



New Jersey Beach Profile Network

Cape May County

Great Egg Harbor Inlet
to Stow Creek

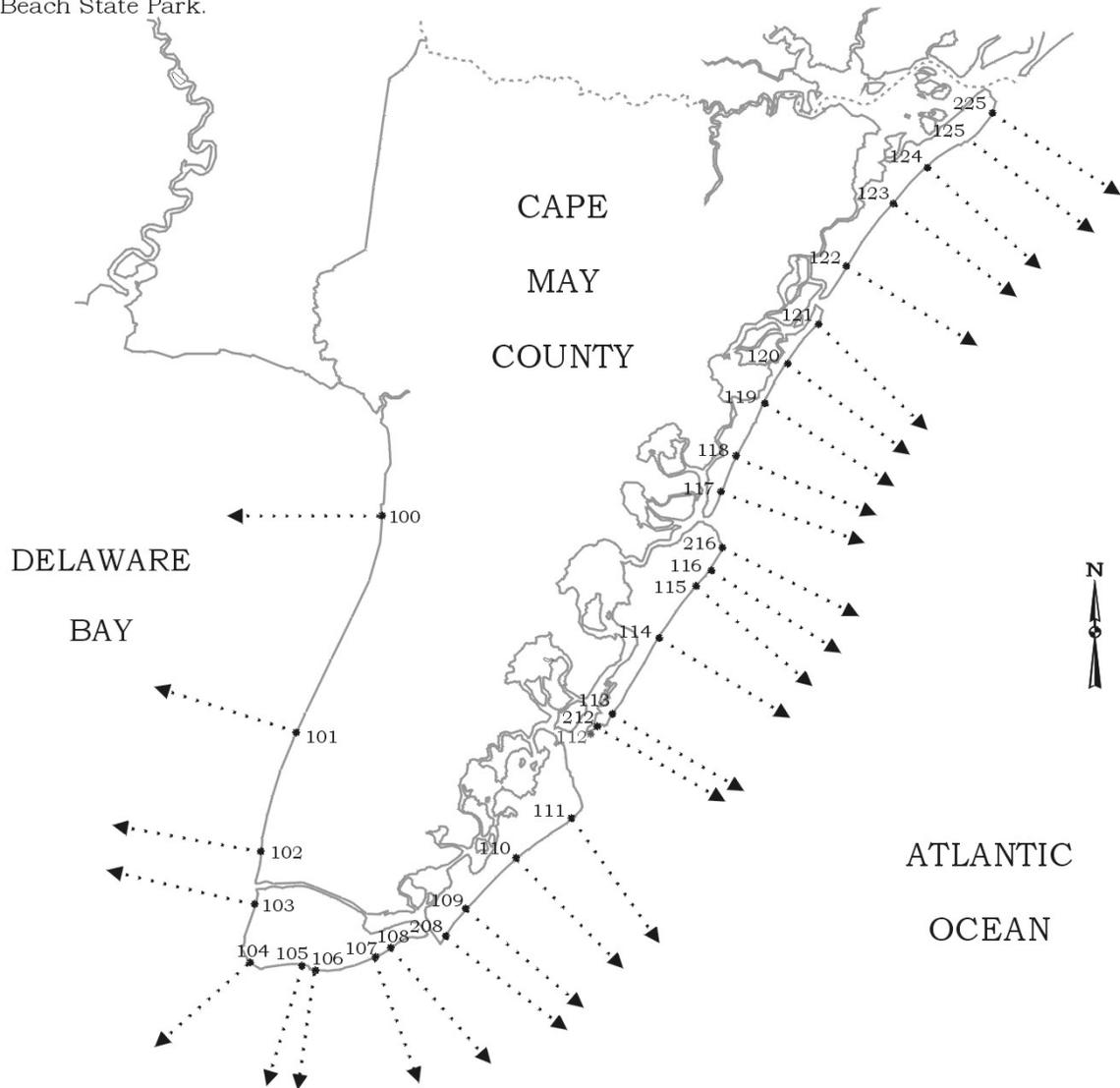
NJBPN Profile #'s
225 - 100



New Jersey Beach Profiles Network Cape May County Profile Site Locations

Figure 81

There are twenty-nine NJBPN survey sites along the beaches of Cape May County, which are a combination of barrier islands, coastal headlands and bayshore. Twenty-five sites are Atlantic Ocean profiles and the remaining four are set along the Delaware Bay shoreline of western Cape May County. The ocean profile sites are located in the following municipalities: the City of Ocean City, Strathmere in Upper Township, the City of Sea Isle City, the Borough of Avalon, the Borough of Stone Harbor, North Wildwood, the City of Wildwood, Lower Township, the City of Cape May, and the Borough of Cape May Point. Profile #112 on South Pointe in Stone Harbor was lost due to continuous erosion and was replaced by profile #212, which is located south of 121st Street in Stone Harbor. The four Delaware Bay profiles are located in the communities of Reeds Beach in Middle Township, Villas in Lower Township, North Cape May in Lower Township and at the Higbee Beach State Park.



CAPE MAY COUNTY 2006 to 2008

Cape May County has the honor of the most coastal restoration projects of the four coastal counties with the five coastal projects involving Federal cooperation with the State of New Jersey and the local municipality. These are Ocean City (northern two thirds of the island), Avalon, Stone Harbor, Cape May City, Cape May Meadows/Cape May Point. The balance of Peck's Beach (Ocean City) is a NJ State/local project. Reeds Beach is a State project with beach restoration a side benefit from a navigation improvement at Bidwell Creek. Planning for projects at Strathmere in Upper Township and the City of North Wildwood are designed as NJ State/local beach nourishment efforts. These await permit approval by the reviewing agencies at present. The Strathmere erosion problem is related to dynamic changes in the tidal channel geometry of Corson's Inlet that when combined with even minor northeast storms produces a serious threat to the northernmost development on Ludlam Island. Inlet dynamics also have negatively impacted the City of North Wildwood since 1998. Sand from the ocean beach has moved into Hereford inlet as a result of shifts in the tidal channel away from the northern Wildwood shoreline. This allowed oceanfront sand to flow into the inlet creating a very large sand spit along the inlet revetment. The beach narrowed by 1,054 feet at the 15th Street survey site between 1998 and 2005. This brought the City's beachfront infrastructure within easy reach of stronger northeast storms and beach restoration was instituted.

In the absence of Congressional appropriations from the 110th Congress, the US Army Corps of Engineers (ACOE) has not been able to undertake maintenance on any of the five Federal projects in 2007 or 2008. The State of NJ cooperated with Ocean City and the Borough of Avalon to add modest quantities of sand to the local "hot spot" erosion zones for the 2008 tourist season. Avalon received about 250,000 cy between 9th and 18th Streets and Ocean City's project covered the beach between Waverly and Seaspray Avenues and 12th Street at the northern end of the oceanfront adding 660,000 cubic yards from Little Egg Inlet shoals.

(http://www.state.nj.us/dep/shoreprotection/docs/080421ocean_city_beachfill.ppt#257,6,Scope of Work).

The storm events have been relatively benign over the past two winters where minor events shifted to the later spring. The past two hurricane seasons 2006 and 2007 were relatively quiet following the massively destructive 2005 season. All this paved the way for beach stability with only minor problems along the Cape May County shoreline.

The Cape May Point 227 experimental reef project continued to have a positive impact on the shorelines of those cells where the concrete structures were placed between groins defining the two cells. Older installations at two other cells in the community continued to maintain a perched beach as well. These installations show that if the area landward of the line of reef units is closed by groins at each end, the beach sand remains in place longer than if the line of reef units is open at one or both ends. Monitoring has shown that the presence of the reef units has made the beach more stable than where there were no units put in place. This installation is special in that the beach is divided in 500 to 750-foot segments by rock groins that extend seaward to the edge of the deep tidal channel entering Delaware Bay past this southern tip of New Jersey. The perching of the beach retards the loss of sand seaward into the channel during moderate wave action.



Figure 234. The site was established in 1994 as part of an expansion of the program to cover beaches adjacent to each of the State's inlets. Inlet shorelines tend to be very dynamic due to the combination of effects by both waves and tidal currents. This location has gained and lost sand in direct response to the pumping of sand onto the oceanfront beach in Ocean City over the past 15 years. The most recent history has been one of erosion. This past summer approximately 878,127 cubic yards of new sand was pumped from the inlet onto the beach south of Surf Road. It would be expected that subsequent surveys would see substantial advance in the shoreline position and beach volume increases in the near future. This past 18 months the site lost 20.90 yds³/ft with a 14-foot advance in the shoreline position. This photograph was taken April 6, 2006 and shows sand in front of a scarp in the dunes during a pause in the retreat in the shoreline since the 2004 nourishment.

GARDENS ROAD, OCEAN CITY SITE 225

Figure 235. The photograph to the right was taken October 30, 2007 and shows the dune toe in an erosional condition. The loss was due to northeast storm activity with the dune giving up sand reserves as the influx of nourishment material declined from the oceanfront beaches.



New Jersey Beach Profile Network

#225 - Gardens Road, Ocean City, Cape May County

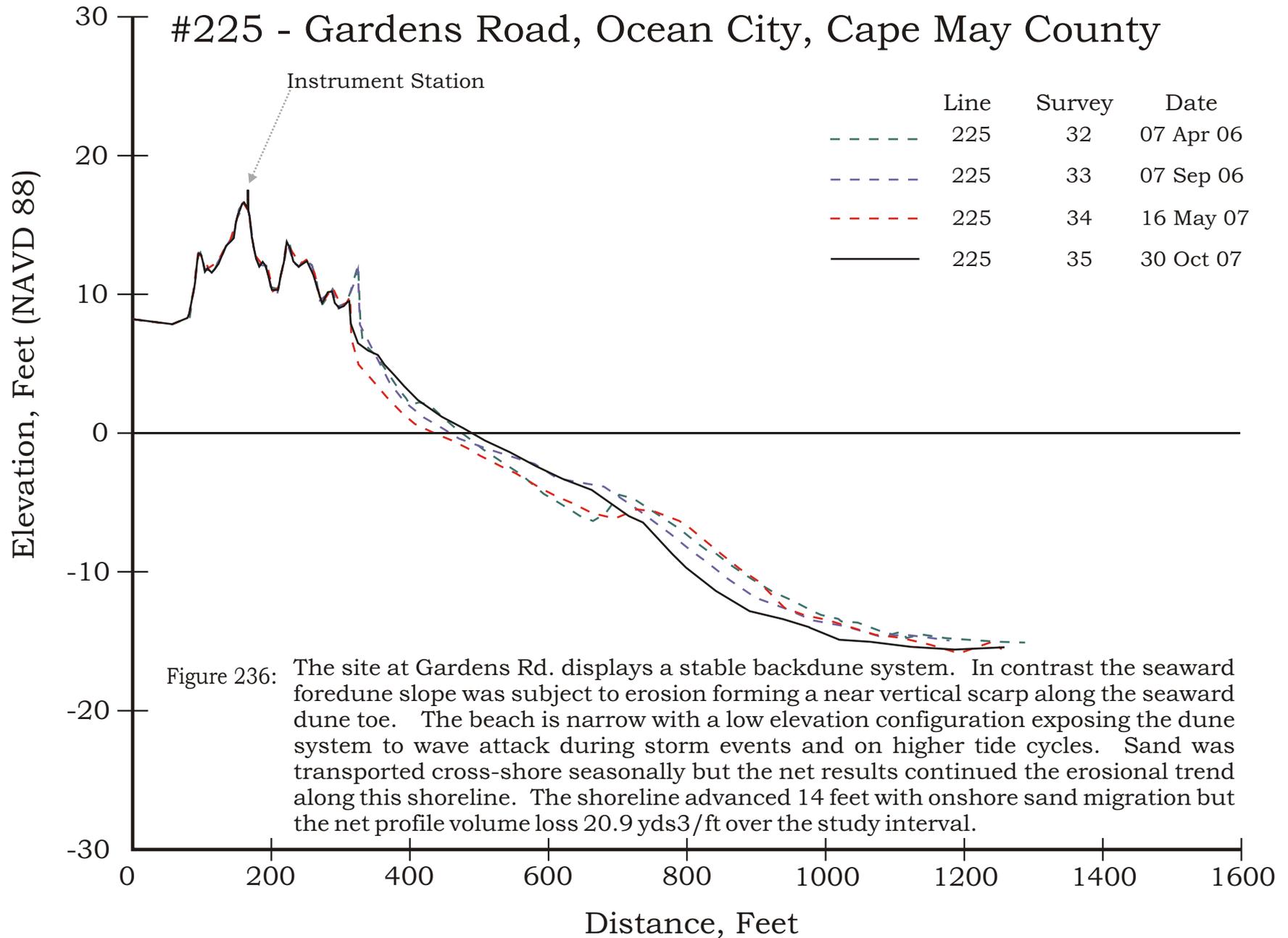




Figure 237. The beach at 6th Street in Ocean City has been a long-term site of serious erosion that originally took the low tide line under the boardwalk in 1989. That situation has not reoccurred due to repeated sediment additions under a US Army Corps project that commenced in 1991. The fourth renourishment was completed in 2004 with over a million cubic yards of sand. The State of NJ added 878,127 cubic yards in 2008 due to a lack of Federal appropriations for continued maintenance by the ACOE. This photograph was taken April 27, 2006

6th STREET, OCEAN CITY – SITE 125

Figure 238. This view taken October 30, 2007, shows continued sand volume loss (-32.27 yds³/ft). The shoreline did not retreat significantly however, (+3.3 feet) as the material still present adjusted into a flatter gradient in spite of dune retreat of about 20 feet.



New Jersey Beach Profile Network

#125 - 6th Street, Ocean City, Cape May County

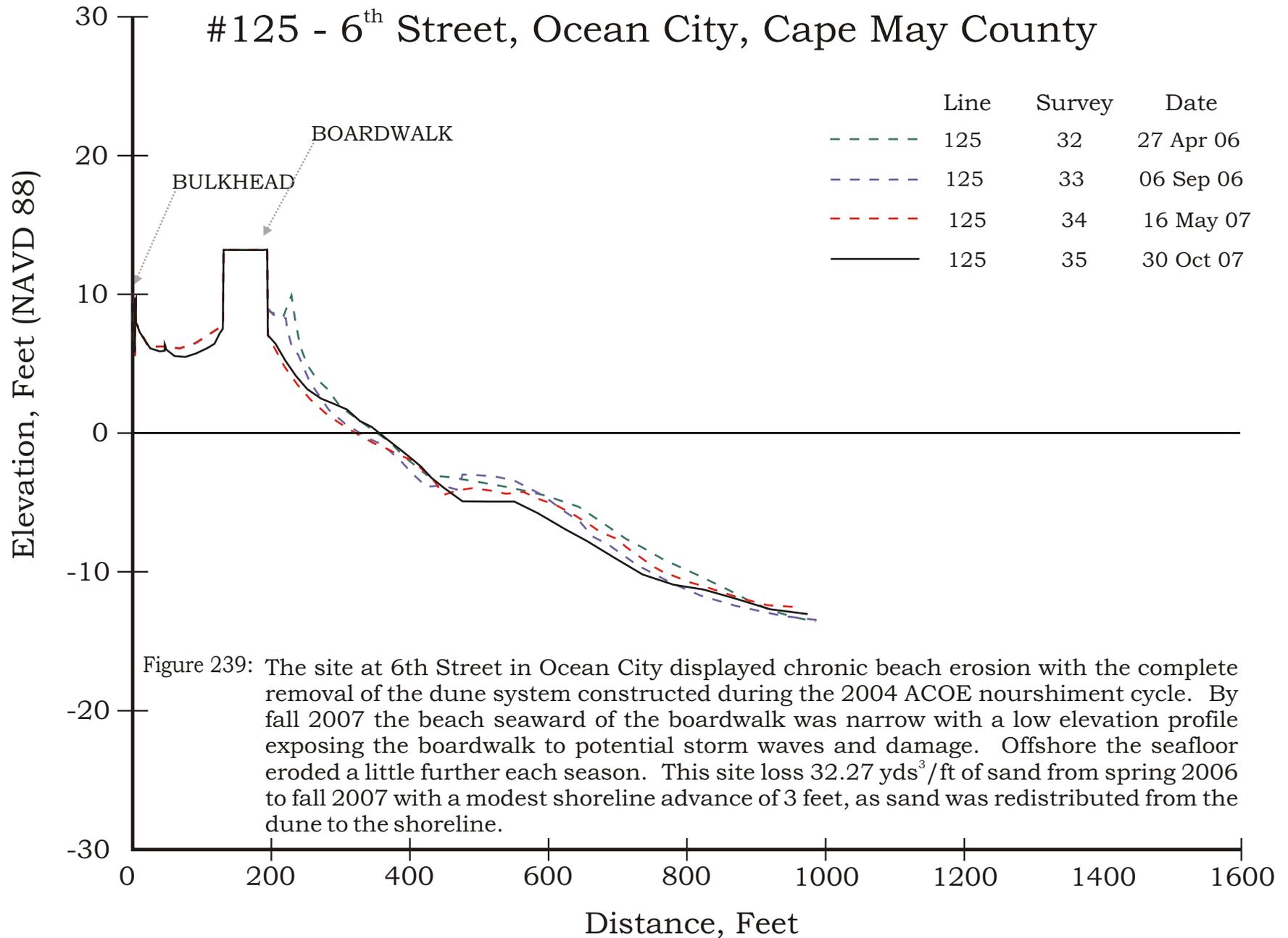




Figure 240. The 20th Street site lies in the middle of the Federal beach nourishment project, which extends to 34th Street. This position is ideal for stability since sand losses are always compensated by additions equally from either the north or the south. As a result, the dunes, beach and offshore has grown dramatically wider over the years since 1991. The success compared with the pre-initial construction situation is amazing since the high tide reached west of the boardwalk during the fall of 1991.

20th STREET, OCEAN CITY – SITE 124

Figure 241. The October 2007 photograph shows little change over 18 months, but the shoreline actually retreated 42 feet accompanied by a 13.27 yds³/ft sand volume loss as a result of changes in the offshore bar.



New Jersey Beach Profile Network

#124 - 20th Street, Ocean City, Cape May County

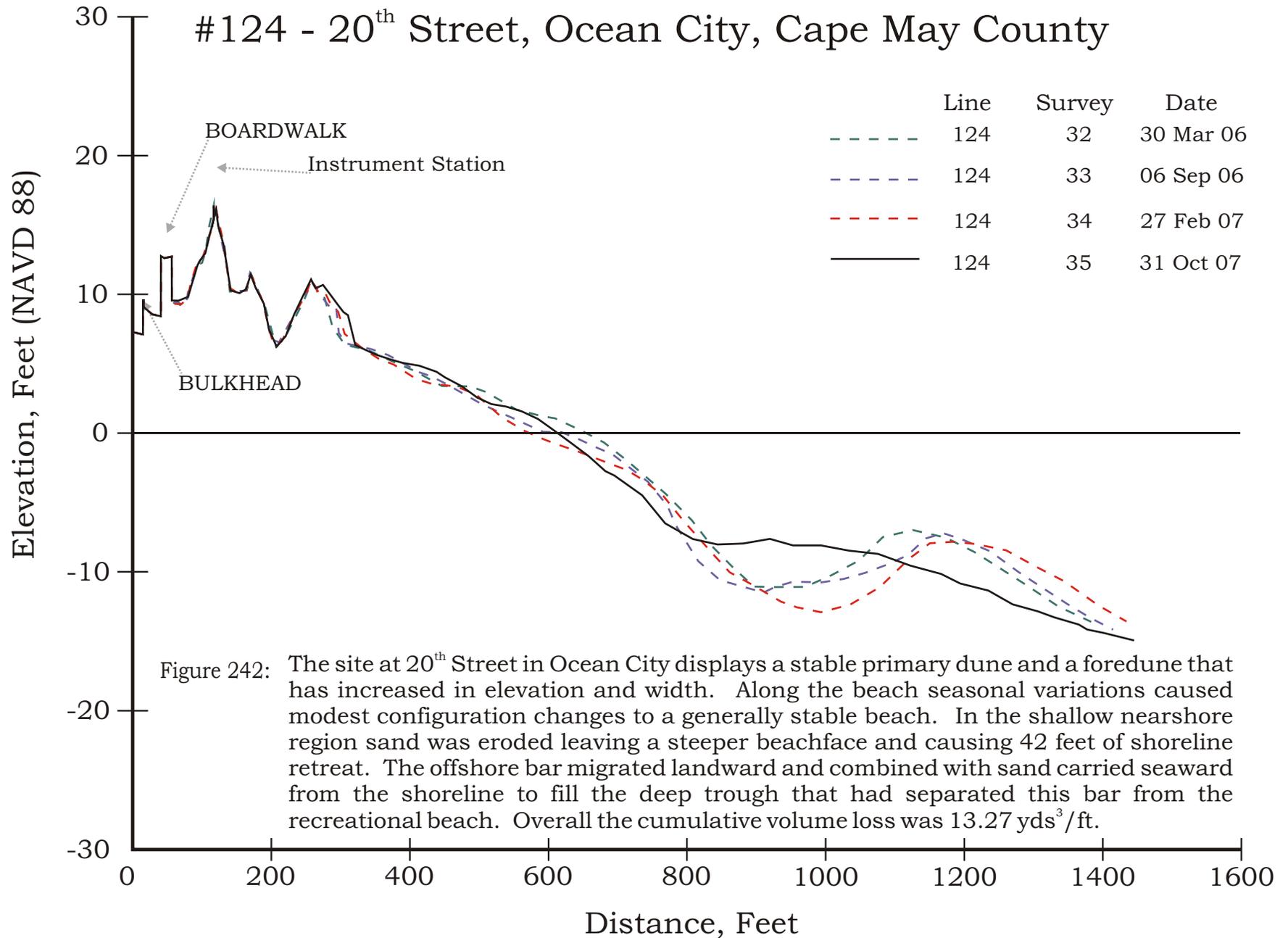




Figure 243. The beach at 34th Street in Ocean City lies at the transition between Federal and State administration over beach nourishment. The State project commenced in 1995 south of 34th Street. The dune has developed seaward of the grass around the fence. The combination of efforts has created a much stronger dune and a wider beach. This photograph was taken April 27, 2006

34th STREET, OCEAN CITY – SITE 223

Figure 244. This view taken October 31, 2007, shows the dune between the development and the beach. This area is twice as wide as it was prior to beach restoration and provides a great measure of storm protection in spite of owner complaints that the distance is too great and the view of the ocean has been diminished. The shoreline has advanced 13 feet and the beach/dune system gained 23.75 yds³/ft.



New Jersey Beach Profile Network

#223 - 34th Street, Ocean City, Cape May County

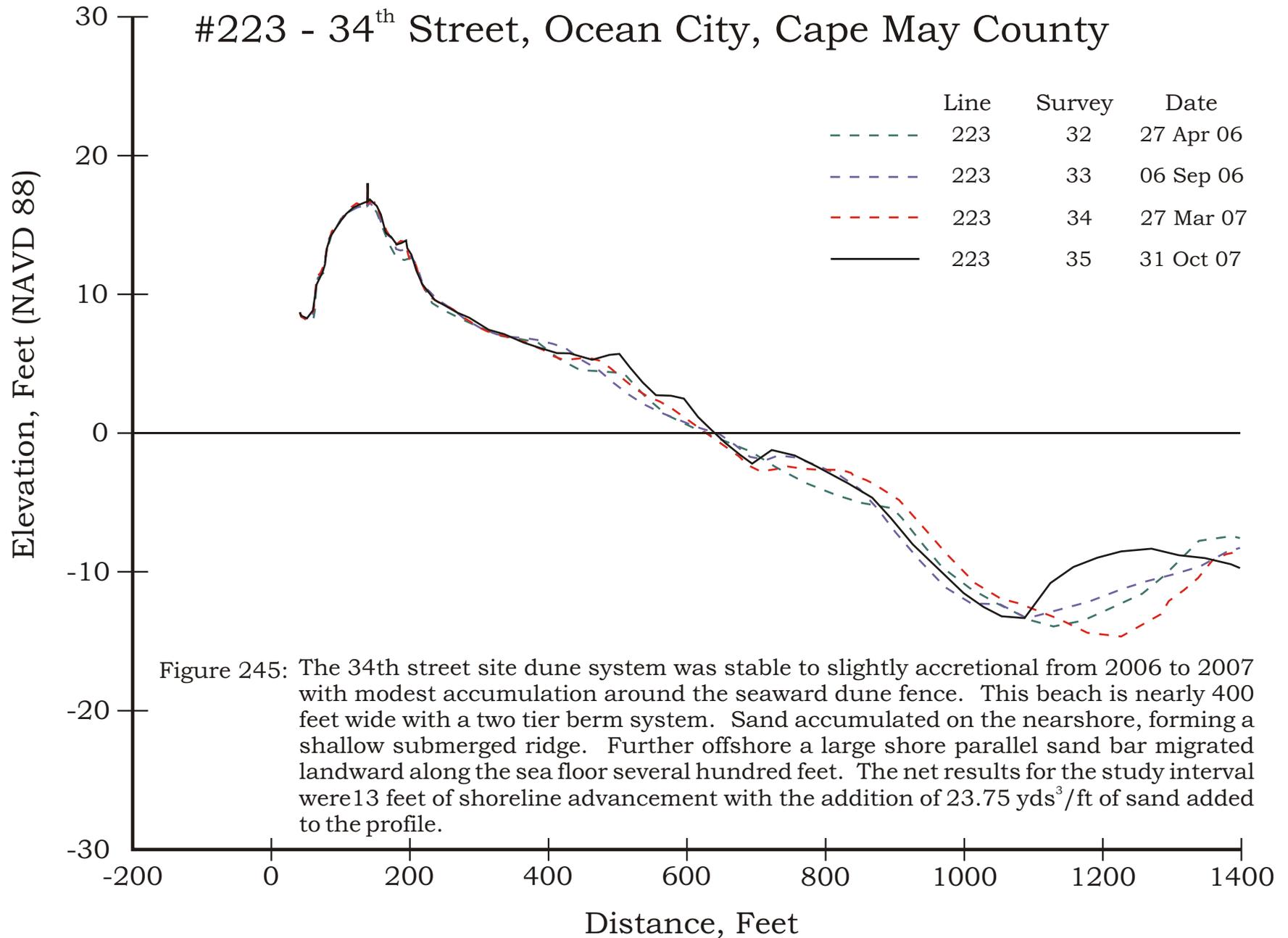




Figure 246. This photograph is a view to the north along the dune crest at 56th Street taken April 27, 2006. The beach replenishment from 34th Street south was initiated by the State of NJ in 1995. This dune has increased in size and presents a significant barrier to storms. Note the ridge at the seaward edge of the vegetation where recent sand blown from the beach has accumulated in a new foredune.

56th STREET, OCEAN CITY - SITE 122

Figure 247. By October 31, 2007 the beach had suffered an erosional event sometime prior to the fall 2006 survey. The fall survey followed tropical storm Ernesto by just a few days. That survey showed the removal of the little foredune ridge and the presence of a scarp at the toe of the original dune. The new ridge in the photograph to the right was created with the bulldozer following the summer accumulation of sand near the toe of the scarp on the beach. The comparison between April 2006 and October 2007 was one where the sand volume had decreased by 1.10 yds³/ft, while the shoreline had advanced by 20 feet. This is a narrow beach, but the net change was essentially zero in spite of the minor erosional event in the fall of 2006.



New Jersey Beach Profile Network

#122 - 56th Street, Ocean City, Cape May County

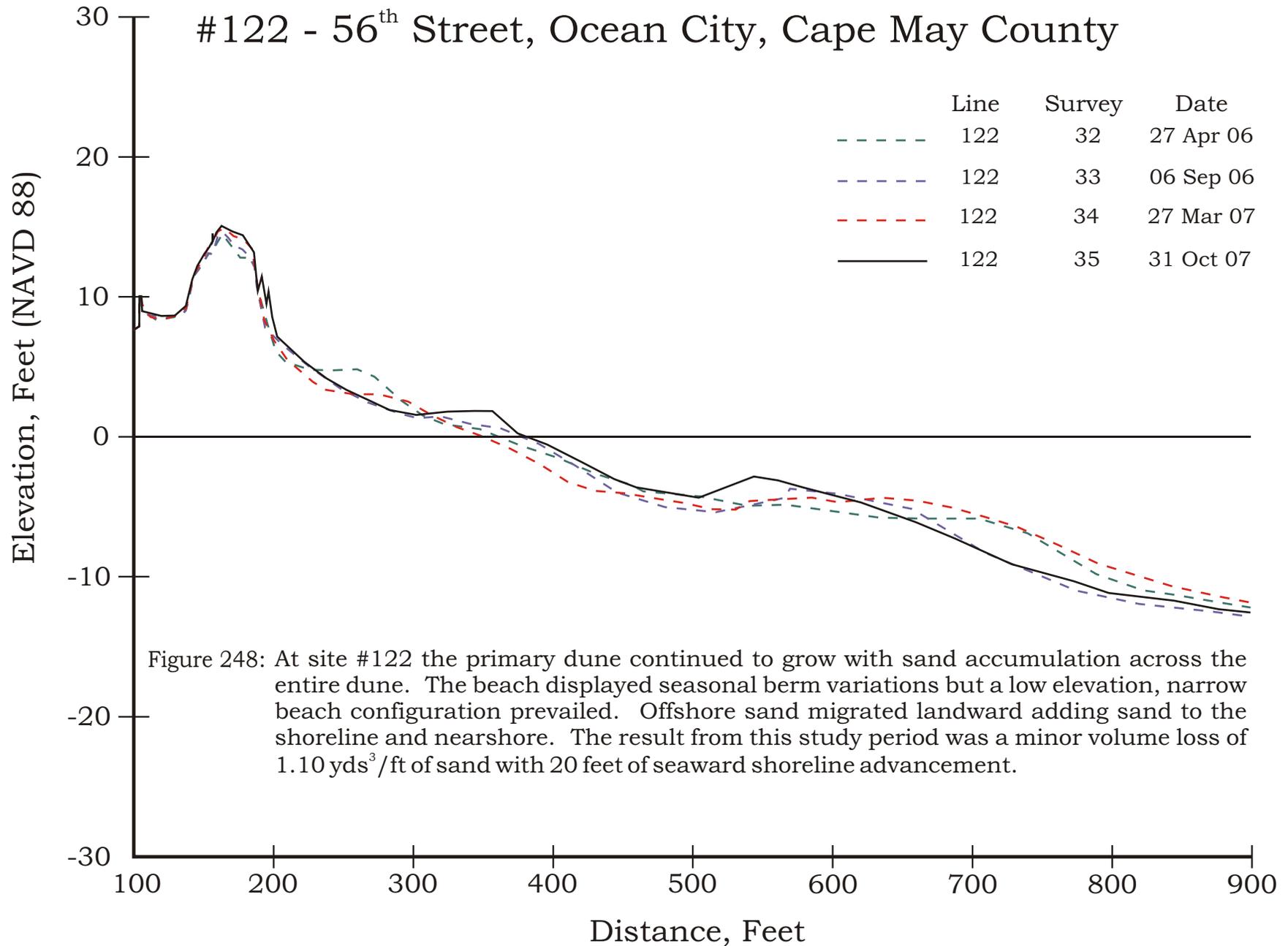




Figure 249. Williams Road is close to Corson's Inlet and responds with dramatic shifts in sand volume and shoreline position over relatively short time periods. The dunes in both photographs for this site have remained untouched by storms since the 2001 NJ State sponsored beach project. However, the beach has changed significantly as the profiles show, with intense shifts in sand geometry and position offshore as the inlet processes have impact on sediment distribution.

WILLIAMS ROAD, STRATHMERE SITE 121

Figure 250. The view to the right was taken November 5, 2007 and shows swash effects to the toe of the seaward slope in the dune. However, the comparison of the beach between June 2006 and November 2007 found 141.35 yds³/ft of new sand deposited on the dune and in the shallow offshore as a pair of huge offshore bars migrated to the shoreline. The shoreline advanced 38 feet as a result of the addition of sand to the berm. This survey followed a minor northeast storm and became convincing evidence of serious erosion taking place about 500 feet north up to the inlet channel during the remainder of that winter.



New Jersey Beach Profile Network

#121 - Williams Road, Strathmere, Cape May County

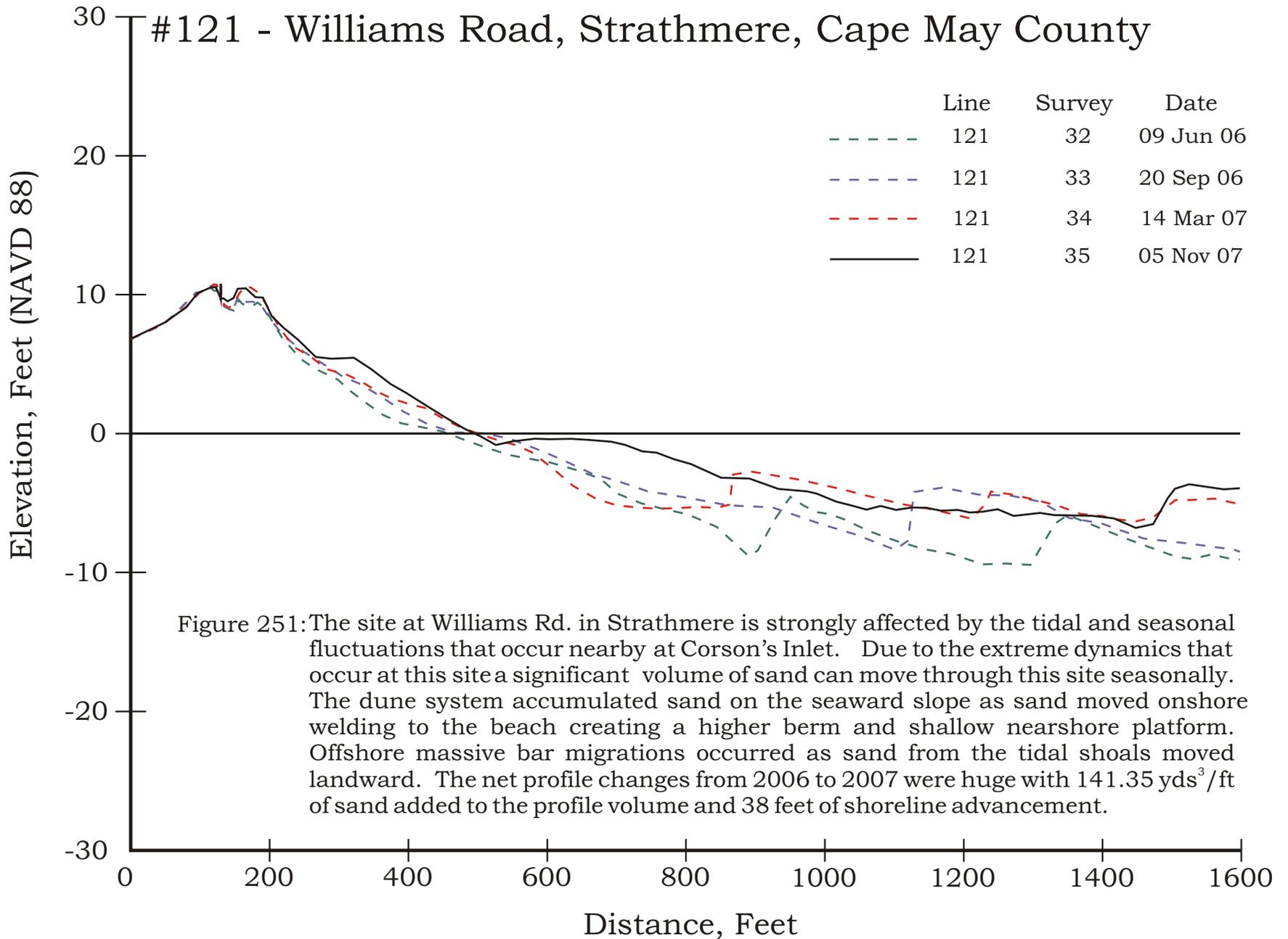




Figure 252. Located at the northernmost part of Sea Isle City, this site is known for its narrow dune, low elevation beach and limited sand supply (June 6, 2006). The dune to the south is cored with a 10-foot diameter geo-textile tube that replace other core materials in 1998 following storm destruction of most of the dune system south of this site. Since then the County has maintained the foredune slope by bulldozing sand from the beach back up to the exposed geo-textile structure each time a minor storm carves away the veneer of sand covering this feature. Thus far, it has withstood the minor events with out serious overtopping or a breach.

1st STREET, SEA ISLE CITY – SITE 120

Figure 253. The photograph to the right was taken November 5, 2007 following a minor northeast event that reached the toe of the dune and exposed the textile fabric further south. Between the two dates the beach changed very little (1.81 yds³/ft, with a 10-foot shoreline advance). Storms have substantial impact on the dune and a major event will overtop the geo-textile core pushing sand onto the highway once again.



New Jersey Beach Profile Network

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

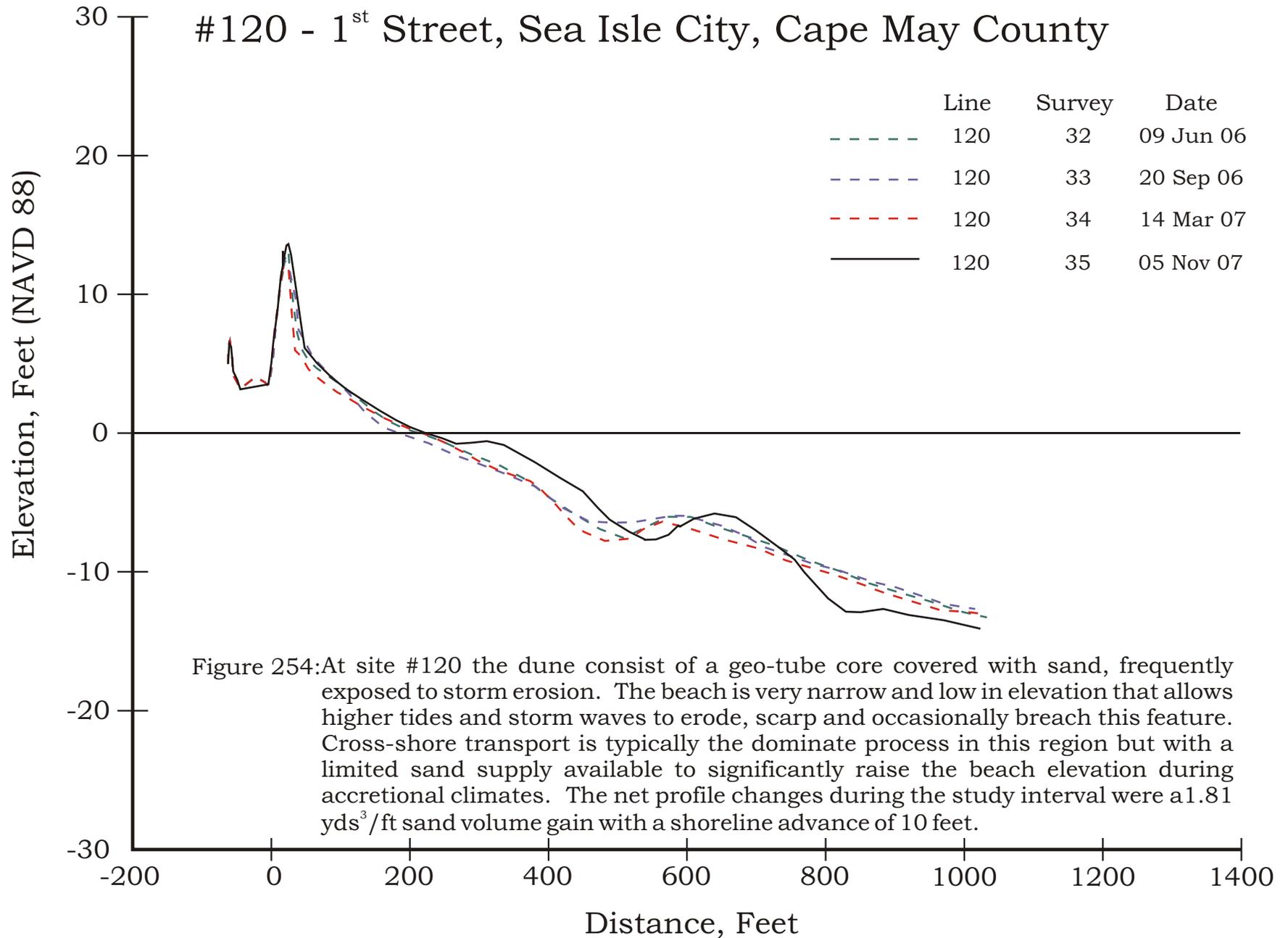




Figure 255. A view to the north from 25th Street showing a nice accumulation of new sand along the dune toe fencing by May 23, 2006. The dune system is wider and healthier this far south into Sea Isle and affords greater protection from storms.

25th STREET, SEA ISLE CITY - SITE 119

Figure 256. This view taken November 9, 2007, shows the impact of minor storms. The dune fencing placed at the toe of the slope was destroyed. This is why putting this relatively fragile, yet effective sand trapping fencing about half to two-thirds the distance up the seaward dune slope allows the fence to trap sand, but remain unaffected by small storms. The naked posts on the right are testimony to the costs associated with placing fencing too far seaward at a low elevation. Over 18 months the beach lost 10.87 yds³/ft., but the shoreline advanced 26 feet seaward.



New Jersey Beach Profile Network

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

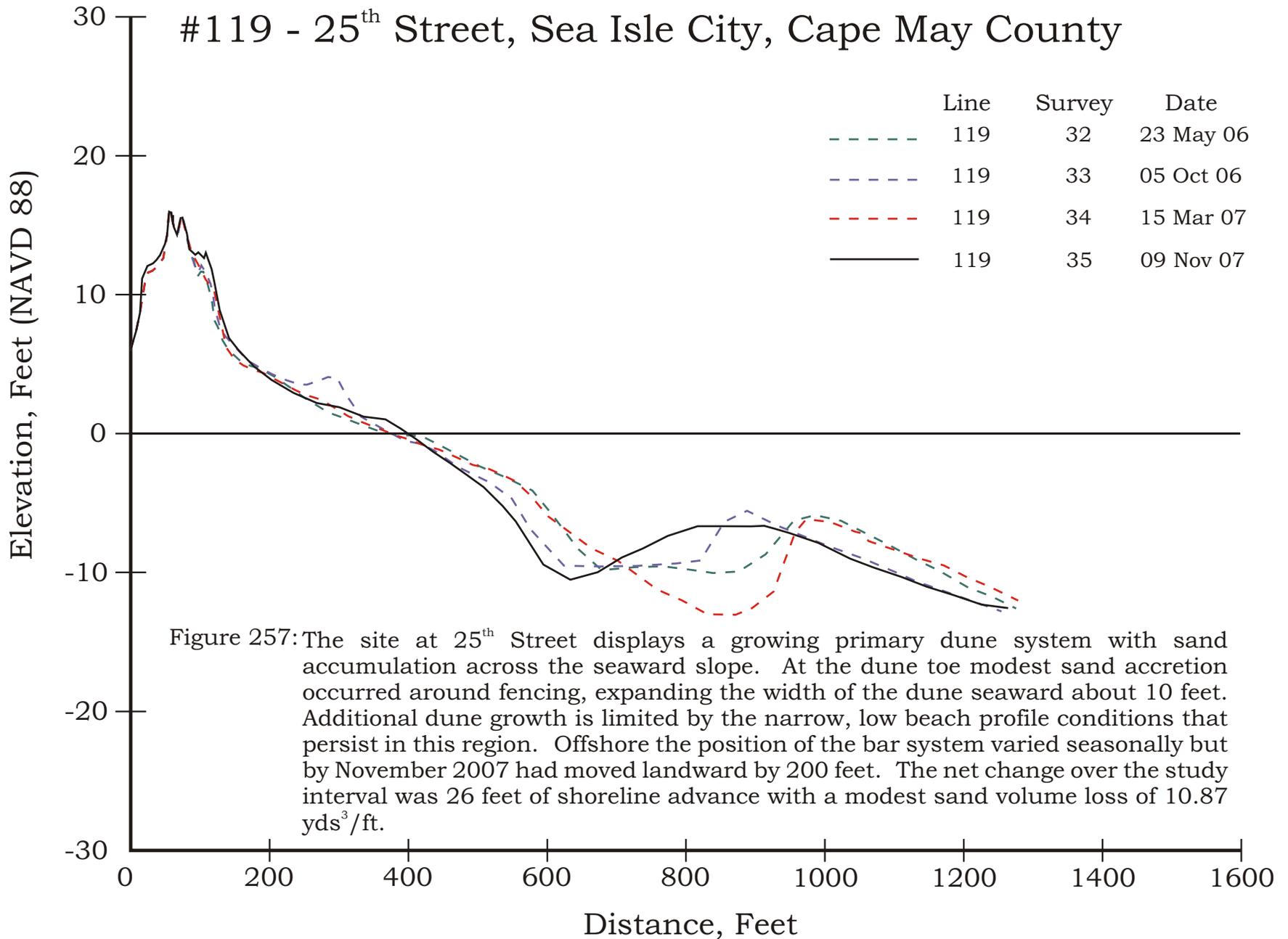




Figure 258. Located in the center of the tourist district of Sea Isle City, the promenade is positioned on the landward slope of the dunes. There is a reasonably wide beach so that this dune is unaffected by modest storms. There are repeated groins from north of this site south to Townsend's Inlet to slow the southerly transport of sand. It has been nearly three decades since sand was pumped onto this beach. The photograph was taken May 23, 2006.

57th STREET, SEA ISLE CITY – SITE 118

Figure 259. The photograph to the right was taken November 9, 2007 and shows the groins to the north and a curve landward on the beach. There were few significant changes over the past 18 months (8.55 yds³/ft. gain in beach volume with a 13-foot shoreline retreat).



New Jersey Beach Profile Network

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

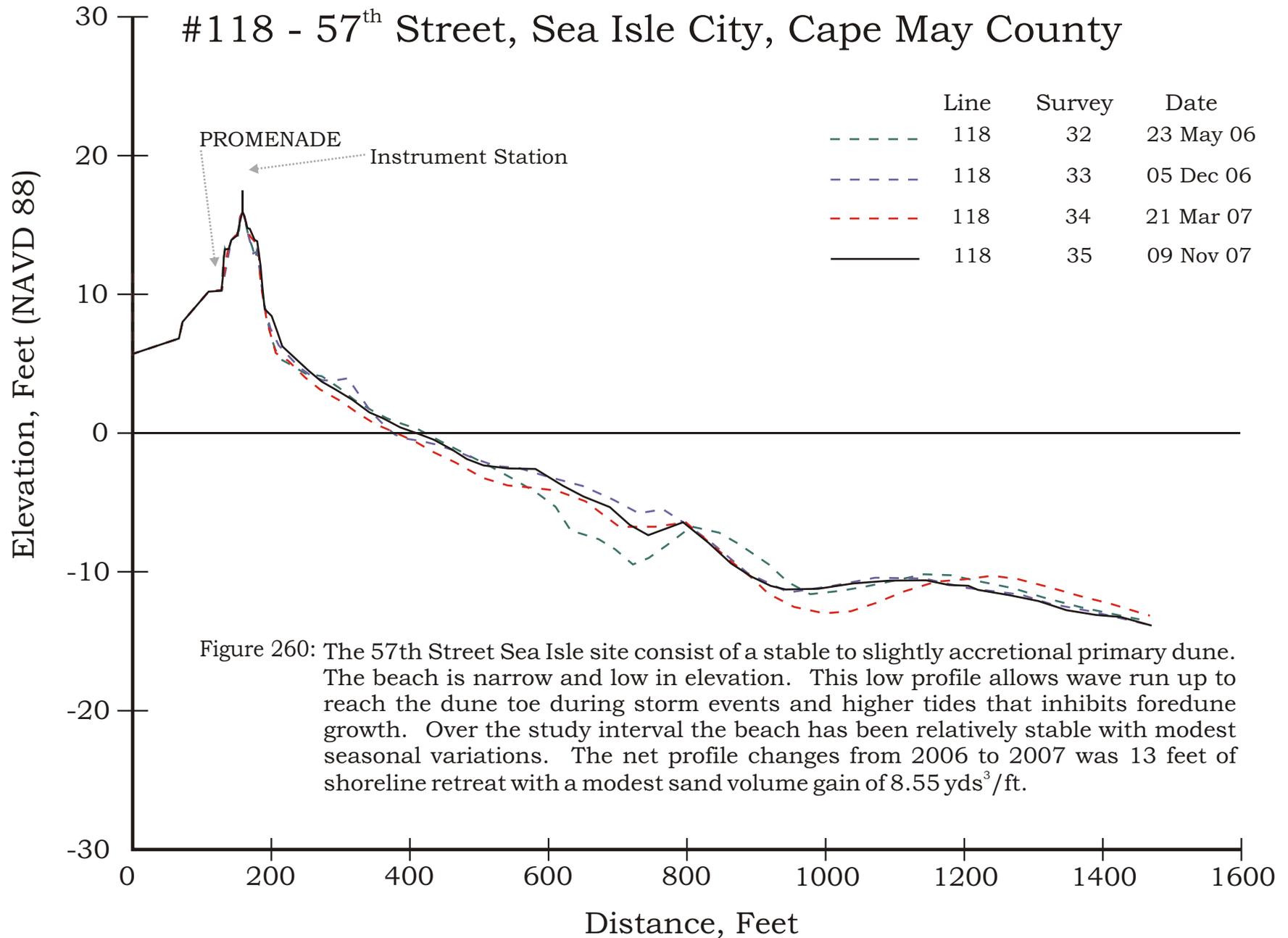




Figure 261. The view to the south (May 23, 2006) from 80th Street shows the beach retained by the 93rd Street groin at Townsend's Inlet. The naked metal posts indicate the removal of snow fencing by minor storms, but no significant damage to the dunes.

80th STREET, SEA ISLE CITY – SITE 117

Figure 262. By November 9, 2007 the sand fencing had been replaced with a zigzag pattern in an up-slope position on the seaward dune profile. The structure in the foreground on the beach is a storm water outfall pipeline, not a groin. The Borough of Avalon is the distant skyline showing the barrier island offset at the inlet. The beach lost a minimal 2.44 yds³/ft. with a minuscule shoreline advance of 0.27 feet.



New Jersey Beach Profile Network

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

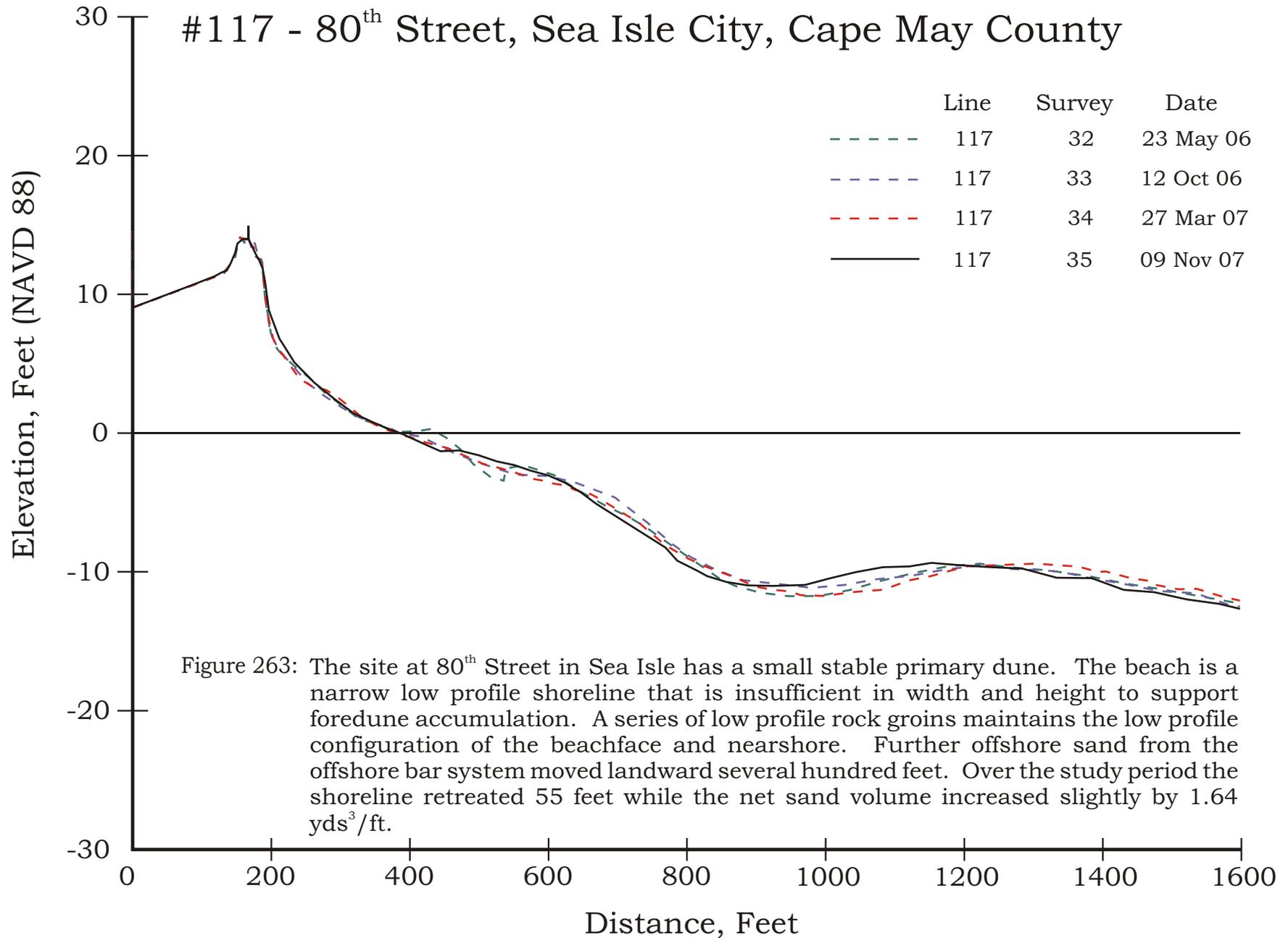




Figure 264. 9th Street in Avalon is position only 500 feet south of Townsend's Inlet. There is a rock jetty protecting the shoreline along the inlet, however, the structure provides northeast wave protection for this beach. Sediment loss ramps up to the south from this site, but the jetty does prevent serious erosion from here north. The photograph was taken May 25, 2006.

9th STREET, AVALON - SITE 216

Figure 265. The photograph to the right was taken November 12, 2007 and shows the dunes and a view across the beach to the Townsend's Inlet jetty. This wide area is retained by the jetty and acts as a buffer for the northeast corner of the municipality. Over the study interval the sand volume increased by 6.79 yds³/ft. and a shoreline advance of just 2 feet. One minor sand deposit has been hydraulically pumped onto this shoreline since the 2004 Federal project was completed. Avalon did move sand back to northern beaches in 2006 using both a minor dredge project and truck-hauled back passing of about 53,000 cy. In 2007 a small 80,000 cubic yard addition was made using quarry sand hauled to the beach by truck.



New Jersey Beach Profile Network

#216 - 9th Street, Avalon, Cape May County

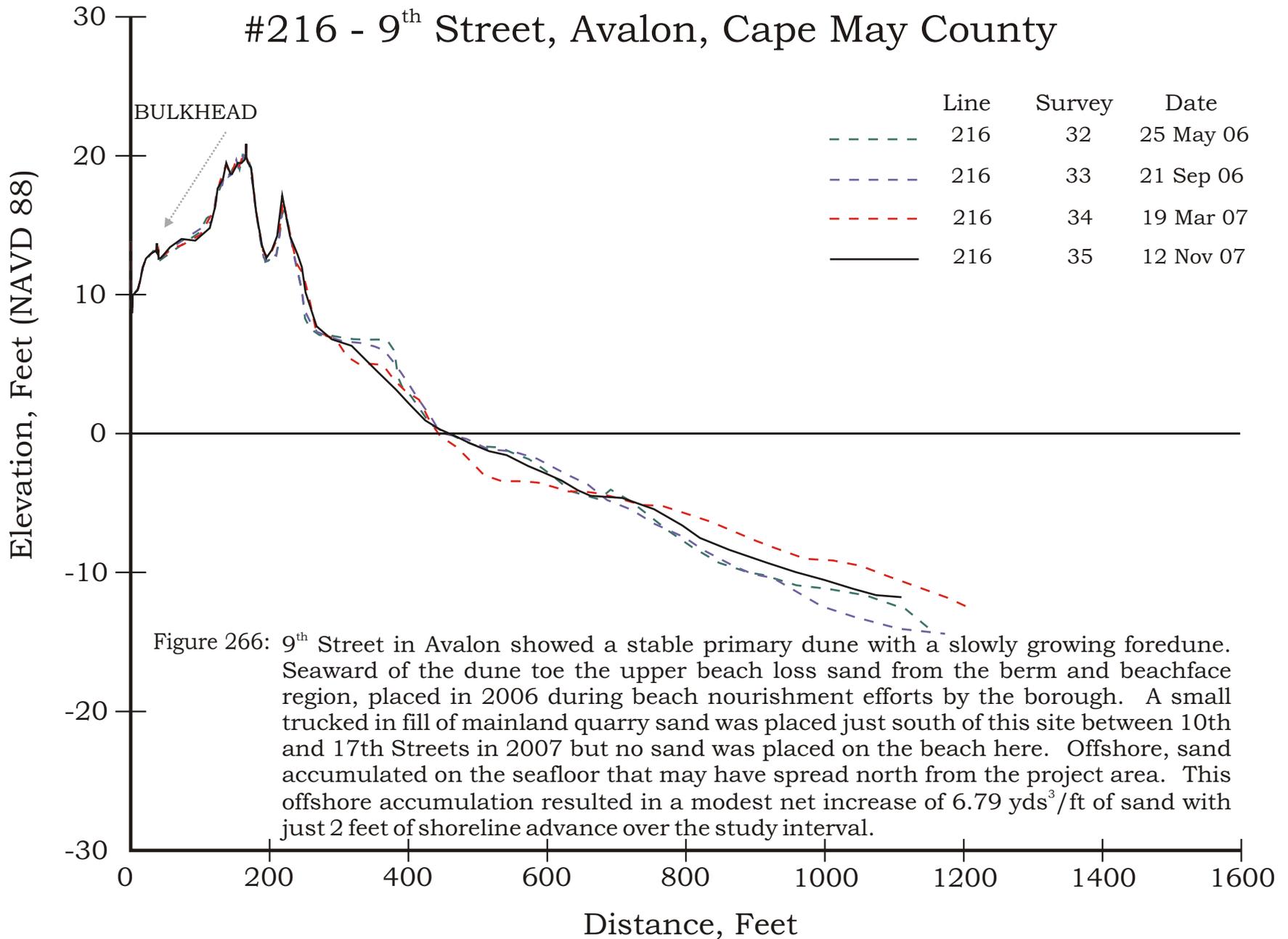




Figure 267. Looking south from the 23rd Street site the beach and fence are new from the recently completed back passing of 55,000 cubic yards of sand from the mid-island beach. Trucks hauled the sand back and placed in it a huge ridge that was graded into the profile shown as survey 32. The picture was taken May 25, 2006.

23rd STREET, AVALON – SITE 116

Figure 268. This view taken November 12, 2007, shows the same scene 18 months later as the beach lost material between September 2006 and November 2007. The net loss was 41.09 yds³/ft. with a 65-foot shoreline retreat. This loss rate was similar to that seen over the past 15 years.



New Jersey Beach Profile Network

#116 - 23rd Street, Avalon, Cape May County

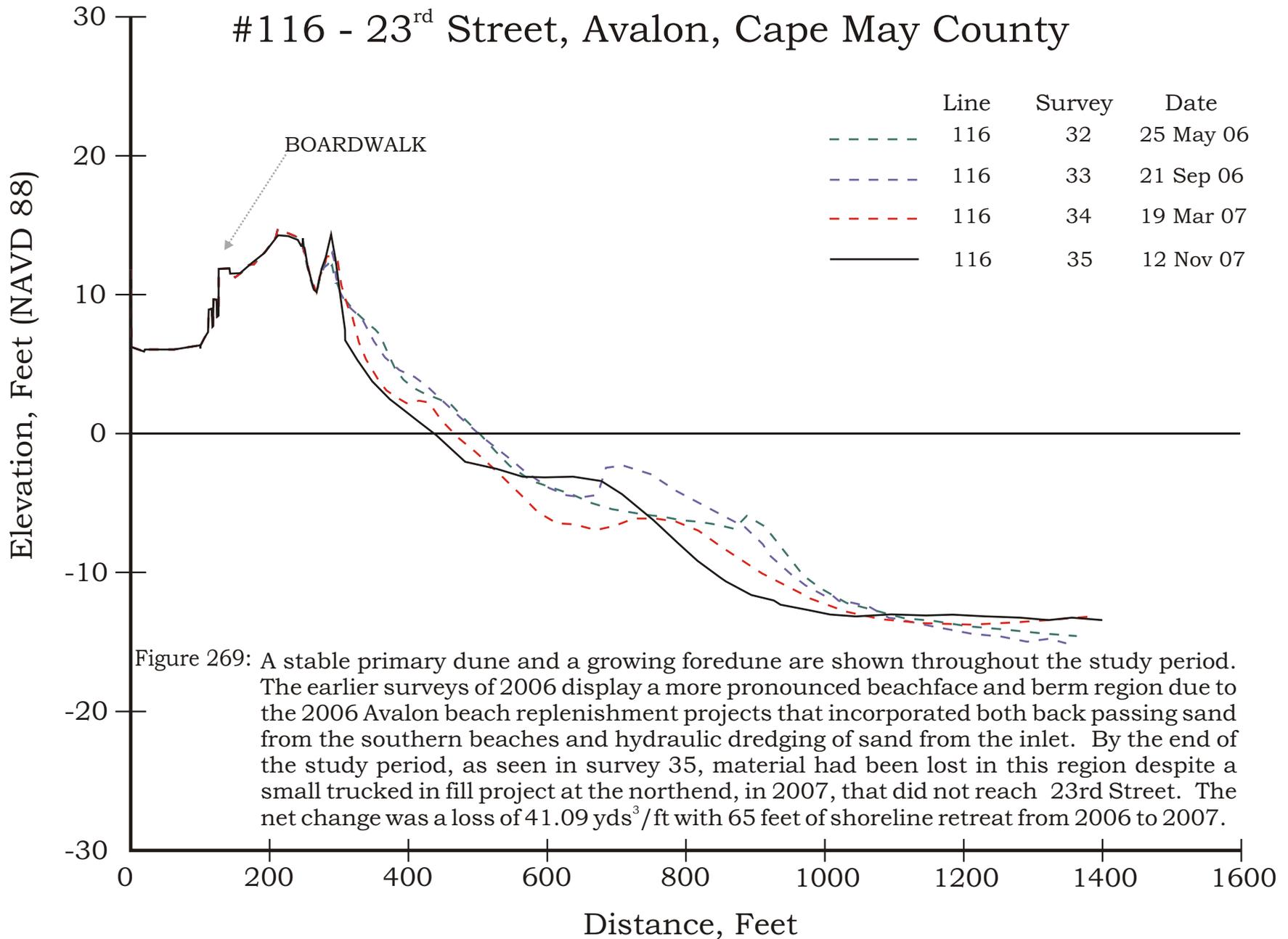




Figure 271. The photograph to the right was taken November 12, 2007 with a view to the north along the dune toe. Change over the past 18 months was in the form of oscillation in the position of the shoreline between the present and survey 34 the previous spring. The beach volume declined by 7.59 yds³/ft., but the shoreline advanced 20 feet.

Figure 270. Sand lost from the northern beaches gets deposited from here south. Surveys done since 1981 have documented dune growth and its seaward advance for 2.5 decades. The instrument position today was on the beach in 1981. This May 25, 2006 view to the north shows the wide, dry beach and the accretion of grass seaward down the seaward dune slope.

35th STREET, AVALON – SITE 115



New Jersey Beach Profile Network

#115 - 35th Street, Avalon, Cape May County

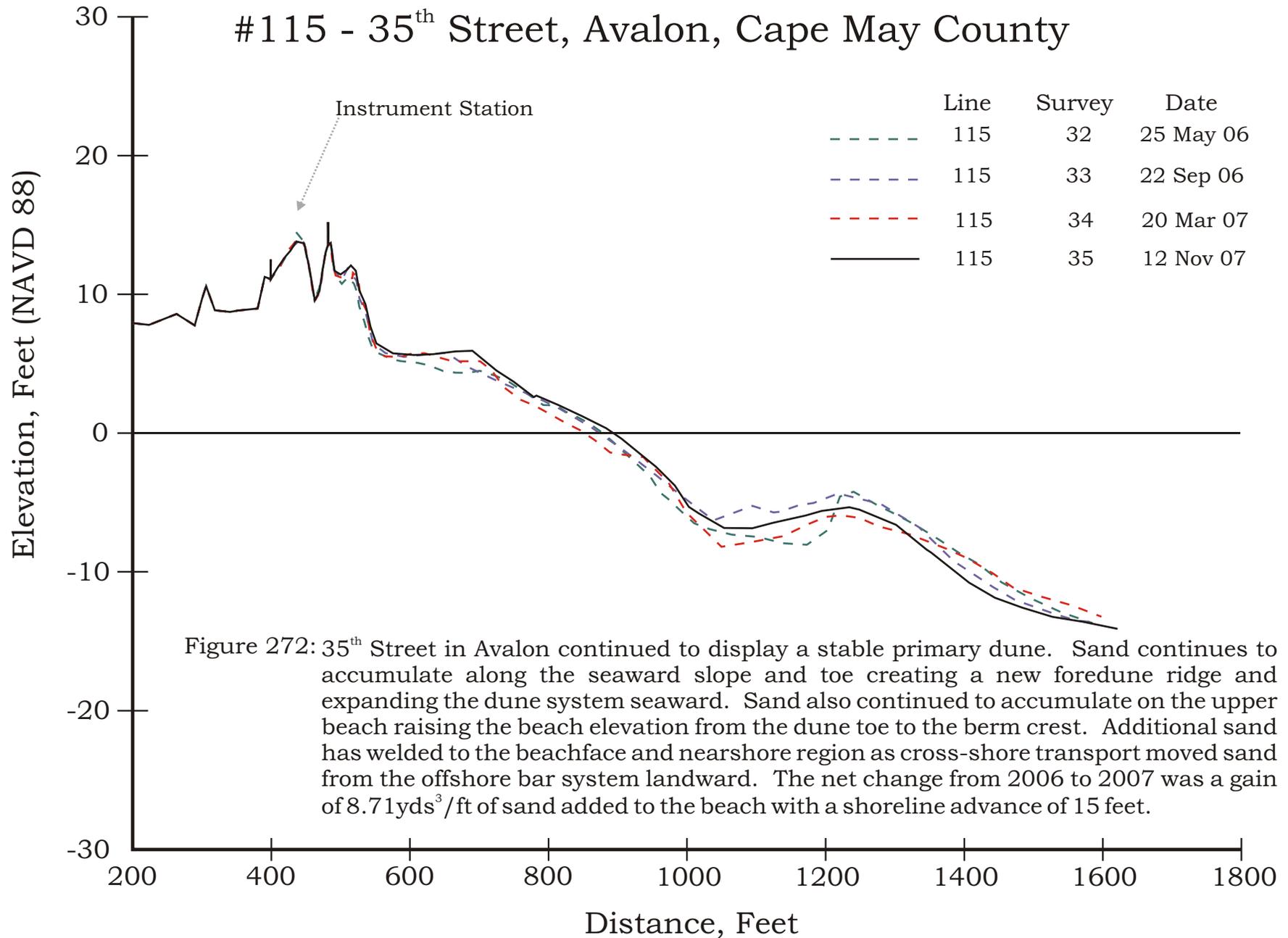




Figure 273. May 26, 2006 shows the beach seaward of a large dune system that has grown substantially over the past 20 years. The site continues to gain a marginal quantity of sand as material is cycled between the beach and the offshore bar system.

70th STREET, AVALON – SITE 114

Figure 274. By November 14, 2007 the beach was only 1 foot wider to the zero elevation position with 6.32 yds³/ft. additional sand on the profile. Sand accumulated at the dune toe, but the beach remained constant.



New Jersey Beach Profile Network

#114 - 70th Street, Avalon, Cape May County

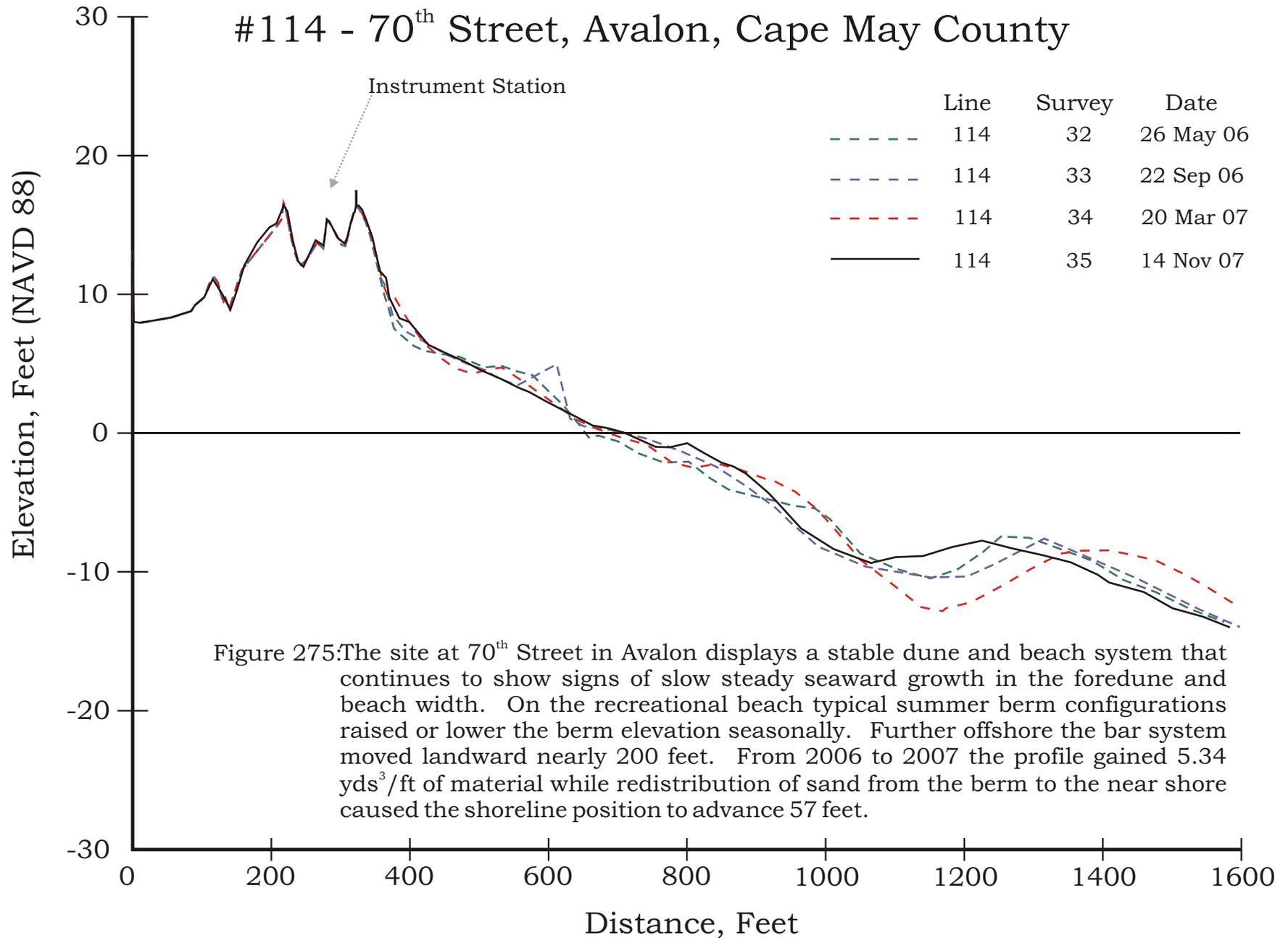




Figure 276. Stone Harbor completed a NJ State and local beach fill in 1997, followed in 2004 by a Federal, State and local project that covered all the beaches on the barrier island except the accretional zone in the middle of the island. This May 22, 2006 picture shows a reasonable width of beach extending up to a recently fenced dune toe.

90th STREET, STONE HARBOR – SITE 113

Figure 277. The change in this site between May 2006 and November 14, 2007 was growth in the dunes, retreat in the beachface, and continued migration back and forth of the offshore bar. The net change was a small loss of 4.13 yds³/ft., with a 5-foot retreat in the shoreline position.



New Jersey Beach Profile Network

#113 - 90th Street, Stone Harbor, Cape May County

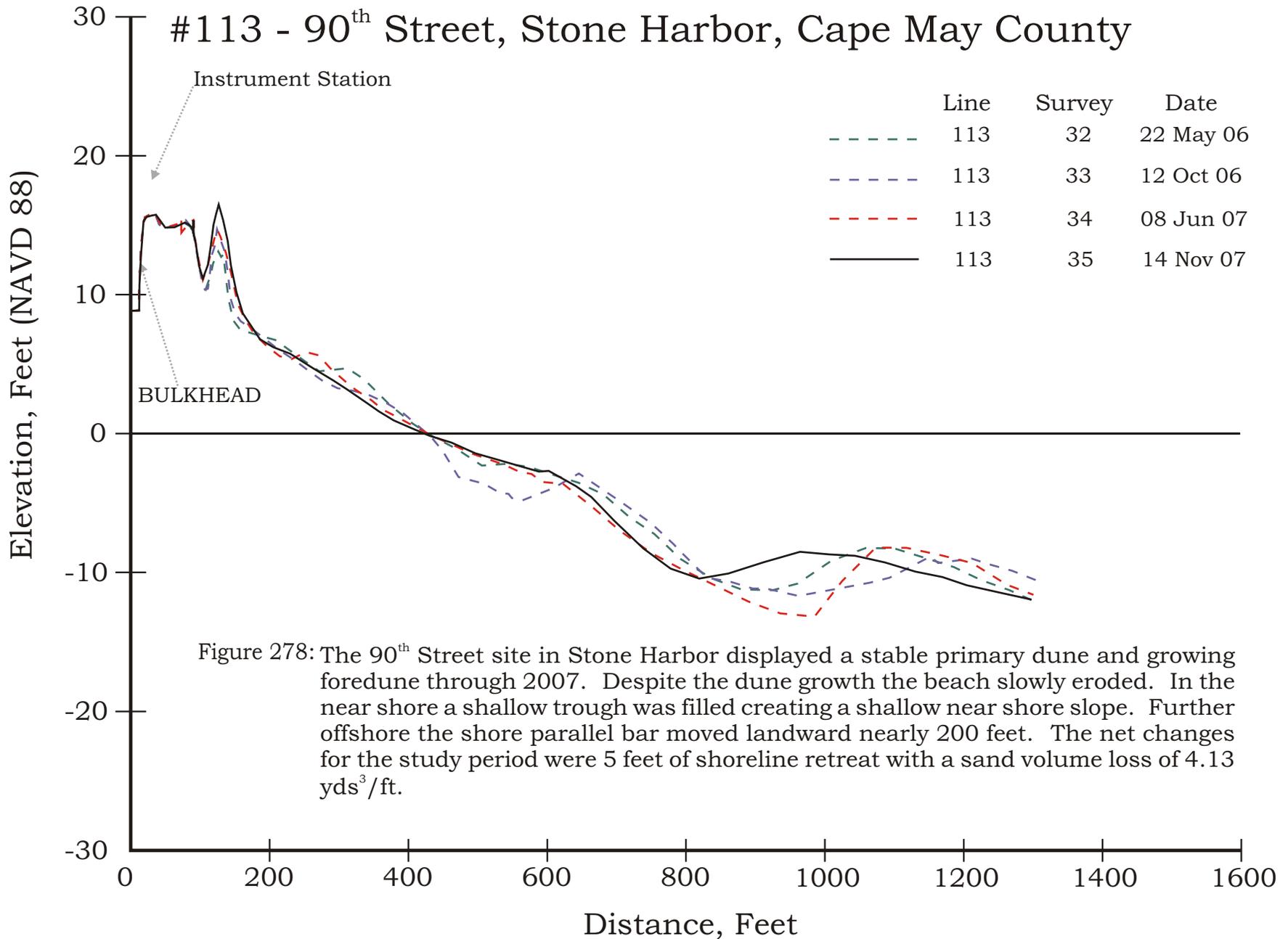


Figure 278: The 90th Street site in Stone Harbor displayed a stable primary dune and growing foredune through 2007. Despite the dune growth the beach slowly eroded. In the near shore a shallow trough was filled creating a shallow near shore slope. Further offshore the shore parallel bar moved landward nearly 200 feet. The net changes for the study period were 5 feet of shoreline retreat with a sand volume loss of 4.13 yds³/ft.



Figure 279. The dune at the south end of Stone Harbor was developed during the 2004 Federal beach restoration project. Positioned seaward of the revetment rocks that reside just in front of the bulkhead just visible at the extreme left of the left hand photograph taken May 22, 2006. The beach remains reasonably wide in spite of some retreat due to the retaining effect of the terminal rock groin along this shoreline.

SOUTH END, STONE HARBOR – SITE 212

Figure 280. This view taken November 14, 2007, shows the toe of the dune and the row of poles put into the sand to tether the catamarans used each summer by Stone Harbor residents. The beach lost 46.25 yds³/ft., while the shoreline retreated 57 feet over the 18-month interval.



New Jersey Beach Profile Network

#212 - South End, Stone Harbor, Cape May County

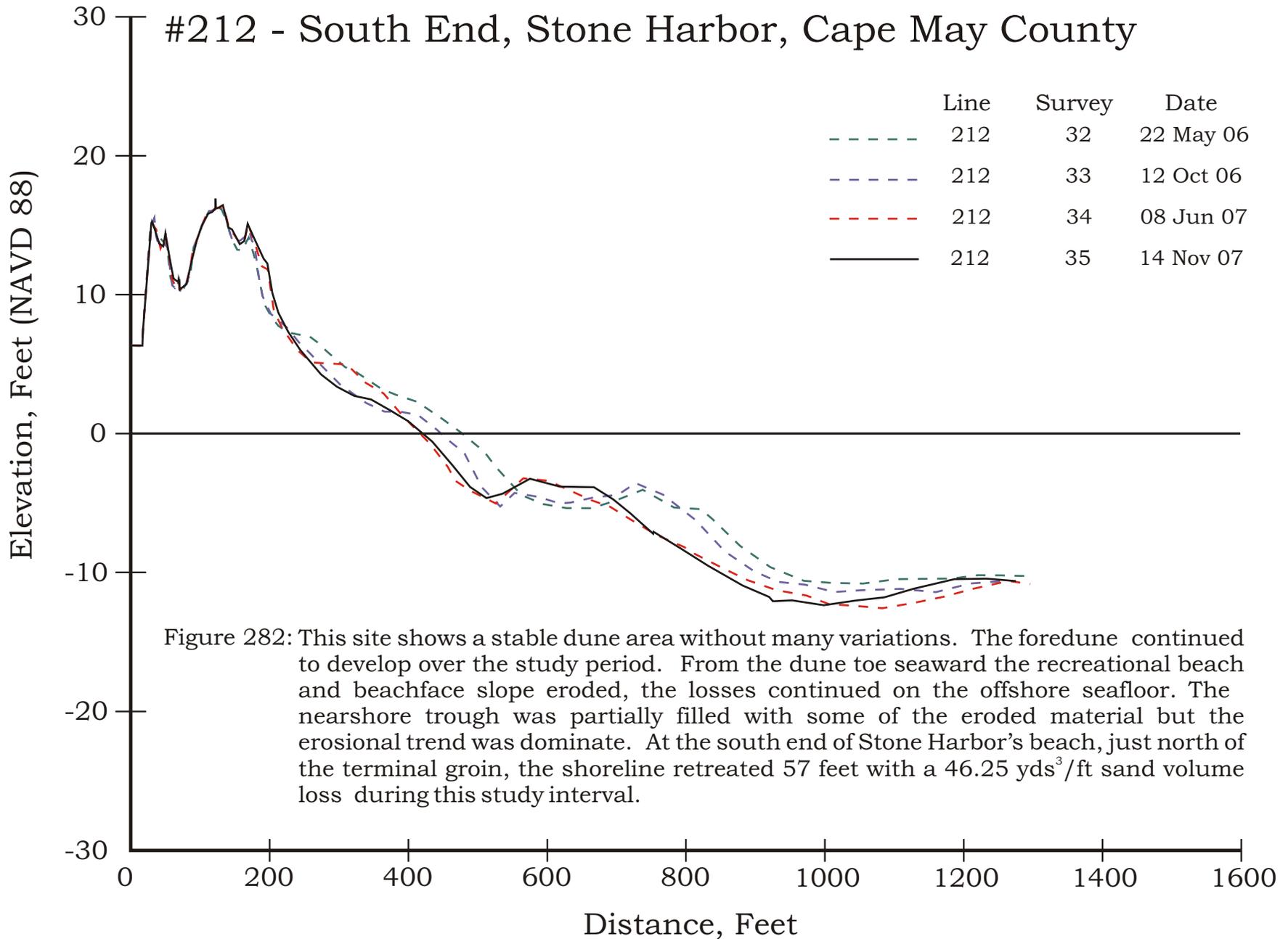




Figure 283. Loss rates reversed at North Wildwood following the largest loss ever measured at a New Jersey beach in the history of the project (1055 feet of retreat in the shoreline from 1998 to 2005). The beach gained sand in each survey since the 30th survey in the spring of 2005. The left picture was taken May 11, 2006.

15th AVENUE, NORTH WILDWOOD SITE 111

Figure 284. The photograph to the right was taken November 16, 2007 and shows the broad, flat beach leading to the recreational piers in both North Wildwood and Wildwood. This 18-month interval saw a 20.93 yds³/ft. gain in sand volume with a 54-foot shoreline advance. This annual gain is about 5% of the sand loss documented at this location.



New Jersey Beach Profile Network

#111 - 15th Avenue, North Wildwood, Cape May County

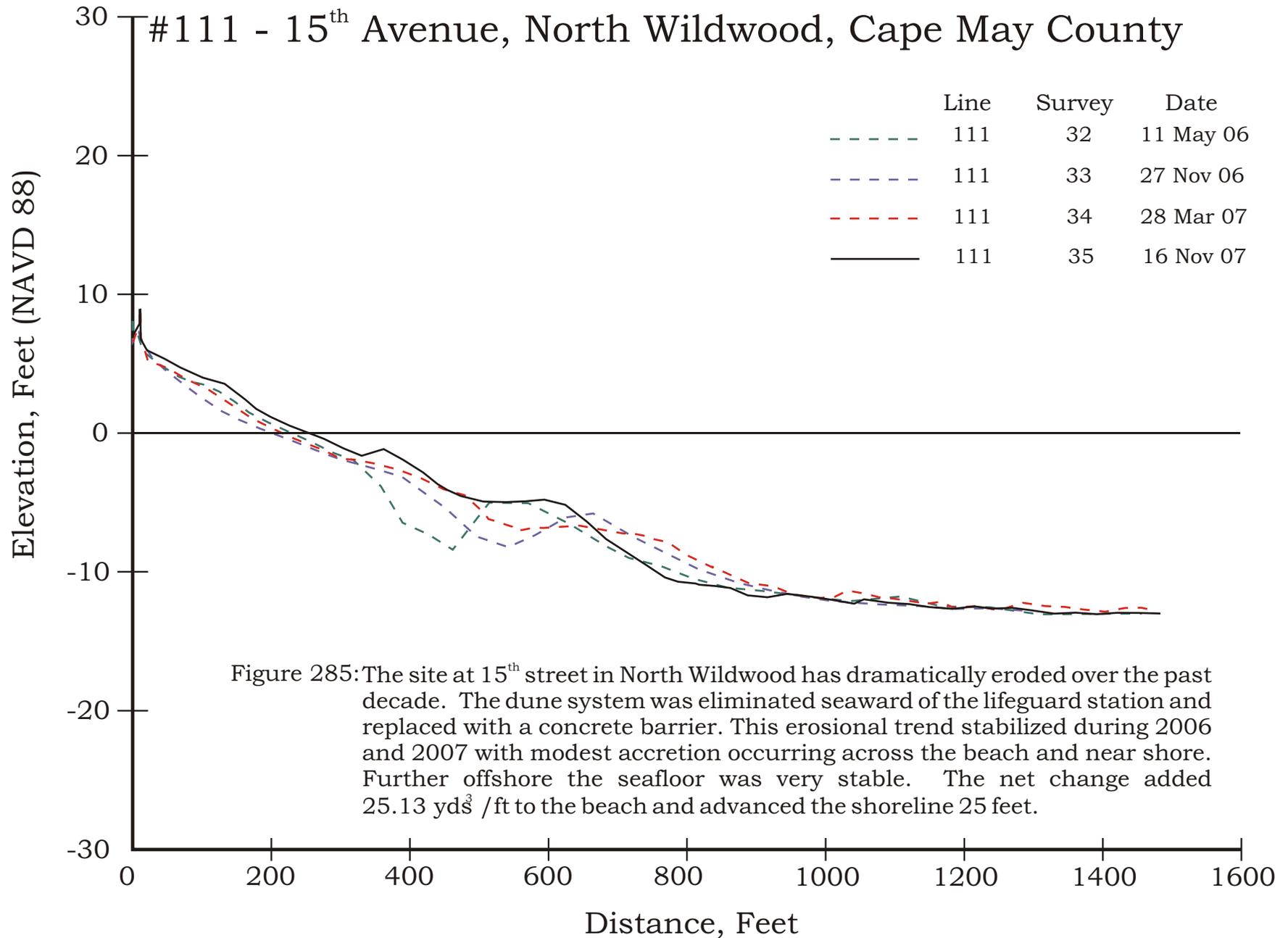




Figure 286. In May of 2006 the beach in Wildwood was graded smooth for the coming tourist season. The vast width of this shoreline has been the subject of many stories over the years. Many folks feel that all the sand lost from every other New Jersey beach comes somehow, to Wildwood. This dramatic accretion has its roots in the early 20th Century with three major events. 1.) The US Navy commissioned the construction of a 3,000-foot long pair of inlet jetties at Cold Springs Inlet south of this location in 1906-11. 2.) In 1922 access causeway construction from “Three-Mile” Island to “Two-Mile Island caused the closure of Turtle Gut Inlet making this one barrier segment. All the ebb-tidal delta sand immediately moved onto the beach. 3.) The oceanfront property had already been sold by 1920 and existing and subsequent owners have successfully resisted allowing new construction seaward as the shoreline accreted.

CRESSE AVENUE, WILDWOOD SITE 110

Figure 287. This view taken November 16, 2007, shows the same view to the south 18 months later. This beach has continued to advance over the past 10 years, this time, due to changes in the tidal channel location in Hereford Inlet. These changes forced massive erosion in North Wildwood with half the lost sand moving into Hereford Inlet as a giant spit, and the other half moving south along the beach advancing this shoreline by 72 feet in 18 months. The sand volume increased by 37.45 yds³/ft.



New Jersey Beach Profile Network

#110 - Cresse Avenue, Wildwood, Cape May County

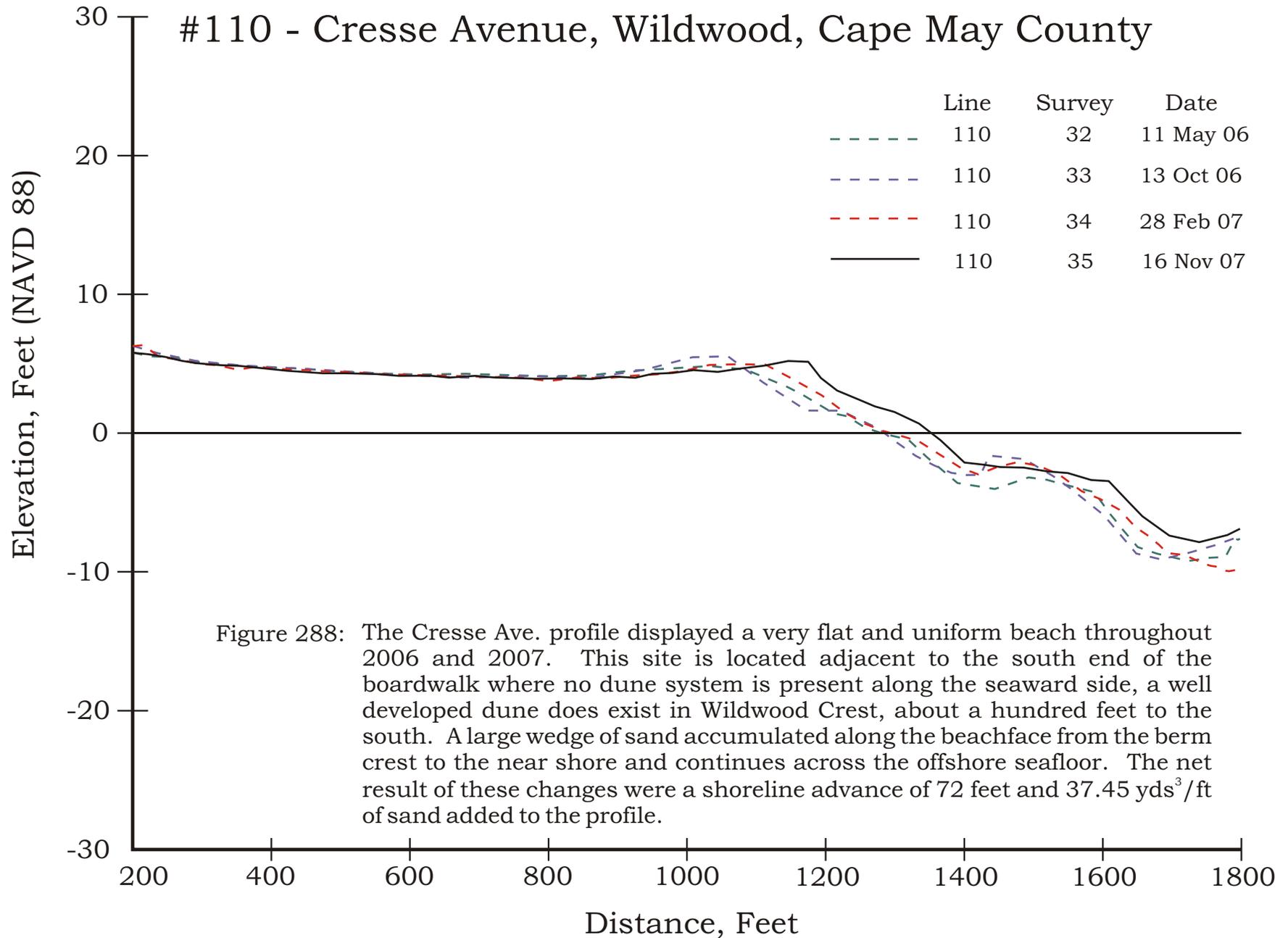




Figure 289. This view to the northeast shows the dunes that have developed at this site since this project began. Sand appears to add to the volume between every survey adding to the bulk and volume of these features. Initially there was no dune system present seaward of the developed property bulkheads. The picture was taken May 11, 2006.

RALEIGH AVENUE, LOWER TOWNSHIP SITE 109

Figure 290. By the fall of 2007, grass growth had added to the dunes and their height and width. Significant re-development has occurred in the interim as well. This beach gained 28.12 yds³/ft., and the shoreline advanced 41 feet. These gains are most likely attributable to the sand loss at the north end of this barrier island. This picture was taken November 21, 2007



New Jersey Beach Profile Network

#109 - Raleigh Ave., Lower Township, Cape May County

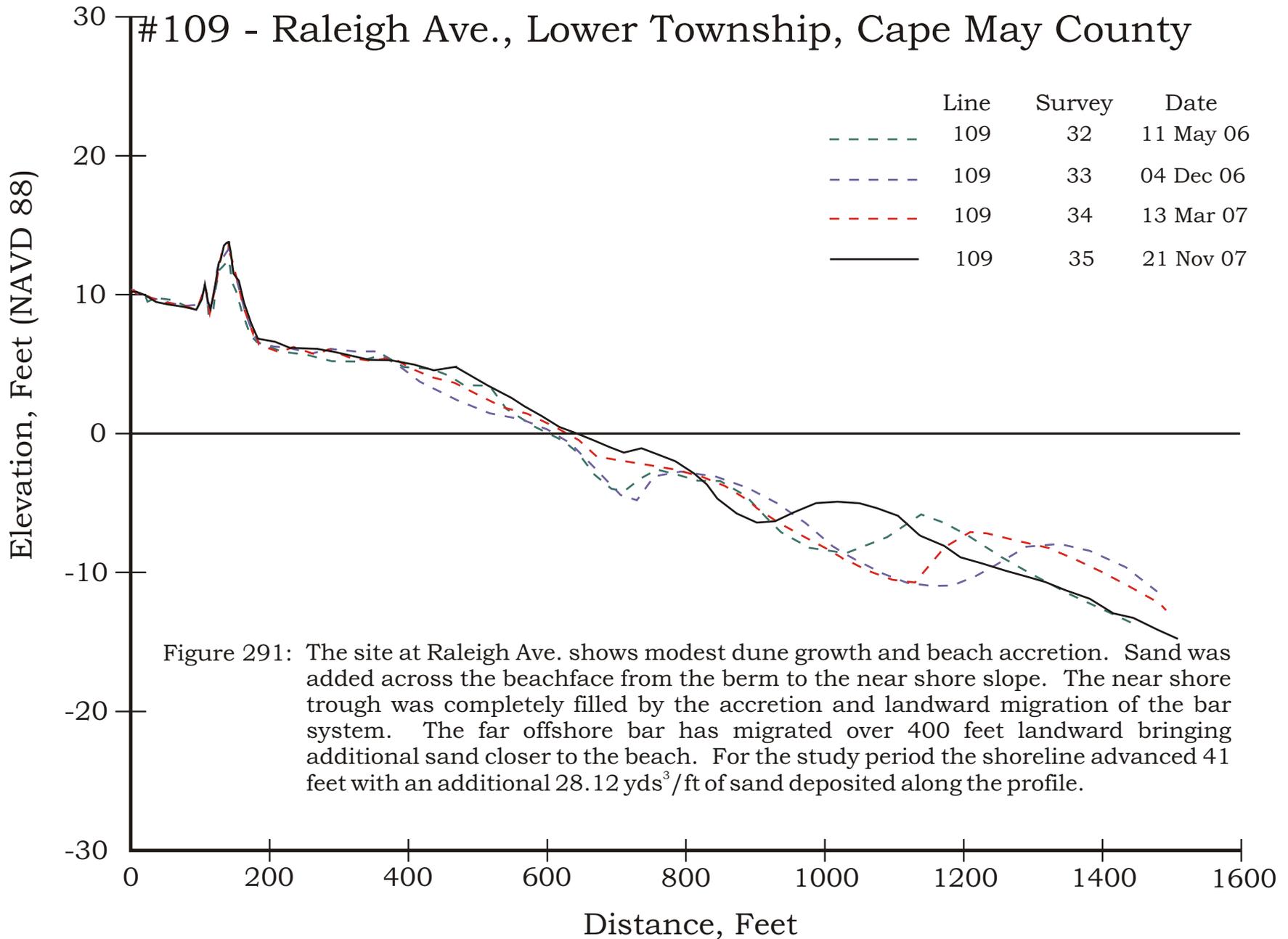




Figure 292. Looking east from the dune crest, the natural area south of development was once in the hands of the military. Now part of the Cape May National Wildlife Refuge, this is a valuable asset saved from condominiums. The timber groin is an old structure.

CAPE MAY NATIONAL WILDLIFE REFUGE – SITE 208

Figure 293. This view taken November 21, 2007, shows the extent of the dune system and the native vegetation across this wide area. The beach gained 5.76 yds³/ft., and the shoreline advanced 14 feet over the past 18 months. The dense vegetation prevents sand from reaching inland beyond the small fore dunes that are developing at their seaward limit.



New Jersey Beach Profile Network

#208 - Cape May NWR, Lower Township, Cape May County

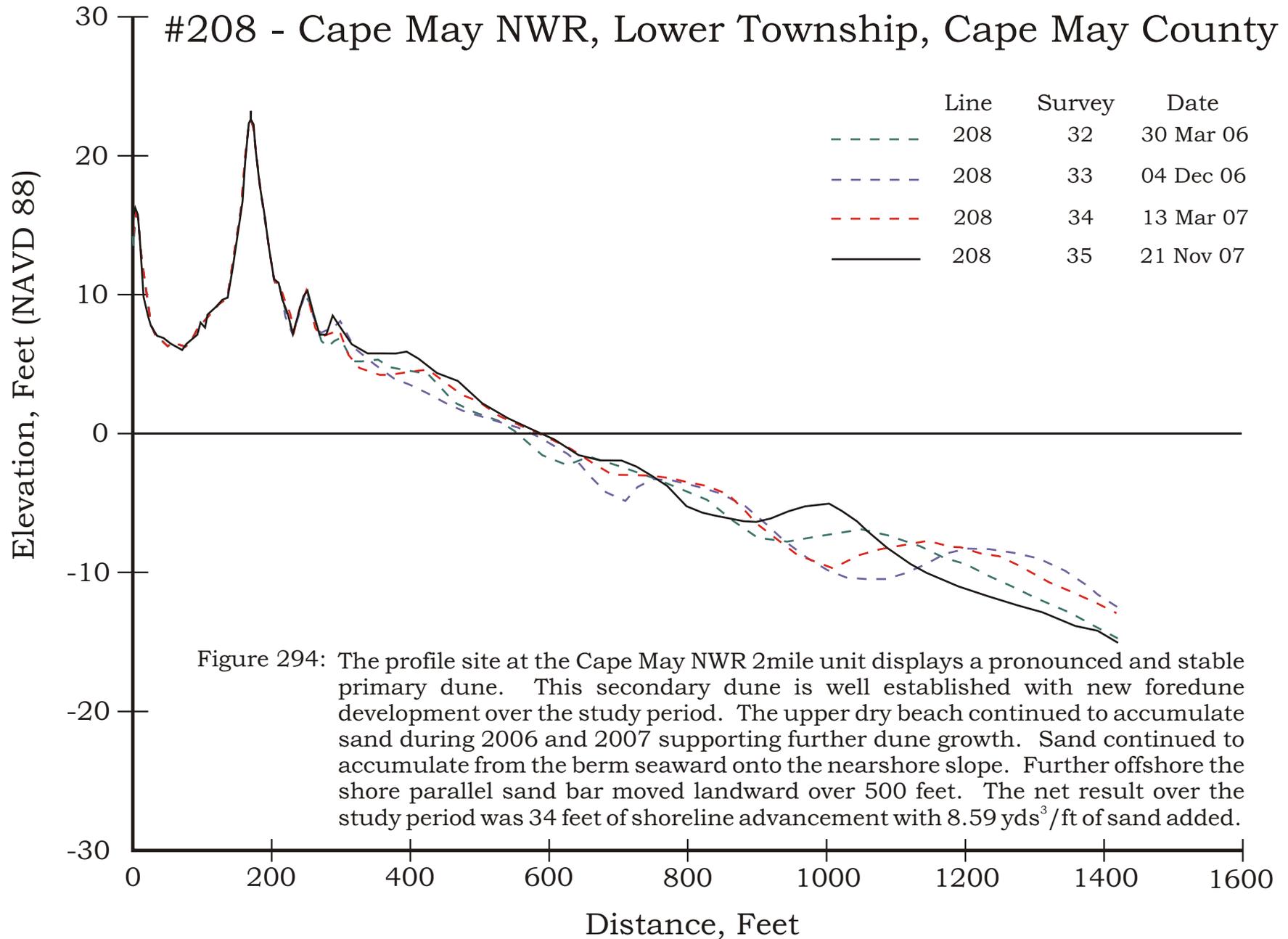




Figure 295. This view south in April 26, 2006 shows the extent of the beach and berm between this recreational facility and the Cape May City development to the south. Sand has been added seven times since 1989 when the first modern large-scale Federal beach nourishment project commenced.

CAPE MAY BEACH CLUB – SITE 108

Figure 296. The vegetation is beginning to colonize the wide berm following beach restoration. High level recreational activity prevents it from growing in front of the profile site at the beach club. The sand volume increased by 16.92 yds³/ft., while the shoreline advanced 22 feet. Initially not a stable nourished beach in the early 1990's, the site has become very stable as the shoreline south was built seaward to support this width.



New Jersey Beach Profile Network

#108 - Cape May Beach Club, Cape May County

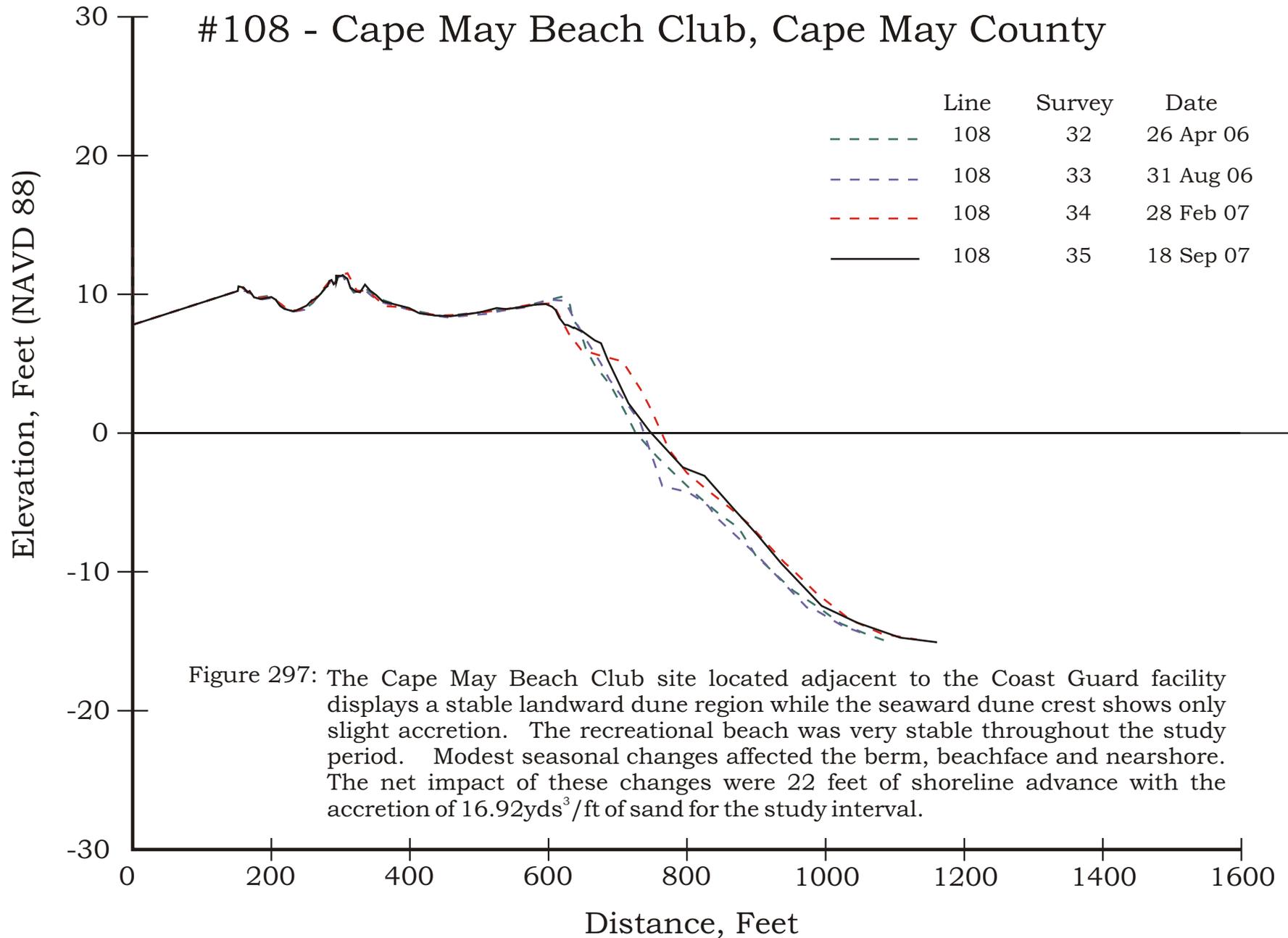




Figure 298. Baltimore Avenue had no dry beach in 1986 and very little recreational use was made of the shoreline here. There was a rock seawall at the road's edge and high tide was at the rocks all the time. Following the initial sand placement in 1990, the beach became a resource once again. This photograph was taken on April 26, 2006 looking north along the toe of the dune.

BALTIMORE AVENUE CAPE MAY CITY SITE 107

Figure 299. This view taken September 18, 2007, shows the substantial dunes between the rock revetment and the berm. 20 years ago this photo spot would have been in 5 feet of water or more at low tide. This beach gained 8.55 yds³/ft., and the shoreline advanced 7 feet over the study interval.



New Jersey Beach Profile Network

#107 - Baltimore Ave., Cape May, Cape May County

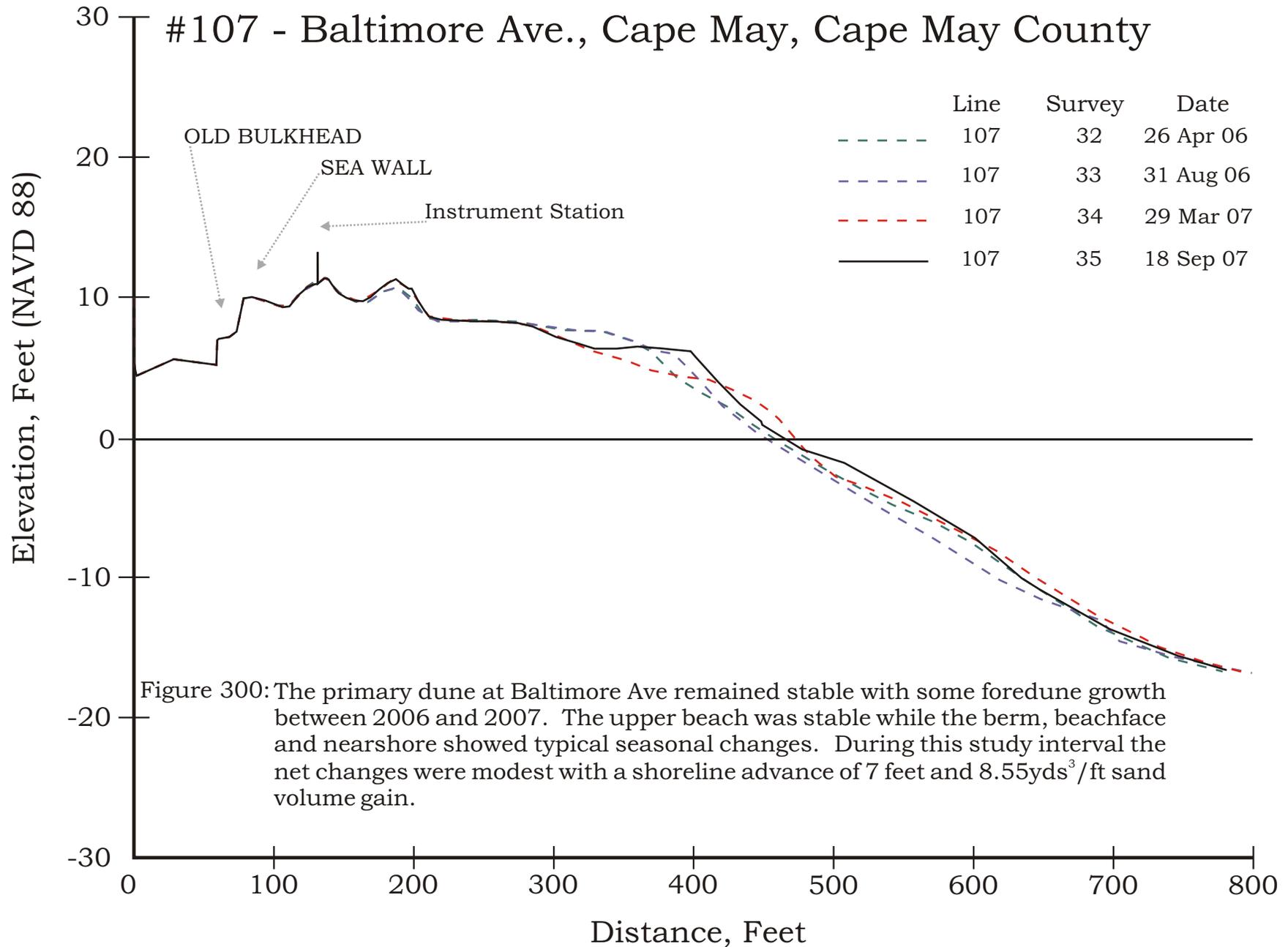




Figure 301. This is the primary recreational beach for Cape May City. Sand was sufficient for tourists at this location prior to the Federal project, but the available space was not sufficient for a summer weekend. Today the beach is wide, stable and grows as maintenance occurs. This view on April 26, 2006 shows the groins exposed as sand was being lost, but the general trend is highly positive compared to pre-project conditions.

BROADWAY AVENUE, CAPE MAY CITY SITE 206

Figure 302. The photograph to the right was taken September 18, 2007 and shows the new restroom facility built at the boardwalk several years ago. The dune extends north and south of this facility along the boardwalk located on the rock revetment. The width of this beach is evident in this shot and it grew wider by 30 feet and gained an additional 18.77 yds³/ft. of new sand by September 2007.



New Jersey Beach Profile Network

#206 - Broadway Ave., Cape May, Cape May County

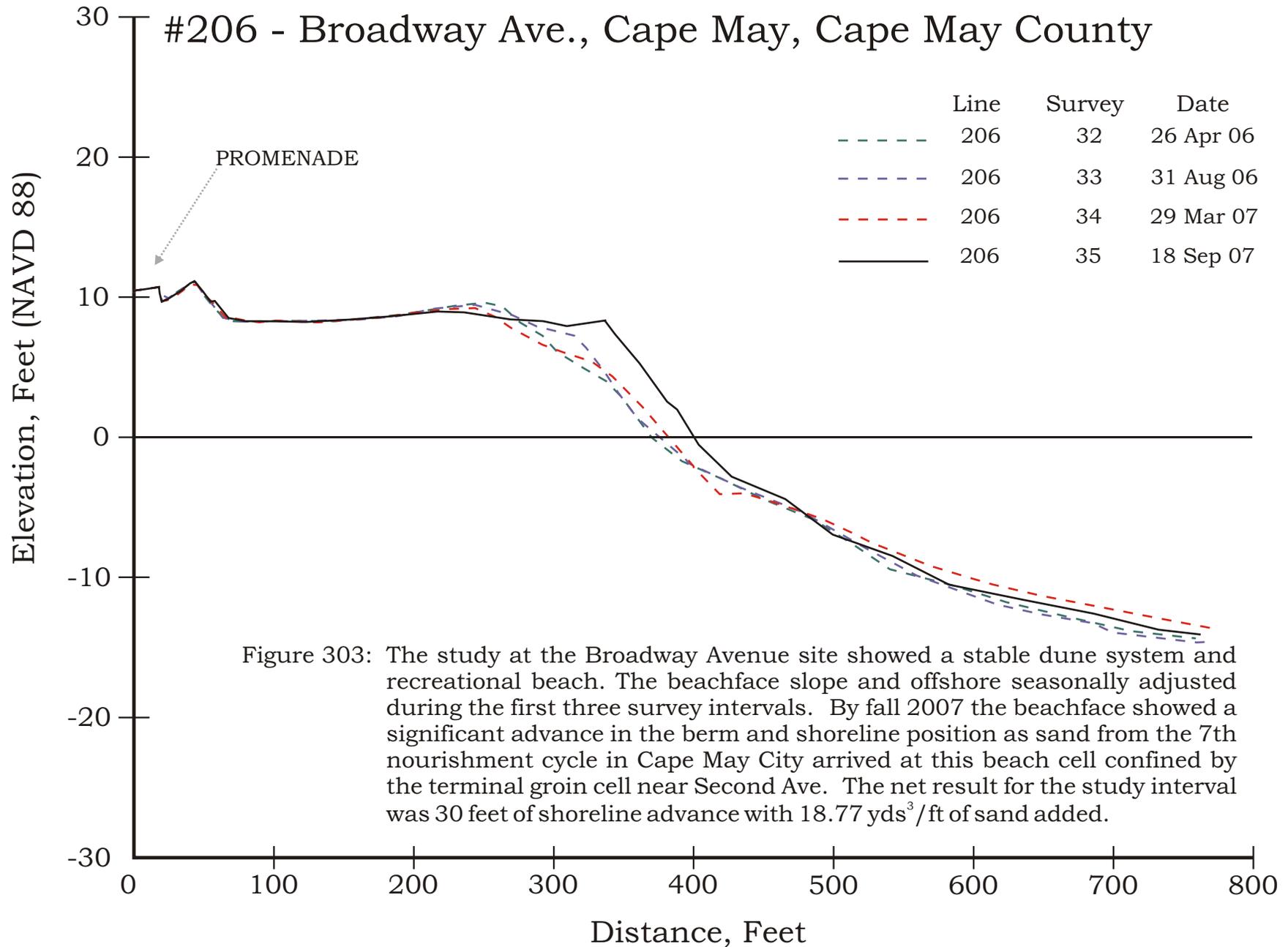




Figure 304. Beach nourishment has unintended consequences when sand moves beyond the project extents. In this case the nature conservancy land has received hundreds of thousands of cubic yards of sand shed from the Cape May City project beaches. Prior to the project the beach lay directly at the toe of the tall landward dune (rebuilt by the State in 1985). The next 20 years saw advance after advance until the present shoreline lies over 600 feet seaward of that original position. This view taken March 29, 2006 shows the toe of the vegetated dunes and the beach seaward of them looking south toward the Cape May lighthouse in the distance.

NATURE CONSERVANCY, CAPE MAY SITE 105

Figure 305. Stepping back into the dunes to the new instrument location, the expanse of the deposit of sand becomes apparent. During this study period an additional 23.59 yds³/ft. of sand were added to the berm, but loss offshore produced a minimal change of only 0.47 yds³/ft. across the entire cross section. However, the shoreline advanced 63 feet further seaward. The original man-made dune line lies to the extreme right along the line of dark green vegetation positioned directly in front of the highest line of dune grass (lighter brown plants).



New Jersey Beach Profile Network

#105 - Nature Conservancy, Cape May, Cape May County

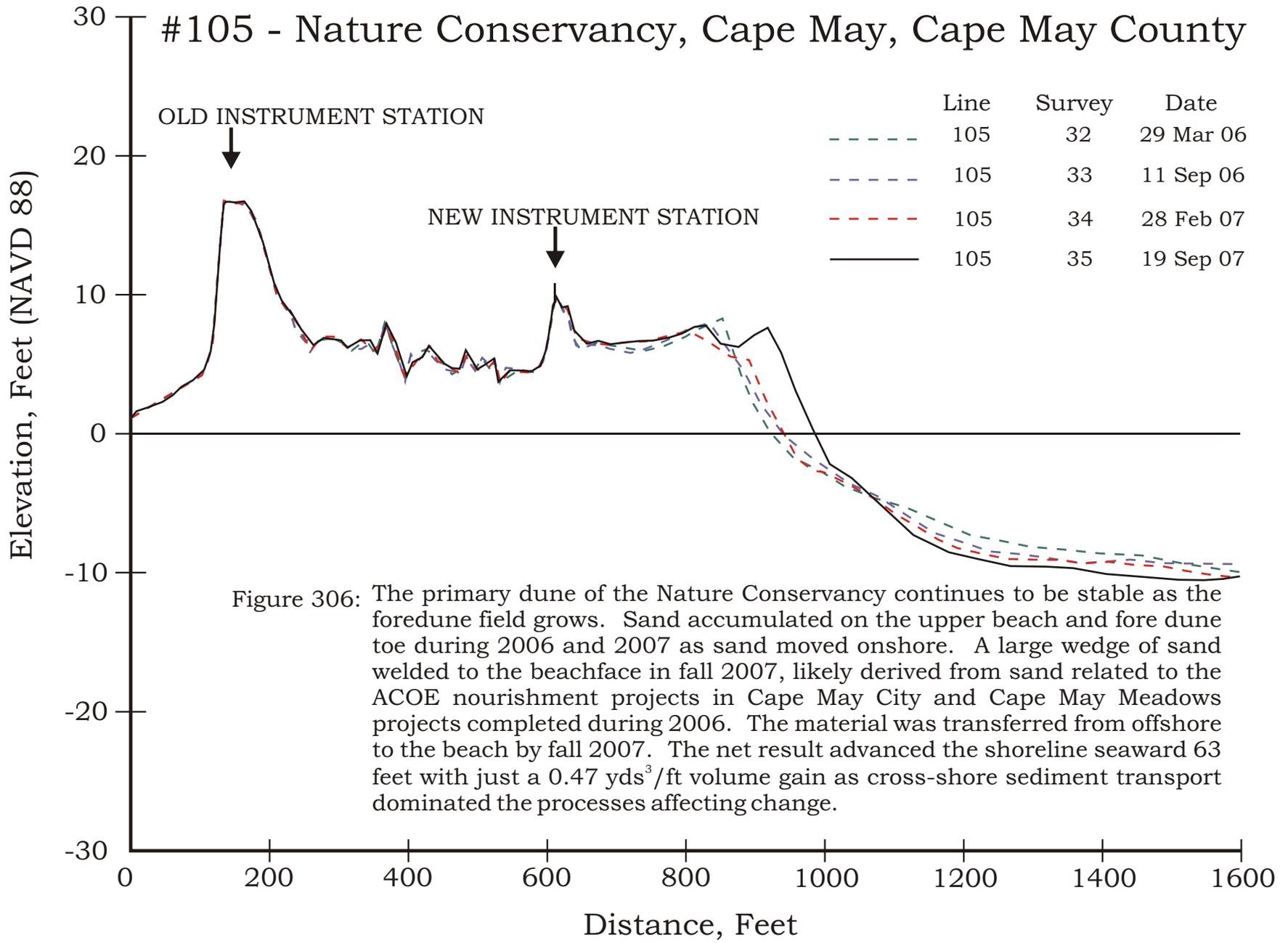


Figure 306: The primary dune of the Nature Conservancy continues to be stable as the foredune field grows. Sand accumulated on the upper beach and fore dune toe during 2006 and 2007 as sand moved onshore. A large wedge of sand welded to the beachface in fall 2007, likely derived from sand related to the ACOE nourishment projects in Cape May City and Cape May Meadows projects completed during 2006. The material was transferred from offshore to the beach by fall 2007. The net result advanced the shoreline seaward 63 feet with just a 0.47 yds³/ft volume gain as cross-shore sediment transport dominated the processes affecting change.



Figure 307. Restoration efforts took place at this location prior to the survey completed April 24, 2006. The plants had been added to the new front slope to the dunes and sand nearly buried the rock groins on either side of this beach.

LAKE DRIVE, CAPE MAY POINT SITE 104

Figure 308. By September 19, 2007 there had been 60 feet of shoreline retreat accompanied by the loss of 37.52 yds³/ft. in sand volume. There were no structures placed offshore as was done in the two groin cells to the west. However, the State and municipality sponsored the placement of rock-filled cages called “gabions” under the new dunes in the beach cells to the east and west. These are designed to provide a measure of resistance to severe storms and preclude dune breaching into the interior development.



New Jersey Beach Profile Network

#104 - Lake Drive, Cape May Point, Cape May County

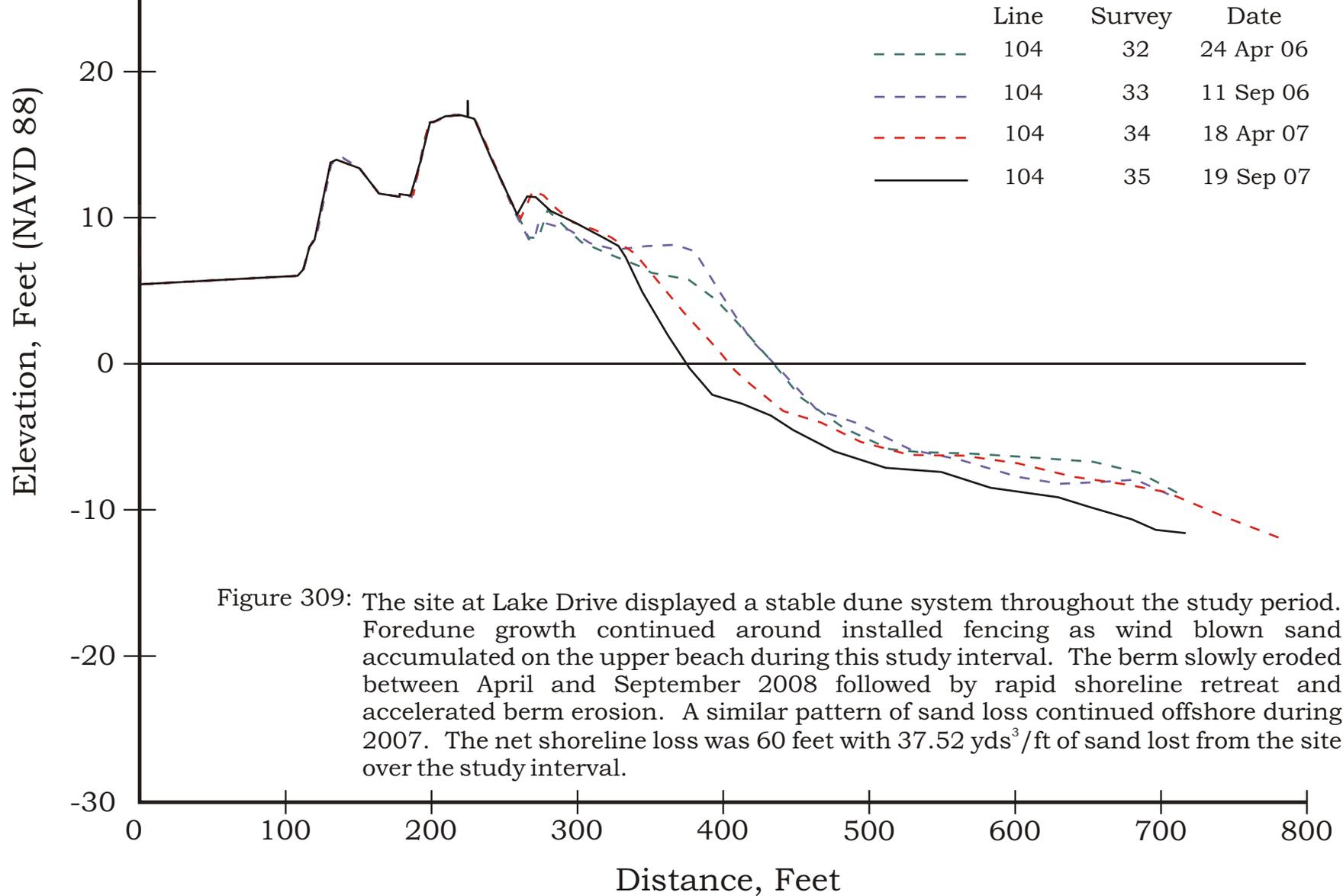




Figure 310. This sequence of profile plots shows a beach retreat between March 29, 2006 (left) and February 28, 2007, followed by a significant advance in the quantity of sand on the beach by December 20, 2007 (below). Shoreline accretion is not common along this undeveloped shoreline, but this series indicates that it does happen.

HIGBEE BEACH – SITE 103

Figure 311. By December 2007 the beach sand volume had increased by 4.03 yds³/ft over the 18 months of study and by 6.26 yds³/ft since February 28, 2007. This produced a 12-foot advance in the shoreline, but a 14-foot advance since February. The two photographs show the increase in sand over the 18-month interval if one looks carefully at the buried stump in the middle distance.



New Jersey Beach Profile Network

#103 - Higbee Beach, Cape May County

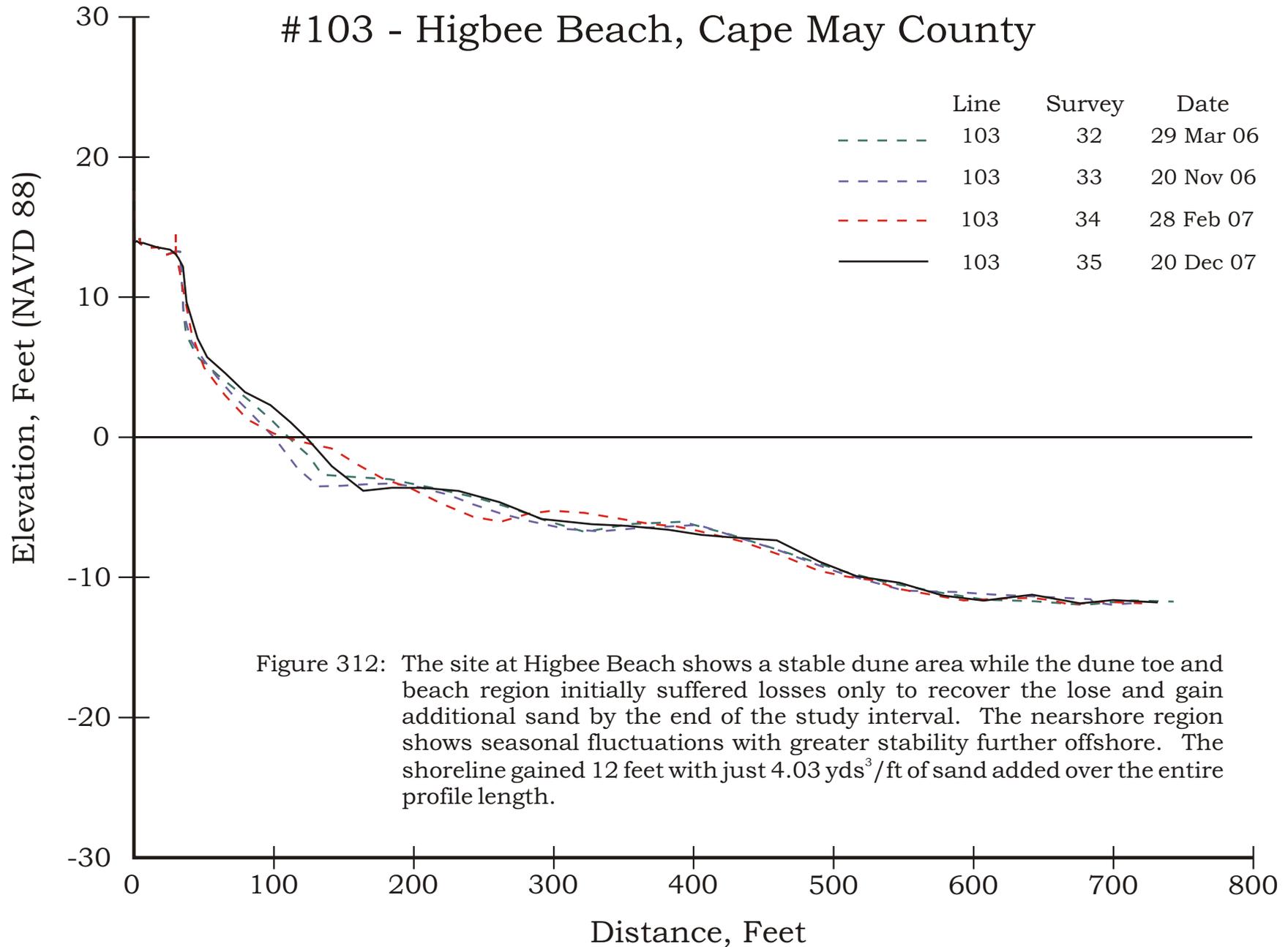




Figure 313. The beachface underwent some winter erosion between November 2006 and May 2007 as waves cut a notch at a high tide elevation (about 4.5 feet). The higher dunes were unaffected, but the beach became considerably steeper. Photograph to the left was taken April 24, 2006.

WHITTIER AVENUE, NORTH CAPE MAY SITE 102

Figure 314. The offshore region remains a broad, flat expanse of sand as a veneer over Delaware Bay lagoon sediments deposited earlier in the development of the western Cape May County shoreline. The majority of the 13.80 yds³/ft. sand loss came from the outermost 200 feet on the intertidal sand flat (0.28 yds³/ft gain out to 572 feet from the reference, then a loss of 14.08 yds³/ft over the final 303 feet of the cross section). The shoreline retreated 5 feet. The photograph to the right was taken December 21, 2007.



New Jersey Beach Profile Network

#102 - Whittier Ave, North Cape May, Cape May County

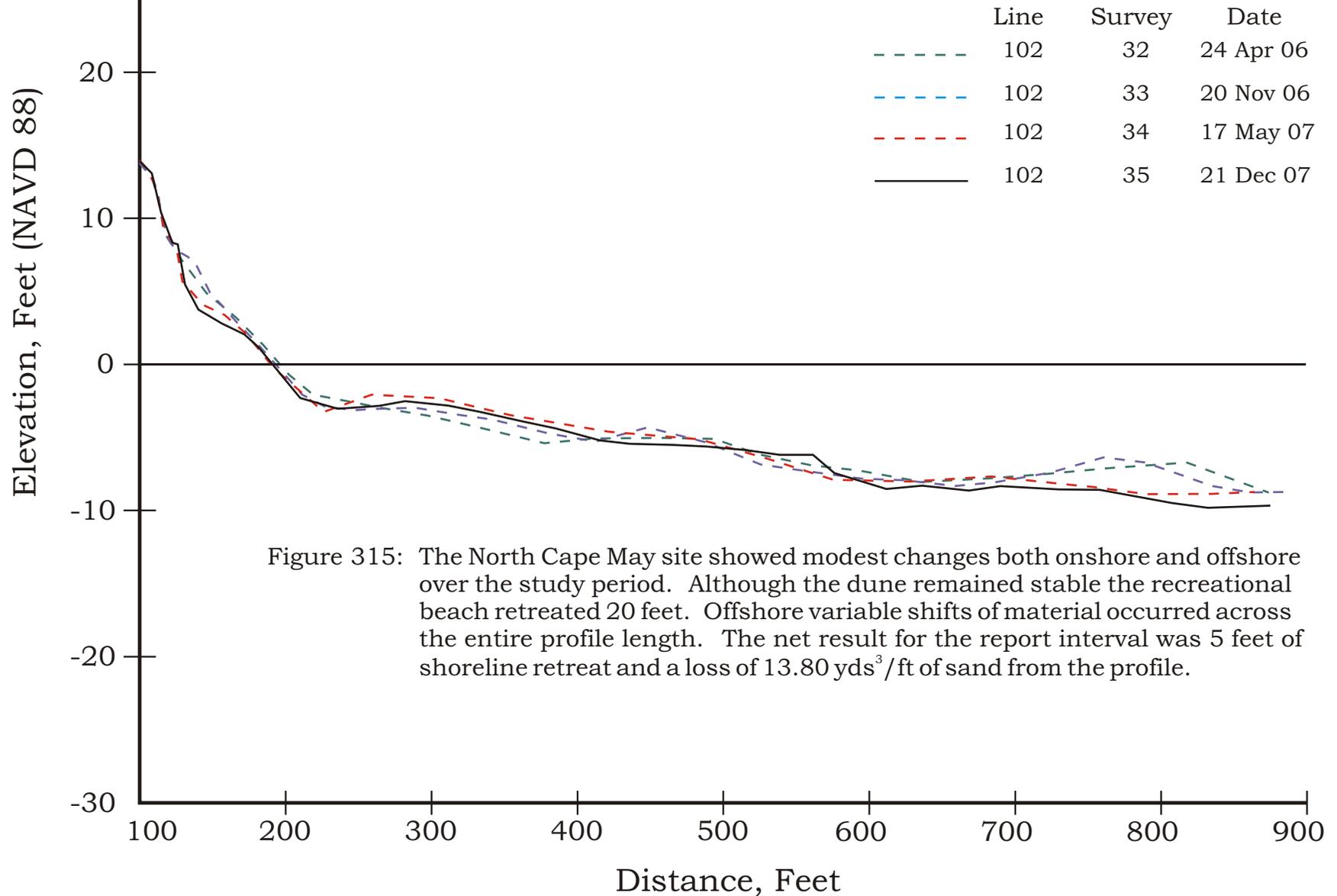




Figure 316. By contrast with Whittier Avenue, the profile site in Villas showed the smallest of impacts of the winter storms cutting notches in the beach slope. The profiles form a tight group with minor shifts offshore at one bar and tiny changes in the beach itself. The photograph to the left was taken April 21, 2006.

PACIFIC AVENUE, VILLAS – SITE 101

Figure 317. This view taken December 21, 2007, shows accumulated grasses at the wrack line and a small scarp at the toe of live grass plants. Offshore the waves are breaking across the wide tidal terrace typical along the western Cape May County shoreline. The sand volume change was a gain of 3.20 yds³/ft, with a shoreline advance of 13 feet.



New Jersey Beach Profile Network

#101 - Pacific Avenue, Villas, Cape May County

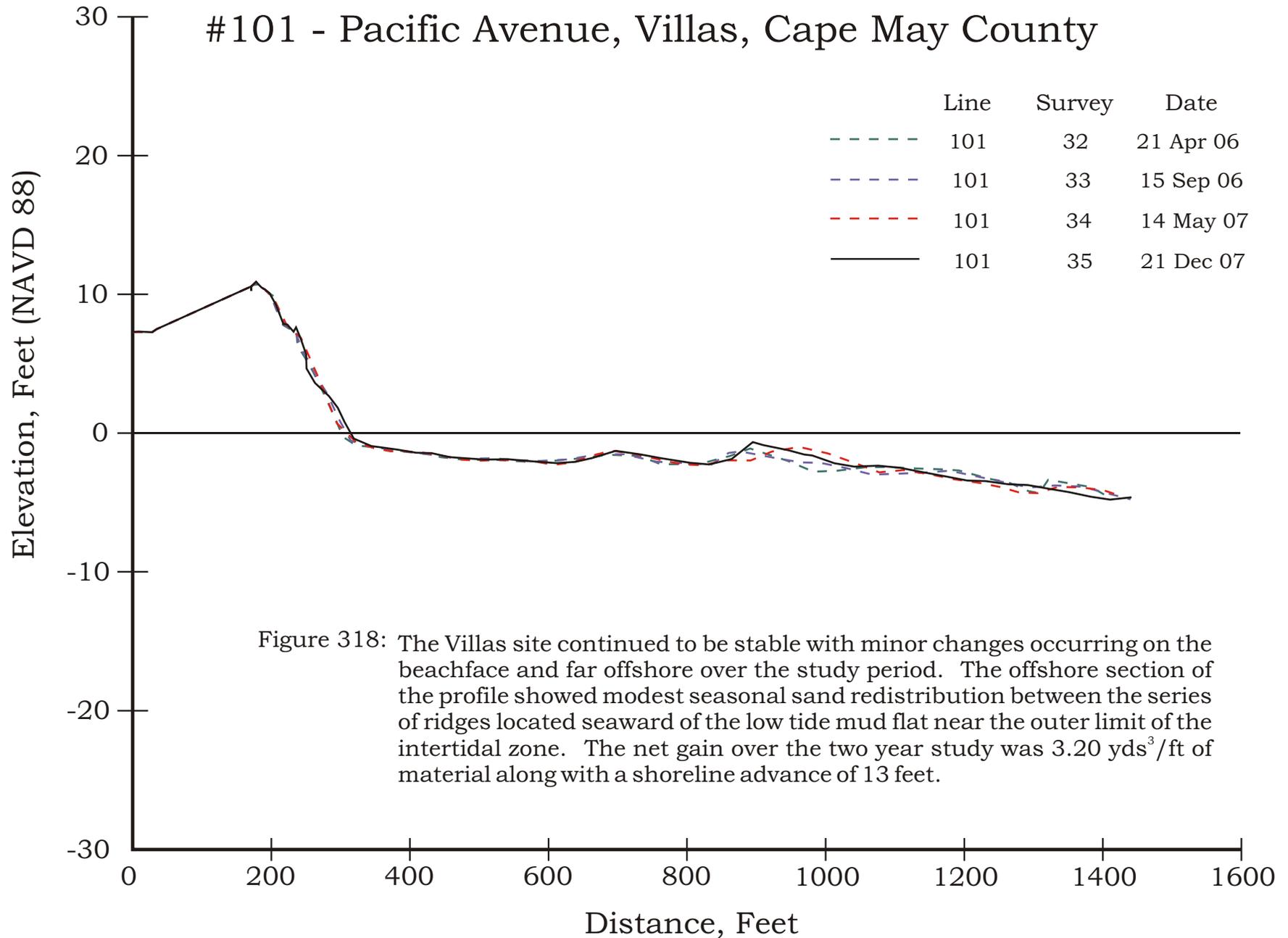




Figure 319. Reeds Beach, NJ is located at the northern limit of sand distribution along the western shoreline of Cape May County. The meager natural supply arriving is not sufficient to offset the losses suffered from landward transport onto the marshes or losses offshore on the terrace. This site has been recessional for decades and shows the wrack line completely landward of the home shown on the beach. Recent overwash shows as sand on the road with a ridge pushed back along the bayside of the roadway.

REEDS BEACH – SITE 100

Figure 320. This view taken December 21, 2007, shows accumulated grasses at the wrack line still positioned landward of the home, but with modest overwash for the moment at this site. Multiple attempts have been made to fund beach restoration along this reach and as this report was written a navigation improvement at Bidwell Creek was starting construction with the dredge material applied to this beach. West winds across Delaware Bay are the major threat to these properties. The worst event in modern memory was Hurricane Gloria in 1985 that came from the southwest across the bay into NJ and did tremendous damage to the NJ bayside communities. The beach change was a meager $0.27 \text{ yds}^3/\text{ft}$. in sand volume and a 0.36-foot shoreline advance over 18 months time.



New Jersey Beach Profile Network

#100 - Reeds Beach, Cape May County

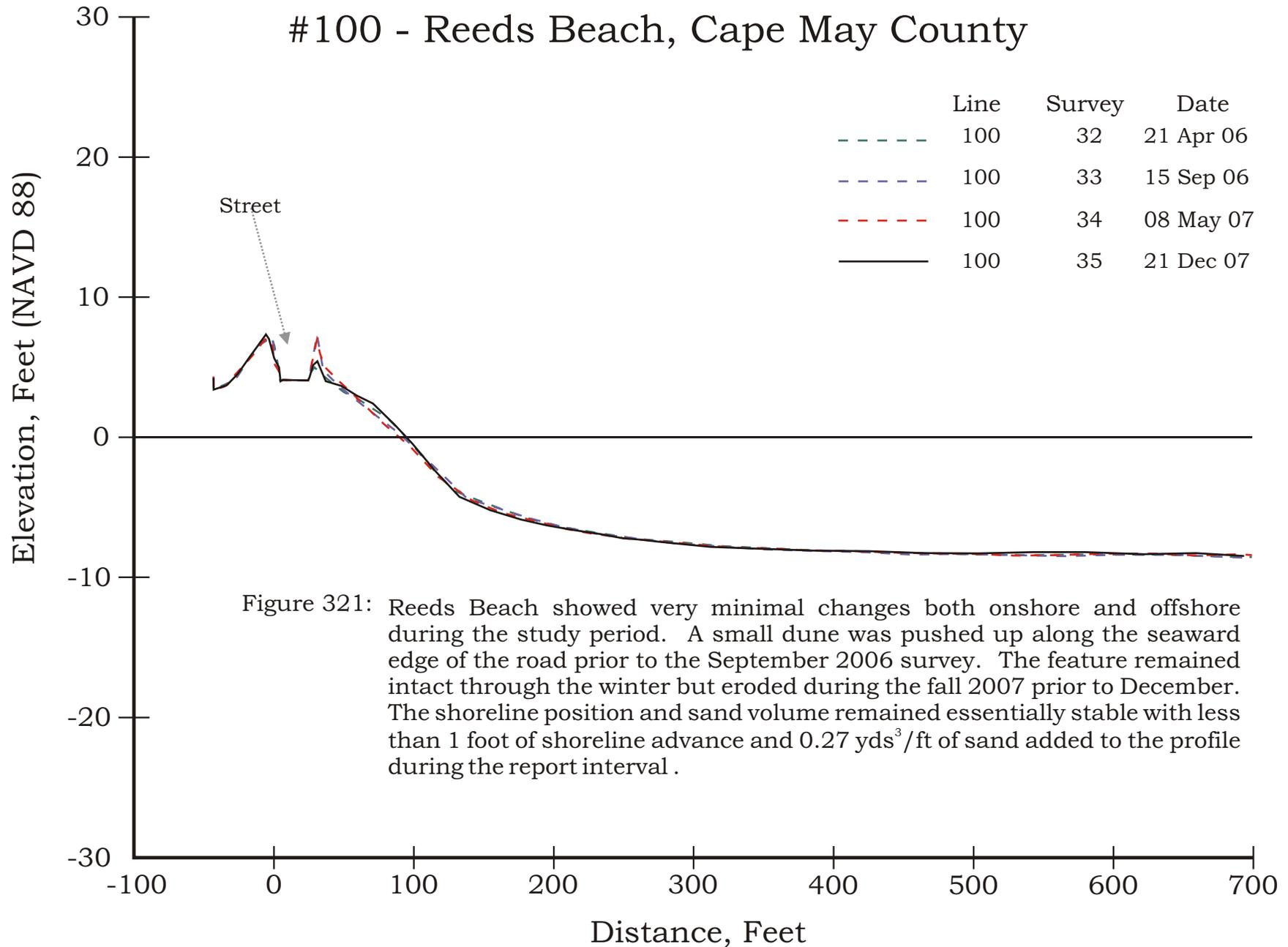


TABLE 1
MONMOUTH COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(volume expressed as cubic yards per foot)	
187: Cliffwood Beach Park	-0.69	-1.78
186: Union Beach	1.00	2.95
185: Port Monmouth, Spy House Museum	4.41	5.09
285: Gateway National R. A., Gunnison Beach	8.46	5.64
284: Gateway National R. A., Parking Lot E	-12.46	-4.35
184: Highland Beach, Gateway Entrance	-1.47	0.80
183: Highland Beach, Via Ripa St.	-2.98	0.91
282: Sea Bright, Shrewsbury Way	-6.79	-6.19
182: Sea Bright, North of Route 520	0.01	3.76
181: Sea Bright, Municipal Beach	1.45	9.82
180: Sea Bright, Sunset Court	-5.17	1.21
179: Monmouth Beach, Cottage Rd.	-45.87	-58.90
178: Monmouth Beach, Beach Club	-14.05	6.00
177: Long Branch, 404 Ocean Ave.	-15.54	-7.41
176: Long Branch, Seven Presidents Park	8.91	16.35
175: Long Branch, North Broadway Ave.	-20.29	-0.23
174: Long Branch, Morris Ave.	-18.86	-22.04
173: Long Branch, West End Ave.	14.18	13.08
172: Long Branch	** NO LONGER ACTIVE **	
171: Elberon, Pullman Ave.	-2.99	-4.70
170: Deal, Roosevelt Ave.	-10.37	-16.79
169: Deal, Darlington Ave.	5.53	-1.08
168: Allenhurst, Corlies Ave.	-3.35	21.80
267: Asbury Park, 7th Ave.	6.68	-3.28
167: Asbury Park, 3rd Ave.	11.18	24.03
166: Ocean grove, Ocean Pathway	12.68	8.96
165: Bradley Beach, McCabe Ave.	4.03	4.03
164: Avon-By-The-Sea, Sylvania Ave.	-2.76	-36.34
163: Belmar, 5th Ave.	8.95	7.07
162: Belmar, 18th Ave.	-6.05	-1.98
161: Spring Lake, Brighton Ave.	-0.39	4.65
160: Spring Lake, Salem Ave.	-15.70	9.98
159: Sea Girt, New York Ave.	15.75	-0.22
158: Sea Girt, Trenton Ave.	-51.53	-11.68
157: Manasquan, Riddle Way	-1.72	-47.48
256: Manasquan, Pompano Ave.	-21.16	-24.46

TABLE 2
MONMOUTH COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(shoreline change expressed in feet)	
187: Cliffwood Beach Park	-10.5	-10.1
186: Union Beach	-1.1	-0.2
185: Port Monmouth, Spy House Museum	-0.1	-1.2
285: Gateway National R. A., Gunnison Beach	18.3	-10.3
284: Gateway National R. A., Parking Lot E	4.0	-16.7
184: Highland Beach, Gateway Entrance	-31.5	0.6
183: Highland Beach, Via Ripa St.	-10.0	13.6
282: Sea Bright, Shrewsbury Way	-56.3	67.8
182: Sea Bright, North of Route 520	-5.0	61.0
181: Sea Bright, Municipal Beach	-7.5	74.2
180: Sea Bright, Sunset Court	-51.0	71.2
179: Monmouth Beach, Cottage Rd.	-133.3	-61.5
178: Monmouth Beach, Beach Club	-23.9	43.9
177: Long Branch, 404 Ocean Ave.	-63.2	14.7
176: Long Branch, Seven Presidents Park	-4.2	43.2
175: Long Branch, North Broadway Ave.	-11.9	49.4
174: Long Branch, Morris Ave.	-28.3	-26.7
173: Long Branch, West End Ave.	10.8	59.4
172: Long Branch	** NO LONGER ACTIVE **	
171: Elberon, Pullman Ave.	-18.6	27.6
170: Deal, Roosevelt Ave.	-54.5	-7.9
169: Deal, Darlington Ave.	-30.2	-3.3
168: Allenhurst, Corlies Ave.	-11.6	47.5
267: Asbury Park, 7th Ave.	5.9	12.2
167: Asbury Park, 3rd Ave.	-13.9	36.8
166: Ocean grove, Ocean Pathway	-24.6	32.3
165: Bradley Beach, McCabe Ave.	-49.0	19.8
164: Avon-By-The-Sea, Sylvania Ave.	-19.7	4.0
163: Belmar, 5th Ave.	-15.0	12.8
162: Belmar, 18th Ave.	-40.5	8.3
161: Spring Lake, Brighton Ave.	-41.1	21.6
160: Spring Lake, Salem Ave.	-35.4	21.8
159: Sea Girt, New York Ave.	10.7	16.2
158: Sea Girt, Trenton Ave.	-60.8	-9.7
157: Manasquan, Riddle Way	14.3	-19.2
256: Manasquan, Pompano Ave.	-6.2	5.1

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

PROFILE SITE LOCATION	Survey	32-33 S06-F06	33-34 F06-S07	34-35 S07-F07	32-35 S06-F07
		(volume expressed as cubic yards per foot of beachfront)			
187: Cliffwood Beach Park		-0.14	-0.46	-1.29	-1.93
186: Union Beach		-2.57	3.39	-0.35	0.36
185: Port Monmouth, Spy House Museum		-0.38	4.57	0.55	4.62
285: Gateway National R. A., Gunnison Beach		6.47	5.75	-0.35	9.39
284: Gateway National R. A., Parking Lot E		-8.54	-3.79	-0.28	-12.63
184: Highland Beach, Gateway Entrance		-1.58	0.04	0.95	-0.50
183: Highland Beach, Via Ripa St.		-8.25	5.41	-4.44	-7.76
282: Sea Bright, Shrewsbury Way		-5.30	-1.61	-4.51	-11.39
182: Sea Bright, North of Route 520		-5.53	5.04	-1.10	-1.10
181: Sea Bright, Municipal Beach		-6.70	8.30	0.96	2.67
180: Sea Bright, Sunset Court		-8.62	3.36	-2.07	-7.26
179: Monmouth Beach, Cottage Rd.		-27.07	-18.75	-40.46	-86.44
178: Monmouth Beach, Beach Club		-3.30	-10.27	17.12	2.90
177: Long Branch, 404 Ocean Ave.		-12.53	-2.83	-4.66	-19.99
176: Long Branch, Seven Presidents Park		-12.34	21.16	-5.37	3.68
175: Long Branch, North Broadway Ave.		-20.33	1.26	-2.33	-22.50
174: Long Branch, Morris Ave.		1.58	-20.72	-1.03	-20.55
173: Long Branch, West End Ave.		-10.93	20.61	-8.22	5.20
172: Long Branch		** NO LONGER ACTIVE **			
171: Elberon, Pullman Ave.		4.90	-7.70	3.34	-0.10
170: Deal, Roosevelt Ave.		0.01	-12.64	-5.37	-16.32
169: Deal, Darlington Ave.		-0.84	6.48	-7.64	-1.62
168: Allenhurst, Corlies Ave.		5.40	-9.55	31.02	27.83
267: Asbury Park, 7th Ave.		0.01	7.00	-10.30	-3.52
167: Asbury Park, 3rd Ave.		-10.47	22.49	2.26	13.62
166: Ocean grove, Ocean Pathway		8.73	3.89	5.25	17.27
165: Bradley Beach, McCabe Ave.		-2.82	6.71	-3.46	1.09
164: Avon-By-The-Sea, Sylvania Ave.		12.73	-16.00	-20.35	-23.26
163: Belmar, 5th Ave.		2.17	7.02	0.24	8.95
162: Belmar, 18th Ave.		3.76	-8.78	7.78	1.70
161: Spring Lake, Brighton Ave.		1.51	-1.82	6.29	6.15
160: Spring Lake, Salem Ave.		-4.58	-12.61	21.20	5.72
159: Sea Girt, New York Ave.		9.43	5.63	-5.74	9.19
158: Sea Girt, Trenton Ave.		-5.51	-46.31	34.56	-16.54
157: Manasquan, Riddle Way		34.71	-37.88	-10.15	-11.49
256: Manasquan, Pompano Ave.		-12.78	-9.44	-15.33	-35.76

TABLE 4
MONMOUTH COUNTY
SEASONAL SHORELINE CHANGES

PROFILE SITE LOCATION	Survey	32-33 S06-F06	33-34 F06-S07	34-35 S07-F07	32-35 S06-F07
		(shoreline change expressed in feet)			
187: Cliffwood Beach Park		9.6	-20.1	10.1	-0.4
186: Union Beach		0.3	-1.4	1.2	0.2
185: Port Monmouth, Spy House Museum		4.1	-4.2	3.0	2.9
285: Gateway National R. A., Gunnison Beach		17.1	1.1	-11.4	6.9
284: Gateway National R. A., Parking Lot E		17.9	-13.9	-2.8	1.2
184: Highland Beach, Gateway Entrance		-9.2	-22.4	22.0	-4.6
183: Highland Beach, Via Ripa St.		-36.1	26.1	-12.5	-22.5
282: Sea Bright, Shrewsbury Way		-94.6	38.3	29.5	-26.8
182: Sea Bright, North of Route 520		-69.6	64.6	-3.5	-8.5
181: Sea Bright, Municipal Beach		-75.0	67.5	6.6	-0.9
180: Sea Bright, Sunset Court		-79.8	28.8	42.4	-8.6
179: Monmouth Beach, Cottage Rd.		-79.3	-54.1	-7.5	-140.8
178: Monmouth Beach, Beach Club		-40.9	17.0	26.9	3.0
177: Long Branch, 404 Ocean Ave.		-55.8	-7.3	22.1	-41.1
176: Long Branch, Seven Presidents Park		-8.8	4.7	38.5	34.4
175: Long Branch, North Broadway Ave.		-39.2	27.2	22.2	10.3
174: Long Branch, Morris Ave.		4.9	-33.2	6.5	-21.8
173: Long Branch, West End Ave.		-54.6	65.4	-6.0	4.8
172: Long Branch		** NO LONGER ACTIVE **			
171: Elberon, Pullman Ave.		-17.6	-1.0	28.6	10.0
170: Deal, Roosevelt Ave.		-45.0	-9.5	1.6	-52.8
169: Deal, Darlington Ave.		-9.8	-20.4	17.1	-13.1
168: Allenhurst, Corlies Ave.		-23.2	11.5	36.0	24.4
267: Asbury Park, 7th Ave.		-0.9	6.7	5.5	11.4
167: Asbury Park, 3rd Ave.		-15.9	2.0	34.8	20.9
166: Ocean grove, Ocean Pathway		-18.8	-5.8	38.2	13.5
165: Bradley Beach, McCabe Ave.		-40.3	-8.7	28.5	-20.5
164: Avon-By-The-Sea, Sylvania Ave.		-25.1	5.4	-1.5	-21.1
163: Belmar, 5th Ave.		-16.0	1.0	11.8	-3.3
162: Belmar, 18th Ave.		-21.2	-19.3	27.5	-13.0
161: Spring Lake, Brighton Ave.		-21.2	-19.9	41.5	0.4
160: Spring Lake, Salem Ave.		-14.5	-20.9	42.7	7.3
159: Sea Girt, New York Ave.		7.3	3.4	12.8	23.5
158: Sea Girt, Trenton Ave.		-15.2	-45.6	35.9	-24.9
157: Manasquan, Riddle Way		28.7	-14.3	-4.9	9.5
256: Manasquan, Pompano Ave.		0.0	-6.2	11.3	5.1

TABLE 5
OCEAN COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(volume expressed as cubic yards per foot)	
156: Point Pleasant, Water St.	25.97	34.21
155: Point Pleasant, Maryland Ave.	-21.68	-14.09
154: Bay Head, Johnson Ave.	-5.51	10.59
153: Mantoloking, 1117 Ocean Ave.	9.15	-3.09
152: Brick Townhsip, Public Beach	-2.71	-8.63
151: Normandy Beach, 1st Ave	-0.48	2.57
150: Lavallette, White Ave.	23.17	9.27
149: Ortley Beach, 8th Ave.	-25.25	8.25
148: Seaside Park, 4th Ave.	9.02	-2.77
347: Berkeley Township, 6th Ave.	7.86	18.74
247: Island Beach State Park, North	-28.45	-2.34
246: Island Beach State Park, Middle	-3.33	1.65
146: Island Beach State Park, South	22.79	0.65
245: Barnegat Light, 10th St.	30.96	18.48
145: Barnegat Light, 26th St.	18.11	20.42
144: Loveladies, La Baia St.	11.28	14.14
143: Harvey Cedars, 73rd St.	-6.71	-10.89
142: Harvey Cedars, Tranquility Drive	-9.30	-20.79
241: Surf City, 20th St.	83.13	72.15
141: Ship Bottom, 8th St.	73.25	28.73
140: Long BeachTownship, 32nd St.	-1.10	-14.34
139: Long Beach Township, 81st St.	2.04	-11.03
138: Long Beach Township, Old Whaling Rd.	6.11	10.67
137: Beach Haven, Taylor Ave.	27.99	-28.00
136: Beach Haven, Dolphin Ave.	-2.85	-11.00
135: Long Beach Township, Webster Ave.	26.89	39.57
234: Long Beach Township, Border w/ Refuge	-18.60	2.53

TABLE 6
OCEAN COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(shoreline change expressed in feet)	
156: Point Pleasant, Water St.	32.1	36.5
155: Point Pleasant, Maryland Ave.	-21.4	-30.8
154: Bay Head, Johnson Ave.	22.9	22.2
153: Mantoloking, 1117 Ocean Ave.	57.3	32.5
152: Brick Township, Public Beach	-17.7	37.4
151: Normandy Beach, 1st Ave	4.9	30.9
150: Lavallette, White Ave.	32.0	15.0
149: Ortley Beach, 8th Ave.	-28.9	23.0
148: Seaside Park, 4th Ave.	22.0	-4.8
347: Berkeley Township, 6th Ave.	3.9	18.2
247: Island Beach State Park, North	-35.7	24.8
246: Island Beach State Park, Middle	-14.4	8.0
146: Island Beach State Park, South	15.2	7.2
245: Barnegat Light, 10th St.	32.0	0.0
145: Barnegat Light, 26th St.	3.2	12.9
144: Loveladies, La Baia St.	-10.7	20.8
143: Harvey Cedars, 73rd St.	8.0	-10.2
142: Harvey Cedars, Tranquility Drive	3.8	-10.7
241: Surf City, 20th St.	107.3	103.3
141: Ship Bottom, 8th St.	41.5	37.5
140: Long Beach Township, 32nd St.	9.6	-7.0
139: Long Beach Township, 81st St.	-14.9	1.1
138: Long Beach Township, Old Whaling Rd.	16.1	25.0
137: Beach Haven, Taylor Ave.	15.7	-10.1
136: Beach Haven, Dolphin Ave.	-6.1	-28.4
135: Long Beach Township, Webster Ave.	30.7	68.7
234: Long Beach Township, Border w/ Refuge	-9.4	17.9

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

PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
		(volume expressed as cubic yards per foot of beachfront)			
156: Point Pleasant, Water St.		15.21	11.32	22.96	49.06
155: Point Pleasant, Maryland Ave.		-3.81	-18.68	3.83	-18.04
154: Bay Head, Johnson Ave.		-3.23	-2.42	13.01	7.43
153: Mantoloking, 1117 Ocean Ave.		7.49	1.86	-4.83	4.44
152: Brick Township, Public Beach		1.89	-4.64	-4.69	-7.11
151: Normandy Beach, 1st Ave		-0.19	-0.38	6.83	4.75
150: Lavallette, White Ave.		9.86	13.31	-1.42	20.74
149: Ortley Beach, 8th Ave.		-35.93	12.53	-3.90	-28.19
148: Seaside Park, 4th Ave.		22.28	-13.37	10.55	19.32
347: Berkeley Township, 6th Ave.		-1.29	9.45	8.95	16.74
247: Island Beach State Park, North		-5.15	-23.14	20.73	-7.85
246: Island Beach State Park, Middle		-9.80	6.35	-5.83	-9.22
146: Island Beach State Park, South		18.04	4.80	-4.09	18.22
245: Barnegat Light, 10th St.		36.88	-6.10	23.94	55.49
145: Barnegat Light, 26th St.		22.12	0.52	19.66	39.25
144: Loveladies, La Baia St.		9.36	3.04	10.85	23.47
143: Harvey Cedars, 73rd St.		18.06	-24.36	13.45	7.13
142: Harvey Cedars, Tranquility Drive		7.17	-17.91	-4.12	-13.52
241: Surf City, 20th St.		-5.76	86.59	-16.37	67.26
141: Ship Bottom, 8th St.		16.54	56.17	-26.35	46.22
140: Long Beach Township, 32nd St.		36.00	-37.41	22.70	21.32
139: Long Beach Township, 81st St.		-7.13	8.23	-19.38	-15.56
138: Long Beach Township, Old Whaling Rd.		-15.29	20.95	-12.03	-4.78
137: Beach Haven, Taylor Ave.		29.75	-1.86	-25.68	1.77
136: Beach Haven, Dolphin Ave.		14.45	-16.51	5.44	3.29
135: Long Beach Township, Webster Ave.		-1.49	28.28	11.38	38.44
234: Long Beach Township, Border w/ Refuge		-25.79	7.25	-3.91	-23.98

**TABLE 8
OCEAN COUNTY
SEASONAL SHORELINE CHANGES**

PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
	(shore line change expressed in feet)				
156: Point Pleasant, Water St.		22.9	9.2	27.3	59.4
155: Point Pleasant, Maryland Ave.		18.8	-40.1	9.3	-12.1
154: Bay Head, Johnson Ave.		37.0	-14.1	36.3	59.2
153: Mantoloking, 1117 Ocean Ave.		53.6	3.8	28.7	86.1
152: Brick Township, Public Beach		-12.0	-5.7	43.2	25.5
151: Normandy Beach, 1st Ave		14.2	-9.3	40.3	45.2
150: Lavallette, White Ave.		48.9	-16.8	31.8	63.9
149: Ortley Beach, 8th Ave.		-8.5	-20.4	43.3	14.5
148: Seaside Park, 4th Ave.		54.2	-32.2	27.4	49.4
347: Berkeley Township, 6th Ave.		1.7	2.2	16.0	19.9
247: Island Beach State Park, North		-39.6	3.9	20.9	-14.8
246: Island Beach State Park, Middle		0.7	-15.1	23.1	8.7
146: Island Beach State Park, South		46.5	-31.3	38.5	53.7
245: Barnegat Light, 10th St.		55.8	-23.8	23.7	55.7
145: Barnegat Light, 26th St.		27.8	-24.7	37.5	40.7
144: Loveladies, La Baia St.		5.7	-16.4	37.1	26.4
143: Harvey Cedars, 73rd St.		38.5	-30.5	20.3	28.3
142: Harvey Cedars, Tranquility Drive		14.2	-10.5	-0.2	3.5
241: Surf City, 20th St.		-3.8	111.1	-7.8	99.5
141: Ship Bottom, 8th St.		3.5	38.0	-0.4	41.1
140: Long Beach Township, 32nd St.		35.5	-26.0	19.0	28.6
139: Long Beach Township, 81st St.		-6.6	-8.3	9.4	-5.5
138: Long Beach Township, Old Whaling Rd.		-13.7	29.8	-4.8	11.3
137: Beach Haven, Taylor Ave.		17.8	-2.1	-8.0	7.8
136: Beach Haven, Dolphin Ave.		36.4	-42.6	14.2	8.1
135: Long Beach Township, Webster Ave.		-3.9	34.5	34.2	64.9
234: Long Beach Township, Border w/Refuge		-1.7	-7.8	25.7	16.3

TABLE 9
ATLANTIC COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34	33 - 35
	S2006-S2007	F2006 - F2007
	(volume expressed as cubic yards per foot)	
134: Brigantine, Green Acres	12.43	4.97
133: Brigantine, 4th Street North	6.50	-19.89
132: Brigantine, 15th Street South	10.87	13.63
131: Brigantine, 43rd Street South	39.79	30.73
130: Atlantic City, North Carolina Ave.	-26.49	-20.79
129: Atlantic City, Raleigh Ave.	12.88	5.07
128: Ventnor City, Dorset Ave.	-8.52	-3.48
127: Margate City, Benson Ave.	-1.89	-0.26
126: Longport, 17th St.	-18.13	9.66

TABLE 10
ATLANTIC COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34	33 - 35
	S2006-S2007	F2006 - F2007
	(shoreline change expressed in feet)	
134: Brigantine, Green Acres	71.3	61.1
133: Brigantine, 4th Street North	-4.2	-11.4
132: Brigantine, 15th Street South	106.5	25.0
131: Brigantine, 43rd Street South	88.1	74.9
130: Atlantic City, North Carolina Ave.	-24.7	-12.0
129: Atlantic City, Raleigh Ave.	-24.5	58.9
128: Ventnor City, Dorset Ave.	29.1	35.7
127: Margate City, Benson Ave.	-7.1	-21.8
126: Longport, 17th St.	-12.9	-2.7

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

PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
		(volume expressed as cubic yards per foot of beachfront)			
134: Brigantine, Green Acres		18.31	-5.53	10.52	23.34
133: Brigantine, 4th Street North		23.59	-17.05	-3.43	3.56
132: Brigantine, 15th Street South		0.94	15.02	-3.30	6.13
131: Brigantine, 43rd Street South		22.18	15.99	13.59	53.85
130: Atlantic City, North Carolina Ave.		-26.44	1.48	-23.89	-52.03
129: Atlantic City, Raleigh Ave.		16.39	-2.86	7.86	19.98
128: Ventnor City, Dorset Ave.		16.85	-25.40	21.77	13.21
127: Margate City, Benson Ave.		11.96	-13.72	13.50	11.48
126: Longport, 17th St.		-15.69	-2.41	12.45	-5.69

**TABLE 12
ATLANTIC COUNTY
SEASONAL SHORELINE CHANGES**

PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
		(shoreline change expressed in feet)			
134: Brigantine, Green Acres		41.3	30.1	31.0	102.4
133: Brigantine, 4th Street North		-31.8	27.6	-39.0	-43.3
132: Brigantine, 15th Street South		84.0	22.5	2.5	109.0
131: Brigantine, 43rd Street South		47.7	40.4	34.5	122.6
130: Atlantic City, North Carolina Ave.		-16.7	-8.0	-4.0	-28.7
129: Atlantic City, Raleigh Ave.		-20.9	-3.6	62.5	38.0
128: Ventnor City, Dorset Ave.		40.4	-11.3	47.0	76.1
127: Margate City, Benson Ave.		10.8	-17.9	-3.9	-11.0
126: Longport, 17th St.		-2.8	-10.1	7.5	-5.4

TABLE 13
CAPE MAY COUNTY
ANNUAL BEACH VOLUME CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(volume expressed as cubic yards per foot)	
225: Ocean City, Gardens Rd.	-16.79	-16.05
125: Ocean City, 6th St.	-22.21	-12.03
124: Ocean City, 20th St.	-23.37	1.62
223: Ocean City, 34th St.	2.21	19.69
122: Ocean City, 56th St.	2.68	14.51
121: Strathmere, Williams Rd.	103.63	79.85
120: Sea Isle City, 1st St.	-14.11	1.76
119: Sea Isle City, 25th St.	-16.93	-2.31
118: Sea Isle City, 57th St.	-7.41	-6.77
117: Sea Isle City, 80th St.	1.82	-2.44
216: Avalon, 9th St.	20.77	12.37
116: Avalon, 23rd St.	-39.31	-49.55
115: Avalon, 35th St.	-0.97	-7.59
114: Avalon, 70th St.	-0.27	6.32
113: Stone Harbor, 90th St.	-18.12	13.13
212: Stone Harbor, 121st St.	-49.16	-20.48
112: Stone Harbor, South Pointe	** NO LONGER ACTIVE **	
111: North Wildwood, 15th Ave.	24.09	20.93
110: Wildwood, Cresse Ave.	4.20	30.91
109: Lower Township, Raleigh Ave.	12.88	25.27
208: Lower Township, U.S.C.G. Base	16.26	5.76
108: Cape May, Beach Club	20.00	19.25
107: Cape May, Baltimore Ave.	6.37	13.17
206: Cape May, Broadway Ave.	10.67	16.86
105: Cape May, Nature Conservancy	-14.23	1.09
104: Cape May Point, Lake Dr.	-11.01	-36.95
103: Higbee Beach State Park	-2.17	9.63
102: North Cape May, Whittier	-4.85	-12.12
101: Villas, Pacific Ave.	1.27	2.08
100: Reeds Beach, Beach Ave.	-0.32	0.87

TABLE 14
CAPE MAY COUNTY
ANNUAL SHORELINE CHANGES
SPRING 2006 - SPRING 2007 & FALL 2006 - FALL 2007

PROFILE SITE LOCATION	Survey	
	32 - 34 S2006-S2007	33 - 35 F2006 - F2007
	(shoreline change expressed in feet)	
225: Ocean City, Gardens Rd.	-39.8	31.2
125: Ocean City, 6th St.	-31.1	27.8
124: Ocean City, 20th St.	-82.1	-9.3
223: Ocean City, 34th St.	0.8	-1.8
122: Ocean City, 56th St.	-11.1	3.6
121: Strathmere, Williams Rd.	42.5	-14.2
120: Sea Isle City, 1st St.	4.8	38.6
119: Sea Isle City, 25th St.	2.3	23.3
118: Sea Isle City, 57th St.	-42.1	33.5
117: Sea Isle City, 80th St.	-61.0	0.3
216: Avalon, 9th St.	-13.9	8.0
116: Avalon, 23rd St.	-36.7	-63.6
115: Avalon, 35th St.	-26.6	19.9
114: Avalon, 70th St.	33.3	1.1
113: Stone Harbor, 90th St.	0.1	-4.1
212: Stone Harbor, 121st St.	-61.0	-26.5
112: Stone Harbor, South Pointe	** NO LONGER ACTIVE **	
111: North Wildwood, 15th Ave.	-14.1	53.6
110: Wildwood, Cresse Ave.	13.7	67.8
109: Lower Township, Raleigh Ave.	26.6	33.1
208: Lower Township, U.S.C.G. Base	30.2	14.3
108: Cape May, Beach Club	37.0	10.9
107: Cape May, Baltimore Ave.	14.7	13.2
206: Cape May, Broadway Ave.	12.1	24.8
105: Cape May, Nature Conservancy	18.2	46.2
104: Cape May Point, Lake Dr.	-30.4	-60.2
103: Higbee Beach State Park	-1.7	23.0
102: North Cape May, Whhittier	-6.5	-2.2
101: Villas, Pacific Ave.	8.0	5.9
100: Reeds Beach, Beach Ave.	-4.8	2.3

TABLE 15
CAPE MAY COUNTY
SEASONAL BEACH VOLUME CHANGES

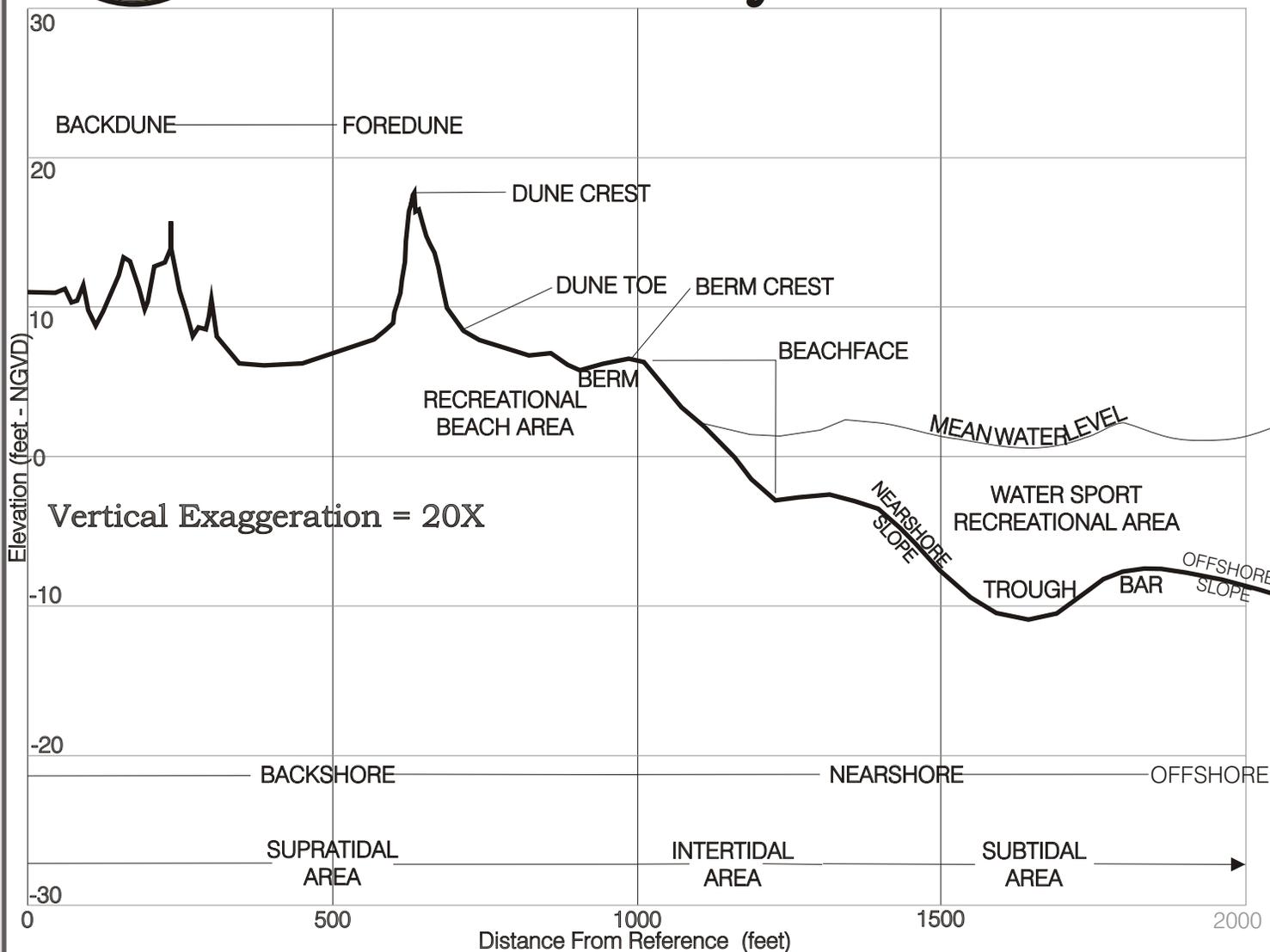
PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
(volume expressed as cubic yards per foot of beachfront)					
225: Ocean City, Gardens Rd.		-3.00	-11.93	-4.25	-20.90
125: Ocean City, 6th St.		-20.16	-2.01	-10.18	-32.27
124: Ocean City, 20th St.		-15.91	-5.79	6.60	-13.27
223: Ocean City, 34th St.		4.55	-1.90	21.85	23.75
122: Ocean City, 56th St.		-15.42	18.18	-3.83	-1.10
121: Strathmere, Williams Rd.		63.59	41.55	41.55	141.35
120: Sea Isle City, 1st St.		0.32	-14.43	15.89	1.81
119: Sea Isle City, 25th St.		-8.30	-9.08	6.39	-10.87
118: Sea Isle City, 57th St.		15.35	-22.45	15.66	8.55
117: Sea Isle City, 80th St.		4.52	-2.92	-0.01	1.64
216: Avalon, 9th St.		-7.26	29.61	-9.92	6.79
116: Avalon, 23rd St.		7.90	-47.83	-1.70	-41.09
115: Avalon, 35th St.		16.25	-17.24	9.32	8.71
114: Avalon, 70th St.		-1.16	2.07	4.90	5.34
113: Stone Harbor, 90th St.		-16.61	-1.08	14.11	-4.13
212: Stone Harbor, 121st St.		-25.39	-23.25	2.77	-46.25
112: Stone Harbor, South Pointe		** NO LONGER ACTIVE **			
111: North Wildwood, 15th Ave.		3.86	17.63	0.89	25.13
110: Wildwood, Cresse Ave.		6.54	-2.22	32.79	37.45
109: Lower Township, Raleigh Ave.		-1.31	12.62	11.51	28.12
208: Lower Township, U.S.C.G. Base		2.73	13.57	-7.52	8.59
108: Cape May, Beach Club		-3.27	22.50	-3.12	16.92
107: Cape May, Baltimore Ave.		-4.70	10.96	2.32	8.55
206: Cape May, Broadway Ave.		1.91	8.85	7.99	18.77
105: Cape May, Nature Conservancy		-1.05	-12.90	14.78	0.47
104: Cape May Point, Lake Dr.		-0.16	-10.88	-26.81	-37.52
103: Higbee Beach State Park		-5.51	3.35	6.26	4.03
102: North Cape May, Whittier Ave.		-1.40	-3.44	-8.52	-13.80
101: Villas, Pacific Ave.		0.65	0.68	1.68	3.20
100: Reeds Beach, Beach Ave.		-0.31	0.01	0.66	0.27

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

PROFILE SITE LOCATION	Survey	32-33	33-34	34-35	32-35
		S06-F06	F06-S07	S07-F07	S06-F07
(shoreline change expressed in feet)					
225: Ocean City, Gardens Rd.		-17.0	-22.9	54.0	14.2
125: Ocean City, 6th St.		-24.5	-6.6	34.4	3.3
124: Ocean City, 20th St.		-32.3	-49.8	40.4	-41.7
223: Ocean City, 34th St.		15.1	-14.3	12.5	13.3
122: Ocean City, 56th St.		16.4	-27.5	31.1	20.0
121: Strathmere, Williams Rd.		52.4	-9.9	-4.3	38.2
120: Sea Isle City, 1st St.		-28.4	33.1	5.5	10.2
119: Sea Isle City, 25th St..		2.8	-0.5	23.8	26.1
118: Sea Isle City, 57th St..		-46.6	4.6	28.9	-13.2
117: Sea Isle City, 80th St..		-55.7	-5.4	5.6	-55.4
216: Avalon, 9th St.		-6.1	-7.8	15.8	1.9
116: Avalon, 23rd St.		-1.6	-35.1	-28.5	-65.2
115: Avalon, 35th St.		-4.8	-21.8	41.8	15.2
114: Avalon, 70th St.		56.2	-22.9	24.0	57.3
113: Stone Harbor, 90th St.		-1.2	1.3	-5.4	-5.3
212: Stone Harbor, 12 1st St.		-30.6	-30.4	3.9	-57.0
112: Stone Harbor, South Pointe		** NO LONGER ACTIVE **			
111: North Wildwood, 15th Ave.		-28.5	14.4	39.2	25.1
110: Wildwood, Cresse Ave.		4.2	9.5	58.3	72.0
109: Lower Township, Raleigh Ave.		8.1	18.5	14.7	41.3
208: Lower Township, U.S.C.G. Base		20.0	10.3	4.1	34.3
108: Cape May, Beach Club		11.3	25.7	-14.8	22.2
107: Cape May, Baltimore Ave.		-5.8	20.5	-7.3	7.4
206: Cape May, Broadway Ave.		5.7	6.4	18.4	30.5
105: Cape May, Nature Conservancy		16.6	1.6	44.6	62.8
104: Cape May Point, Lake Dr.		0.4	-30.8	-29.4	-59.8
103: Higbee Beach State Park		-10.5	8.9	14.1	12.5
102: North Cape May, Whittier Ave.		-3.1	-3.4	1.2	-5.2
101: Villas, Pacific Ave.		7.3	0.6	5.3	13.2
100: Reeds Beach, Beach Ave.		-2.0	-2.8	5.1	0.4

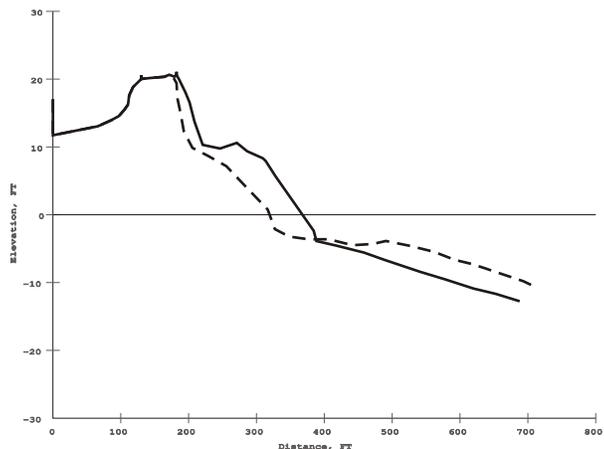


Typical Beach Profiles in New Jersey



Above is a typical beach profile with major features and zones labeled. No beach will show every aspect of this diagram at all times, but it illustrates all important features that appear on the New Jersey shoreline..

Seasonal Variations



The pair of profiles to the left show some of the typical seasonal beach profile changes. The dashed line profile is the result of a winter season, where ocean conditions moved material offshore. The solid line profile is the result of a summer season, where ocean conditions moved sand onshore. The summer profile has a well developed berm and wider beach and dune, while the winter profile has this beach material present in the offshore region of the profile.



Coastal Research Center Glossary of Coastal Terms



Accretion - The addition of material by natural processes.

Aeolian Accretion - The accretion that results from wind driven processes.

Backshore - The area of the beach profile landward of the berm and seaward of upland dunes or bluffs.

Beachface - Also known as foreshore. The area of the beach exposed to regular wave action.

Berm - The nearly horizontal portion of the beach formed at the high water line as waves deposit material. A beach may have no berm or multiple berms.

Bulkhead - A structure that is built to retain or prevent the slumping of land at the influence of water and wave action. Bulkheads are typically made of wood, steel, or aluminum.

Cross-shore Transport - The transfer of sand perpendicular to the shoreline, or along the profile. A bar migrating onto the beach is an example of cross-shore transport.

Current - The flow of water.

Downdrift - The dominant direction of movement of littoral materials.

Datum - A reference level from which elevations are measured.

Dry Beach - The area of beach between the water and dune toe that is commonly used for recreating. Also referred to as recreational beach.

Dune - Unconsolidated hills or mounds of sand. Dunes are the result of aeolian processes and may have vegetation ranging from sparse to dense. Vegetation greatly stabilizes a dune.

Eddy - A circular current running contrary to the main current.

Erosion - The removal of material by natural processes.

Foredune - The most seaward of the dune ridge along the profile.

Geotube - A geotextile fabric tube filled with sand, typically used to retain material or to dissipate wave energy.

Groin - A shore-perpendicular erosion control structure, usually made of wood or rock. This structure acts to slow the process of littoral transport.

Hurricane - A tropical cyclone in the Northern Hemisphere, with sustained winds over 74 mph.

Jetty - A shore-perpendicular erosion control structure similar to a groin, however it is used to control the movement of an inlet or channel.

Littoral Current - Current that moves parallel to shore, that results from the approach of waves not being perpendicular to the shoreline.

Littoral Drift - Also known as longshore transport. Movement of material in the longshore direction, resulting from the littoral currents.



Coastal Research Center Glossary of Coastal Terms



Longshore Transport - Also known as littoral drift. Movement of material in the longshore direction, resulting from the littoral currents.

NGVD - (the datum of 1929) A common elevation reference developed from a specific model of the Earth's surface.

Onshore - In the direction of the shoreline; landward.

Offshore - In the direction opposite of the shoreline; seaward.
The region of the beach profile seaward of the first bar.

Neap Tide - A tide having significantly reduced variations from mean tide levels. Neap tides occur near quarter moon stages.

Nearshore - Region of beach profile extending from the berm seaward through the offshore.

Northeaster - Dominant type of coastal winter storm event experienced in New Jersey, with winds from the northeast that exceed 30 mph.

Revetment - Cover of stone placed on or along a shoreline to protect a slope or shore structure.

Ridge - A low elevation, near shore parallel continuous mound of sand, pushed onshore by wave action.

Riprap - Line of rocks placed randomly along a slope or structure for protection.

Runnel - A continuous area of lower elevation than, but parallel to and adjacent to, a ridge(s).

Scarp - A near vertical feature created through the erosion of material from the lower portion of a slope or bluff.

Scour - Underwater removal of material through currents and wave action.

Seawall - Structure that separates the land and water.

Shoreline - The narrow area of land in contact with the water. When referring to a profile plot, the point where the profile crosses the line representing the datum.

Spring Tide - Tide with the most extreme variations from mean tide levels. Spring tides occur at new or full moon stages.

Swale - A long, narrow, generally shallow depression between ridges.

Swash - The area of beachface exposed to breaking wave energy as waves come ashore.

Storm Surge - The abnormal rise in local sea level that accompanies a hurricane or other major storm event.

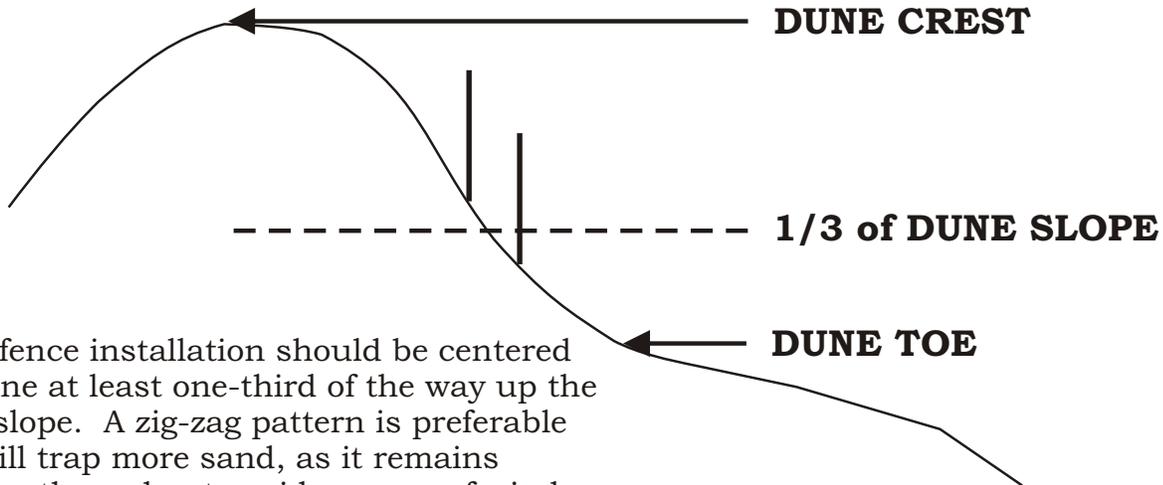
Updrift - In the direction opposite of the dominant movement of littoral materials.

Wrack - Debris deposited on the beach by wave action.

References: A.G.I., U.S.A.C.O.E., N.O.A.A., F.E.M.A., N.J.D.E.P.



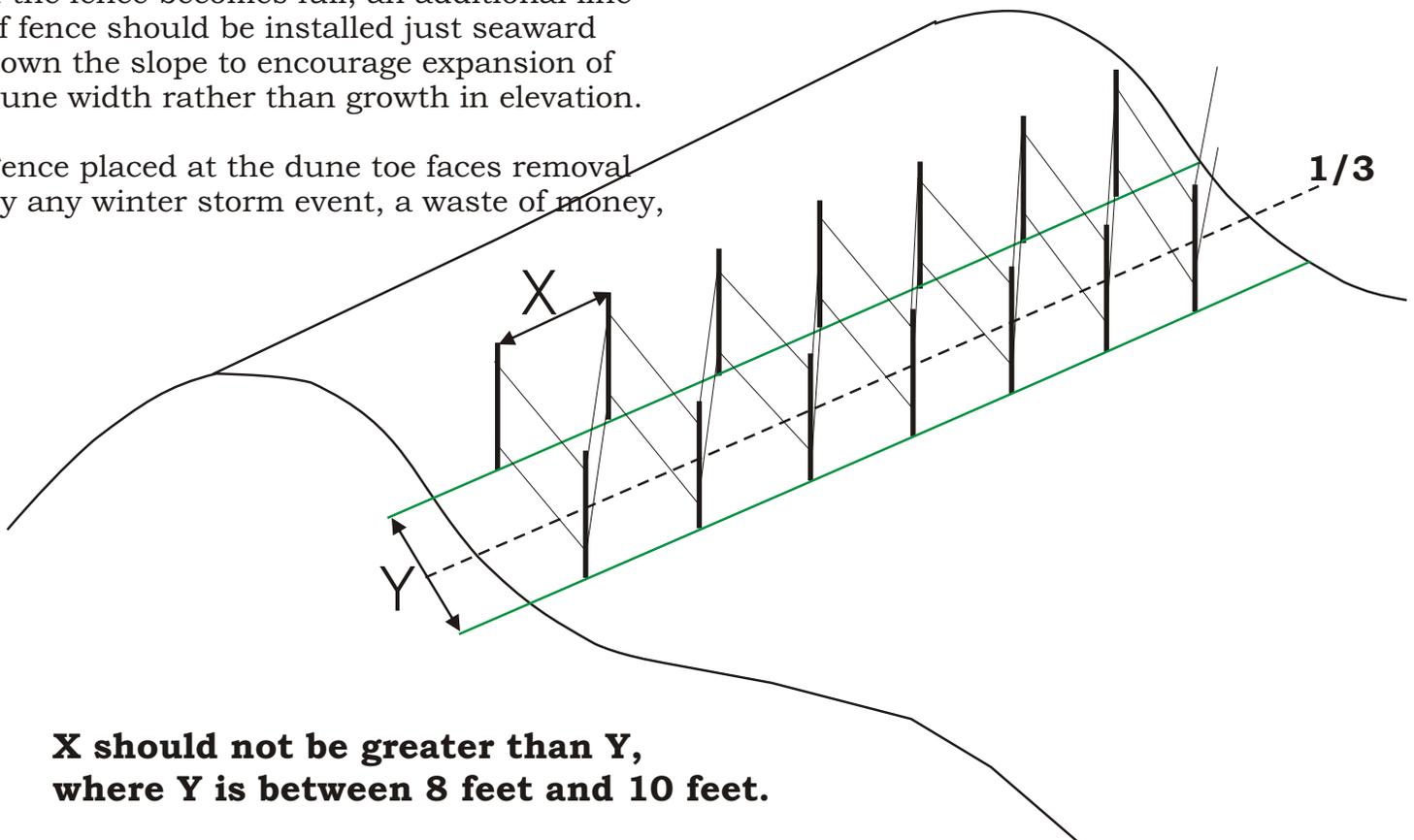
Optimal Dune Fence Placement (Initial Fence Placement)



Dune fence installation should be centered on a line at least one-third of the way up the dune slope. A zig-zag pattern is preferable and will trap more sand, as it remains effective throughout a wider range of wind directions. The zig-zag pattern should be implemented as shown below.

If the fence becomes full, an additional line of fence should be installed just seaward down the slope to encourage expansion of dune width rather than growth in elevation.

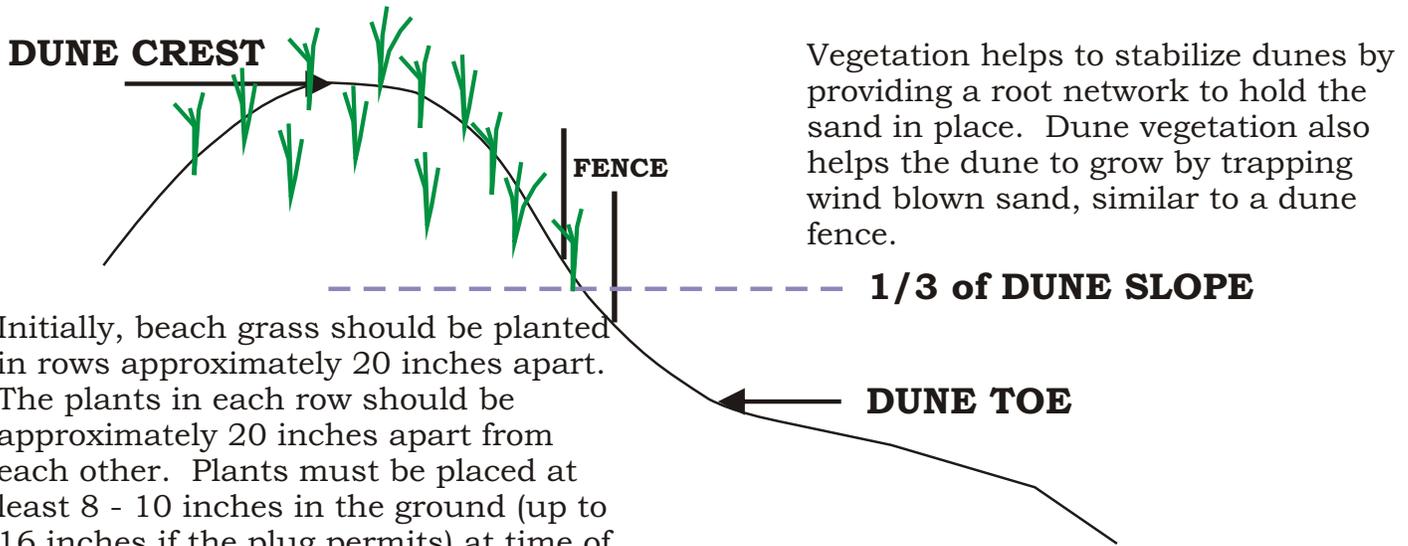
Fence placed at the dune toe faces removal by any winter storm event, a waste of money,



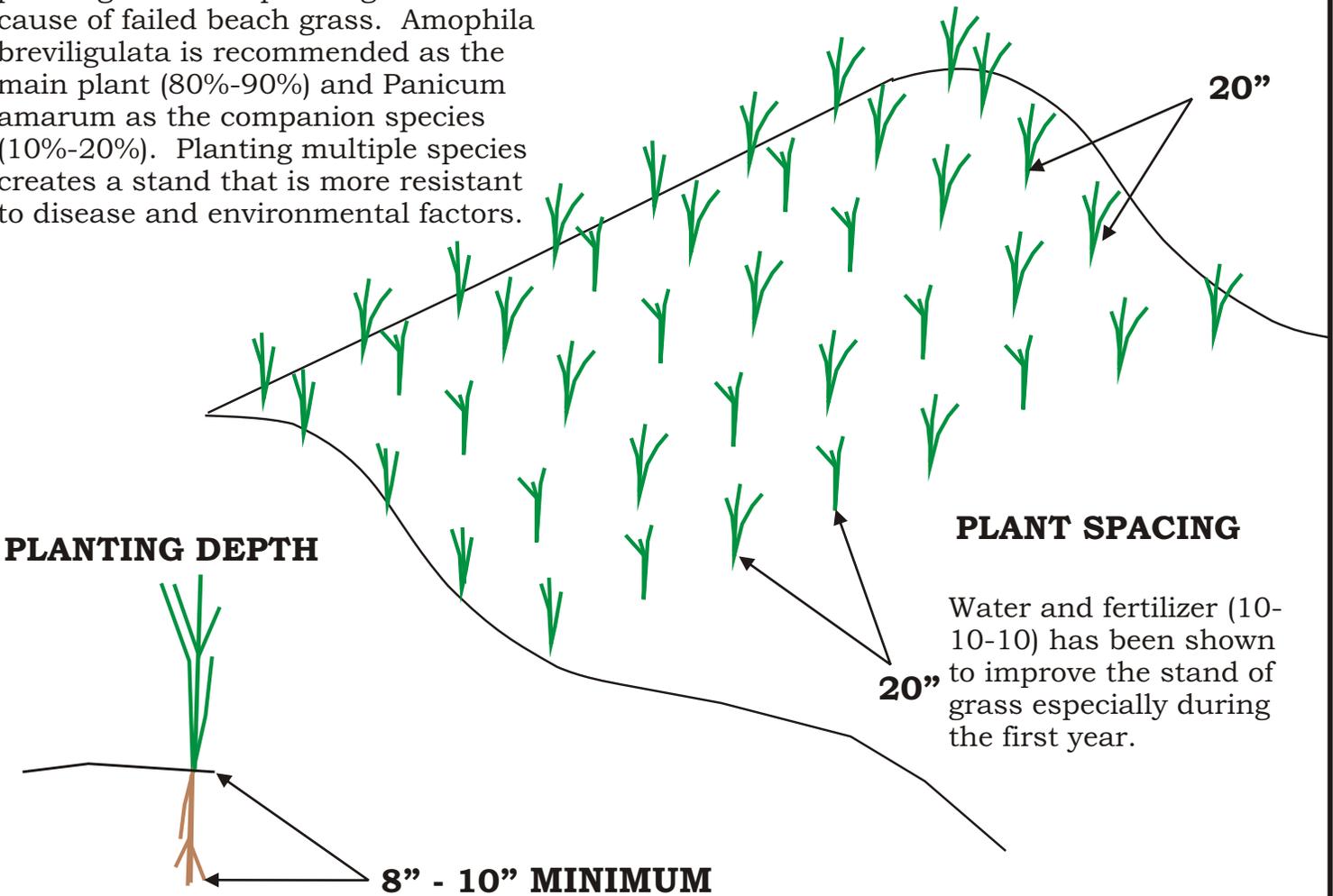
**X should not be greater than Y,
where Y is between 8 feet and 10 feet.**



Optimal Beach Grass Planting (Initial Planting)



Initially, beach grass should be planted in rows approximately 20 inches apart. The plants in each row should be approximately 20 inches apart from each other. Plants must be placed at least 8 - 10 inches in the ground (up to 16 inches if the plug permits) at time of planting. Shallow planting is the #1 cause of failed beach grass. *Amophila breviligulata* is recommended as the main plant (80%-90%) and *Panicum amarum* as the companion species (10%-20%). Planting multiple species creates a stand that is more resistant to disease and environmental factors.



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