

Florida Department of Environmental Protection
Office of Resilience and Coastal Protection



Range Monuments: Questions and Answers



1.) Question: What is a Range Monument?

Answer: Range (R) Monument or Reference (R) Monument and commonly referred to as a R monument are coastal survey markers or monuments. They mark key survey points along Florida's sandy coastline.

2.) Question: Why are the R monuments along Florida's coastline?

Answer: The R monuments are utilized by Land Surveyors and Coastal Engineers to measure the beach topography for determining erosional or accretional trends and to coordinate mapping of beach restoration project boundaries or the project's engineered performance. They are also utilized by local, state and federal officials for similar mapping purposes. See Florida's [Beach and Shore Preservation Act](#) and [Coastal Mapping Act](#) or the [Critical Erosion Report](#) and [Project Monitoring Standards](#) for additional information.

3.) Question: Who installed the survey monuments?

Answer: Originally (early 1970's), the University of Florida's [Department of Coastal & Oceanographic Engineering Laboratory](#) through contracts with the Department of Natural Resources (DNR) of the Division of Beaches and Shores, which now is the Department of Environmental Protection (DEP), the Office of Resilience and Coastal Protection (RCP), and specifically within the [Beach Management Program's](#) surveying staff.

4.) Question: Where are the R monuments located?

Answer: The R monuments are located at approximately 1,000-foot intervals along Florida's sandy coastline, with a few exceptions. The R monuments are not located in the Florida Keys (Monroe County), Eglin Air Force Base (Santa Rosa and Okaloosa Counties), portions of Shell Island and Crooked Island (Bay County), Saint Vincent Island (Franklin County) the pocket beaches from Wakulla through Pasco Counties, the Canaveral National Seashore/ Kennedy Space Center (Brevard County), the Kice Island, Cape Romano or Ten Thousand Islands (Collier County). Also, for the portions of Florida's shoreline listed above that have no physical R monuments, the Department uses a virtual position (V) that can be seen in the map direct tool on the Department's web page with V-330 as an example.

5.) Question: When were the R monuments installed?

Answer: The R monuments were installed in the early 1970's.

6.) Question: What do R monuments look like?

Answer: The 1970's model are 4"x 4" X 4' concrete monument (Figure 1) with a DNR brass disk on top. Some of the newer R monuments are made of a plastic Bernstein pipe with a DEP brass disk set on top. Some R monuments have a witness post adjacent to the monument that are either a metal or fiberglass post with signage that indicates a survey marker is nearby, generally within 1 to 5 feet of the witness post. See Figure 2, Figure 3, and Figure 4 for additional photos of the R monuments. See an aerial image example in Figure 5 showing the R monument locations with red triangles along the shoreline. Profile graphs from survey data collected after hurricanes by Real-Time Kinematic (RTK) Global Positioning Systems (GPS) or LiDAR can be seen in Figure 6, Figure 7, Figure 8, Figure 9 or Figure 10.

- 7.) Question: Where can I find the beach erosion survey data that has been collected over the years?
Answer: Historic beach erosion survey data can be found in the Department's [historic shoreline database](#). The beach survey data has been repeatedly collected along a prescribed profile bearing. See an example of a physical monitoring [survey report](#).
- 8.) Question: What happens if a R monument is destroyed (naturally or intentionally)?
Answer: Although fine or imprisonment for intentional destruction is possible, that usually does not happen. Occasionally, R monuments are dislodged as a result of a storm, beach erosion or new development. In the past, the Department would replace the Range monuments, but with the advancement of the GPS surveying tool, the Department no longer replaces the R monuments.
- 9.) Question: Do the R monuments have coordinates and elevations?
Answer: Yes, this information can be found in the historic shoreline database in the profile survey data files. For engineers, surveyors, or GIS personnel needing the northing and easting coordinates or elevation of the Range Monuments or the A Stations, see the following [link for A-tabs, R-tabs and Profile elevation data](#). *Positions may have shifted over time; this information is to be used at one's own risk.*
- 10.) Question: Does the Department utilize the [state plane coordinate system](#) with the R monument coordinate values?
Answer: Yes, the coordinate values given out to the public are in the Northing (Y), Easting (X) and Elevation (Z) U.S. Survey feet format in the Florida State Plane System of Coordinates. These coordinates can be found in the historic shoreline database.
- 11.) Question: Can the R monuments be seen in the Department's aerial photomaps or geographic information system (GIS) layer?
Answer: Yes, although the R monuments are not actually visible in the photographs, the Department has the interactive [map direct](#) that shows the R monuments approximate location on current aerial photography and depicted as small red triangles and they can also be seen in the Department's [GIS layers](#), [geospatial data](#) or [LABINS](#). The virtual monuments are depicted as small blue triangles.



Figure 1. Range monument R-32 on Perdido Key in Escambia County, Fl.



Figure 2. Range monument R-137, Treasure Island in Pinellas County, Fl.



Figure 3. Range monument R-22 in Malacompra Park in Flagler County, FL.



Figure 4. Range monument R-3 on Anna Maria Island in Manatee County, FL.



Figure 5. Aerial image of Range Monuments depicted by red triangles along Florida’s coastline in Ft. Clinch State Park. Google Earth imagery, January 2019.

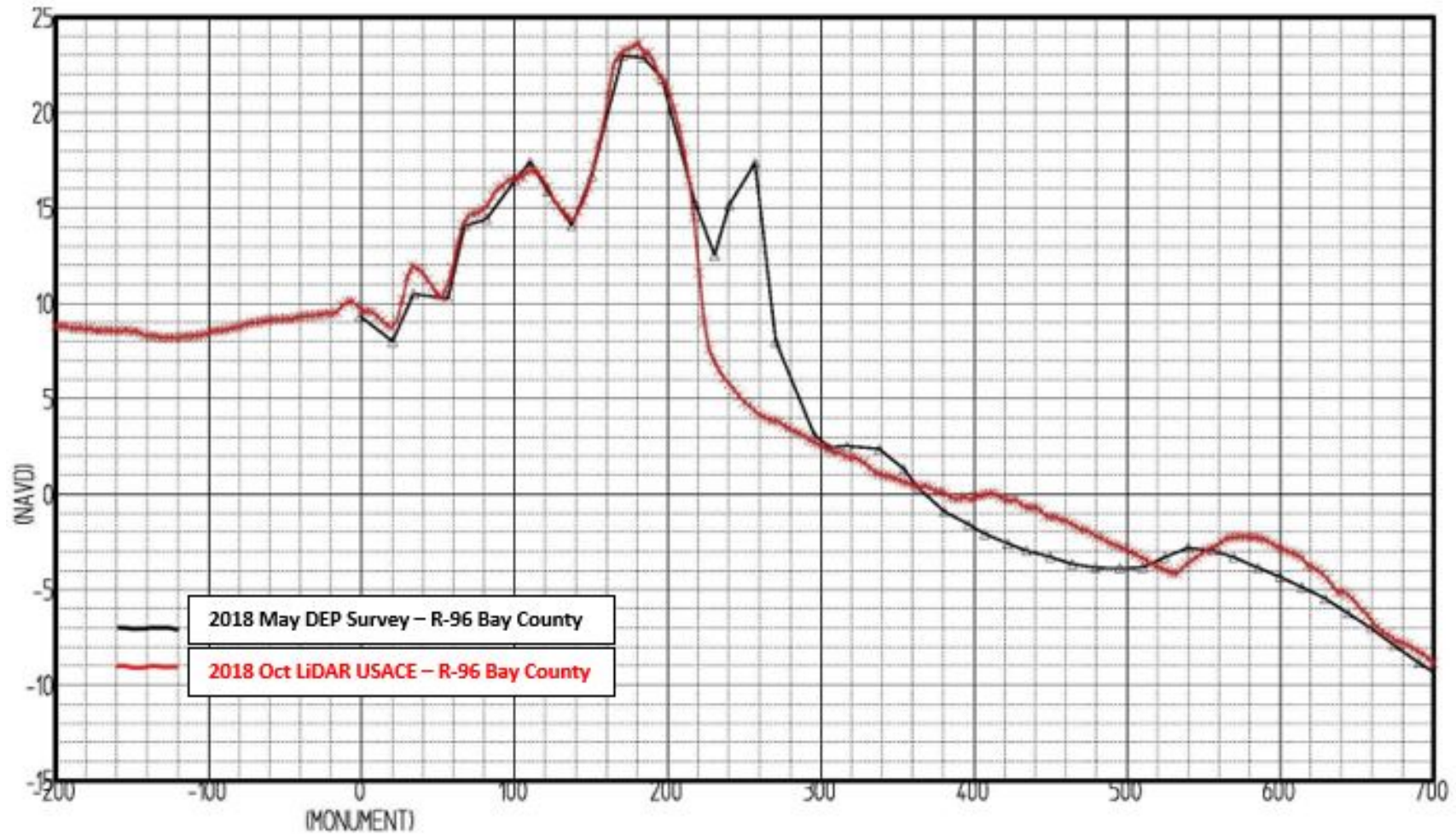


Figure 6. Pre-storm and post-storm profile comparison of major dune erosion in St. Andrews State Park in Bay County at R-96, due to Hurricane Michael (2018).

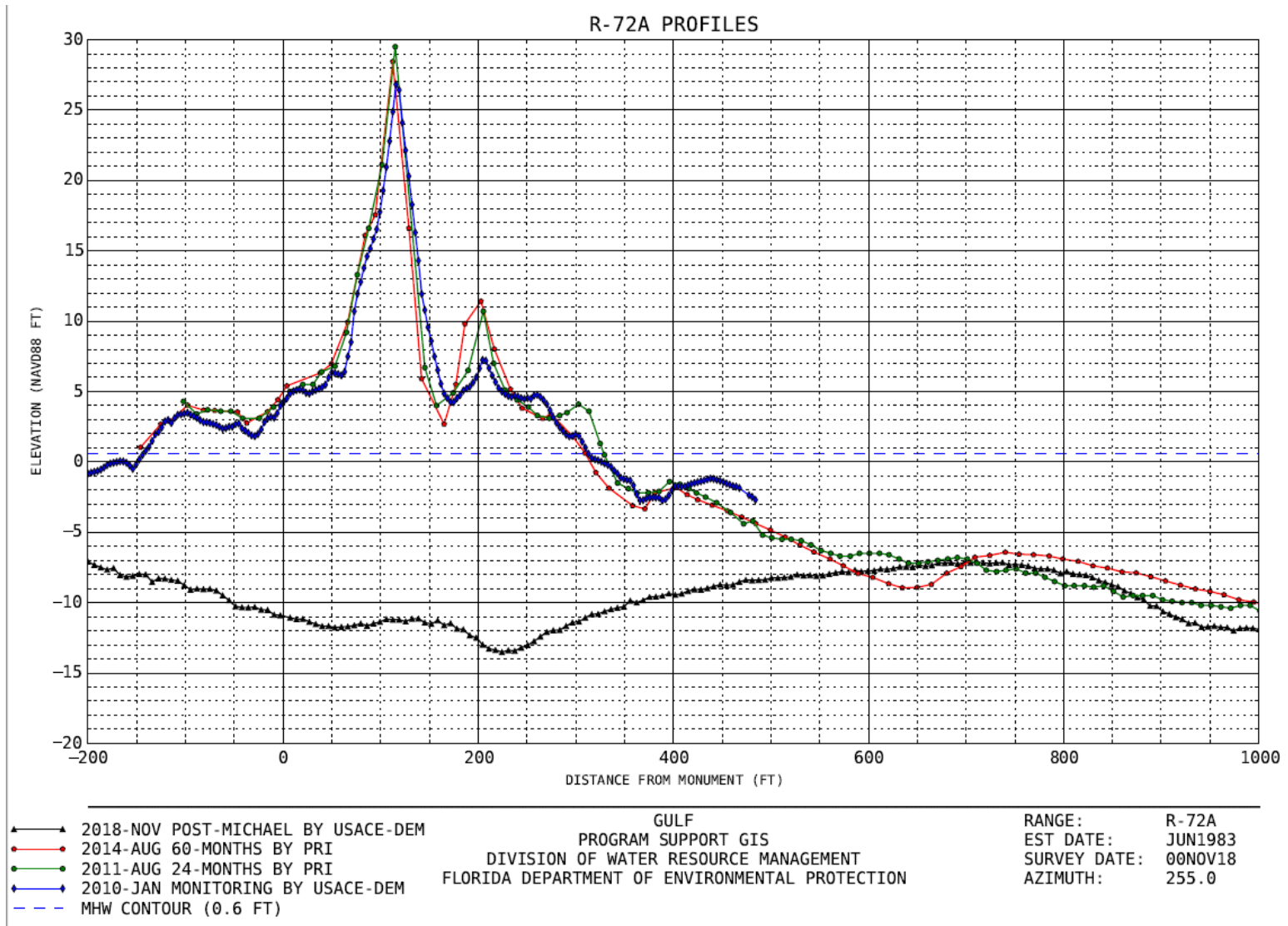
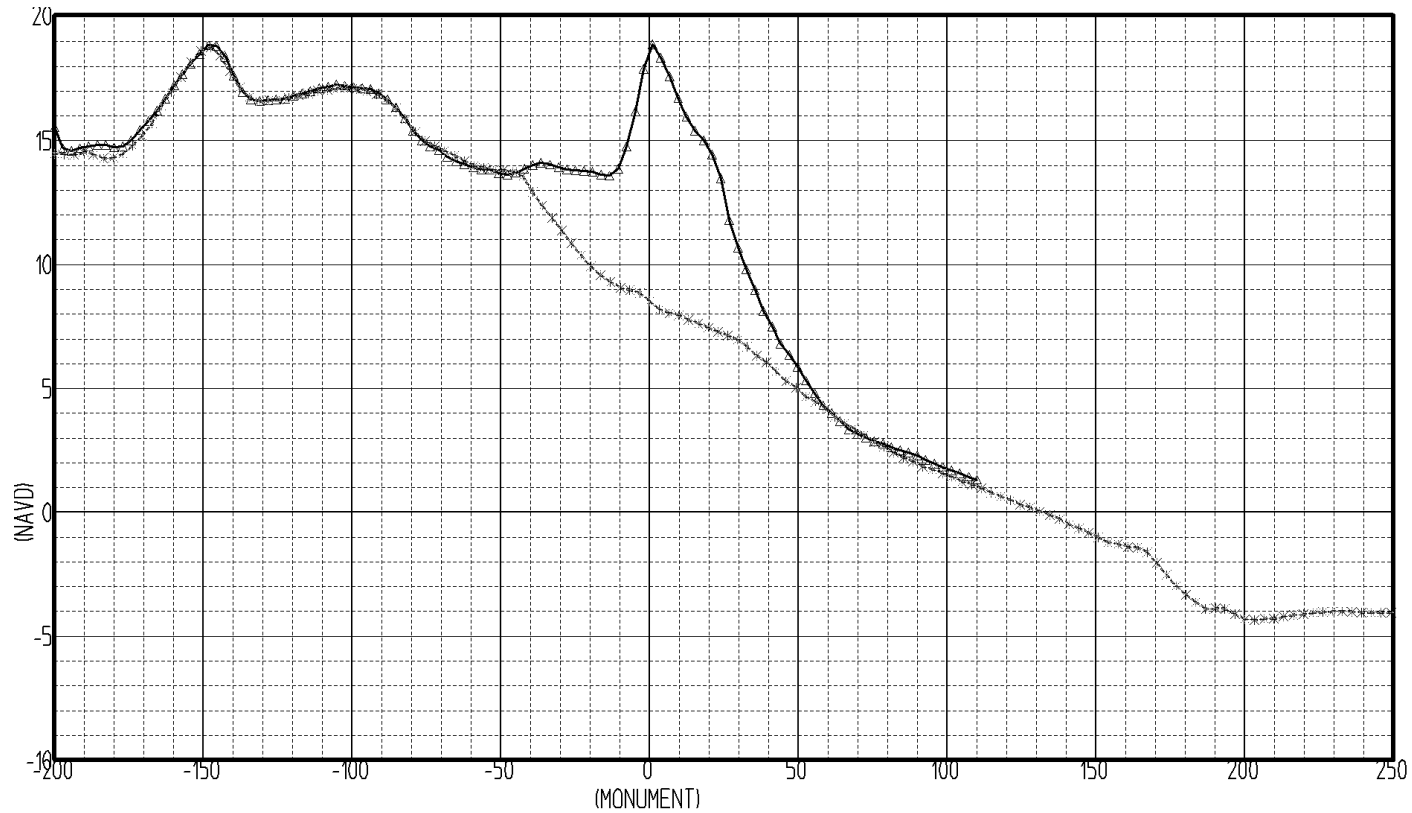


Figure 7. Pre-storm and post-storm profile comparison at the site of the breach across St. Joseph Peninsula State Park in Gulf County at R-72, due to [Hurricane Michael](#) (2018).



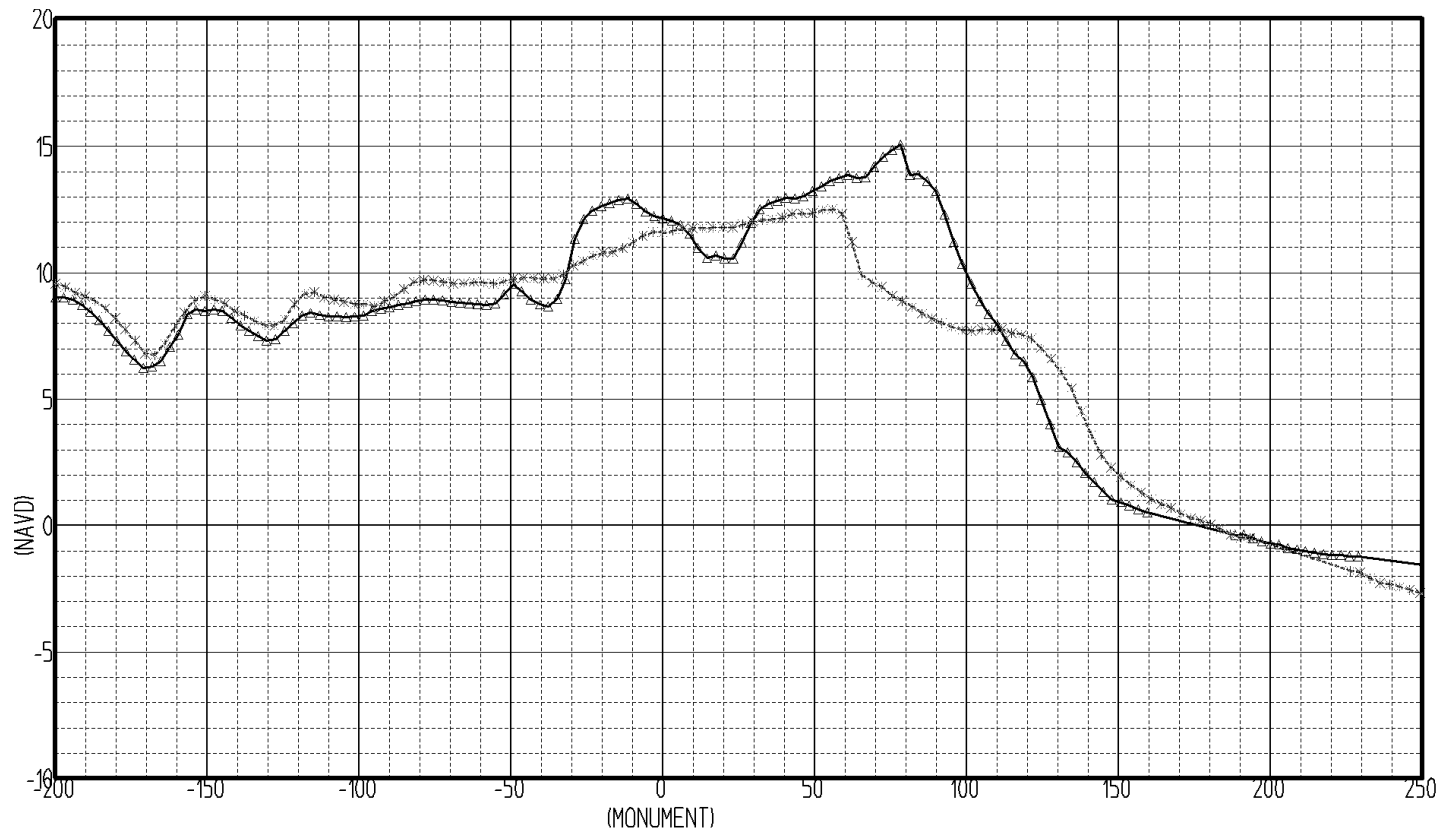
BEACH PROFILE
—▲—▲— 2016 PRE-MATTHEW LIDAR
- - * - - * - - 2016 POST-MATTHEW LIDAR

ST JOHNS COUNTY
Division of Water Resource Management
FL Dept. of Environmental Protection

Range: R-087 1/3
Mon Est: JUN1972
DOT DATE:
BEACH DATE: 00JUN16
OFFSHORE DATE:

05-25-17

Figure 8. Pre-storm and post-storm profile comparison of DEP R Monument, R-87 in St. Johns County of erosion due to [Hurricane Matthew](#) (2016).



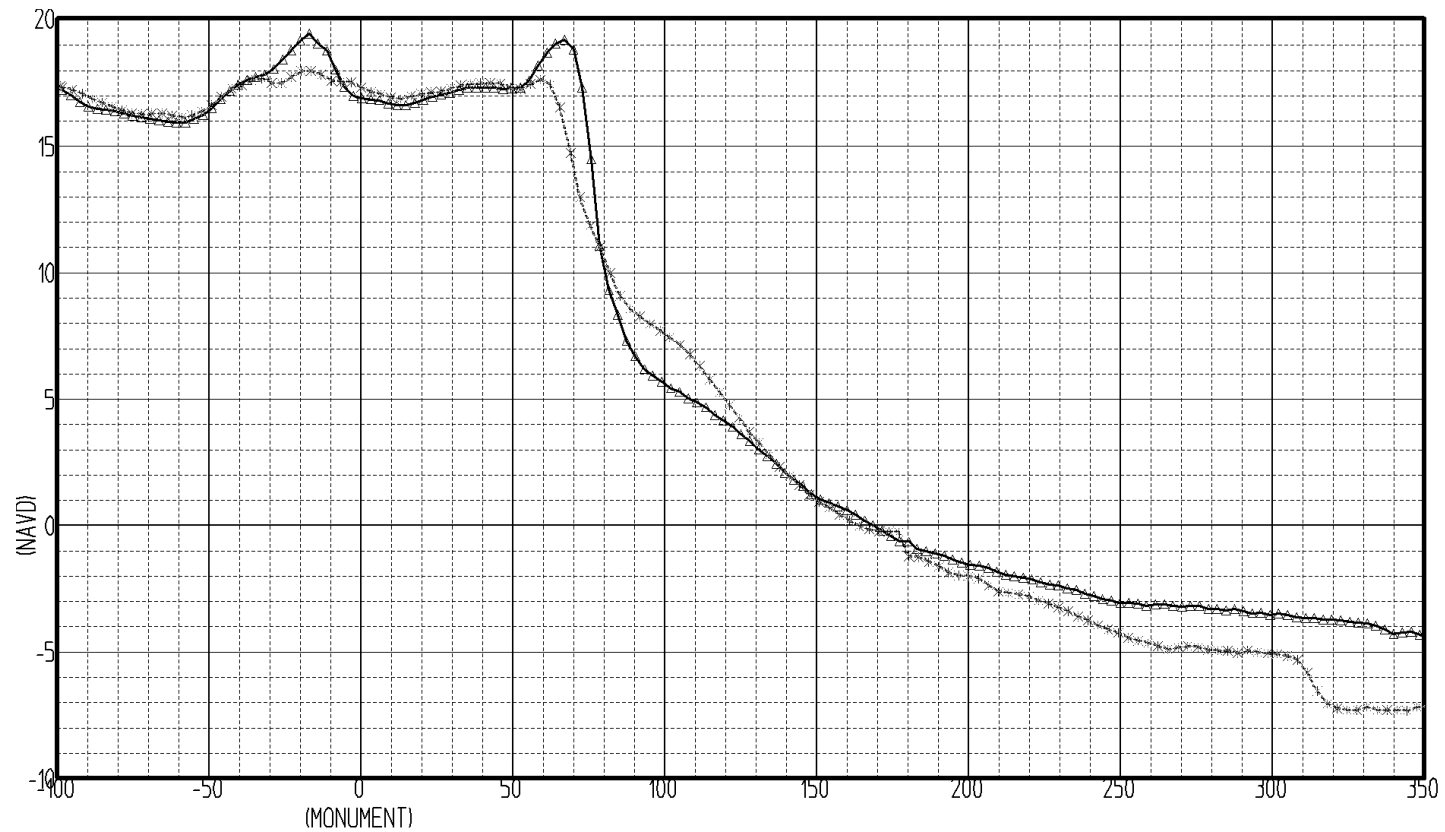
BEACH PROFILE	
—△—△—	2016 PRE-MATTHEW LIDAR
- - - * - - -	2016 POST-MATTHEW LIDAR

FLAGLER COUNTY
Division of Water Resource Management FL Dept. of Environmental Protection

Range: R-008	1/4
Mon Est:	MAY1972
DOT DATE:	
BEACH DATE:	00JUN16
OFFSHORE DATE:	

05-31-17

Figure 9. Pre-storm and post-storm profile comparison of DEP R Monument, R-8 in Flagler County of erosion due to Hurricane Matthew (2016).



BEACH PROFILE
 —▲— 2016 PRE-MATTHEW LIDAR
 -*- 2016 POST-MATTHEW LIDAR

FLAGLER COUNTY
 Division of Water Resource Management
 FL Dept. of Environmental Protection

Range: R-085
 Mon. Est: MMM1999
 DOT DATE:
 BEACH DATE: 00JUN16
 OFFSHORE DATE:
 1/3

06-07-17

Figure 10. Pre-storm and post-storm profile comparison of DEP R Monument, R-85 in Flagler County of erosion due to Hurricane Matthew (2016).