

**FINAL REPORT FOR 2021
ON THE CONDITION OF THE MUNICIPAL BEACHES
IN**

TABLE OF CONTENTS

Beach Monitoring Program Methodology

The beach



Figure 1

Sand continues to ero

The table of values for the final quarter of 2021 show a marked increase in erosion rates pretty much distributed across the entire array of survey sites except for

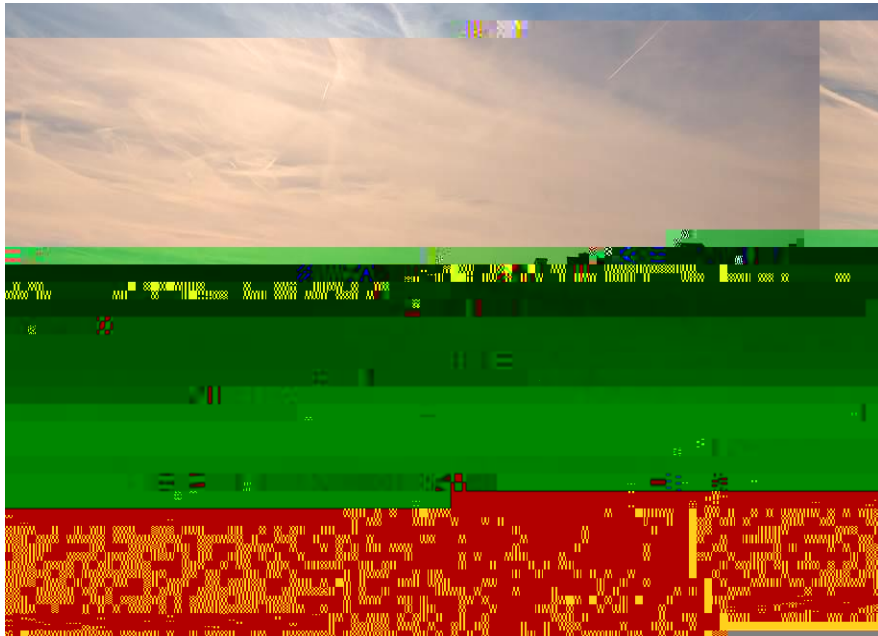


Figure 5. This 2021 sequence of surveys present the case for rapid shoreline retreat. Note that between December 2020 and February 2021 three significant northeast storms had only minimal impact on the beach configuration at the site. Things commenced to deteriorate after the February survey with equal losses recorded in June, September and December 2021 in spite of the absence of storm activity that matched events during the first quarter of the year.

Survey Line UT-5, Williams Avenue, Strathmere

This site was first nourished by the State of NJ in 1984 and is located near the southern limit for direct inlet influences. The site has been monitored since 1986 as part of the NJBPN program and was included in the municipal monitoring project. Sand is intermittently added to the beach in this region as tidal delta bars accumulate off adjacent ebb shoals and migrate landward under favorable conditions to attach themselves to the shoreline providing influxes of sand.

The Williams Avenue site was not provided massive sand volumes initially in the federal project. However, recent rates of erosion prompted a significant fill by December 2019. The fill volume was 116.67 yds³/ft. which produced a 272-foot shoreline advance. The 2021 impacts were mostly defined by shoreline retreat amounting to 99 feet between December 2020 and December 2021. The majority of the retreat occurred during the February northeaster and again following the September 2021 survey.



6a. December 15, 2020



6b. June 7, 2021



6c. December 8, 2021

Figures 6a to 6c. UT-5 survey site on Williams Avenue.

Figure 6a shows the beach surface from the seaward dune toe to the water line as of the end of 2020.

Figure 6b was taken in June 2021 looking south across the central region on the upper beach between the dune and the berm.

Figure 6c. The December 2021 view from the upper beach area shows the decreased width, but no dune damage to date.

Survey Location UT-4, Tecumseh Avenue, Strathmere;

This profile location was established because the shoreline dynamics are very different between the Williams Avenue (UT-5) and Jasper Avenue (UT-3) sites related to the influence of the ebb- Inlet. Jasper Avenue performs more like a mid-island beach where losses are mainly directed toward the south with cross-shore sand redistributions the major component of change. Tecumseh Avenue lies mid-way between the two different beach configurations and was surrounded by an obsolete array of timber bulkheads and timber groins. These structures were installed decades previously and are currently buried in the beach project sand.

The USACE sponsored beachfill was completed by July 2015 which significantly extended and elevated the dune and beachface seaward. The most recent 2019 maintenance effort provided 72.36 yds³/ft. in new sand on the beach yielding a 153-foot s

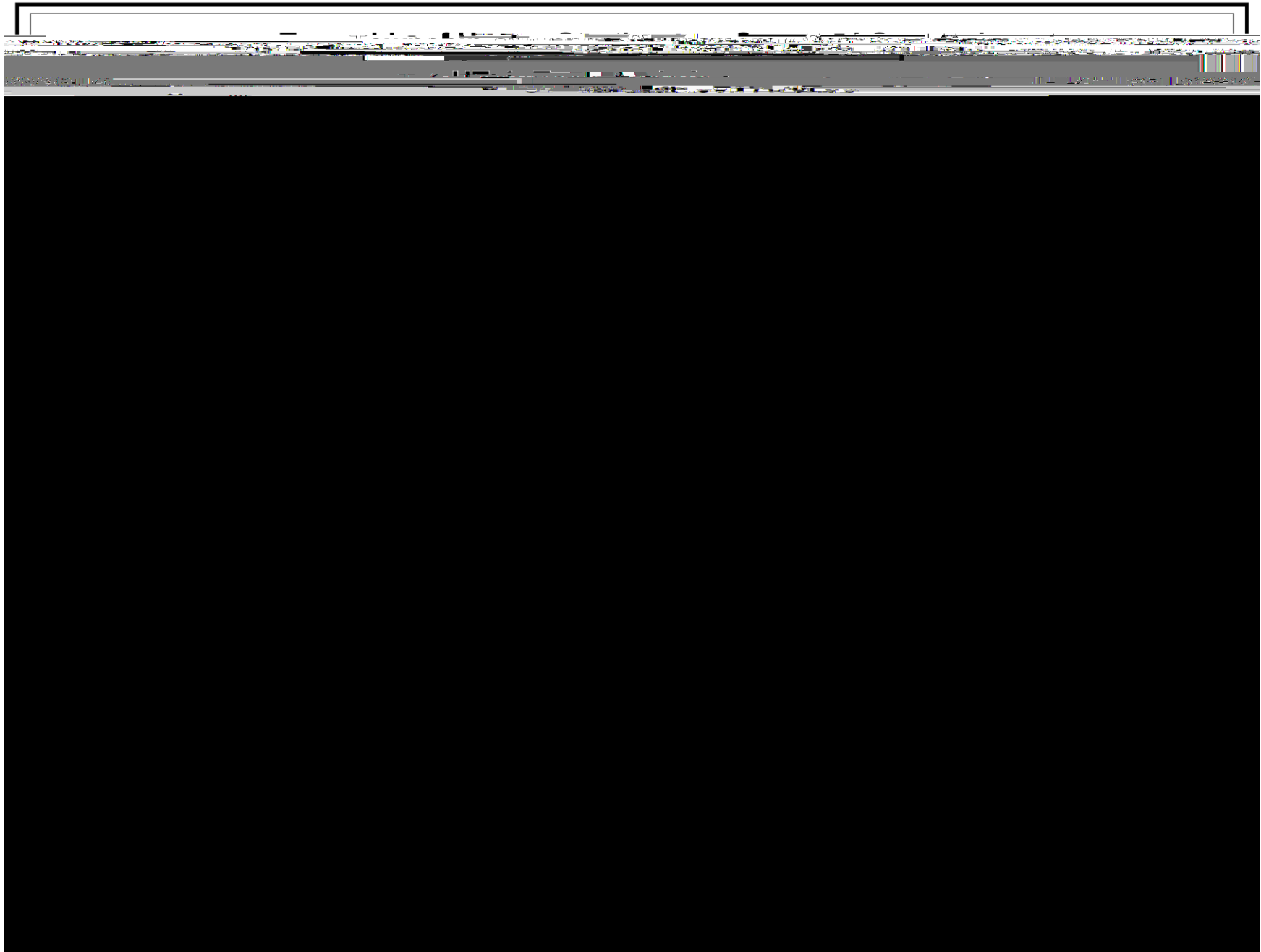


Figure 9. This location suffered early year storm erosion on the beach without a great deal of berm development over the summer. The June offshore bar made it to the beachface by September with another bar about to move onto the beach as of December 8, 2021.

Survey Line UT-3, Jasper Avenue, Strathmere;

Jasper Avenue is the first of three sites located along the central part of the island know
This segment has been notoriously

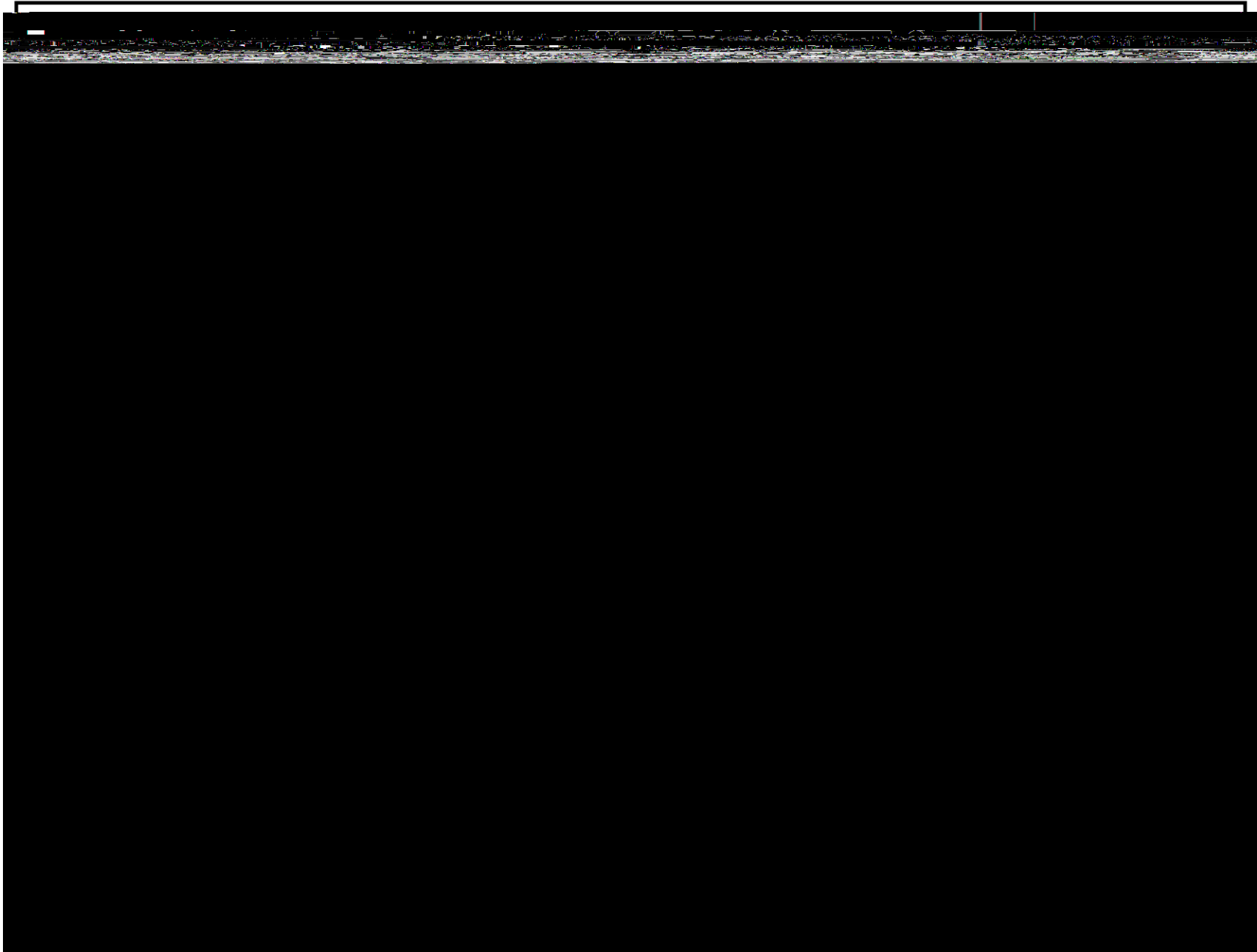
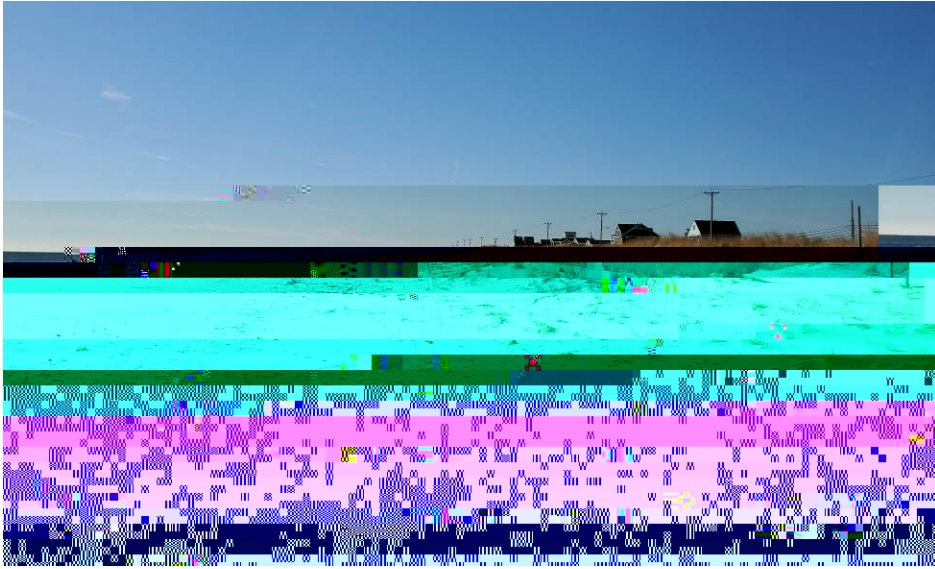


Figure 11. For the past several years all the dune accretion took place on the emerging foredu

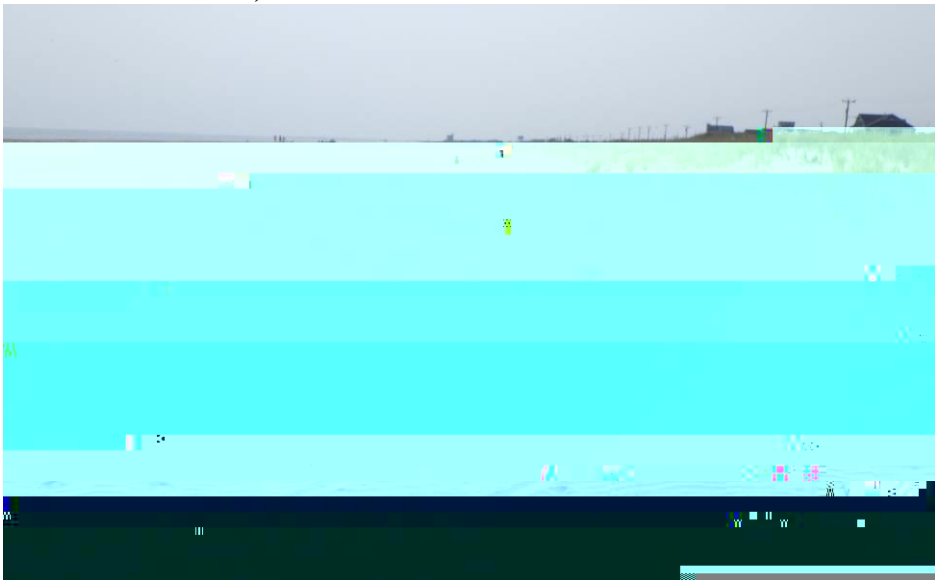
Survey Line UT-2, 2400 Commonwealth Avenue, Strathmere;

This site is located directly seaward of the residence at 2400 Commonwealth Avenue in the southern segment of the Strathmere shoreline. This region has been more resilient than First Avenue with no documented episodes of dune breaching or overwash during the CRC monitoring for the Township. The state, local and federal beach nourishment efforts have significantly enhanced the beach and dune starting in 1984. The most effective non-federal project was completed by the NJDEP and Upper Township at a 75% state cost and 25% local cost in 2009

Following initial USACE project construction, the post-Jonas northeast storm restoration was complete by June 2016 with a wider beach due to an added 56.01 yds³/ft. placed at the site



12a. December 15, 2020



12c.

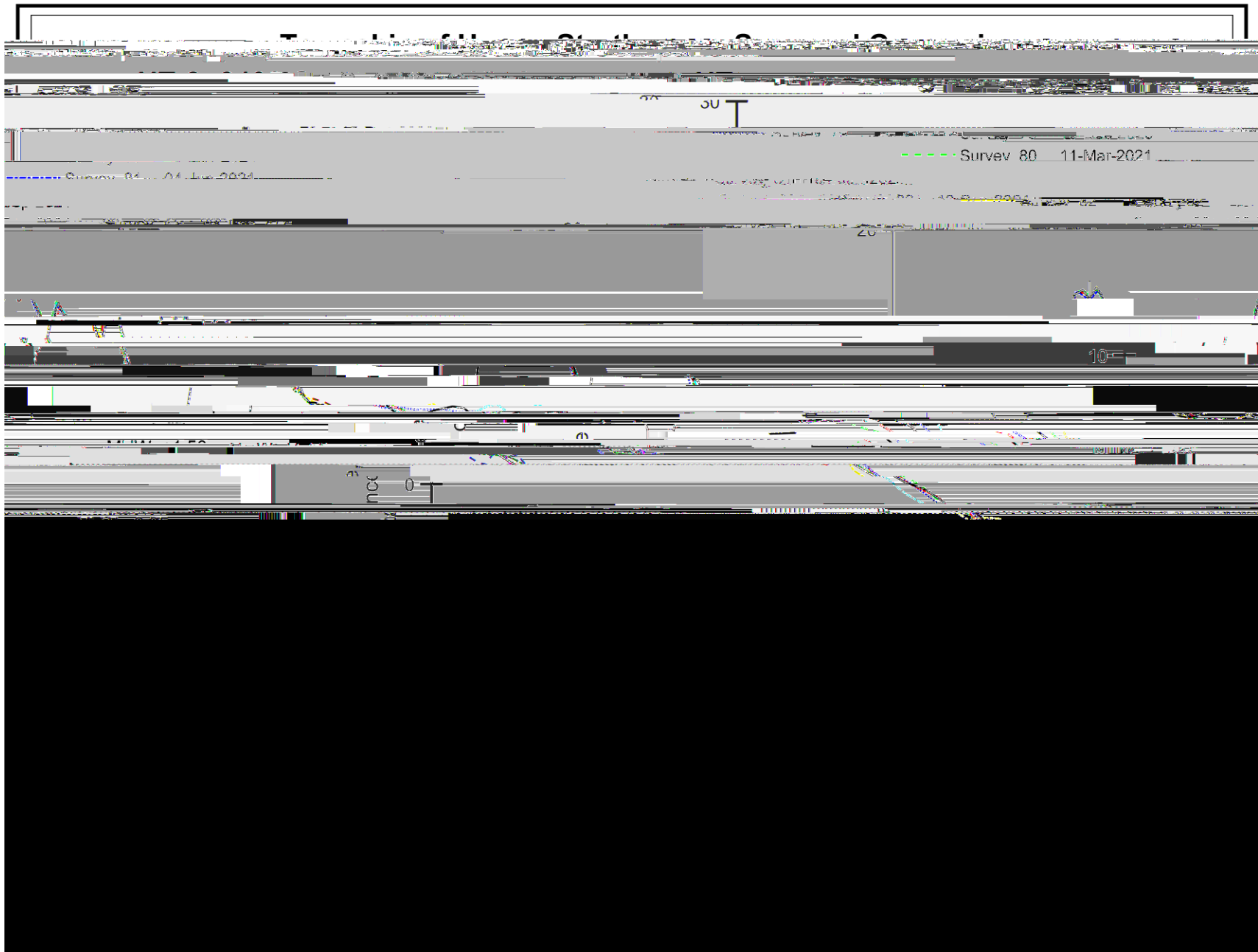


Figure 13. Located in the middle of the mid-Whale Beach area, this site remains quite stable. The primary dune developed a significant foredune nearly at the same elevation as the reference position on the original dune. The beach berm was degraded by the early winter storms with a repetitive growth of a berm ridge in December 2020, September 2021 remaining a little landward as of December 2021. Offshore, the bar system was present after the northeast storms in

Survey Line UT-1, First Street (NJBPN #120), Strathmere;

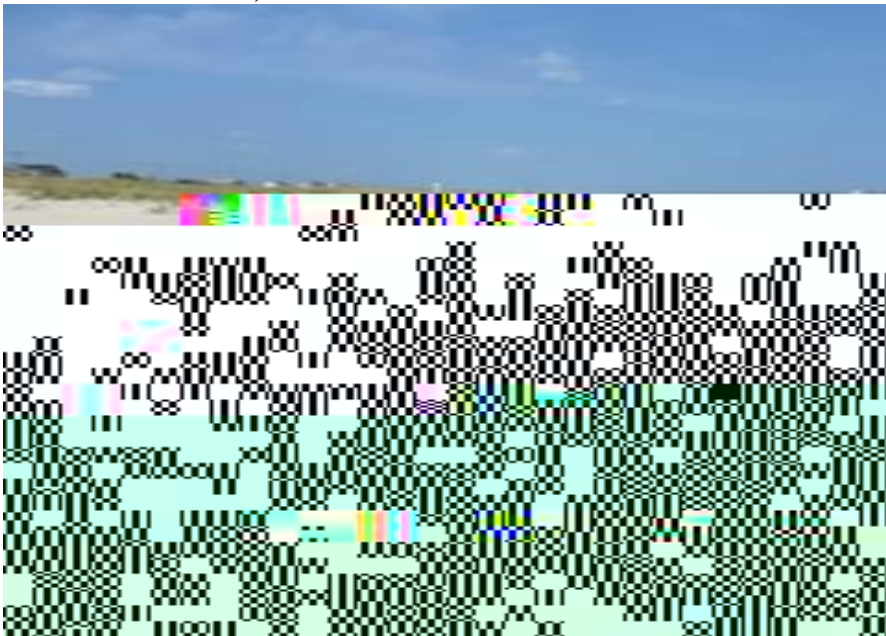
This profile site is actually a few yards inside Sea Isle City but was established in 1986 for a NJ State beach monitoring program. Acting as the southernmost site in Upper Township, this location once suffered from overwash during any moderate northeaster. In fact, the segment to the south of the site was so persistently overwashed, that the County undertook the installation of 10-foot diameter geo-textile tubes as dune core along 2,400 feet of the beach into Sea Isle City in 1996. The geo-textiles replaced the use of I-5 gravel used as road grade base in the core of the primary dune. Another failed attempt was the placement of the first generation of Beachsaver Reefs in the proximal nearshore sub-tidal zone to mitigate wave energy striking the beach. These were removed shortly after they subsided into the sand and marsh mat under the sand by order of the NJDEP.

In 1984 a New Jersey co-sponsored beach nourishment project introduced Corson s Inlet sand to this location as part of the original Strathmere beach nourishment project. This work was accompanied with three timber base and rock toe offshore groins spaced widely between the Tecumseh Avenue site and this location. The NJDEP 2009 beach project added material here as well.

The USACE sponsored beachfill was completed by July 2015 which significantly extended and elevaQq e significantly



14a. December 15, 2020



14c. September 13, 2021



14b. June 4, 2021

Photograph 14a is a view to the north at the seaward toe of the dunes across the beach showing the extent of sand accumulation. There is far more sand present than was on the site prior to the federal project completion.

Photograph 14b shows the beach six months later after three notable northeast storms. Likely, the debris at the beginning of the seaward dune toe slope came from the February 1 & 2, 2021 storm. Summer growth has added luxuriant vegetative cover to the dune.

Photograph 14c This early fall view shows the beach width re-established after the offshore bar moved onto the beach.



Figure 15. Seasonal variations related to changes in storm intensity appear well illustrated in this site's five transects. The December 2020 beach developed a flat beachface and large offshore bar after the storms as of March 2021. By June the bar moved landward, and some sand was added to the beachface. As of September, the bar had attached to the beach and a significant berm ridge had developed. The December 2021 survey showed both a new offshore bar, but closer to the beach and the September berm ridge pushed landward on the beach. This is indicative of more unsettled weather patterns emerging in the fall.

