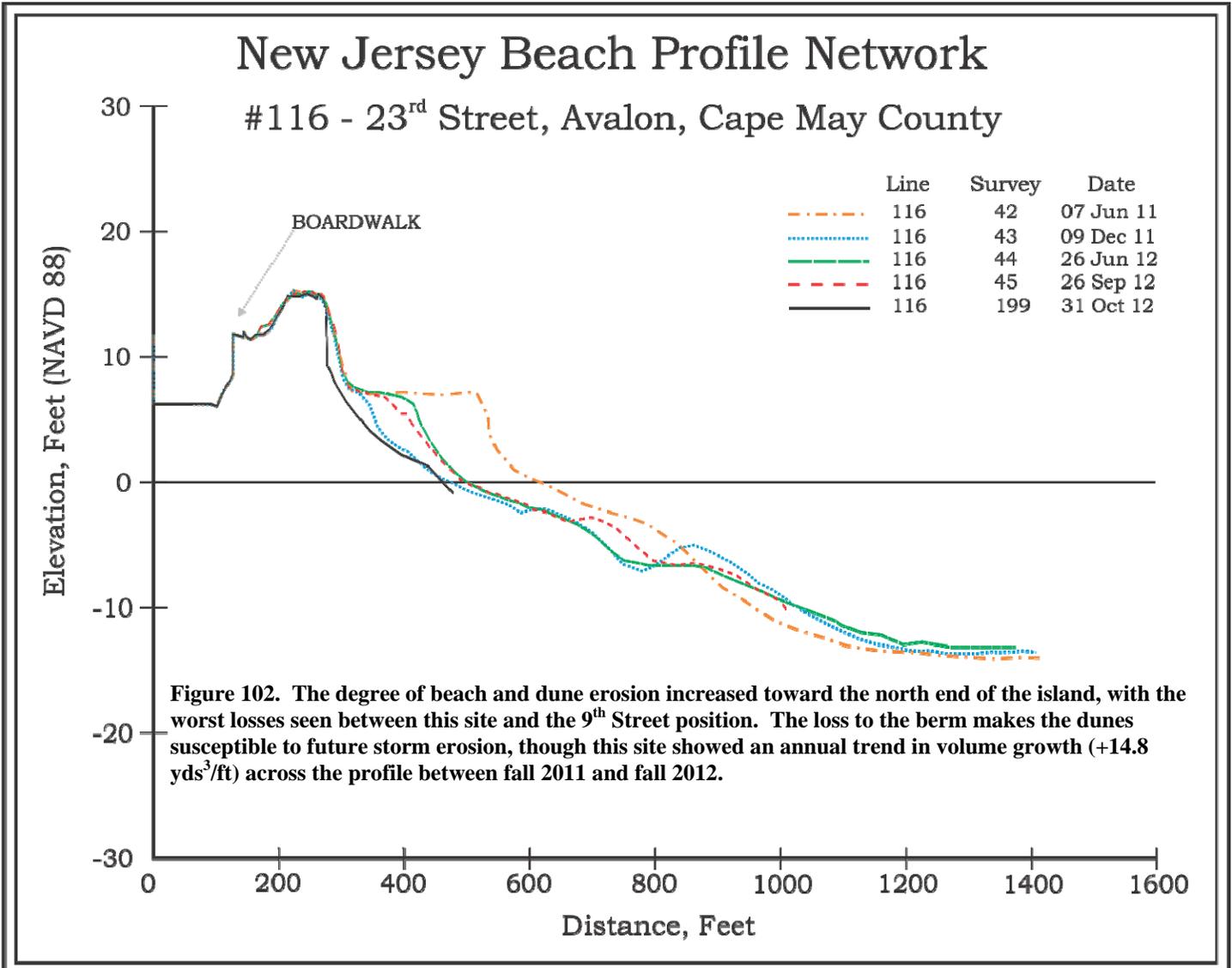
The September 25th photograph shows the wide berm and seasonal plant growth at the 9th Street site. Following Sandy the fence was taken out as was the wide berm with erosion cutting into the seaward dune toe slope. The litter deposited on the dune slope shows the elevation to which the waves ran up the dunes (14.0 feet NAVD88 in Avalon).



23rd Street, Avalon, Cape May County, Site #116;



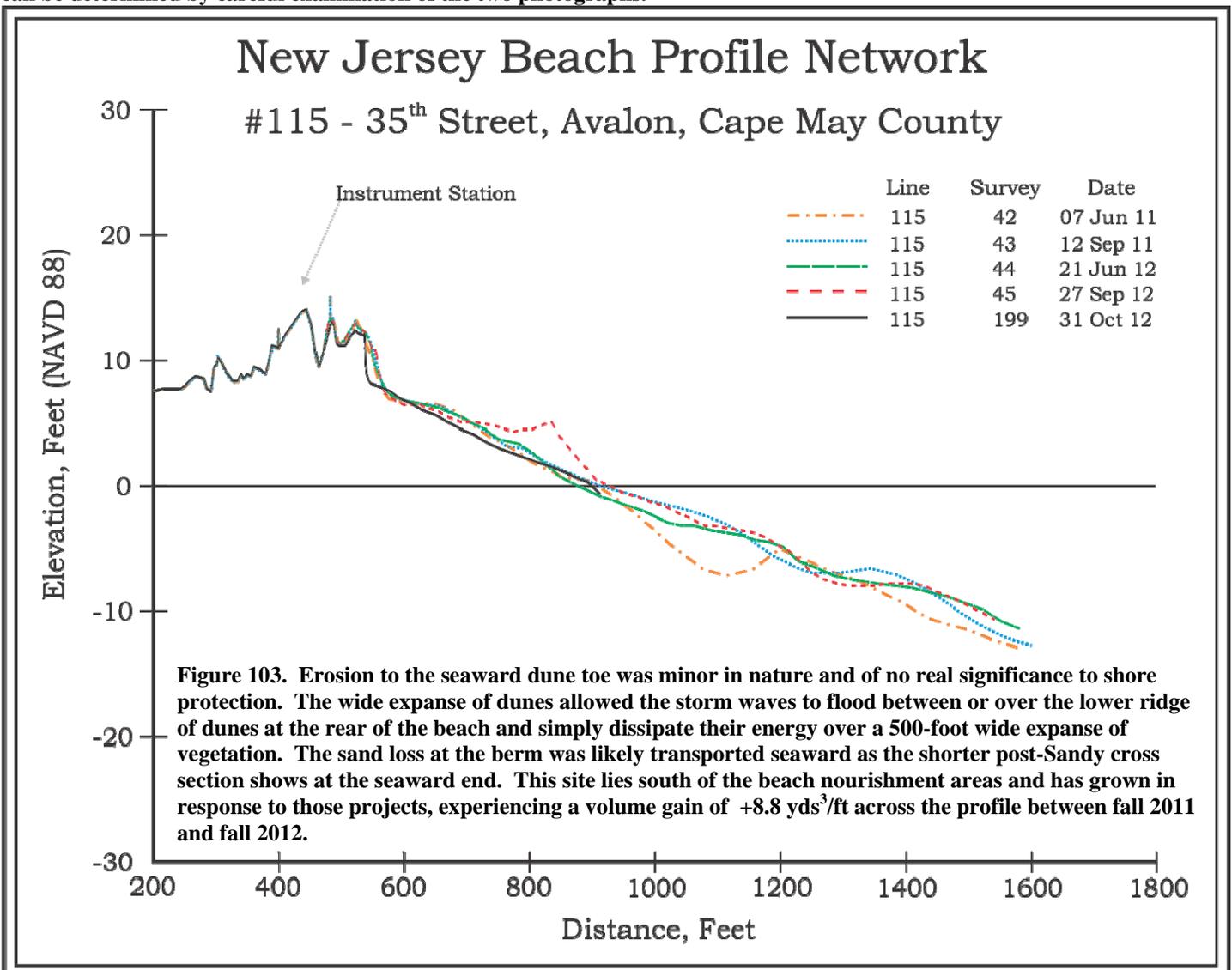
The left picture was taken September 25, 2012 and shows the beach late in the summer with a generous post-sand fill berm present and a healthy season's growth in new dune plants. By October 31st, the beach was much lower in elevation as sand was carried offshore and the dune's seaward slope was cut and sand washed into the grasses. The entrance pathway was truncated at most Avalon street-end entrances.



35th Street, Avalon, Cape May County, Site #115;



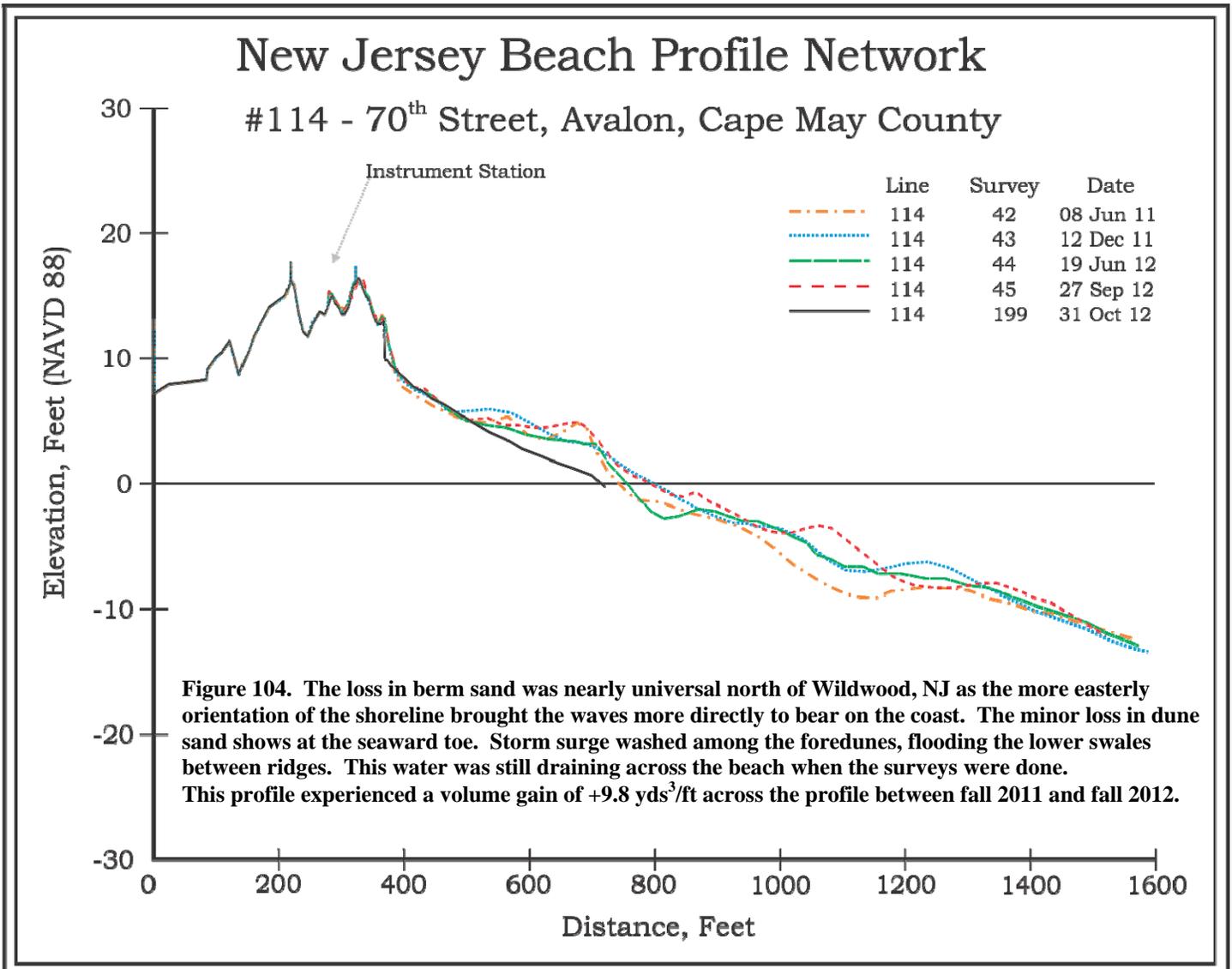
Between September 27th and October 31st, the beach at 35th Street suffered foredune flooding and minor erosion of the seaward toe. Sand was stripped from the berm and washed into the lower elevation dune field. The loss to individual plants can be determined by careful examination of the two photographs.



70th Street, Avalon, Cape May County, Site #114;



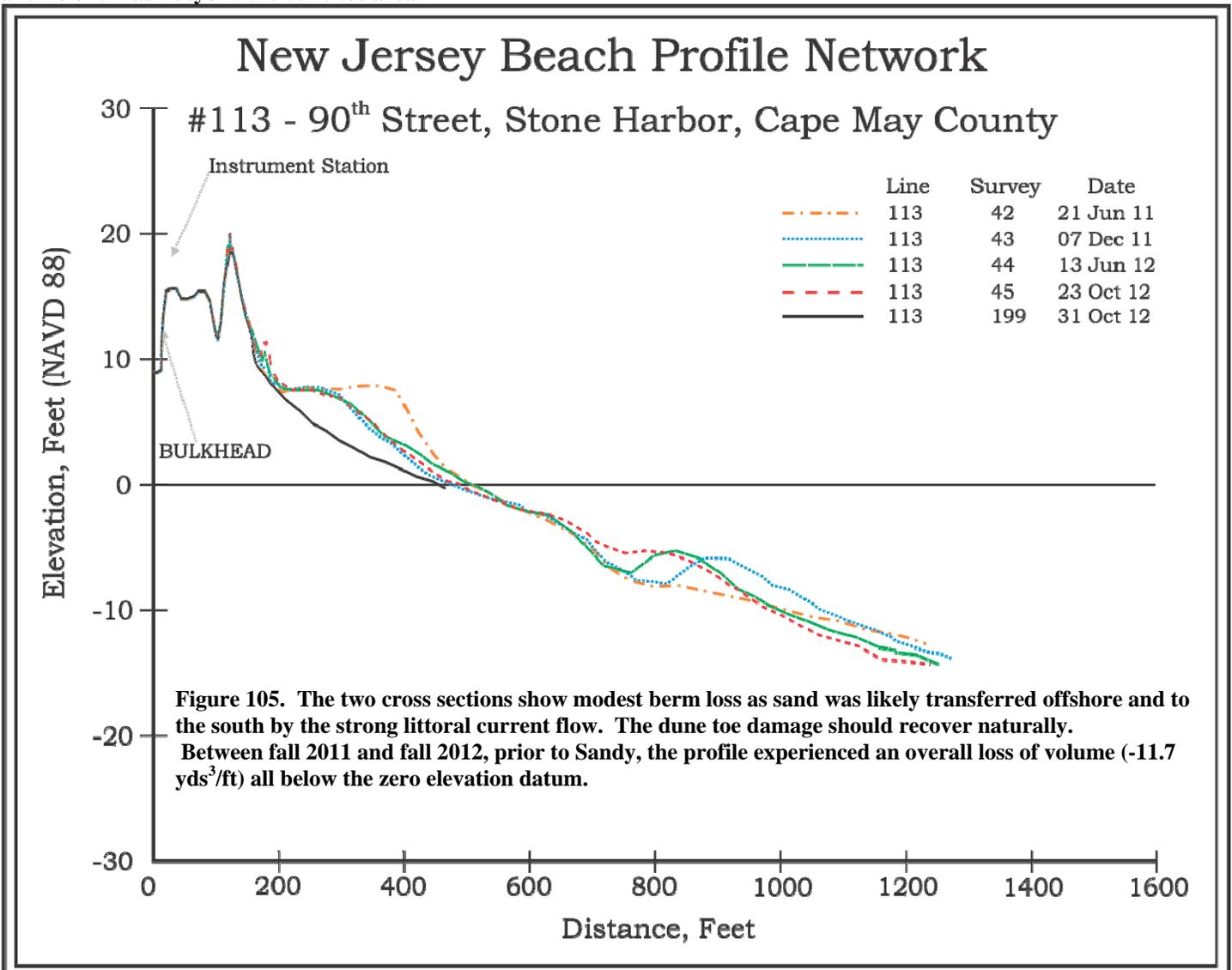
The left picture was taken September 28, 2012 during the late summer survey, and the nearly identical view was obtained October 31st just after Sandy. Note that there are two pairs of closely spaced fence posts that have a small angle between them in their vertical positions. The two pairs of posts are present in both photographs and show the loss in seaward dune toe grass and sand. The berm along the ocean's edge was also reduced in elevation.



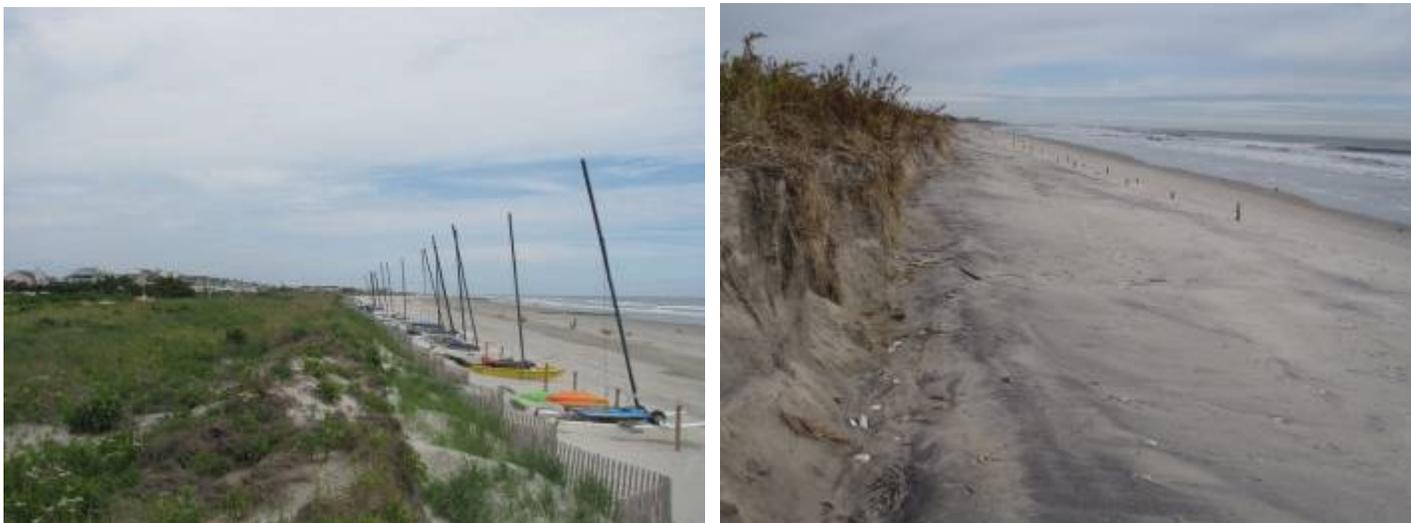
90th Street, Stone Harbor, Cape May County, Site #113;



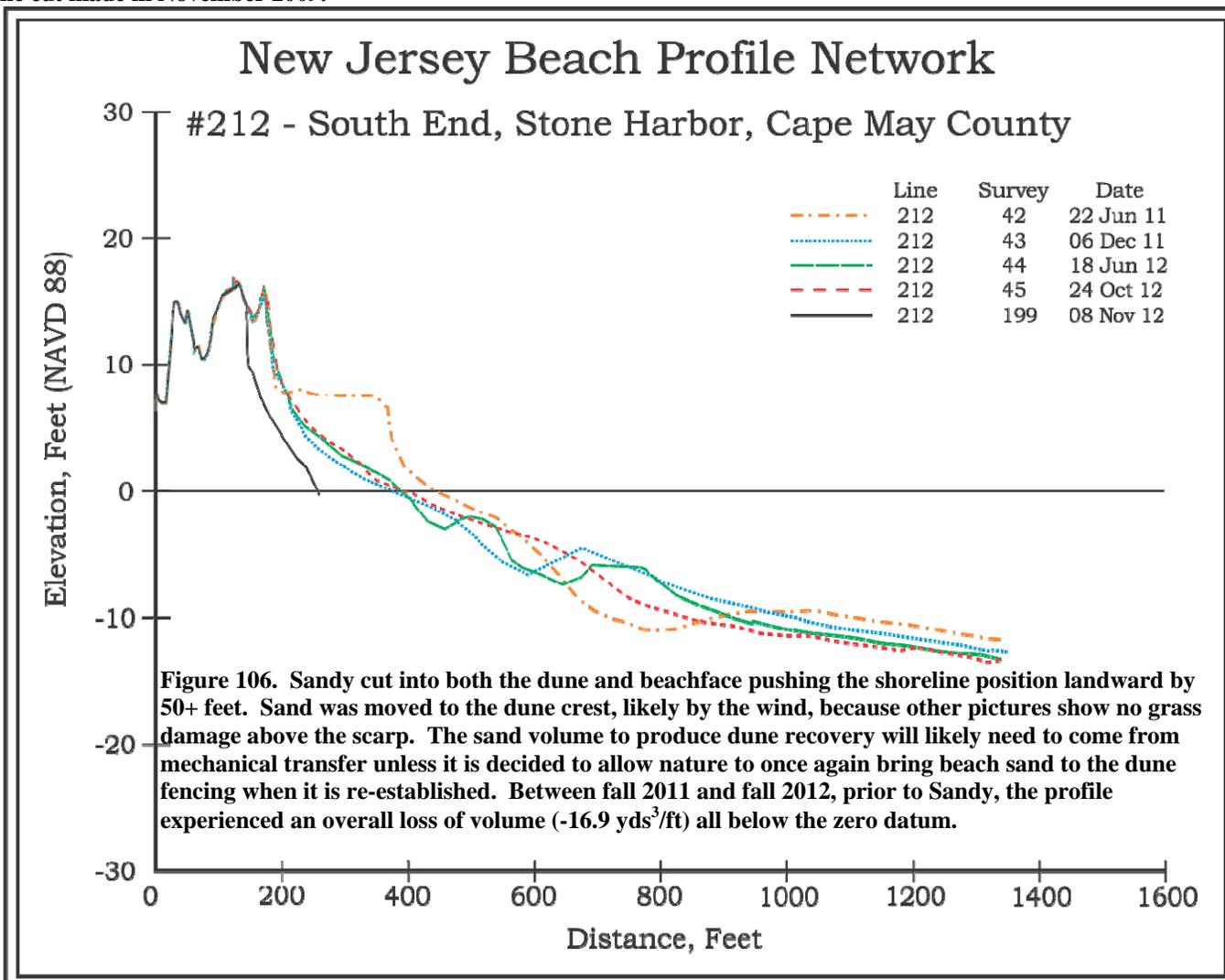
The left photograph was taken October 24, 2012 just prior to Sandy. The right picture was taken October 31, 2012 and shows the effects of lowering the berm elevation and some minor dune toe erosion. This site did not suffer significant erosion damage and no overwash beyond the dune toe area.



121st Street, Stone Harbor, Cape May County, Site #212;



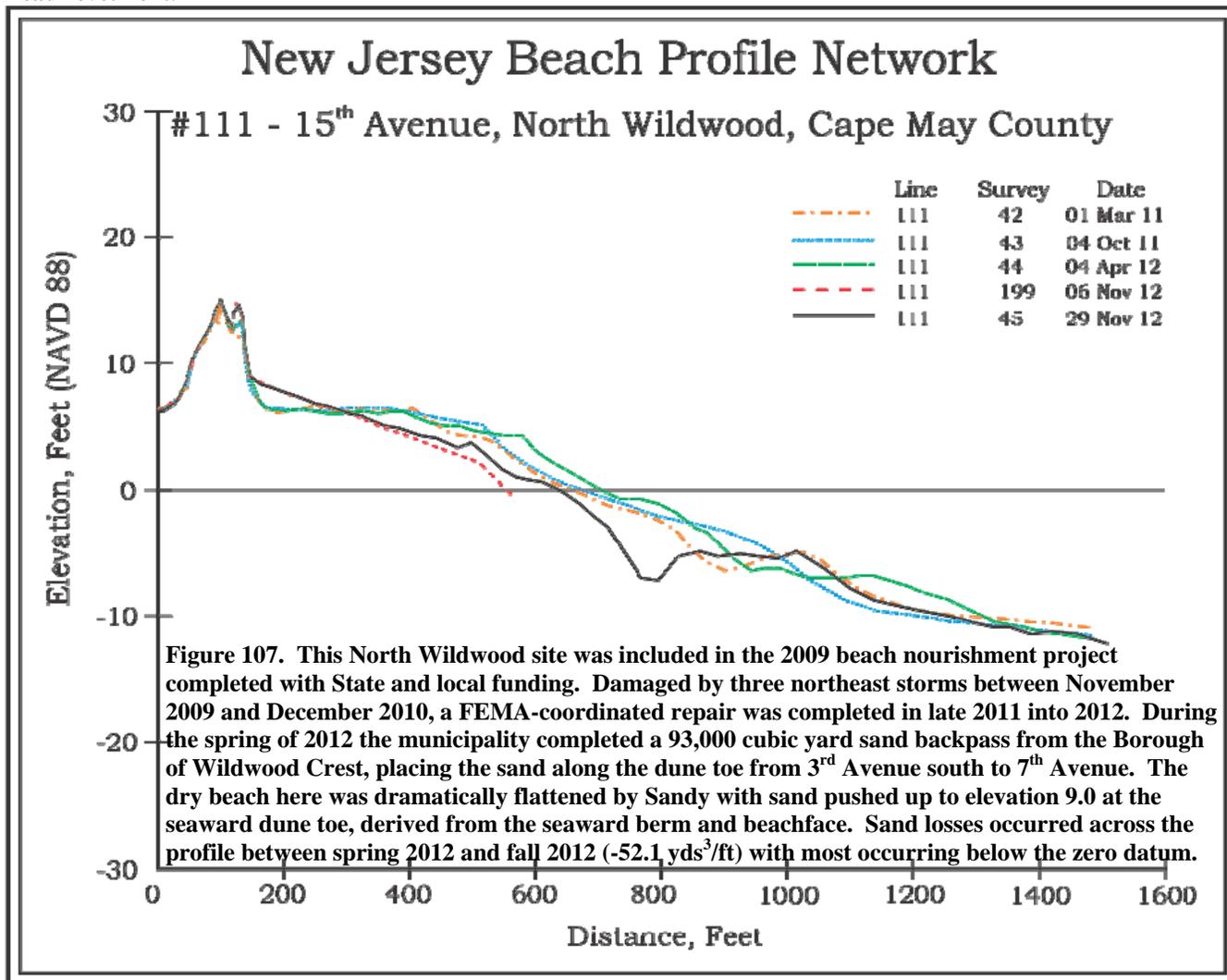
The southern cross section in Stone Harbor was re-established just north of the terminal rock groin along the Borough oceanfront following the loss of South Point in 1990. The left picture shows the conditions in June 2012 where sand had deposited seaward of an older scarp cut into the dunes, building out to the sand fencing. Sandy eliminated all the newly-deposited material moving the beach landward uniformly by 50 feet. The catamaran pilings show a closer proximity to the surf after Sandy than prior to the storm (Nov. 8, 2012). The erosional cut in the dunes returned to approximately the location of the cut made in November 2009.



15th Avenue, North Wildwood, Cape May County, Site #111;



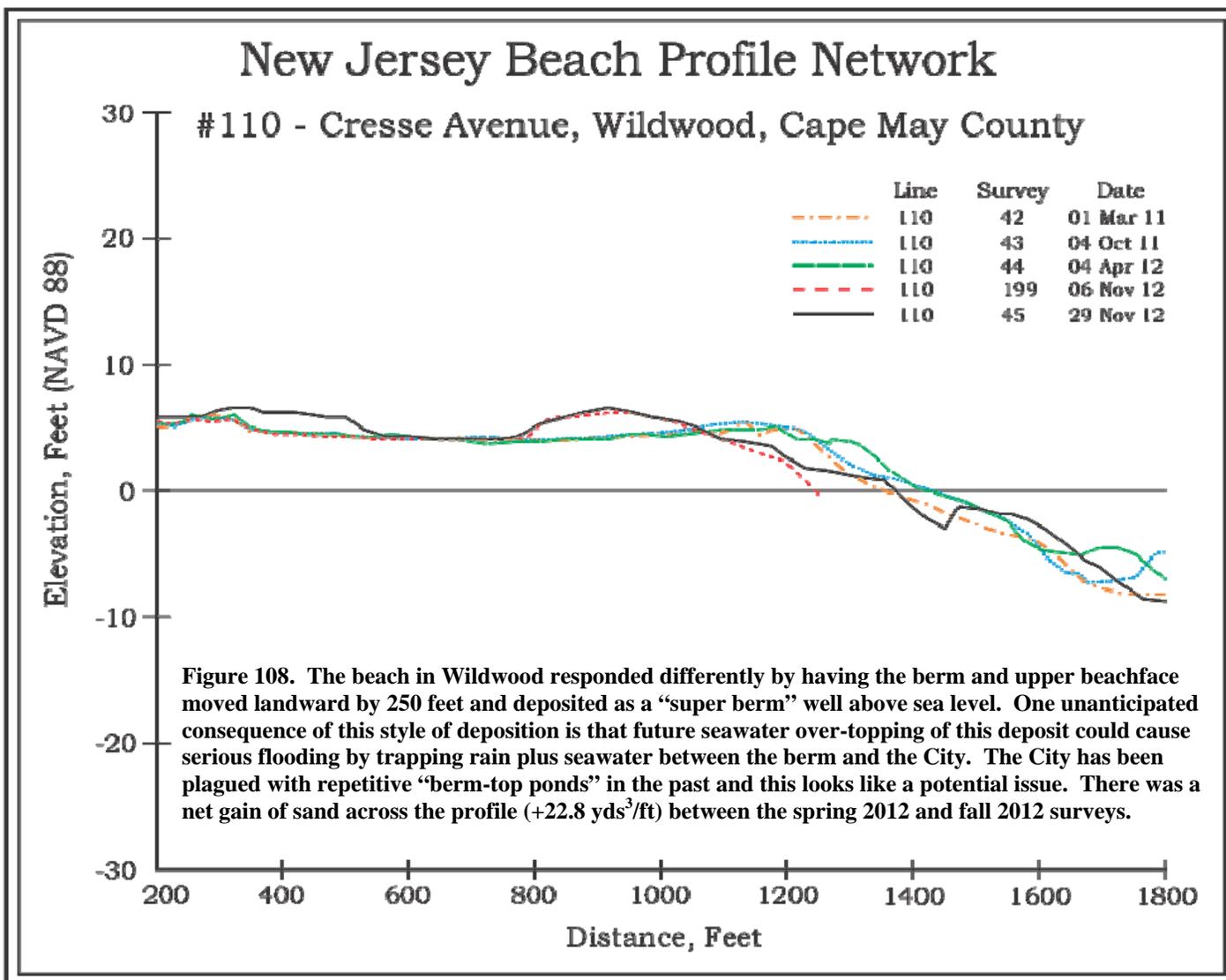
The view to the southeast from 15th Avenue dune crossover was taken April 4, 2012. The picture following Sandy was taken on November 29th and is on the right. Summer dune grass growth shows in spite of the storm. The waves did flow across the entire dry beach and ramped up a deposit onto the seaward dune toe. No dune breach occurred near this location. Further south at the piers, the dune was erased because it was built to pass seaward of the pier ends and was far more exposed to wave action. Erosion at the very northeast corner of the City also removed the dune south to 4th Avenue and over-topped the bulkhead revetment.



Cresse Avenue, Wildwood, Cape May County, Site #110;



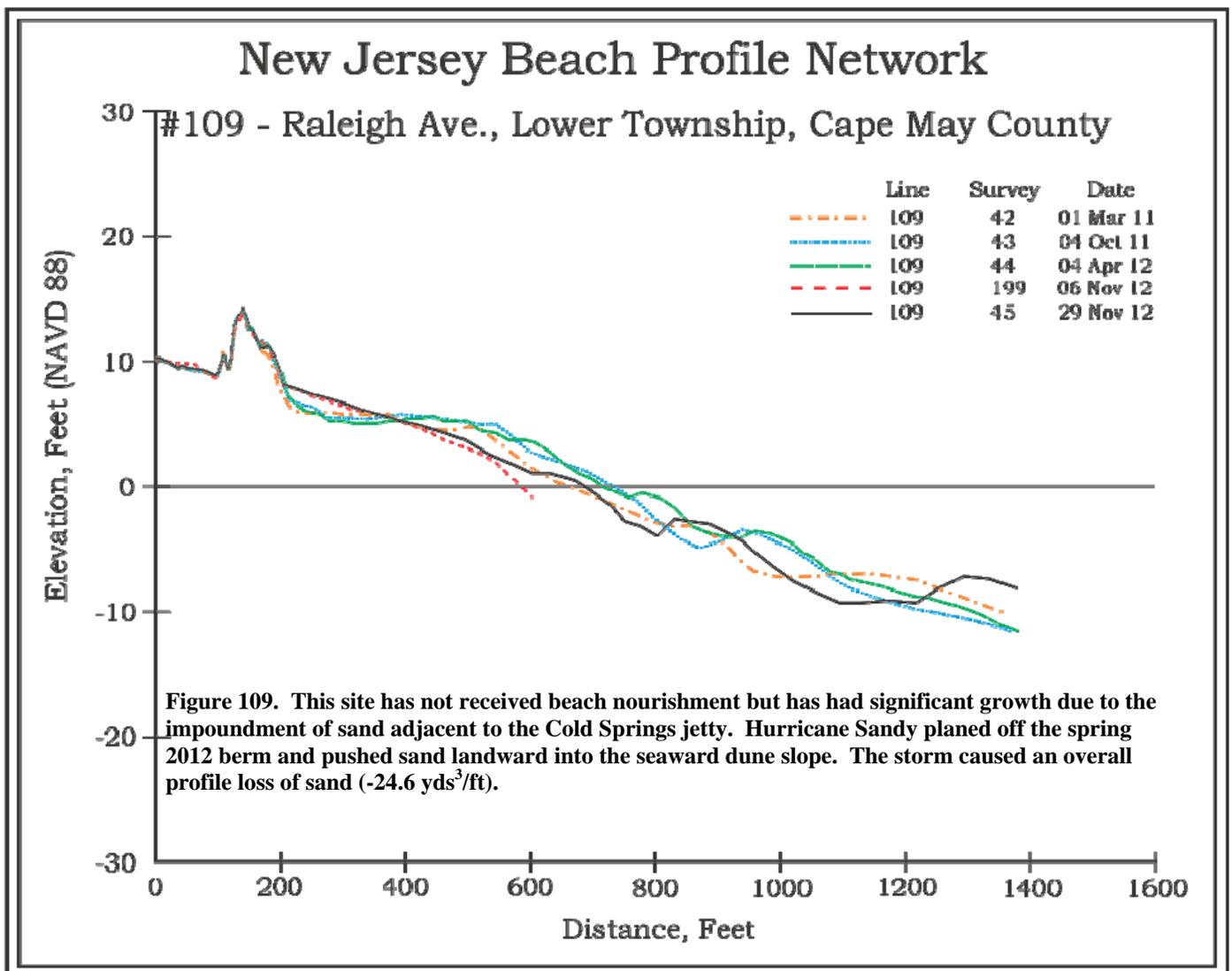
On April 4, 2012 the view across the beach in Wildwood was taken from the tiny dune in front of the boardwalk. The November 29th view on the right was taken from the same location, but minus the sign. The beach gained sand at the berm 600 feet seaward of the boardwalk. The sand deposit probably was derived from the erosion of the spring survey's berm.



Raleigh Avenue, Lower Township, Cape May County, Site #109;



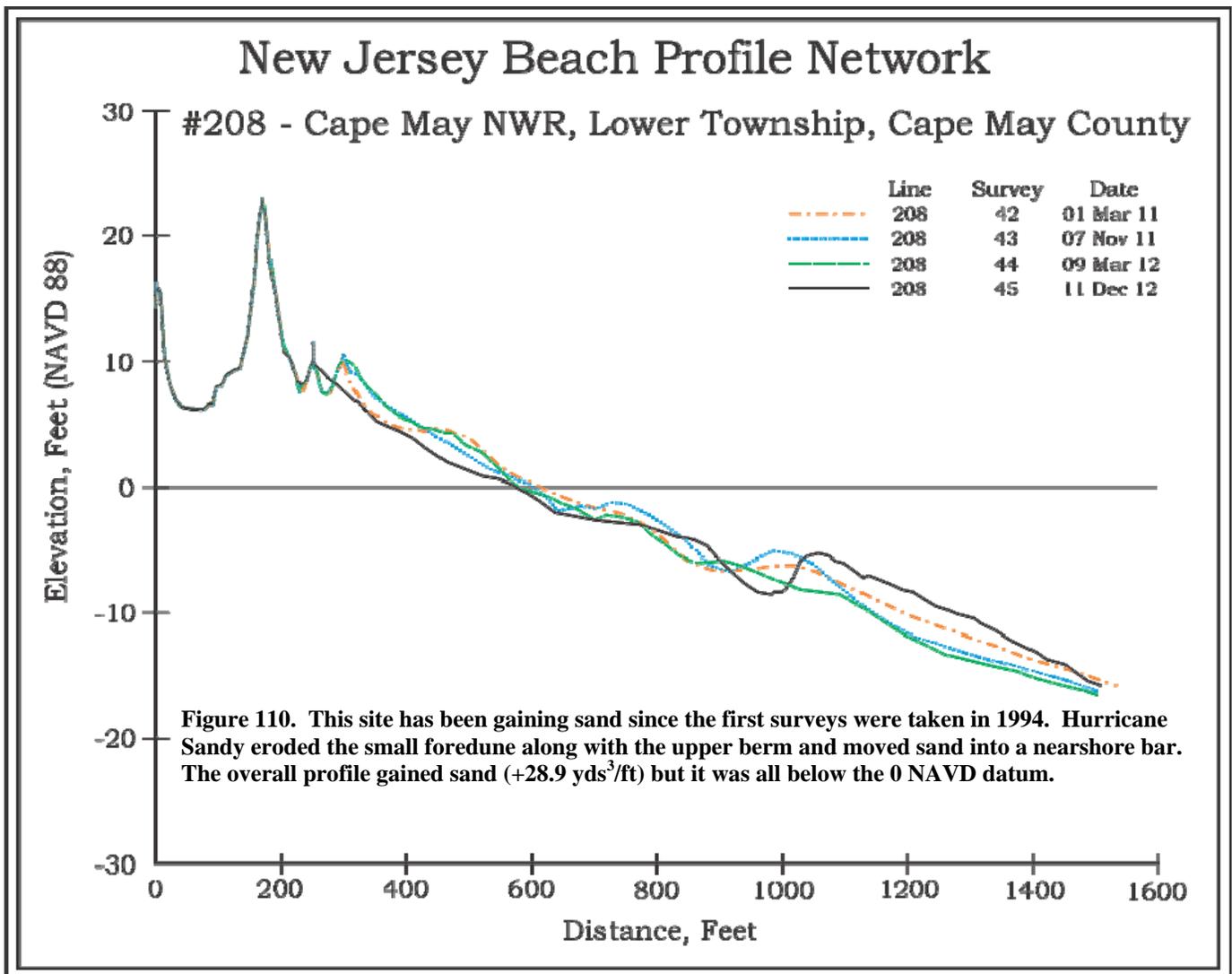
The early spring photograph of the beach taken April 4, 2012 is shown on the left. The right-hand view was taken November 29th a month after the storm. Here sand was forced landward to the toe of the dunes where a deposit filled in a slightly lower part of the beach than the berm. The sand on the berm was likely the source of the deposit since the storm surge flooded the entire dry beach.



US Coast Guard Base, Lower Township, Cape May County, Site #208;



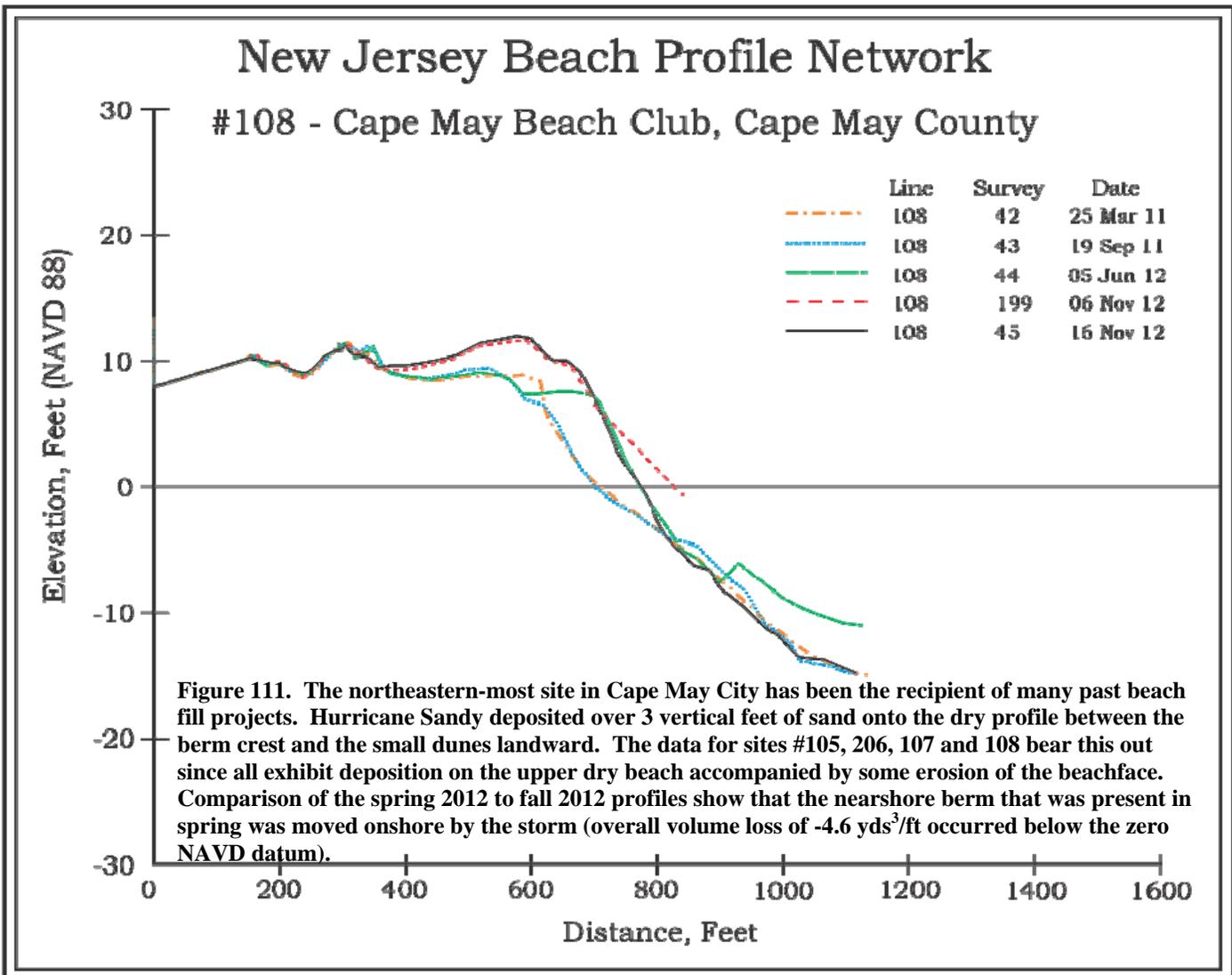
The left picture was taken March 9, 2012 looking toward the sea. The natural areas were surveyed last and done with normal procedures, so the length of the surveys are equal and extend well off shore. The outfall line shows in both photographs (December 11th for the right side) and shows that little change in beach elevation occurred. The berm was eroded somewhat and transported toward the dunes. Water reached into the new foredune area directly landward of the vehicle and washed up into the second ridgeline. The new, white sand in the center of the right photo is not present on the left side.



Cape May Beach Club, Cape May City, Cape May County, Site #108;



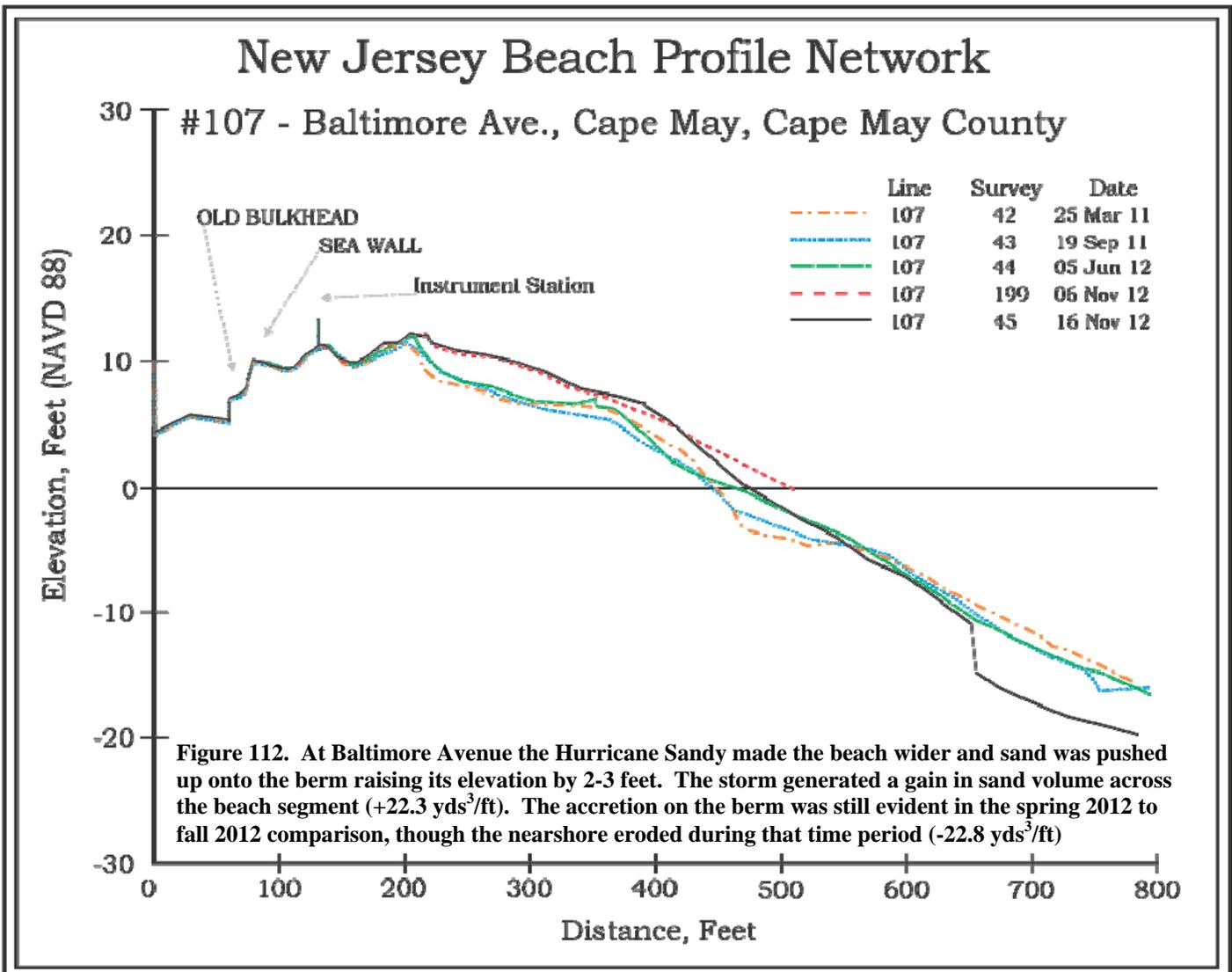
On June 5, 2012, the beach was wide with the removable boardwalk ready for the summer. The post-storm picture on the right was taken November 9th at approximately the same spot looking southeast to the ocean. Assuming that the photographers are all about the same height and were standing when they took the shots, the berm elevation covers far more of the view of the ocean in November than it did in June. The cross section below shows why.



Baltimore Avenue, Cape May City, Cape May County, Site #107;



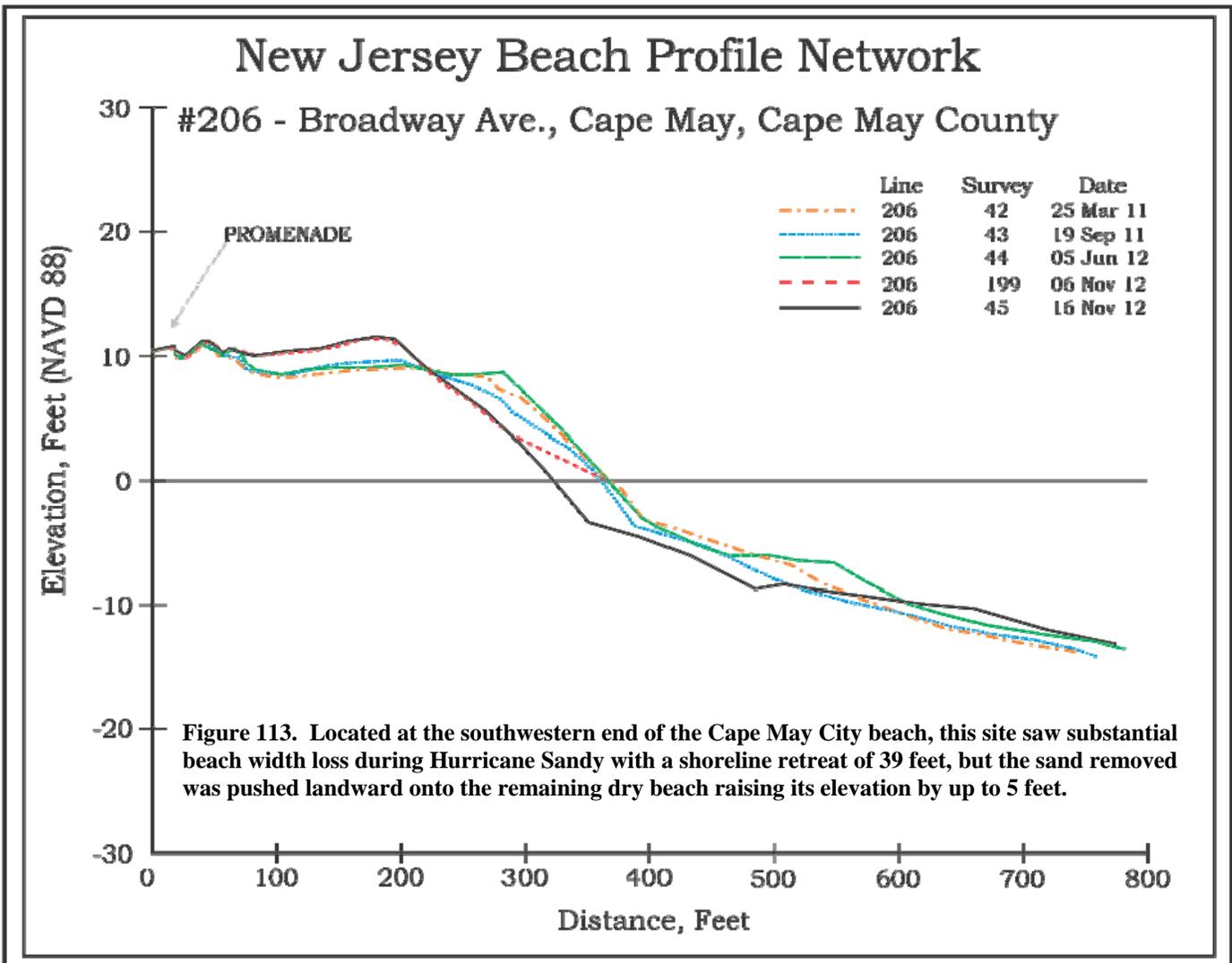
The left picture was taken in June 5, 2012 showing the beach toward the northeast. The post-storm shot on the right was taken November 9th. The sand can be seen deposited around the fencing leaving only two rows of wire above the sand while in June there were 5 rows of wire showing. Here the beach was also widened toward the zero elevation position.



Broadway Avenue, Cape May City, Cape May County, Site #206;



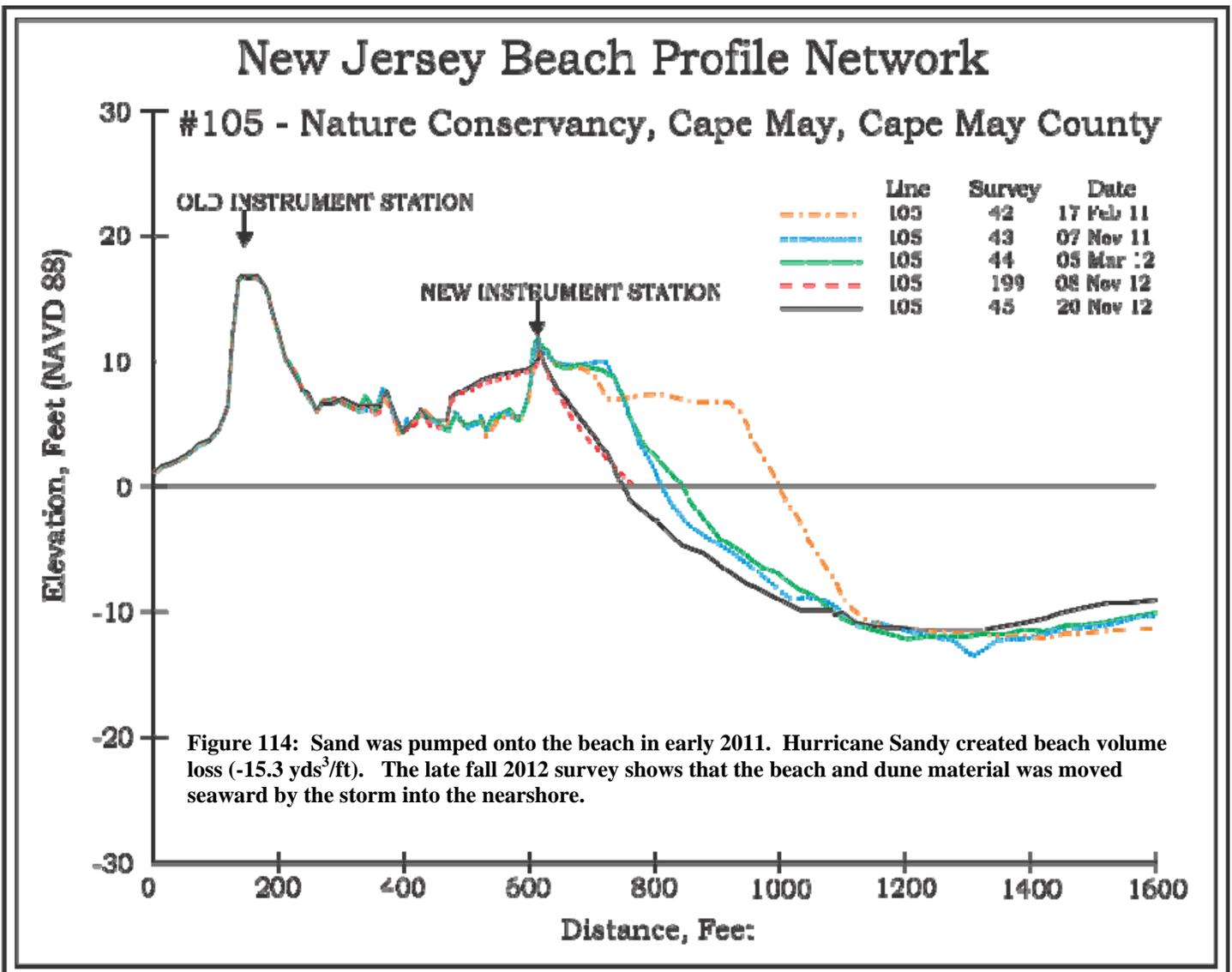
The June 5, 2012 picture shows the popular bathing beach at the beginning of the last summer season. The right side shows the post-storm view on November 9th. The elevation increase shown below can be seen in the smaller slice of ocean in the right-hand view as compared to the left side. The seaward stair railings in both pictures have the same relative relationship to the horizon indicating that the view from the camera is almost the same elevation in both pictures.



Nature Conservancy, Cape May County, Site #105;



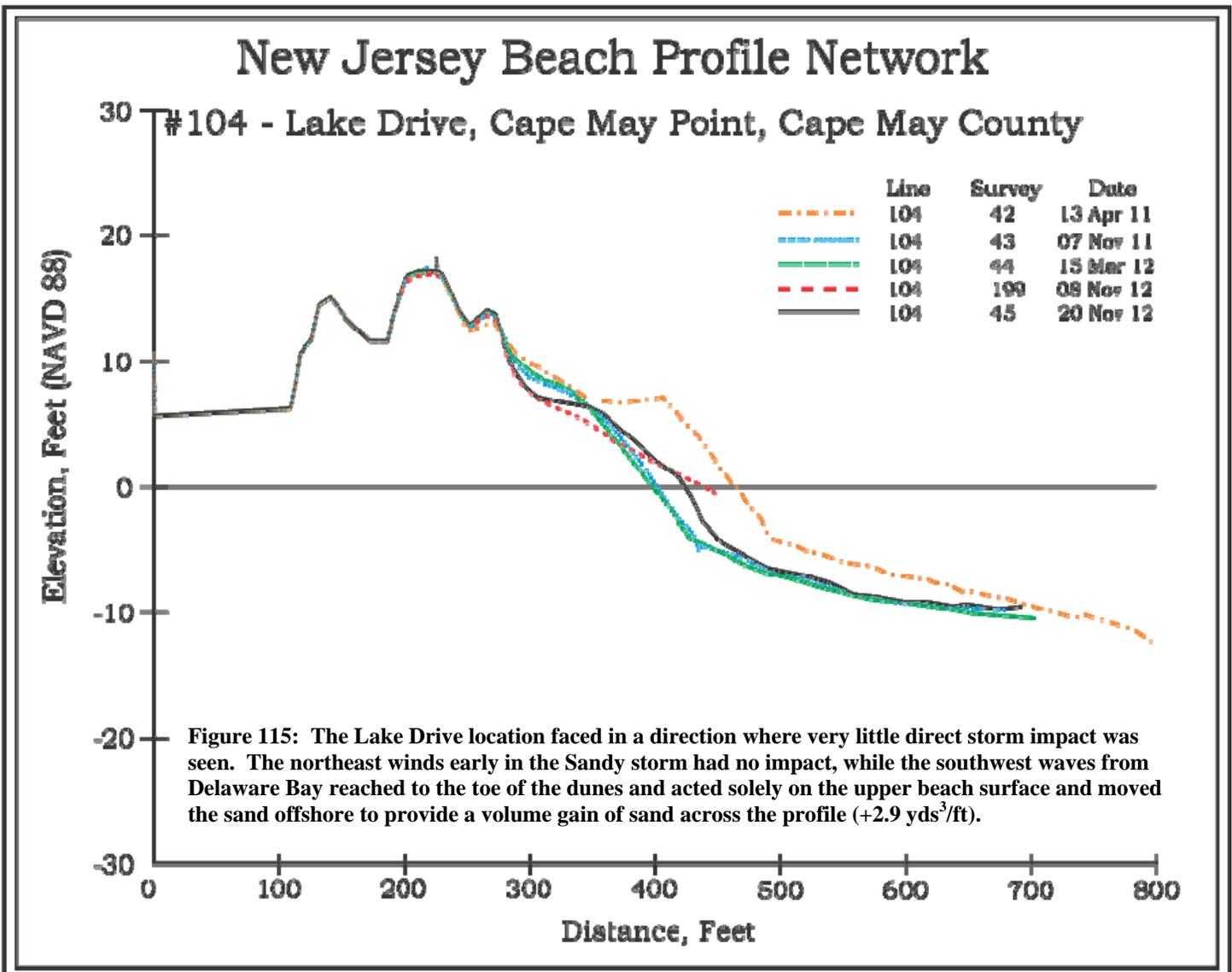
The left picture was taken March 5, 2012 looking toward the terminal groin in Cape May City. The left shot was done November 9th showing the dune erosion and overwash into the newer dune development that has occurred over the past 22 years since the initial beach restoration took place in Cape May City in 1990.



Lake Drive Cape May Point, Cape May County, Site #104;



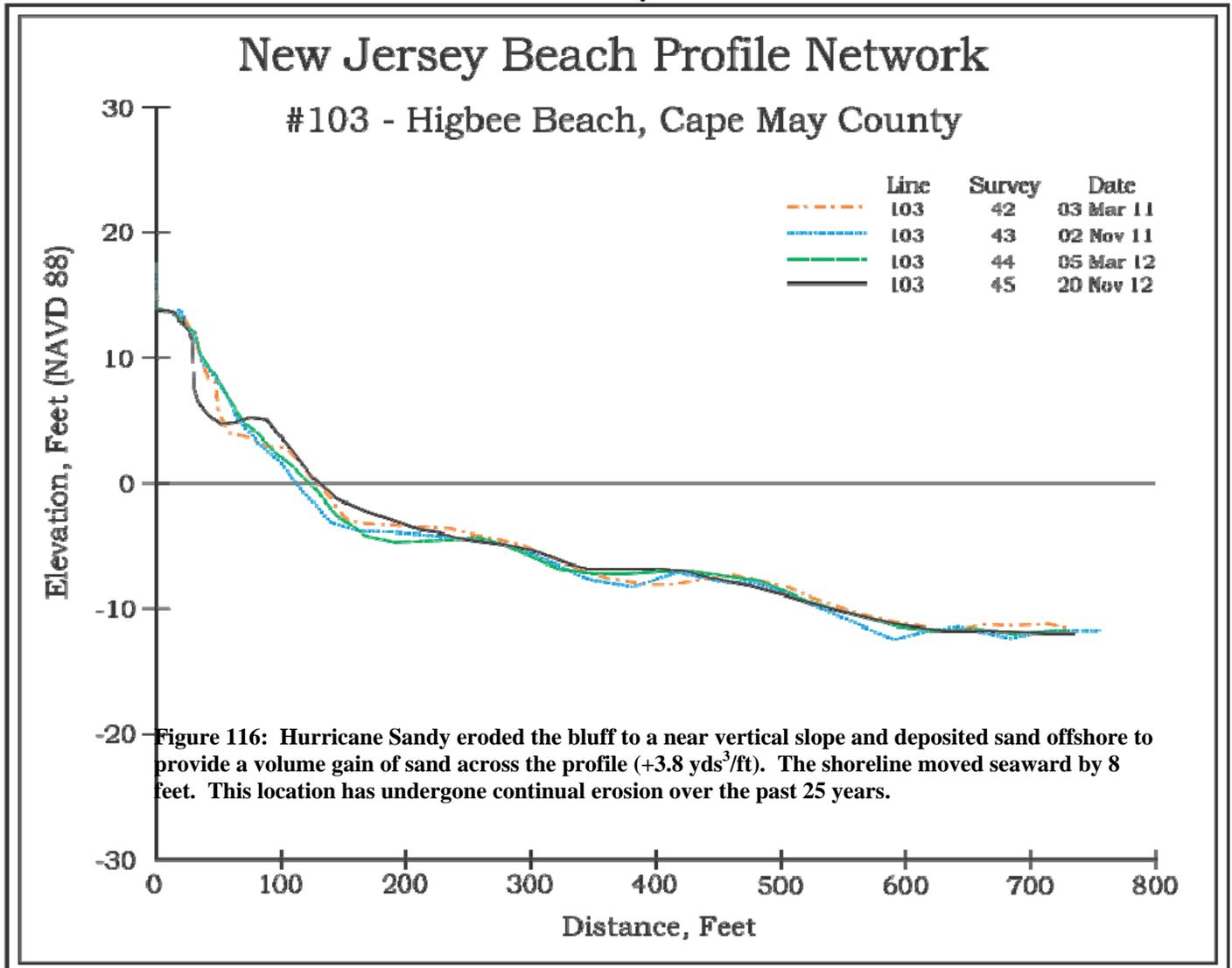
The left picture was taken March 15, 2012 while the post-storm photograph was taken November 20th looking across the dunes to the bay. The beach was reduced in width somewhat, but no erosion occurred in the dunes. This location was essentially untouched by the storm.



Higbee Beach State Park, Cape May County, Site #103;



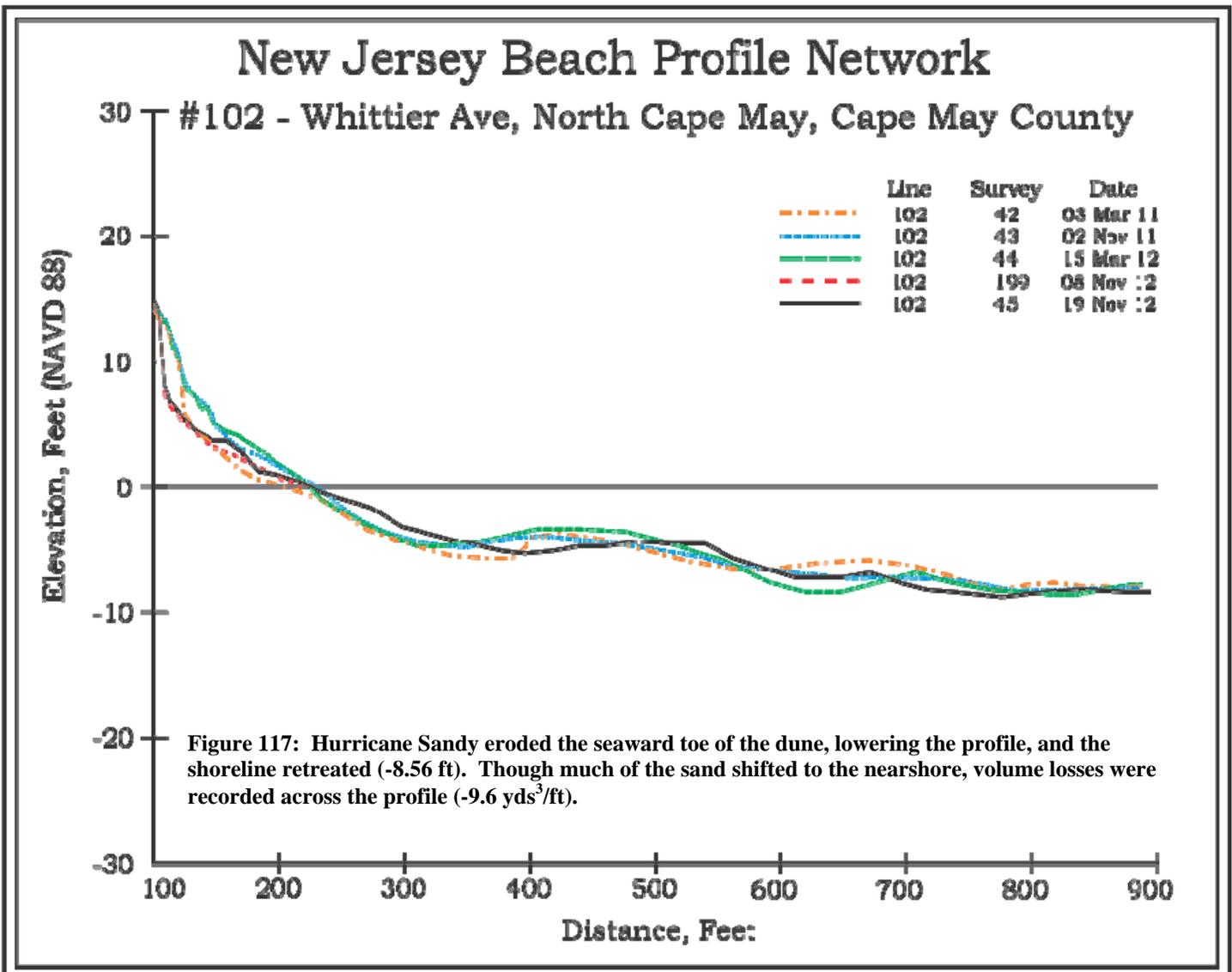
The left picture was taken March 5, 2012 while the post-storm picture on the right was taken November 20, 2012. The shoreline at the State Park, south of the Cape May Canal suffered bluff erosion into the mantle of wind-deposited sand that mantles the scarp. The incipient grasses were stripped away between the high tide line and the base of the bluff during Sandy. The beach was lower but wider with some sand moved into the bay.



Whittier Avenue, North Cape May, Cape May County, Site #102;



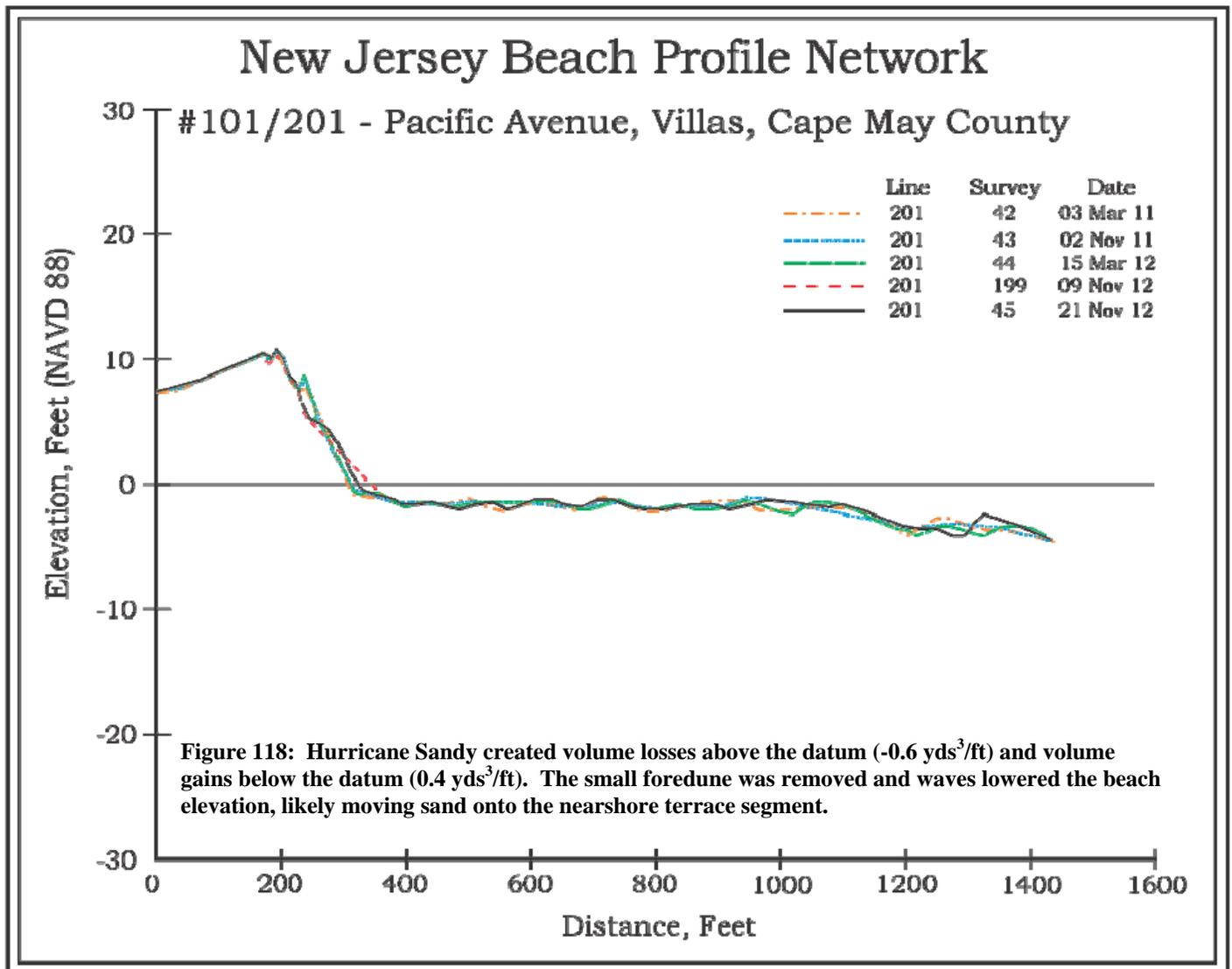
At Whittier Avenue the drainage line shows the extent of beach erosion between March 15, 2012 and after Sandy on November 9th. Sand was moved offshore onto the terrace, but the dune withstood the majority of the Delaware Bay wave assault on this shoreline.



Pacific Avenue, Villas, Cape May County, Site #201;



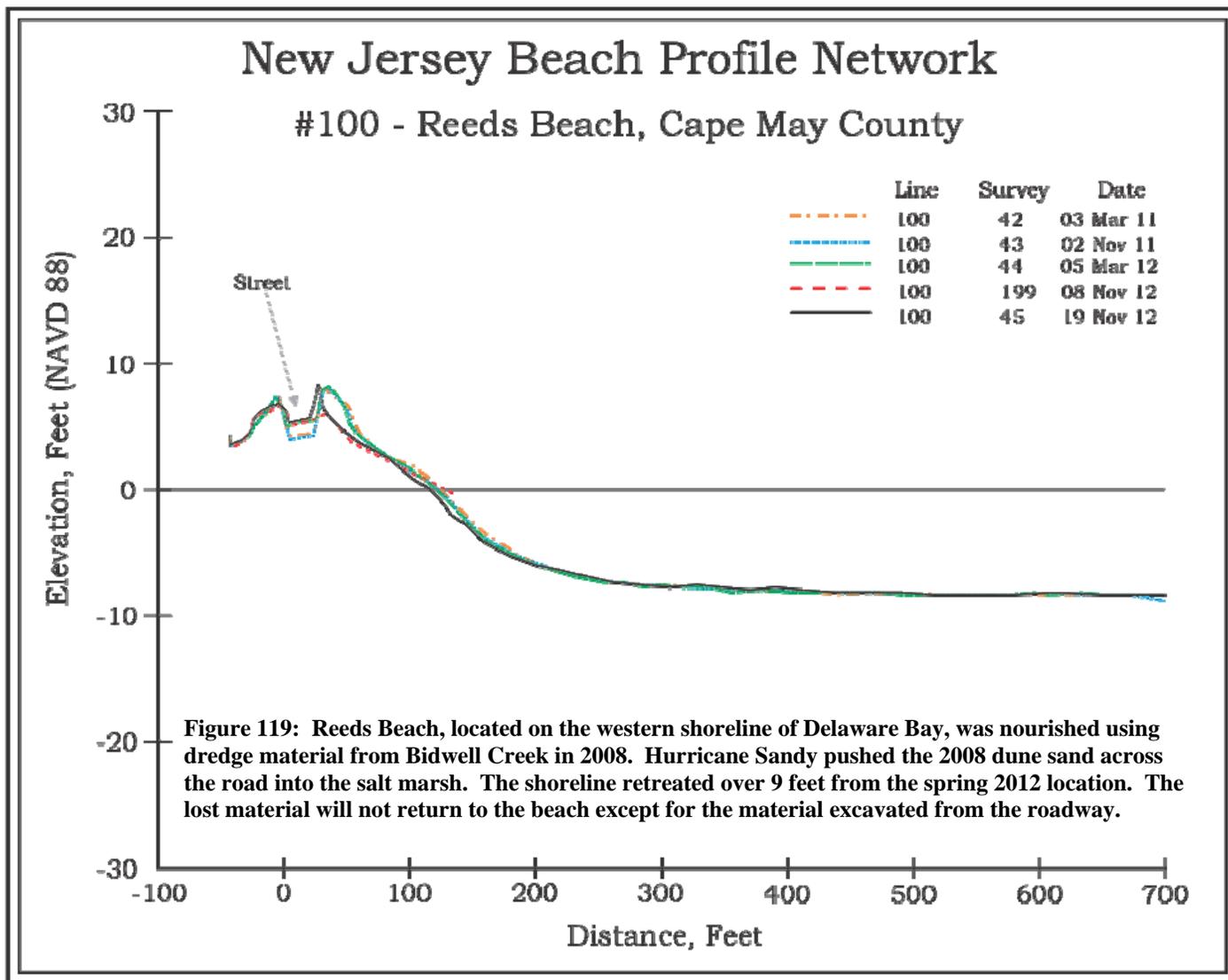
The left view was taken March 7, 2012 looking south along the beachfront. By November 9th the storm impact was found to have eroded the beach into the toe of the dune reducing the beach elevation and creating a minor scarp. The height of the uplands bluff prevented local wave or tidal flooding.



Reeds Beach, Cape May County, Site #100;



The left photograph was taken March 5, 2012 looking south. The dune was vegetated and the beach was higher in elevation compared to the post-Sandy picture on the right taken November 8, 2012. The sand in the center of the right photo has been transferred from the roadway back to the beach as a series of piles.



Summary of Cape May County's Sandy impacts:

Cape May County's good fortune was greatly assisted by being located south of where the center of Sandy's rotation came ashore in New Jersey. The "eye" passed over northern Atlantic County about 9pm Monday night and produced a rapid change in the wind direction from the north-northeast to southwest. This acted to blunt the impact of the second high tide and reduce the wave height somewhat. Values of the elevation for wave run-up on dunes were between 13.5 and 14.5 feet NAVD 88 elevation. This was ten feet lower than similar measurements made in Long Branch, Monmouth County. In addition, many of the Cape May communities had been participants in the Philadelphia Army Corps Shore Protection projects starting in 1989 in Cape May City. Wide beaches with in-depth dune protection provided all the storm-stopping power needed to prevent wave damage and the flooding of the oceanfront streets with sand. A few places suffered mostly due to narrow beaches unable to limit wave impacts on the dunes. The horizontal erosion rates during Sandy were sufficient to cut through and produce overwash into Ocean City in spots, Sea Isle City in a few places, and in Wildwood where there was no dune to stop the water in spite of having the widest municipal beach in New Jersey. In 2009 a dune was incorporated into a beach restoration design for a NJ State – locally sponsored project with the City of North Wildwood. This dune served to demonstrate the difference in wave damage dunes can provide even for a community with an extremely wide natural beach.

The table below shows the sand volume change between either the earlier fall survey at each site or the spring 2012 survey (natural sites) and the post-Hurricane Sandy survey.

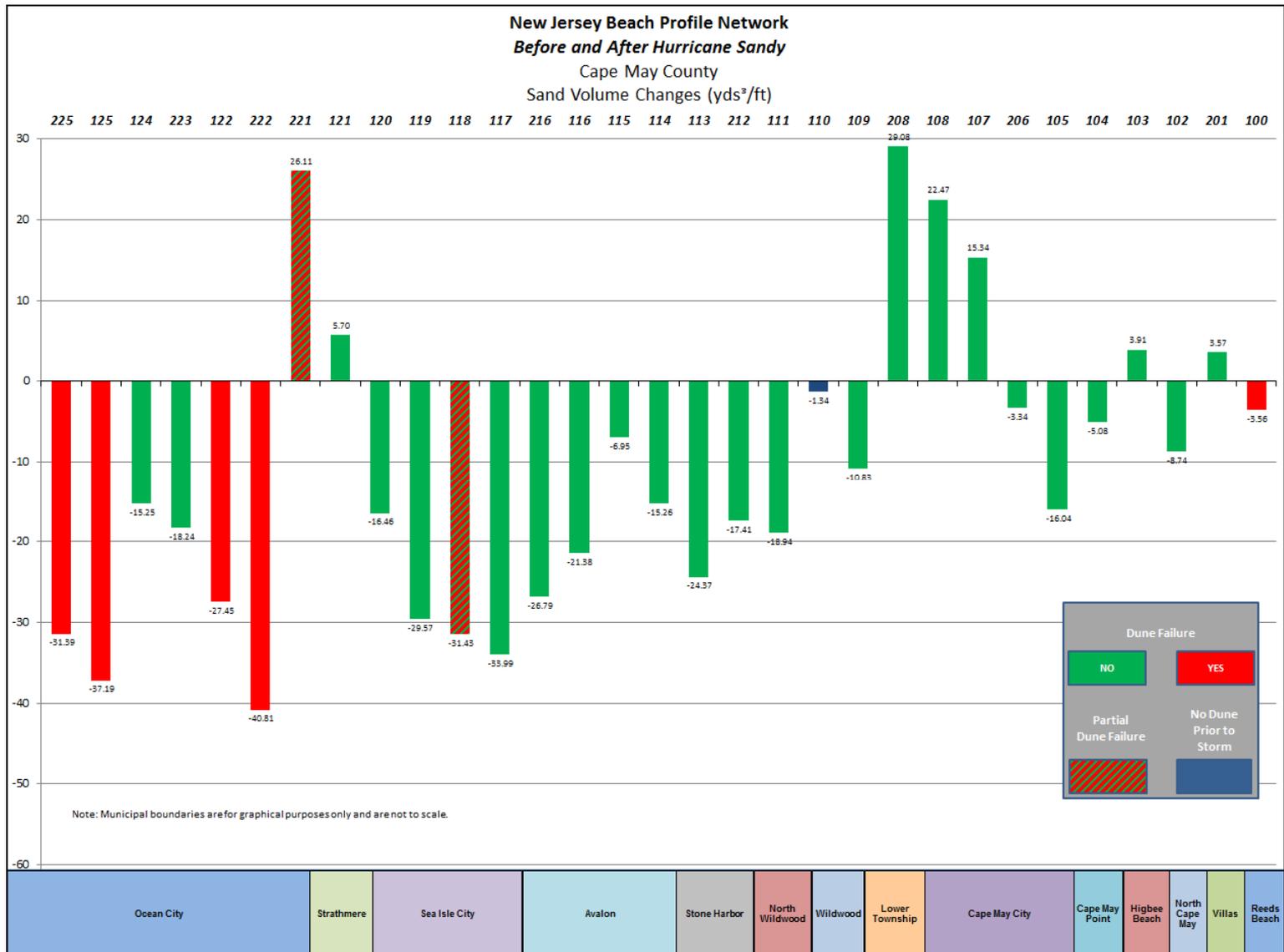


Figure 120. This graphic shows the sand volume loss figures for each of the communities within the developed sections of the Cape May County shoreline. Federal shore protection projects have occurred along this portion of the New Jersey shoreline in Ocean City, Strathmere, Sea Isle City, Avalon, Stone Harbor, North Wildwood, Cape May City, Cape May Point, and Reeds Beach. The engineered beach and dune systems have been maintained by the USACE recently and kept the storm generated waves from breaching the dunes. All sites experienced berm erosion and dune losses except for site 221 Corson’s Inlet State Park, which is undeveloped, site 121 in Strathmere, which recently completed a beach nourishment project, sites 208 Cape May National Wildlife Refuge, sites 108 and 107 in Cape May City, where the orientation of the storm and location of landfall actually created long period swell waves that built up the beach. There were also moderate gains at site 103 in Higbee Beach State Park and site 201 in the Villas, which is located in the Delaware Bay. True dune failures occurred in Ocean City, where the greatest sand volume losses also occurred and overwash of waves transported sand landward of the beach.

Cape May County Post Sandy Volume Changes

MUNICIPALITY	NJBPN Site#	Vol Change cu yds per ft	Average of Sand Loss Between Adjacent Sites (cy/ft)	Dune Failure	Recent Beach Fill	Distance Between Sites (FEET)	Vol Change - Cubic Yards Between Profiles (South to North)	Cumulative Volume Change Cubic Yards (South to North)
Ocean City	225	-31.39	To Inlet	Y	2010	1,006	-31,578	-31,578
Ocean City	125	-37.19	-34.29	Y	2010	3,820	-130,997	-162,576
Ocean City	124	-15.25	-26.22	N	2010	8,108	-212,591	-375,166
Ocean City	223	-18.24	-16.74	N	2010	7,885	-132,027	-507,193
Ocean City	122	-27.45	-22.85	Y	1995	12,271	-280,328	-787,521
Ocean City	222	-40.81	-34.13	Y	1995	2,264	-77,287	-864,808
Corson's Inlet S Park	221	26.11	-7.35	Y-Partial	Never	1,739	-12,786	-877,593
Strathmere	121	5.70	15.90	N	2012	1,241	19,733	-857,861
Sea Isle City	120	-16.46	-5.38	N	2012	7,961	-42,834	-900,694
Sea Isle City	119	-29.57	-23.02	N	2012	6,824	-157,057	-1,057,752
Sea Isle City	118	-31.43	-30.50	Y-partial	2009	9,078	-276,889	-1,334,641
Sea Isle City	117	-33.99	-32.71	N	2009	6,087	-199,107	-1,533,747
Avalon	216	-26.79	-30.39	N	2011	500	-15,195	-1,548,942
Avalon	116	-21.38	-24.08	N	2012	3,921	-94,442	-1,643,385
Avalon	115	-6.95	-14.16	N	Never	3,482	-49,314	-1,692,699
Avalon	114	-15.26	-11.10	N	2011	9,780	-108,606	-1,801,305
Stone Harbor	113	-24.37	-19.81	N	2011	5,633	-111,605	-1,912,910
Stone Harbor	212	-17.41	-20.89	N	2011	9,833	-205,405	-2,118,315
North Wildwood	111	-18.94	-18.17	N	2011	3,582	-65,099	-2,183,414
Wildwood	110	-1.34	-10.14	No Dune	Never	9,987	-101,239	-2,284,653
Lower Township	109	-10.83	-6.08	N	Never	11,296	-68,718	-2,353,371
Lower Township	208	29.08	9.12	N	Never	3,638	33,198	-2,320,174
Cape May City	108	22.47	25.78	N	2010	5,757	148,387	-2,171,787
Cape May City	107	15.34	18.91	N	2010	2,667	50,424	-2,121,363
Cape May City	206	-3.34	6.00	N	2010	9,470	56,841	-2,064,522
Cape May Nature Con	105	-16.04	-9.69	N	2011	1,736	-16,819	-2,081,341
Cape May Point	104	-5.08	-10.56	N	2010	8,393	-88,616	-2,169,957
Higbee Beach S Park	103	3.91	-0.58	N	Never	9,934	-5,801	-2,175,758
North Cape May	102	-8.74	-2.41	N	Never	7,008	-16,914	-2,192,672
Villas	201	3.57	-2.58	N	Never	19,154	-49,484	-2,242,156
Reeds Beach	100	-3.56	0.01	Y	2010	35,265	282	-2,241,874

Figure 121. This table illustrates the changes in sand volume for the 31 Cape May County beach sites with the sand volume for the beach/dune part of the profile in cubic yards of sand per foot of shoreline at that site. The distance between sites (not counting inlets) allows an estimate of sand volume lost between profile locations that are compiled for the entire county in the right-hand column. Local site sand volumes in RED denote locations where Sandy added sand to the beaches and dunes.

TABLE 1
MONMOUTH COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE	42 - 44	43 - 45
LOCATION	S2011-S2012	F2011 - F2012
	(volume expressed as cubic yards per foot)	
187: Cliffwood Beach Park	-4.76	-8.21
286: Union Beach	3.46	2.68
185: Port Monmouth, Spy House Museum	4.84	14.09
285: Gateway National R. A., Gunnison Beach	13.15	18.05
284: Gateway National R. A., Parking Lot E	-32.27	-1.76
184: Highland Beach, Gateway Entrance	-0.52	6.80
183: Highland Beach, Via Ripa St.	-3.43	0.05
282: Sea Bright, Shrewsbury Way	-19.14	-14.85
182: Sea Bright, North of Route 520	-22.90	-22.71
181: Sea Bright, Municipal Beach	-2.12	-23.48
180: Sea Bright, Sunset Court	9.39	10.04
179: Monmouth Beach, Cottage Rd.	225.96	171.75
178: Monmouth Beach, Beach Club	95.31	-1.77
177: Long Branch, 404 Ocean Ave.	33.07	-16.90
176: Long Branch, Seven Presidents Park	13.28	1.11
175: Long Branch, North Broadway Ave.	-12.48	24.26
174: Long Branch, Morris Ave.	-14.46	-28.54
173: Long Branch, West End Ave.	-45.35	-38.86
272: Long Branch 805 Ocean Ave.	-12.72	-14.99
171: Elberon, Pullman Ave.	-23.98	-12.84
170: Deal, Roosevelt Ave.	8.84	16.63
169: Deal, Darlington Ave.	7.32	-2.62
168: Allenhurst, Corlies Ave.	49.77	27.43
267: Asbury Park, 7th Ave.	28.60	12.69
167: Asbury Park, 3rd Ave.	5.07	-11.57
166: Ocean grove, Ocean Pathway	-7.48	-3.49
165: Bradley Beach, McCabe Ave.	-4.65	-23.33
164: Avon-By-The-Sea, Sylvania Ave.	-22.10	-7.65
163: Belmar, 5th Ave.	-4.24	-8.90
162: Belmar, 18th Ave.	-20.20	7.15
161: Spring Lake, Brighton Ave.	-3.61	25.62
160: Spring Lake, Salem Ave.	21.05	17.33
159: Sea Girt, New York Ave.	23.35	24.08
158: Sea Girt, Trenton Ave.	10.96	-17.13
157: Manasquan, Riddle Way	5.04	-2.50
256: Manasquan, Pompano Ave.	-45.68	-51.38

TABLE 2
MONMOUTH COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE LOCATION	42 - 44	43 - 45
	S2011-S2012	F2011 - F2012
	(shoreline change expressed in feet)	
187: Cliffwood Beach Park	-9.0	-2.9
286: Union Beach	-0.8	8.7
185: Port Monmouth, Spy House Museum	-7.3	3.4
285: Gateway National R. A., Gunnison Beach	7.8	168.0
284: Gateway National R. A., Parking Lot E	-30.7	37.9
184: Highland Beach, Gateway Entrance	11.4	-55.3
183: Highland Beach, Via Ripa St.	11.9	-33.4
282: Sea Bright, Shrewsbury Way	-40.7	-111.5
182: Sea Bright, North of Route 520	-1.7	-38.9
181: Sea Bright, Municipal Beach	-15.9	-22.4
180: Sea Bright, Sunset Court	43.9	30.3
179: Monmouth Beach, Cottage Rd.	285.9	244.0
178: Monmouth Beach, Beach Club	138.9	30.7
177: Long Branch, 404 Ocean Ave.	109.7	-4.2
176: Long Branch, Seven Presidents Park	64.9	13.2
175: Long Branch, North Broadway Ave.	6.8	-1.8
174: Long Branch, Morris Ave.	-13.2	-14.1
173: Long Branch, West End Ave.	-10.8	-12.4
272: Long Branch 805 Ocean Ave.	10.91	16.3
171: Elberon, Pullman Ave.	2.7	-9.5
170: Deal, Roosevelt Ave.	28.9	-8.5
169: Deal, Darlington Ave.	21.0	15.4
168: Allenhurst, Corlies Ave.	46.5	33.2
267: Asbury Park, 7th Ave.	45.4	23.6
167: Asbury Park, 3rd Ave.	41.5	6.7
166: Ocean grove, Ocean Pathway	32.2	47.6
165: Bradley Beach, McCabe Ave.	9.4	42.6
164: Avon-By-The-Sea, Sylvania Ave.	10.0	27.5
163: Belmar, 5th Ave.	16.2	5.3
162: Belmar, 18th Ave.	5.2	28.9
161: Spring Lake, Brighton Ave.	25.4	34.5
160: Spring Lake, Salem Ave.	54.0	50.5
159: Sea Girt, New York Ave.	45.7	89.2
158: Sea Girt, Trenton Ave.	60.5	63.0
157: Manasquan, Riddle Way	86.7	21.2
256: Manasquan, Pompano Ave.	19.2	15.6

**TABLE 3
MONMOUTH COUNTY
SEASONAL BEACH VOLUME CHANGES**

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S1-F12	S11-F12
	(volume expressed as cubic yards per foot of beachfront)				
187: Cliffwood Beach Park		-3.81	-0.94	-7.08	-11.92
286: Union Beach		2.86	0.59	2.09	5.50
185: Port Monmouth, Spy House Museum		-6.64	11.44	2.60	7.44
285: Gateway National R. A., Gunnison Beach		-20.84	33.92	-0.92	-1.37
284: Gateway National R. A., Parking Lot E		-45.10	12.83	-14.58	-47.45
184: Highland Beach, Gateway Entrance		-1.31	0.73	6.41	5.71
183: Highland Beach, Via Ripa St.		-2.08	-1.33	1.40	-2.01
282: Sea Bright, Shrewsbury Way		-16.69	-2.62	-5.17	-32.49
182: Sea Bright, North of Route 520		-3.35	-19.13	-2.77	-25.69
181: Sea Bright, Municipal Beach		6.02	-5.54	-14.83	-16.90
180: Sea Bright, Sunset Court		-5.36	14.74	-5.45	5.74
179: Monmouth Beach, Cottage Rd.		12.73	217.08	-42.97	181.88
178: Monmouth Beach, Beach Club		15.13	77.94	-79.17	15.96
177: Long Branch, 404 Ocean Ave.		8.76	24.90	-40.28	-6.79
176: Long Branch, Seven Presidents Park		3.13	10.11	-8.67	4.50
175: Long Branch, North Broadway Ave.		1.63	-12.22	43.40	30.94
174: Long Branch, Morris Ave.		-0.06	-14.63	-14.24	-28.69
173: Long Branch, West End Ave.		-34.24	-11.61	-25.81	-72.88
272: Long Branch 805 Ocean Ave.		-2.51	-9.86	-4.37	-17.78
171: Elberon, Pullman Ave.		-21.16	-3.23	-8.45	-35.14
170: Deal, Roosevelt Ave.		-21.62	30.42	-14.16	-4.93
169: Deal, Darlington Ave.		6.80	0.44	-3.06	4.29
168: Allenhurst, Corlies Ave.		40.65	9.12	16.56	69.83
267: Asbury Park, 7th Ave.		32.42	-3.58	16.66	45.13
167: Asbury Park, 3rd Ave.		15.43	-10.09	-2.71	4.18
166: Ocean grove, Ocean Pathway		-3.74	-3.69	0.05	-7.23
165: Bradley Beach, McCabe Ave.		12.83	-17.64	-6.33	-11.24
164: Avon-By-The-Sea, Sylvania Ave.		-17.45	-4.53	-2.79	-24.99
163: Belmar, 5th Ave.		10.21	-17.52	8.93	3.63
162: Belmar, 18th Ave.		-13.89	-5.66	12.72	-6.55
161: Spring Lake, Brighton Ave.		-26.80	23.21	2.36	-1.32
160: Spring Lake, Salem Ave.		11.66	9.05	8.50	25.34
159: Sea Girt, New York Ave.		17.61	6.45	17.22	40.79
158: Sea Girt, Trenton Ave.		23.70	-12.88	-3.95	6.64
157: Manasquan, Riddle Way		11.78	-5.79	3.03	6.15
256: Manasquan, Pompano Ave.		-11.00	-35.81	-19.31	-56.47

TABLE 4
MONMOUTH COUNTY
SEASONAL SHORELINE CHANGES

PROFILE SITE	Survey	42-43	43-44	44-45	42-45
LOCATION	S11-F11	F11-S12	S1-F12	S11-F12	
		(shoreline change expressed in feet)			
187: Cliffwood Beach Park		-7.4	-1.7	-1.3	-10.3
286: Union Beach		-1.6	0.80	7.9	7.10
185: Port Monmouth, Spy House Museum		-1.9	-5.4	8.8	1.5
285: Gateway National R. A., Gunnison Beach		-47.2	55.0	113.0	120.8
284: Gateway National R. A., Parking Lot E		-70.1	39.3	-1.4	-32.1
184: Highland Beach, Gateway Entrance		20.4	-9.1	-46.3	-34.9
183: Highland Beach, Via Ripa St.		15.4	-3.5	-29.9	-18.0
282: Sea Bright, Shrewsbury Way		-17.2	-23.6	-88.0	-128.7
182: Sea Bright, North of Route 520		26.0	-27.8	-11.1	-12.9
181: Sea Bright, Municipal Beach		22.0	-37.9	15.5	-0.5
180: Sea Bright, Sunset Court		22.1	21.8	8.5	52.4
179: Monmouth Beach, Cottage Rd.		-1.9	287.8	-43.8	242.1
178: Monmouth Beach, Beach Club		22.0	117.0	-86.3	52.6
177: Long Branch, 404 Ocean Ave.		64.3	45.4	-49.5	60.1
176: Long Branch, Seven Presidents Park		44.1	20.7	-7.6	57.3
175: Long Branch, North Broadway Ave.		13.9	-7.1	5.3	12.1
174: Long Branch, Morris Ave.		-12.8	-0.4	-13.7	-26.9
173: Long Branch, West End Ave.		-19.7	8.9	-21.3	-32.1
272: Long Branch 805 Ocean Ave.		19.46	-8.55	24.9	35.8
171: Elberon, Pullman Ave.		3.1	-0.4	-9.2	-6.5
170: Deal, Roosevelt Ave.		12.1	16.8	-25.3	3.6
169: Deal, Darlington Ave.		19.3	1.8	13.7	34.7
168: Allenhurst, Corlies Ave.		44.1	2.4	30.8	77.2
267: Asbury Park, 7th Ave.		43.2	2.2	21.4	66.8
167: Asbury Park, 3rd Ave.		61.1	-19.6	26.4	67.9
166: Ocean grove, Ocean Pathway		8.2	24.0	23.6	55.8
165: Bradley Beach, McCabe Ave.		-5.0	14.4	28.3	37.6
164: Avon-By-The-Sea, Sylvania Ave.		-14.4	24.4	3.2	13.1
163: Belmar, 5th Ave.		16.5	-0.3	5.5	21.8
162: Belmar, 18th Ave.		-7.1	12.2	16.6	21.8
161: Spring Lake, Brighton Ave.		-7.7	33.1	1.4	26.8
160: Spring Lake, Salem Ave.		8.4	45.7	4.8	58.9
159: Sea Girt, New York Ave.		33.5	12.3	76.9	122.7
158: Sea Girt, Trenton Ave.		52.4	8.2	54.8	115.3
157: Manasquan, Riddle Way		35.8	50.9	-29.7	57.1
256: Manasquan, Pompano Ave.		-11.5	30.7	-15.2	4.0

TABLE 5
OCEAN COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE LOCATION	42 - 44	43 - 45
	S2011-S2012	F2011 - F2012
	(volume expressed as cubic yards per foot)	
156: Point Pleasant, Water St.	80.41	40.08
155: Point Pleasant, Maryland Ave.	-17.30	-12.32
154: Bay Head, Johnson Ave.	25.09	17.90
153: Mantoloking, 1117 Ocean Ave.	-5.11	-1.45
152: Brick Townhsip, Public Beach	7.40	-3.37
151: Normandy Beach, 1st Ave	10.97	-2.21
150: Lavallette, White Ave.	4.57	12.29
149: Ortley Beach, 8th Ave.	-12.09	-12.93
248: Seaside, Franklin Ave.	13.33	20.22
148: Seaside Park, 4th Ave.	-2.91	11.35
347: Berkeley Township, 6th Ave.	-6.34	-0.91
247: Island Beach State Park, North	-3.62	-2.70
246: Island Beach State Park, Middle	10.89	-19.16
146: Island Beach State Park, South	7.14	-38.29
245: Barnegat Light, 10th St.	45.38	26.99
145: Barnegat Light, 26th St.	26.37	39.07
144: Loveladies, La Baia St.	34.79	18.22
143: Harvey Cedars, 73rd St.	-36.73	-24.01
142: Harvey Cedars, Tranquility Drive	-25.50	-1.85
241: Surf City, 20th St.	41.65	10.77
141: Ship Bottom, 8th St.	23.01	-6.67
140: Long BeachTownship, 32nd St.	76.60	133.08
139: Long Beach Township, 81st St.	2.08	0.10
138: Long Beach Township, Old Whaling Rd.	-16.69	-2.78
137: Beach Haven, Taylor Ave.	-26.31	-8.68
136: Beach Haven, Dolphin Ave.	-34.49	-24.47
135: Long Beach Township, Webster Ave.	36.40	29.53
234: Long Beach Township, Border w/ Refuge	-71.99	-32.89

TABLE 6
OCEAN COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012
Survey

PROFILE SITE LOCATION	42 - 44	43 - 45
	S2011-S2012	F2011 - F2012
	(shoreline change expressed in feet)	
156: Point Pleasant, Water St.	85.33	45.26
155: Point Pleasant, Maryland Ave.	42.69	-24.81
154: Bay Head, Johnson Ave.	87.59	10.11
153: Mantoloking, 1117 Ocean Ave.	43.43	5.64
152: Brick Township, Public Beach	51.08	18.37
151: Normandy Beach, 1st Ave	35.31	3.52
150: Lavallette, White Ave.	29.79	62.50
149: Ortley Beach, 8th Ave.	77.89	-19.50
248: Seaside, Franklin Ave.	57.99	19.83
148: Seaside Park, 4th Ave.	36.55	17.27
347: Berkeley Township, 6th Ave.	52.48	-5.67
247: Island Beach State Park, North	67.98	34.14
246: Island Beach State Park, Middle	59.51	-45.23
146: Island Beach State Park, South	136.66	-85.57
245: Barnegat Light, 10th St.	68.76	45.71
145: Barnegat Light, 26th St.	39.07	38.59
144: Loveladies, La Baia St.	67.52	93.35
143: Harvey Cedars, 73rd St.	-28.06	9.84
142: Harvey Cedars, Tranquility Drive	-25.36	13.95
241: Surf City, 20th St.	55.56	17.68
141: Ship Bottom, 8th St.	51.83	-7.28
140: Long Beach Township, 32nd St.	141.97	216.12
139: Long Beach Township, 81st St.	-0.79	-0.10
138: Long Beach Township, Old Whaling Rd.	-15.47	11.67
137: Beach Haven, Taylor Ave.	-29.05	-12.84
136: Beach Haven, Dolphin Ave.	-50.05	-6.35
135: Long Beach Township, Webster Ave.	27.71	36.29
234: Long Beach Township, Border w/ Refuge	-111.60	-21.03

**TABLE 7
OCEAN COUNTY
SEASONAL BEACH VOLUME CHANGES**

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S1-F12	S11-F12
		(volume expressed as cubic yards per foot of beachfront)			
156: Point Pleasant, Water St.		54.65	20.78	18.64	96.01
155: Point Pleasant, Maryland Ave.		-4.00	-13.60	2.25	-16.28
154: Bay Head, Johnson Ave.		17.33	7.65	10.17	35.31
153: Mantoloking, 1117 Ocean Ave.		1.67	-6.43	5.15	0.06
152: Brick Township, Public Beach		11.86	-4.46	1.09	8.48
151: Normandy Beach, 1st Ave		13.99	-3.12	0.92	11.80
150: Lavallette, White Ave.		2.59	1.64	10.63	15.12
149: Ortley Beach, 8th Ave.		0.23	-9.27	-3.64	-18.09
248: Seaside, Franklin Ave.		0.23	13.35	6.89	20.15
148: Seaside Park, 4th Ave.		-11.82	8.80	2.42	-0.39
347: Berkeley Township, 6th Ave.		-1.50	-1.55	0.70	-8.19
247: Island Beach State Park, North		-3.24	-0.31	-2.43	-5.93
246: Island Beach State Park, Middle		15.84	-4.95	-19.65	-8.72
146: Island Beach State Park, South		-2.51	9.87	-46.40	-39.50
245: Barnegat Light, 10th St.		41.45	3.93	22.98	68.35
145: Barnegat Light, 26th St.		15.73	10.78	28.38	54.72
144: Loveladies, La Baia St.		21.76	12.85	5.34	40.28
143: Harvey Cedars, 73rd St.		-28.07	-8.69	-15.37	-52.03
142: Harvey Cedars, Tranquility Drive		-13.81	-12.29	9.99	-15.51
241: Surf City, 20th St.		42.95	-1.47	12.25	53.70
141: Ship Bottom, 8th St.		30.10	-7.09	0.43	24.30
140: Long Beach Township, 32nd St.		-41.21	117.95	14.98	91.67
139: Long Beach Township, 81st St.		9.02	-7.37	6.99	9.17
138: Long Beach Township, Old Whaling Rd.		1.02	-17.71	14.84	-1.76
137: Beach Haven, Taylor Ave.		-22.37	-4.03	-4.54	-30.87
136: Beach Haven, Dolphin Ave.		-17.29	-16.93	-7.95	-42.16
135: Long Beach Township, Webster Ave.		12.65	23.74	5.78	42.20
234: Long Beach Township, Border w/ Refuge		-71.65	-0.30	-32.75	-104.56

TABLE 8
OCEAN COUNTY
SEASONAL SHORELINE CHANGES

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S1-F12	S11-F12
			(shoreline change expressed in feet)		
156: Point Pleasant, Water St.		55.92	29.42	15.88	101.21
155: Point Pleasant, Maryland Ave.		57.54	-14.85	-9.96	32.73
154: Bay Head, Johnson Ave.		79.78	7.81	2.30	89.89
153: Mantoloking, 1117 Ocean Ave.		26.68	16.75	-11.11	32.32
152: Brick Township, Public Beach		19.98	31.10	-12.73	38.35
151: Normandy Beach, 1st Ave		40.11	-4.81	8.33	43.64
150: Lavallette, White Ave.		23.34	6.44	56.06	85.84
149: Ortley Beach, 8th Ave.		81.88	-3.99	-15.51	62.38
248: Seaside, Franklin Ave.		23.93	34.06	-14.23	43.76
148: Seaside Park, 4th Ave.		1.87	34.67	-17.40	19.14
347: Berkeley Township, 6th Ave.		29.05	23.42	-29.09	23.39
247: Island Beach State Park, North		8.00	59.98	-25.84	42.15
246: Island Beach State Park, Middle		21.86	37.65	-82.89	-23.37
146: Island Beach State Park, South		42.16	94.50	-180.07	-43.41
245: Barnegat Light, 10th St.		63.02	5.73	39.98	108.73
145: Barnegat Light, 26th St.		18.48	20.60	18.00	57.07
144: Loveladies, La Baia St.		22.39	45.13	48.22	115.74
143: Harvey Cedars, 73rd St.		-12.69	-15.37	25.20	-2.85
142: Harvey Cedars, Tranquility Drive		13.56	-38.91	52.86	27.50
241: Surf City, 20th St.		59.01	-3.45	21.12	76.68
141: Ship Bottom, 8th St.		53.72	-1.89	-5.37	46.46
140: Long Beach Township, 32nd St.		-59.68	201.65	14.47	156.44
139: Long Beach Township, 81st St.		5.14	-5.94	5.83	5.04
138: Long Beach Township, Old Whaling Rd.		-14.49	-0.99	12.66	-2.81
137: Beach Haven, Taylor Ave.		-33.28	4.23	-17.07	-46.13
136: Beach Haven, Dolphin Ave.		-27.42	-22.63	16.28	-33.77
135: Long Beach Township, Webster Ave.		1.22	26.49	9.80	37.51
234: Long Beach Township, Border w/Refuge		-120.55	8.95	-29.99	-141.59

TABLE 9
ATLANTIC COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE LOCATION	42 - 44	43 - 45
	S2011-S2012	F2011 - F2012
	(volume expressed as cubic yards per foot)	
134: Brigantine, Green Acres	14.14	7.40
133: Brigantine, 4th Street North	3.18	7.32
132: Brigantine, 15th Street South	-13.72	1.94
131: Brigantine, 43rd Street South	30.94	3.93
230: Atlantic City, Rhode Island Ave.	95.21	45.28
130: Atlantic City, North Carolina Ave.	177.96	75.21
129: Atlantic City, Raleigh Ave.	19.47	18.07
128: Ventnor City, Dorset Ave.	12.95	44.75
127: Margate City, Benson Ave.	23.32	-16.52
126: Longport, 17th St.	14.16	2.22

TABLE 10
ATLANTIC COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE LOCATION	42 - 44	43 - 45
	S2011-S2012	F2011 - F2012
	(shoreline change expressed in feet)	
134: Brigantine, Green Acres	24.6	-3.4
133: Brigantine, 4th Street North	56.2	10.1
132: Brigantine, 15th Street South	-10.7	-42.6
131: Brigantine, 43rd Street South	25.9	50.4
230: Atlantic City, Rhode Island Ave.	-160.1	99.4
130: Atlantic City, North Carolina Ave.	214.1	124.1
129: Atlantic City, Raleigh Ave.	11.3	-34.2
128: Ventnor City, Dorset Ave.	15.2	6.5
127: Margate City, Benson Ave.	51.0	-28.3
126: Longport, 17th St.	17.7	-1.9

**TABLE 11
ATLANTIC COUNTY
SEASONAL BEACH VOLUME CHANGES**

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S12-F12	S11-F12
		(volume expressed as cubic yards per foot of beachfront)			
134: Brigantine, Green Acres		25.52	-11.38	18.78	32.92
133: Brigantine, 4th Street North		1.39	1.79	5.51	8.72
132: Brigantine, 15th Street South		-9.51	-3.97	5.89	-8.04
131: Brigantine, 43rd Street South		38.82	-8.39	13.19	42.84
230: Atlantic City, Rhode Island Ave.		141.35	48.58	-30.47	186.84
130: Atlantic City, North Carolina Ave.		116.41	61.69	12.92	191.12
129: Atlantic City, Raleigh Ave.		-1.00	20.45	-2.22	17.22
128: Ventnor City, Dorset Ave.		3.39	9.62	34.83	47.52
127: Margate City, Benson Ave.		5.76	17.00	-32.99	-9.84
126: Longport, 17th St.		15.52	-0.73	2.95	17.11

**TABLE 12
ATLANTIC COUNTY
SEASONAL SHORELINE CHANGES**

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S12-F12	S11-F12
		(shoreline change expressed in feet)			
134: Brigantine, Green Acres		29.8	-5.1	1.7	26.3
133: Brigantine, 4th Street North		-8.4	64.6	-54.5	1.7
132: Brigantine, 15th Street South		-31.0	20.3	-62.9	-73.6
131: Brigantine, 43rd Street South		-43.2	69.0	-18.6	7.3
230: Atlantic City, Rhode Island Ave.		49.5	-209.6	309.0	148.9
130: Atlantic City, North Carolina Ave.		131.9	82.2	41.9	256.0
129: Atlantic City, Raleigh Ave.		2.6	8.7	-42.9	-31.6
128: Ventnor City, Dorset Ave.		14.9	30.0	36.5	21.4
127: Margate City, Benson Ave.		31.5	19.5	-47.8	3.2
126: Longport, 17th St.		-4.5	22.2	-24.1	-6.4

TABLE 13
CAPE MAY COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

PROFILE SITE LOCATION	Survey	
	42 - 44 S2011-S2012	43 - 45 F2011 - F2012
	(volume expressed as cubic yards per foot)	
225: Ocean City, Gardens Rd.	-43.74	-5.81
125: Ocean City, 6th St.	-55.93	-11.86
124: Ocean City, 20th St.	34.90	-2.80
223: Ocean City, 34th St.	35.60	-9.04
122: Ocean City, 56th St.	-2.32	6.89
222: Ocean City, 59th St.	-53.02	-55.66
221: Corson's Inlet Park, Ocean City	-97.52	-28.81
121: Strathmere, Williams Rd.	16.91	82.33
120: Sea Isle City, 1st St.	48.82	34.44
119: Sea Isle City, 25th St.	-2.22	13.93
118: Sea Isle City, 57th St.	10.06	30.82
117: Sea Isle City, 80th St.	-8.92	-12.01
216: Avalon, 9th St.	-11.99	-24.00
116: Avalon, 23rd St.	-33.80	14.89
115: Avalon, 35th St.	31.95	8.83
114: Avalon, 70th St.	23.06	9.85
113: Stone Harbor, 90th St.	-7.34	-11.78
212: Stone Harbor, 121st St.	-39.42	-16.97
112: Stone Harbor, South Pointe	** NO LONGER ACTIVE **	
111: North Wildwood, 15th Ave.	21.81	-35.12
110: Wildwood, Cresse Ave.	26.70	29.37
109: Lower Township, Raleigh Ave.	24.46	-11.23
208: Lower Township, U.S.C.G. Base	-29.81	7.53
108: Cape May, Beach Club	52.25	44.54
107: Cape May, Baltimore Ave.	-0.71	2.45
206: Cape May, Broadway Ave.	11.29	-0.68
105: Cape May, Nature Conservancy	-73.16	-8.62
104: Cape May Point, Lake Dr.	-47.47	5.88
103: Higbee Beach State Park	-4.27	10.71
102: North Cape May, Whittier	6.81	-6.70
101: Villas, Pacific Ave.	1.01	3.29
100: Reeds Beach, Beach Ave.	-1.59	-0.58

TABLE 14
CAPE MAY COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2011 - SPRING 2012 & FALL 2011 - FALL 2012

Survey

PROFILE SITE LOCATION	42 - 44 S2011-S2012	43 - 45 F2011 - F2012
	(shoreline change expressed in feet)	
225: Ocean City, Gardens Rd.	-49.2	-49.1
125: Ocean City, 6th St.	-54.2	-10.9
124: Ocean City, 20th St.	68.5	24.0
223: Ocean City, 34th St.	29.6	-34.7
122: Ocean City, 56th St.	18.0	-21.4
222: Ocean City, 59th St.	-86.7	-69.9
221: Corson's Inlet Park, Ocean City	-78.5	-63.5
121: Strathmere, Williams Rd.	88.6	72.1
120: Sea Isle City, 1st St.	92.3	11.0
119: Sea Isle City, 25th St.	23.0	46.8
118: Sea Isle City, 57th St.	73.2	14.2
117: Sea Isle City, 80th St.	26.4	21.7
216: Avalon, 9th St.	-42.8	-41.6
116: Avalon, 23rd St.	-115.1	24.8
115: Avalon, 35th St.	34.9	11.8
114: Avalon, 70th St.	13.7	-7.7
113: Stone Harbor, 90th St.	-1.4	10.1
212: Stone Harbor, 121st St.	-56.6	19.0
112: Stone Harbor, South Pointe	** NO LONGER ACTIVE **	
111: North Wildwood, 15th Ave.	46.0	-38.5
110: Wildwood, Cresse Ave.	73.8	-62.1
109: Lower Township, Raleigh Ave.	57.8	-47.8
208: Lower Township, U.S.C.G. Base	-33.5	-25.2
108: Cape May, Beach Club	61.0	72.7
107: Cape May, Baltimore Ave.	12.7	27.7
206: Cape May, Broadway Ave.	-2.9	-39.3
105: Cape May, Nature Conservancy	-156.7	-62.9
104: Cape May Point, Lake Dr.	-66.7	22.4
103: Higbee Beach State Park	-6.2	18.6
102: North Cape May, Whhittier	20.4	-5.3
101: Villas, Pacific Ave.	4.0	13.3
100: Reeds Beach, Beach Ave.	-4.5	-6.5

TABLE 15
CAPE MAY COUNTY
SEASONAL BEACH VOLUME CHANGES

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S1-F12	S11-F12
		(volume expressed as cubic yards per foot of beachfront)			
225: Ocean City, Gardens Rd.		-13.72	-29.98	24.29	-19.49
125: Ocean City, 6th St.		-38.00	-17.92	6.64	-48.83
124: Ocean City, 20th St.		39.02	-4.19	1.43	36.15
223: Ocean City, 34th St.		25.95	9.59	-18.97	16.62
122: Ocean City, 56th St.		-7.41	2.64	2.16	2.12
222: Ocean City, 59th St.		-38.09	-14.31	-40.81	-94.68
221: Corson's Inlet Park, Ocean City		-50.79	-37.18	26.19	-73.93
121: Strathmere, Williams Rd.		-89.48	105.95	-24.03	-7.09
120: Sea Isle City, 1st St.		19.44	29.57	4.99	54.20
119: Sea Isle City, 25th St.		-2.90	0.67	13.26	11.14
118: Sea Isle City, 57th St.		-13.26	23.30	7.52	17.63
117: Sea Isle City, 80th St.		-2.57	-5.97	-6.14	-14.87
216: Avalon, 9th St.		-17.10	5.15	-23.31	-49.23
116: Avalon, 23rd St.		-49.93	16.76	4.34	-44.76
115: Avalon, 35th St.		40.39	-8.42	18.92	48.41
114: Avalon, 70th St.		36.55	-13.45	24.14	47.64
113: Stone Harbor, 90th St.		-0.05	-7.74	-4.38	-11.64
212: Stone Harbor, 121st St.		-26.28	-13.26	-3.62	-43.24
112: Stone Harbor, South Pointe		** NO LONGER ACTIVE **			
111: North Wildwood, 15th Ave.		4.77	17.00	-52.10	-30.51
110: Wildwood, Cresse Ave.		19.87	6.88	22.83	49.88
109: Lower Township, Raleigh Ave.		10.49	14.03	-24.67	-1.63
208: Lower Township, U.S.C.G. Base		-8.46	-21.49	28.95	-0.98
108: Cape May, Beach Club		2.09	48.39	-4.61	46.63
107: Cape May, Baltimore Ave.		-6.59	5.73	-3.42	-3.65
206: Cape May, Broadway Ave.		-8.26	20.23	-20.79	-9.80
105: Cape May, Nature Conservancy		-87.37	14.20	-22.84	-96.01
104: Cape May Point, Lake Dr.		-44.36	-2.22	8.39	-38.69
103: Higbee Beach State Park		-11.16	6.88	3.85	-0.41
102: North Cape May, Whittier Ave.		6.60	0.23	-6.95	-0.09
101: Villas, Pacific Ave.		2.46	-1.45	4.73	5.75
100: Reeds Beach, Beach Ave.		-1.49	0.06	-0.80	-2.41

**TABLE 16
CAPE MAY COUNTY
SEASONAL SHORELINE CHANGES**

PROFILE SITE LOCATION	Survey	42-43	43-44	44-45	42-45
		S11-F11	F11-S12	S1-F12	S11-F12
		(shoreline change expressed in feet)			
225: Ocean City, Gardens Rd.		-5.2	-44.0	-5.0	-54.3
125: Ocean City, 6th St.		-42.2	-12.0	1.1	-53.1
124: Ocean City, 20th St.		109.6	-41.1	65.1	133.6
223: Ocean City, 34th St.		24.9	4.7	-39.4	-9.8
122: Ocean City, 56th St.		5.8	12.1	-33.6	-15.6
222: Ocean City, 59th St.		-44.4	-42.3	-27.5	-114.2
221: Corson's Inlet Park, Ocean City		-72.2	-6.3	-57.2	-135.6
121: Strathmere, Williams Rd.		-117.3	205.9	-133.8	-45.2
120: Sea Isle City, 1st St.		52.9	39.4	-28.5	63.8
119: Sea Isle City, 25th St..		28.9	-5.9	52.8	75.8
118: Sea Isle City, 57th St..		52.0	21.2	-7.0	66.2
117: Sea Isle City, 80th St..		28.6	-2.2	23.9	50.3
216: Avalon, 9th St.		-62.5	19.7	-61.4	-104.2
116: Avalon, 23rd St.		-142.3	27.2	-2.4	117.5
115: Avalon, 35th St.		5.4	-40.3	52.1	17.2
114: Avalon, 70th St.		55.7	-41.9	34.2	47.9
113: Stone Harbor, 90th St.		-32.2	30.8	-20.7	-22.0
212: Stone Harbor, 121st St.		-68.3	11.7	7.3	-49.4
112: Stone Harbor, South Pointe		** NO LONGER ACTIVE **			
111: North Wildwood, 15th Ave.		16.1	29.9	-68.4	-22.5
110: Wildwood, Cresse Ave.		76.3	-2.4	-59.7	14.2
109: Lower Township, Raleigh Ave.		71.2	-13.5	-34.4	23.4
208: Lower Township, U.S.C.G. Base		-12.2	-21.2	-4.0	-37.4
108: Cape May, Beach Club		-9.9	70.9	1.7	62.7
107: Cape May, Baltimore Ave.		-2.9	15.5	12.2	24.8
206: Cape May, Broadway Ave.		-7.4	4.5	-43.8	-46.7
105: Cape May, Nature Conservancy		-186.0	29.3	-92.2	-248.9
104: Cape May Point, Lake Dr.		-63.2	-3.4	25.9	-40.8
103: Higbee Beach State Park		-16.5	10.4	8.2	2.1
102: North Cape May, Whittier Ave.		26.9	-6.5	1.2	21.6
101: Villas, Pacific Ave.		4.7	-0.7	14.0	18.0
100: Reeds Beach, Beach Ave.		-2.1	-2.4	-4.1	-8.5