



## **New Jersey Beach Profile Network**

# **Atlantic County**

**Little Egg Inlet  
to Great Egg Harbor Inlet**

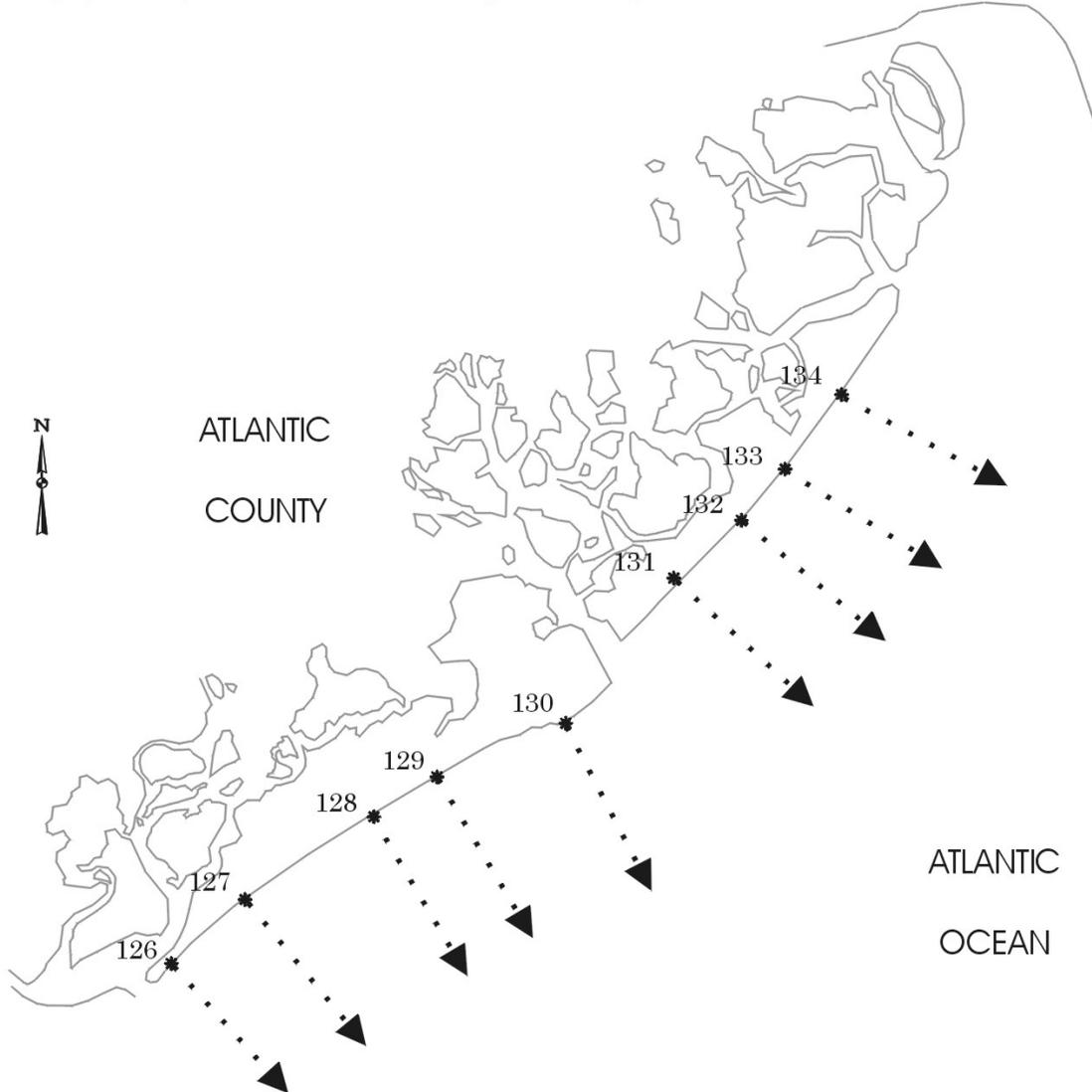
**NJBPN Profile #'s  
134 - 126**



## New Jersey Beach Profile Network Atlantic County Profile Site Locations

Figure 70

There are nine 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 bordered by Little Egg Inlet to the north and by Brigantine Inlet to the south. Little Beach is part of the Forsythe National Wildlife Refuge and is therefore not surveyed. South of Brigantine Inlet lay Brigantine Island, the northern third of which remains undeveloped as part of the New Jersey Green Acres program. There is one survey site along the undeveloped portion of the Brigantine shoreline and three additional sites on the developed portion. Absecon Inlet separates Brigantine Island from Absecon Island. The Absecon Island communities, Atlantic City, Ventnor, Margate, and Longport, are all highly developed. There are five beach profile survey sites in the communities of Absecon Island.



## ATLANTIC COUNTY – 2006 to 2008

The Atlantic County oceanfront shoreline consists of three barrier islands where the northern one, Little Beach Island and a third of the second, Brigantine Island, are undeveloped and in a natural state. The City of Brigantine occupies the remainder of the second island and Absecon Island is home to Atlantic City, Ventnor City, Margate City, and the Borough of Longport. These communities have been the direct and indirect beneficiaries of federally sponsored beach nourishment projects that have substantially added to the beach width, sand volume and enhanced the dune protection for landward properties. The Absecon Island project was completed in 2002 with sand derived from Absecon Inlet. The refusal of Margate City and Longport to participate in the project has resulted in a significant loss of sand from the southern third of Ventnor City beaches through end effect erosion where sand is transported (south) to the areas not initially replenished. The NJBPN surveys have documented substantial increases in sand volume at Benson Avenue in Margate and a minor increase all the way south at 17<sup>th</sup> Street in Longport. The Ventnor City profile is located in the middle of the municipal shoreline and has remained stable because it is well north of the project's termination at the border with Margate City. End-effect erosion from fill projects is a significant reason for continuity of projects across an entire barrier island or between inlets.

Recent erosion has renewed concern for beach losses at the northernmost beaches of Atlantic City near Absecon Inlet. This erosional hot spot continued to retreat after completion of the federally sponsored Absecon Island beach nourishment project. Erosion has brought wave action to the toe of the dunes near Massachusetts Avenue and the loss of much of the remaining dune profile during minor northeasters in the late spring of 2008.

The City of Brigantine received beach sand derived from Brigantine Inlet during 2006 to renourish the erosional area located at the northern end of the development on the island. This area has been the site of three projects between 1997, 2001 and 2006. The first two were NJ State and locally sponsored with the 1997 initial fill amounting to 1,000,000 cubic yards of new sand. Lesser amounts have been added subsequently during maintenance projects, but the segment at the extreme north end of development in the City of Brigantine is a continuing zone of instability. Sand moves south toward the north jetty at Absecon Inlet creating a massive beach seaward of the development at the 43<sup>rd</sup> Street profile site. The loss of sand to the north has been a direct benefit to the City beaches to the south. Suggestions have been made to seriously evaluate various methods to collect the sand in the south and transport it back to the erosion zone to begin the process all over again. This would do two things; lower the costs to mobilizing inlet or offshore pumping projects and recycle the sand supply so that repetitive mining of the Brigantine Inlet tidal shoals can be drastically reduced.

The lack of Congressional appropriations under the WRDA 2007 act has precluded the ACOE from undertaking the maintenance required to these projects that was included in the agreements signed by the federal government, the State of NJ and the local municipality. These funds are authorized, but have not been appropriated under the 110<sup>th</sup> Congress.



Figure 190. This site location was established in 1973 as part of a study of shoreline changes related to a proposed nuclear power plant for the region offshore from Little Egg Inlet between Little Beach and Long Beach Island. The last major change was directly the result of the December 1992 northeast storm where the sea washed through the dunes and back into Widgeon Bay behind the beach. A vast sand plain extended from the berm about 800 feet westward into the bay. This dune shown in these photographs has developed around a single row of straight sand fencing installed in 1998. No work was done to either enhance or vegetate this dune system and the row of fencing is now nearly 100 feet inland from the dune toe.

## **GREEN ACRES SITE – SITE 134**

Figure 191. The view to the north shows a seaward slope to the dune, a reasonably wide beach and a bar system marked by breaking waves offshore (May 6, 2006).





Figure 192. The view to the south across the entire dune width shows the extensive development in vegetation cover since December 1992. The row of taller plants on the right side of the picture is bayberry and phragmites growing along the over wash line established after that storm. The beach has been in excellent condition over the past decade. This past 18 months has seen a 23.34 yds<sup>3</sup>/ft sand volume gain and a 102-foot shoreline advance as Brigantine Inlet sand has migrated south toward this location

## **GREEN ACRES SITE – SITE 134**

Figure 193. This view taken October 23, 2007, shows the width of the beach from the low tide position back to the seaward dune slope.



# New Jersey Beach Profile Network

#134 - Green Acres Area, Brigantine, Atlantic County

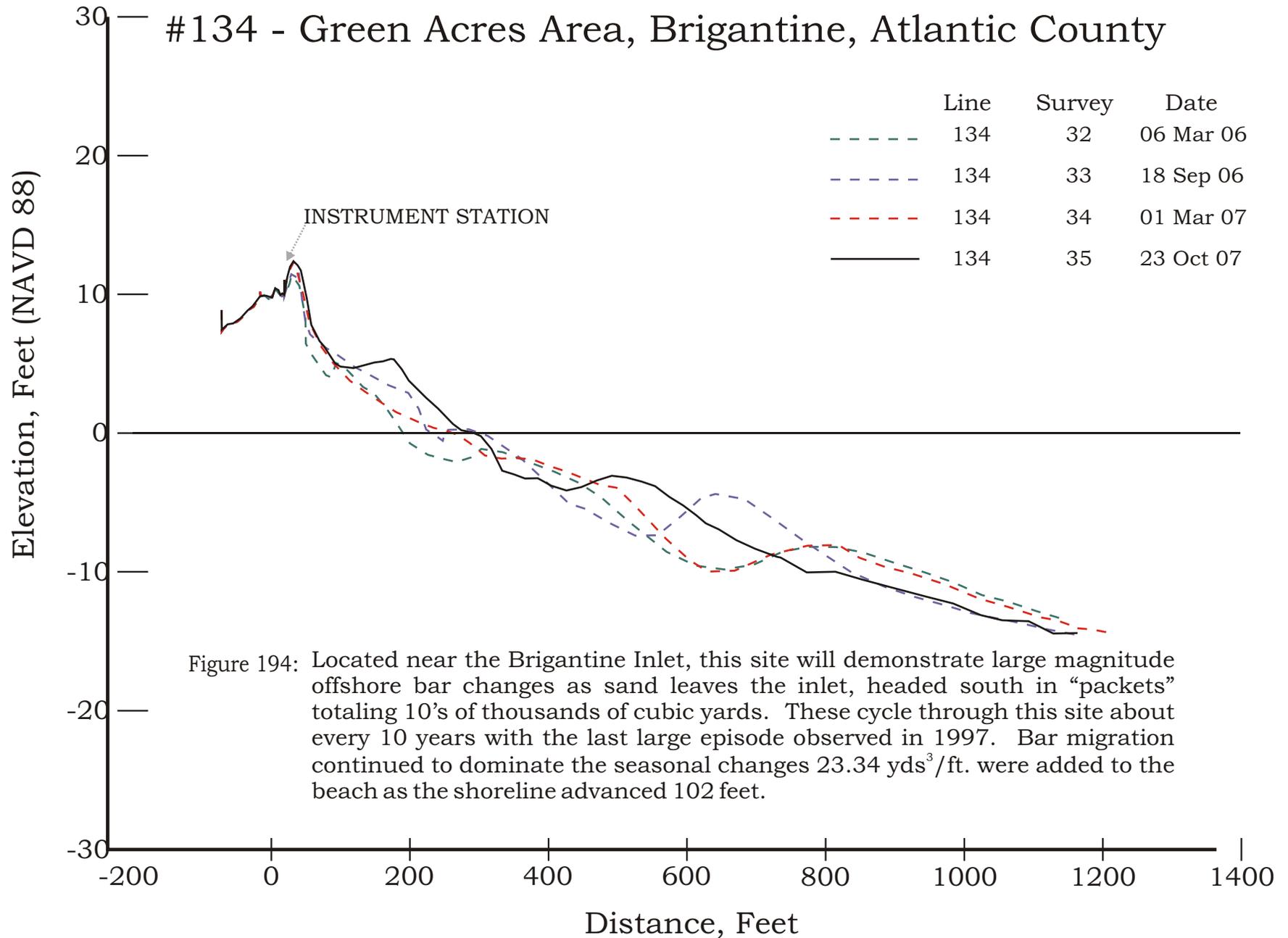




Figure 195. This site is at the northern end of development in Brigantine, but at the southern end of the original 1997 beach nourishment project. The beach has retreated from the “as-built” width, but remains in far better condition than it was prior to the 1997 project. Work by the City and State in 2001 restored this beach then Federal project undertook the initial ACOE-sponsored work. This finished in 2006 extending reconstruction 10 blocks further south with modest sand volumes.

## 4<sup>th</sup> ST. NORTH, BRIGANTINE – SITE 133

Figure 196. This view across the dunes at 4<sup>th</sup> Street North shows secondary vegetation colonization between the buildings and the dune crest. The post-construction beach condition is far superior to that present in 1997. There has been no structural storm damage since the 1992 northeast storm.





Figure 197. By May 23, 2007 the vegetation was essentially unchanged and the beach was in similar condition to that present in the spring of 2006. This beach maintained a small sand volume increase (3.56 yds<sup>3</sup>/ft) but saw a 43-foot retreat in the shoreline position as sand continued to move south past this location from the 2006 fill.

## **4<sup>th</sup> STREET, BRIGANTINE – SITE 133**

Figure 198. The upper beach remained wide and as ample protection for minor storm impact on the dune toe. The northern feeder beach supplies sand to the project and since the site lies at the southern end of major beach nourishment; the response to sand loss is later in the cycle than the erosion results observed at the northern limit of municipal development along this shoreline.



# New Jersey Beach Profile Network

#133 - 4<sup>th</sup> Street North, Brigantine, Atlantic County

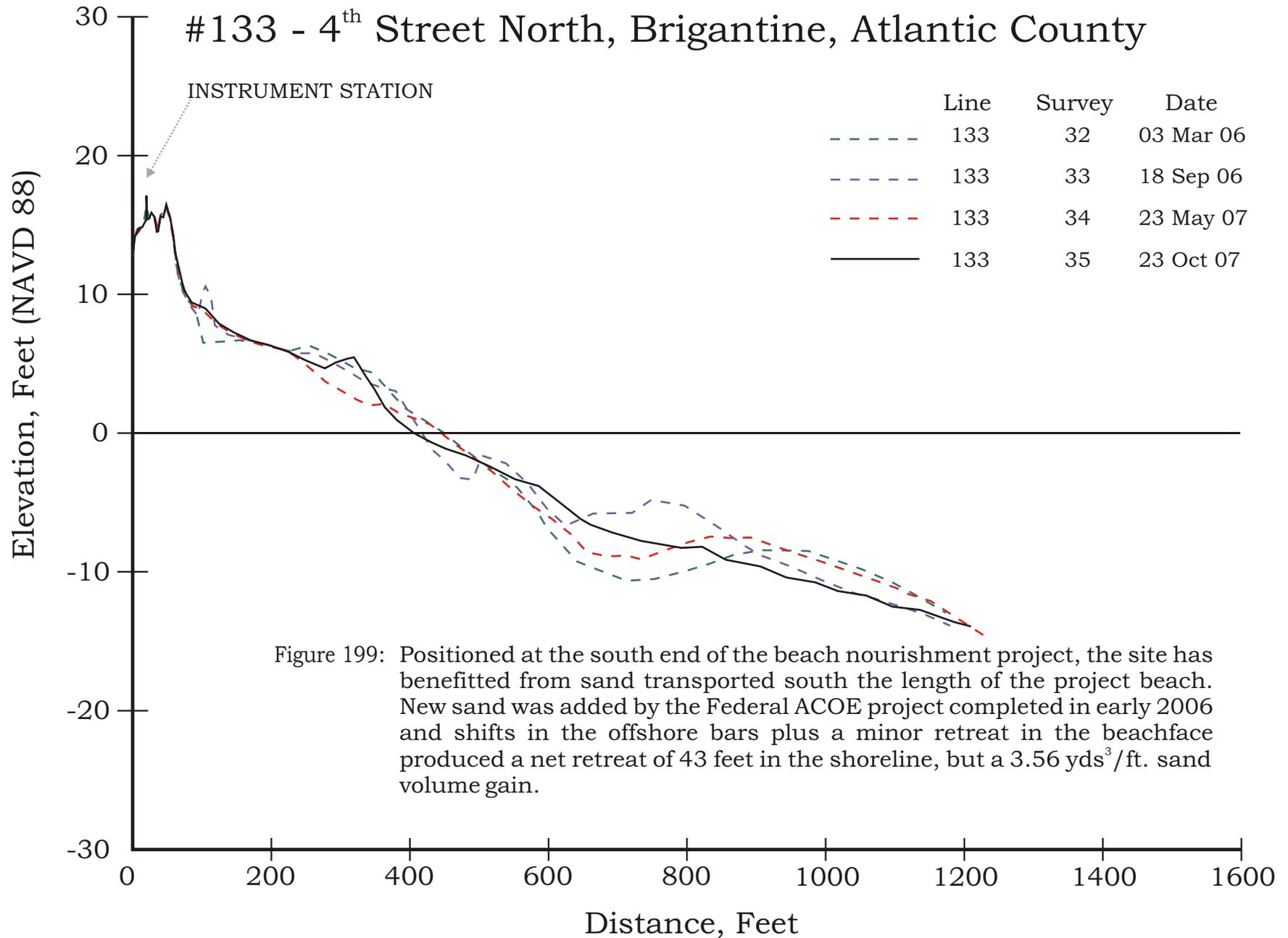


Figure 199: Positioned at the south end of the beach nourishment project, the site has benefitted from sand transported south the length of the project beach. New sand was added by the Federal ACOE project completed in early 2006 and shifts in the offshore bars plus a minor retreat in the beachface produced a net retreat of 43 feet in the shoreline, but a 3.56 yds<sup>3</sup>/ft. sand volume gain.



Figure 200. This beach is a beneficiary from sand migration south from the three episodes of beach nourishment at the northern end of the municipal development. The evidence appears as increased sand volume on the beach within 3 months of the project completion. The width of the dry beach today provides more protection for the old Brigantine Hotel, now the timeshares condominium, because this building has no dune in front of the bulkhead right at the seaward-facing building façade.

## 15<sup>th</sup> ST. SOUTH, BRIGANTINE – SITE 132

Figure 201. Looking south during the spring toward Atlantic City in the distance. The wide, low-gradient beachface shows the extent of sand accumulation since 1997. Further south the beach becomes nearly as wide as that seen in Wildwood.





Figure 202. This picture shows the relationship between the timeshare development and the beach. The aging bulkhead is the only shore protection feature present, in previous storm events the building to the left filled with sand. The structure in the center was not present during the December 1992 northeaster. The absence of a dune and flat low profile of the beach could allow wave impacts against the bulkhead from a significant storm event that would have serious consequences for this building.

## 15<sup>th</sup> ST. SOUTH, BRIGANTINE – SITE 132

Figure 203. This photo shows a view across the berm looking south from the profile line. The beach retains a flat gradient but has grown seaward substantially since 1997, with a few offshore bar features. This site gained 6.13 yds<sup>3</sup>/ft of sand volume with a 109-foot shoreline advance seaward as new sand presumably derived from the project area was added to the site. It should be noted that in 1973 the waves reached the aging timber bulkhead shown above at each high tide cycle.



# New Jersey Beach Profile Network

#132 - 15<sup>th</sup> Street South, Brigantine, Atlantic County

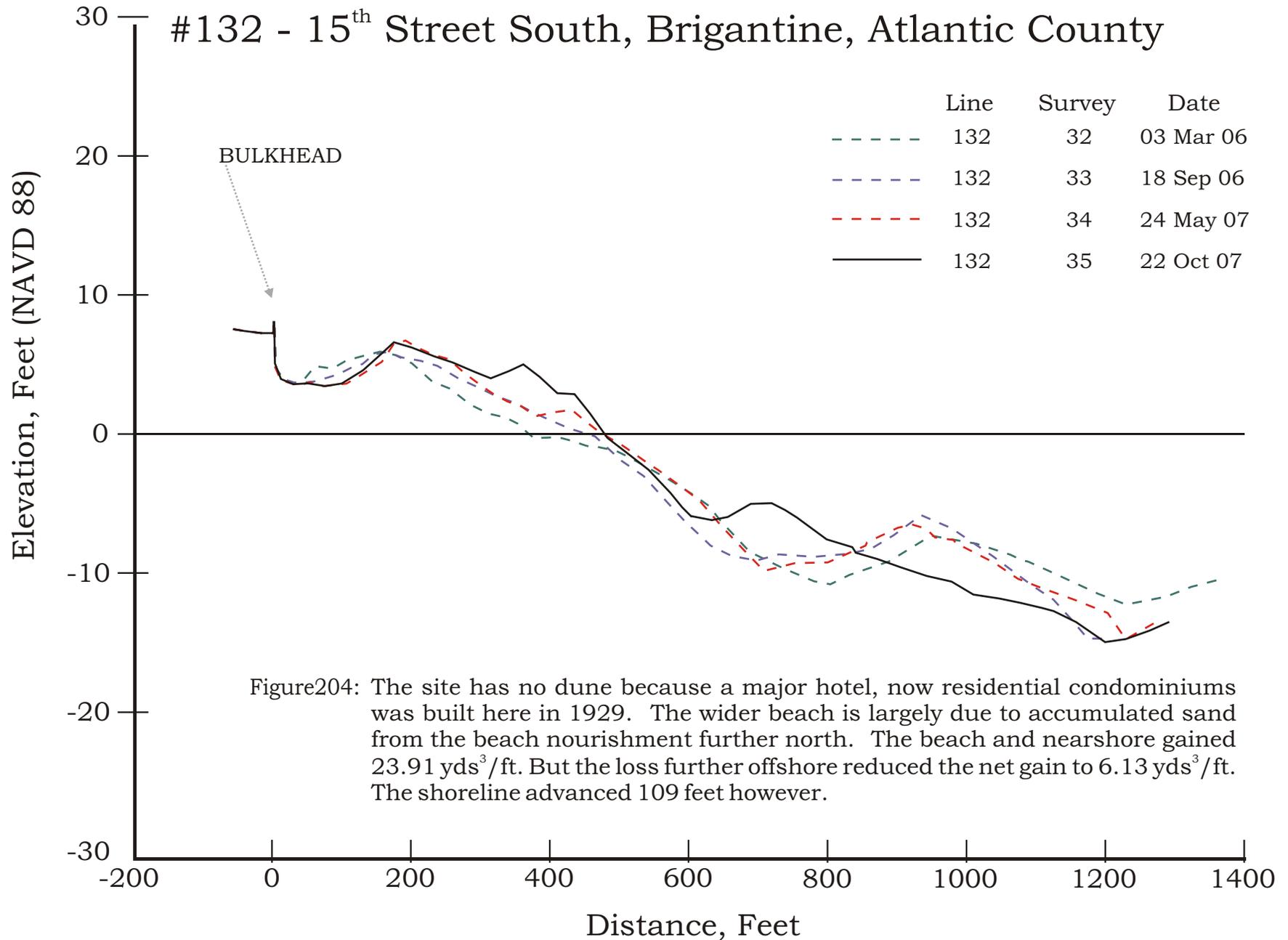




Figure 205. The 43<sup>rd</sup> Street South profile crosses a vast area of mature dunes covering 600 feet from the street end to the landward slope of the current primary frontal dune. Sand trapped by the north Absecon Inlet jetty has promoted hundreds of feet of shoreline advance since the 1950's. Atlantic City's skyline shows in the distance.

## **43<sup>rd</sup> ST. SOUTH, BRIGANTINE – SITE 131**

Figure 206. The view from the beach illustrates the tremendous width to this beach. This point from where the picture was taken would be 1,000 seaward feet from the water's edge in 1940, prior to the building of the first phase of the north jetty to Absecon Inlet. These two pictures were taken April 6, 2006. By the fall of 2007 the beach had gained 53.85 yds<sup>3</sup>/ft and the shoreline advanced an additional 122 feet seaward.





Figure 207. This view was taken from the survey instrument position established on the crest of the primary dune (October 7, 2007). The dry beach is supporting dune advances onto its surface and continued growth of what may become a climax maritime forest on Brigantine some time in the future.

## **43<sup>rd</sup> ST. SOUTH, BRIGANTINE – SITE 131**

Figure 208. Looking southwest from the instrument station showing the bayberry bushes covering older dune positions between the present beach grass vegetation and the development (extreme right at the horizon). The building in the swale is for lifeguard equipment and is located along the 43<sup>rd</sup> Street access path to the beach.



# New Jersey Beach Profile Network

#131 - 43<sup>rd</sup> Street, Brigantine, Atlantic County

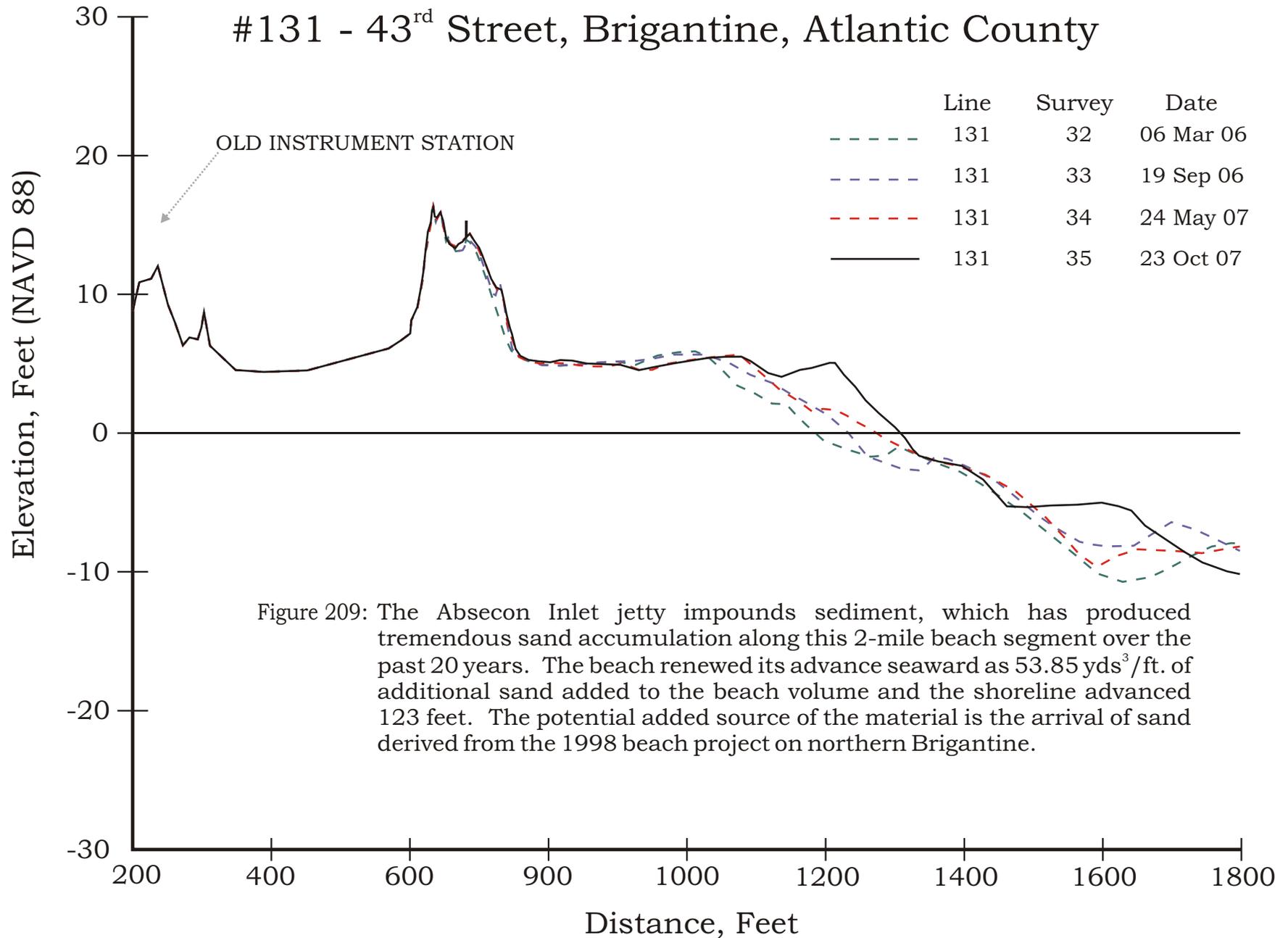




Figure 210. The North Carolina Avenue beach remained stable through the summer of 2007 with material slowly added to the dune as the vegetation matured. The beach width south of the pier did not change much and storm damage was absent as of October 17, 2007.

## NORTH CAROLINA AVENUE – SITE 130

Figure 211. Comparing this view to that taken in the spring (April 11, 2007, above vs. October 17, 2007 to the right) shows considerable beach retreat south of the small timber groin in the middle distance. The offset along the south side of the timber groin is not present along the pilings on the distant pier in the above photo. This indicates that the groin may be impeding sand flow south while the pier is more permeable allowing sand transfer below the structure to feed the profile site. The cross section is located on the beach north of the timber groin. Despite the restriction to sand flow south the beach has lost 52.03 yds<sup>3</sup>/ft of sand volume with a 29-foot shoreline retreat in the past 18 months. This may be a result of the severely eroded north end Atlantic City beaches limiting the supply of sand available to flow south to this region.



# New Jersey Beach Profile Network

#130 - North Carolina Ave., Atlantic City, Atlantic County

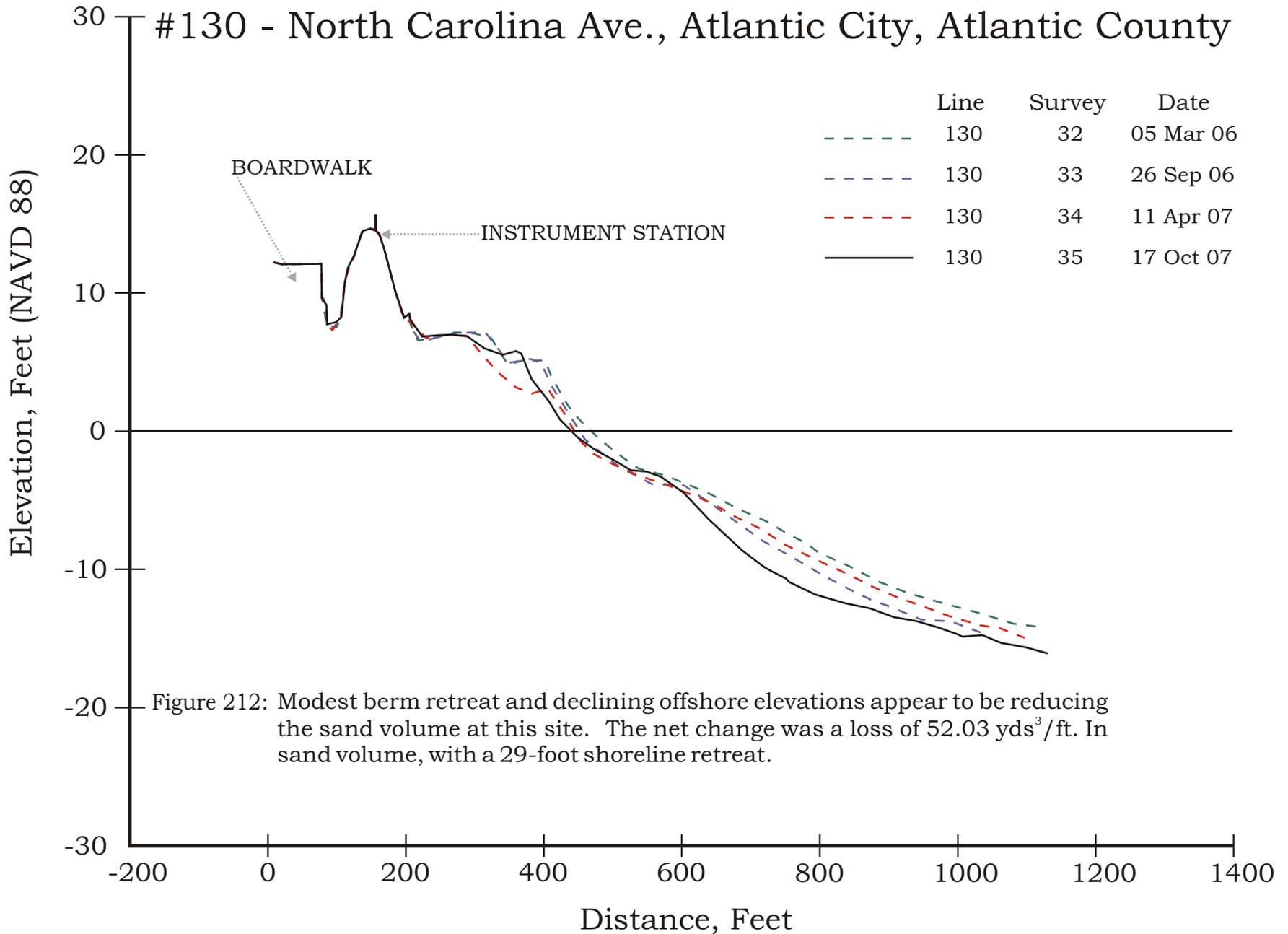


Figure 212: Modest berm retreat and declining offshore elevations appear to be reducing the sand volume at this site. The net change was a loss of 52.03 yds<sup>3</sup>/ft. In sand volume, with a 29-foot shoreline retreat.



Figure 213. At Raleigh Avenue in Atlantic City the Federal beach project converted a moderate width beach with a small dune system into an expansive dry beach with a substantially larger dune system following project completion. Since 2004, the beach has remained essentially unchanged as the losses were matched by gains from the north or offshore.

## RALEIGH AVENUE – SITE 129

Figure 214. This view from the dunes at Raleigh Avenue in April 2006 shows the new dune with recently planted grass plugs and the new beach access cross over from the boardwalk. Positioned over a mile south of the piers in Atlantic City, there are no visible groin structures affecting the flow of sand parallel to this section of the shoreline. The beach has maintained a considerable width as a result. Located in the middle of the beach nourishment project, this site is more stable. The sand volume gain was 19.98 yds<sup>3</sup>/ft with a 38-foot shoreline advance over this study interval.





Figure 215. By October 2007, the dunes had accumulated additional sand at the line of the original fencing. This shows to the left as very vigorous grass and a nearly buried line of sand fence. The beach width and height has remained relatively stable, as designed and built during the project's construction.

## **RALEIGH AVENUE – SITE 129**

Figure 216. This view from in front of the dunes shows the beach width looking south into Ventnor City. Sand has ramped up along the original fencing and grass is naturally moving down the slope to colonize the new area. Another line of fencing placed about a third the way up the bare slope would effectively prevent continued elevation growth by trapping the new sand lower on the seaward dune slope, before it moves up the slope to the crest.



# New Jersey Beach Profile Network

#129 - Raleigh Avenue, Atlantic City, Atlantic County

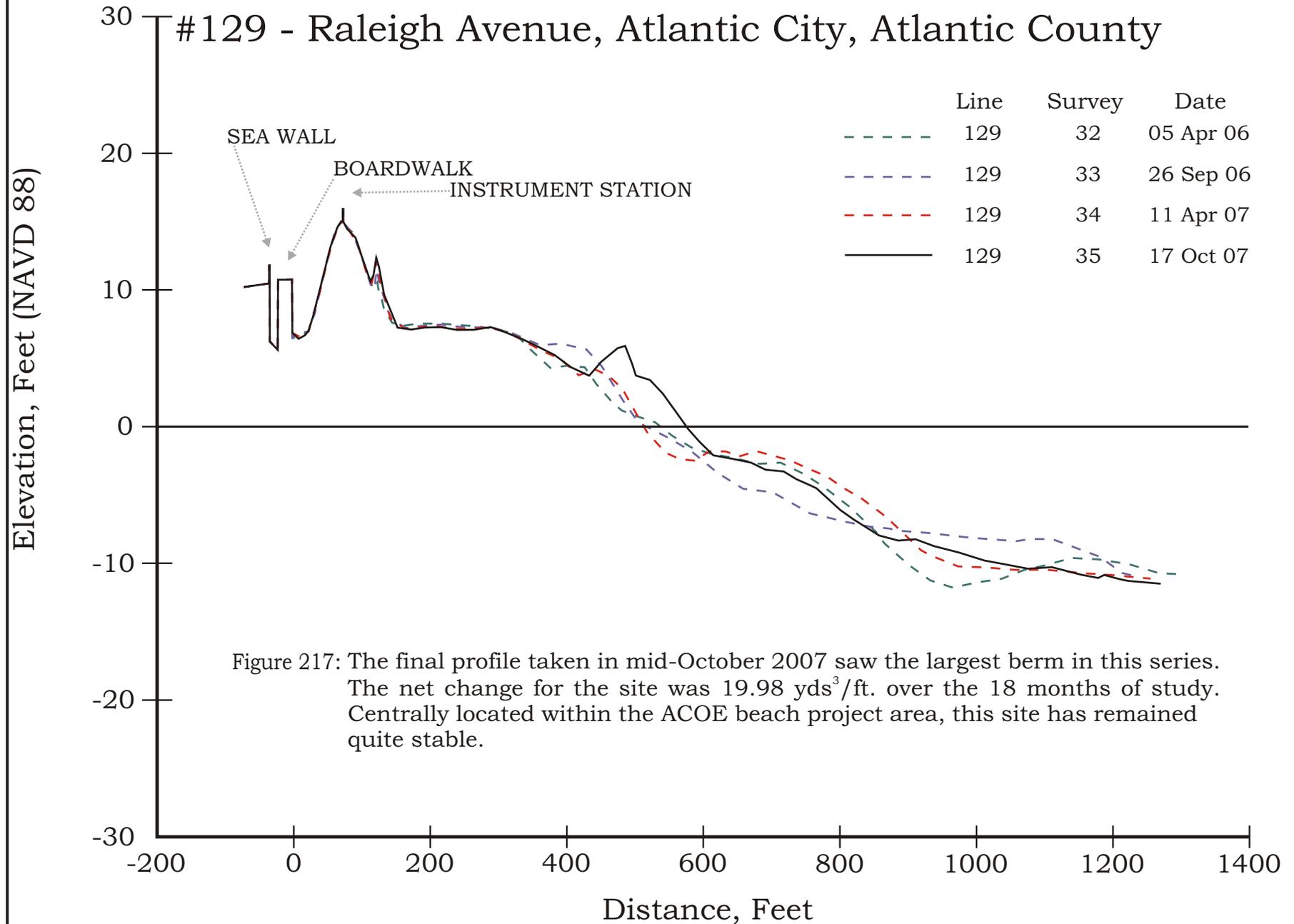




Figure 218. The Dorset Avenue site in Ventnor City received a new dune, plants and a much wider beach in 2004 as part of the federal project. The photo shows the recent plant placement pattern and the wider beach as built, which continues south towards the Margate City border.

## **DORSET AVENUE – SITE 128**

Figure 219. This view to the north shows the new, wider beach and the area of dry sand available for recreation. The picture was taken April 6, 2006. This wider beach significantly enhances the shore protection value of the beach for the properties and infrastructure located just landward of the sand.





Figure 220. Dune growth by October 17, 2007 is very evident, with a slightly narrower beach as some sand moved south. The reduction amounted to about 15% of the original project width.

## **DORSET AVENUE – SITE 128**

Figure 221. This view to the south shows the beach close to the shoreline. The initial width has been reduced, but the success of the project is still excellent three years later (October 17, 2007). The site continued to gain sand ( $13.21 \text{ yds}^3/\text{ft}$ ) with a 76-foot shoreline advance seaward. This site is part of the mid-project beach not subject to end-effect erosion.



# New Jersey Beach Profile Network

#128 - Dorset Avenue, Ventnor, Atlantic County

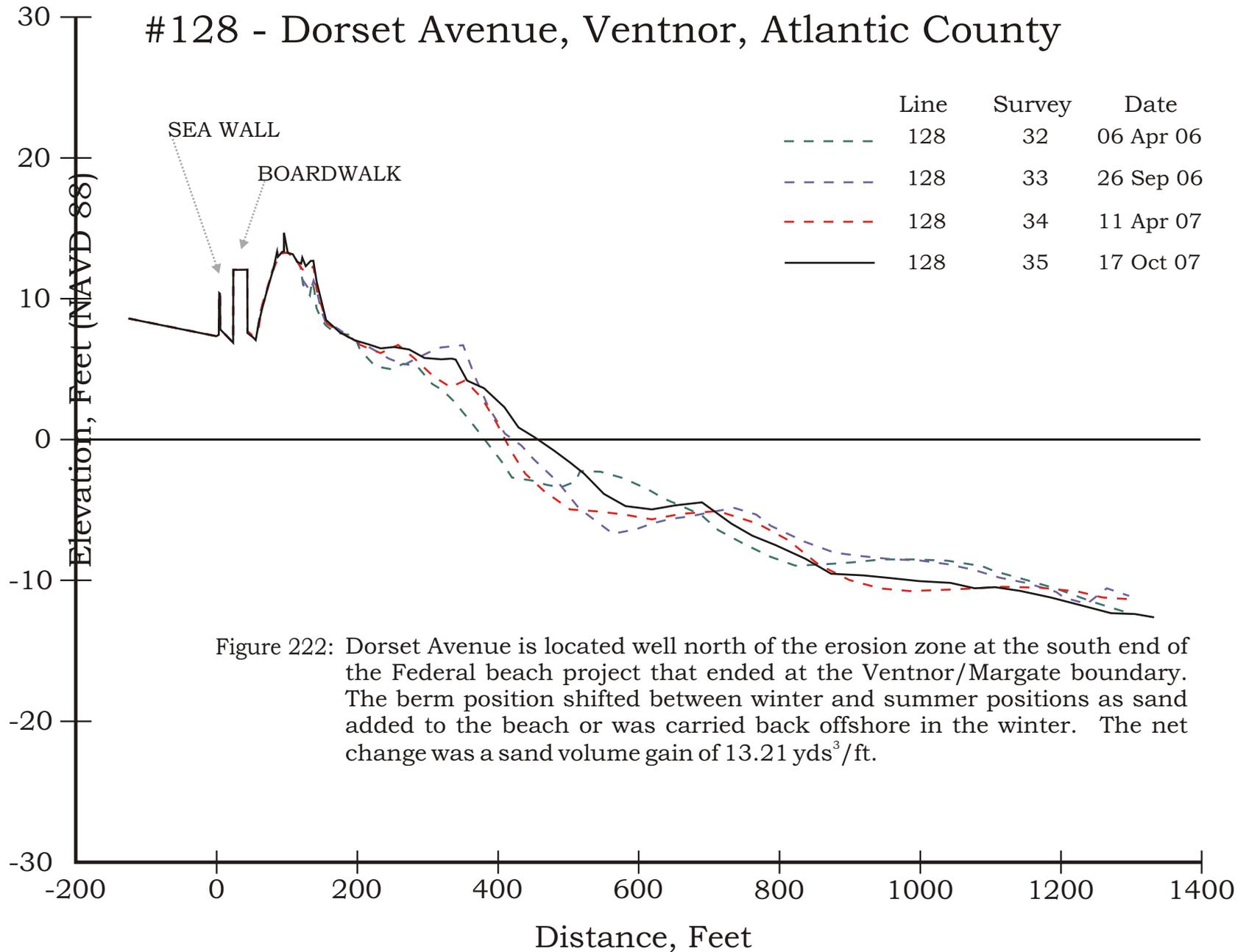


Figure 222: Dorset Avenue is located well north of the erosion zone at the south end of the Federal beach project that ended at the Ventnor/Margate boundary. The berm position shifted between winter and summer positions as sand added to the beach or was carried back offshore in the winter. The net change was a sand volume gain of 13.21 yds<sup>3</sup>/ft.



Figure 223. The Benson Avenue site seen here from the reference location on the bulkhead shows the entire width of the beach. Spotty dunes populate the dry beach, but no unified municipal effort was expended here in promoting dune development. This beach has gained width as sand moved south from the Federal project that ended at the Ventnor – Margate boundary because the City of Margate refused to participate.

## **BENSON AVENUE – SITE 127**

Figure 224. This view to the north shows dunes present to the north and a fairly wide, dry beach. This shoreline showed accelerated sand volume gains starting in 2005. This is due to southerly transport from the Atlantic City/Ventnor City project in 2004.





Figure 226. This view to the north shows the toe of the dunes north of this site and the substantial width to the dry beach in Margate City in October 2007. The 18-month sand volume rose by 11.48 yds<sup>3</sup>/ft while the shoreline position retreated by 11 feet.

Figure 225. Someone decided in favor of a more tropical setting for the Benson Avenue site. The palms are real and probably are not expected to survive the winter, but style and ambience is everything on the Jersey shore.

## **BENSON AVENUE – SITE 127**



# New Jersey Beach Profile Network

## #127 - Benson Avenue, Margate, Atlantic County

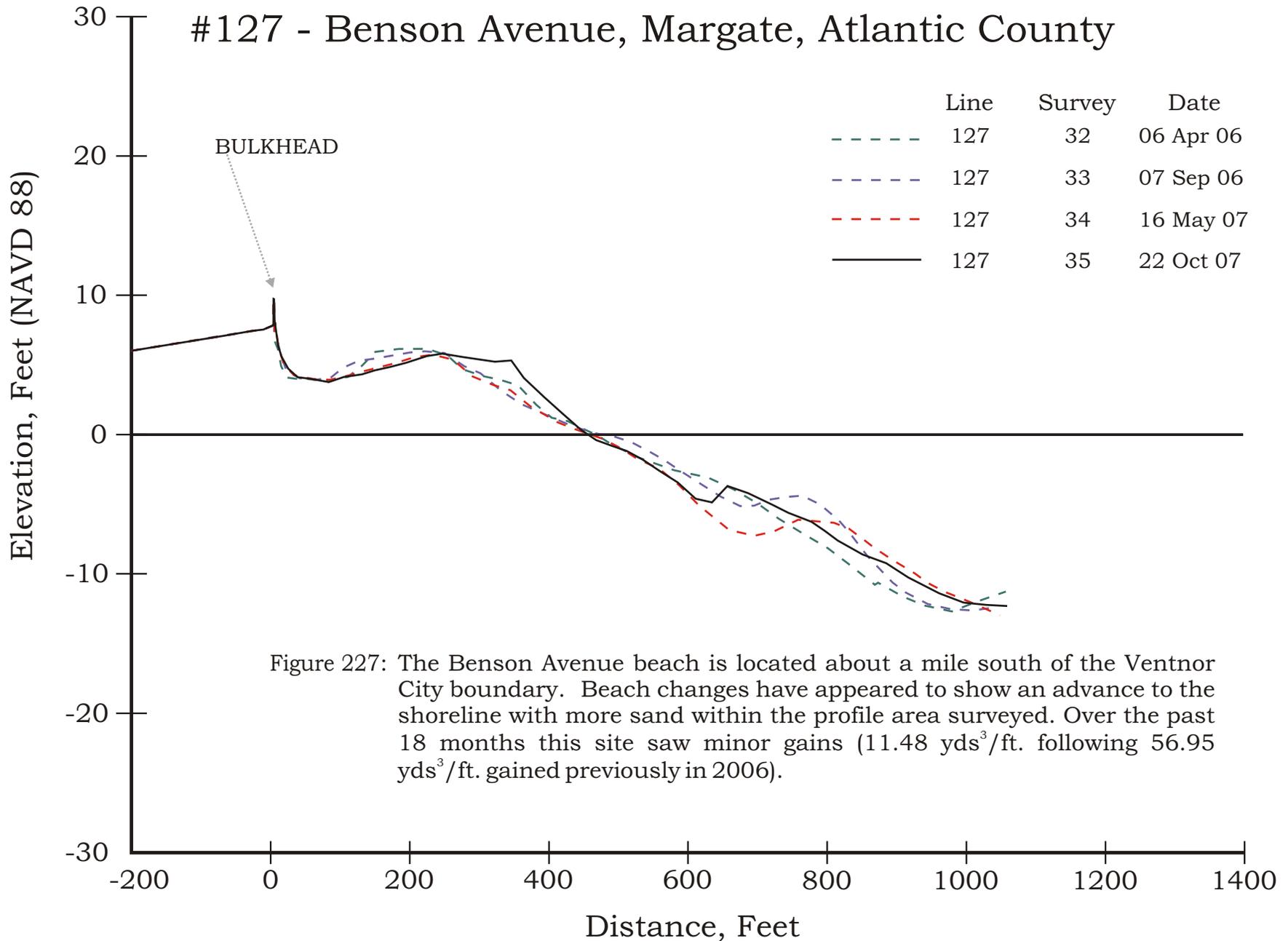




Figure 229. This view to the south along the seawall from 17<sup>th</sup> Street shows that the beach remains relatively wide to the 11<sup>th</sup> Street terminal jetty in Longport. There is development on the inlet side of the jetty, set back several hundred feet from that seen in this picture (April 2006).

Figure 228. The Longport profile site is located at 17<sup>th</sup> Street in the municipality. The concrete seawall has substantial sand deposited in front of it in the spring of 2006. The trend of shoreline advance had slowed in the past two years, but rapid loss was not seen. There has not been a dune system at this site since 1986.

## 17<sup>th</sup> STREET – SITE 126





Figure 230. The October 22, 2007 photograph was taken seaward of the concrete seawall and shows the sand elevation at the wall and the width of the beach. The sand volume declined by 5.69 yds<sup>3</sup>/ft, and the shoreline retreated by 5 feet between the spring of 2006 and the fall of 2007.

## 17<sup>th</sup> STREET – SITE 126

Figure 231. This view to the south along the seawall shows little change in 18 months since the photograph taken in April 2006. The beach is in better shape than it has been since work started on this project in 1986. The gains can be attributed to the Federal project completed in Atlantic City and Ventnor in 2004. Like Margate, Longport declined to participate in the project when they had the chance. Reduced funding by Congress for maintaining existing projects may eliminate further chances at a major beach nourishment effort because in the past two years, even funding to monitor existing projects has been in short supply. No maintenance is contemplated on Absecon Island until at least FY 2010.



# New Jersey Beach Profile Network

## #126 - 17<sup>th</sup> Street, Longport, Atlantic County

