A beach profile survey is a topographic and bathymetric survey of a beach and adjacent regions. The surveys are conducted along multiple shore perpendicular transects that typically initiate at the dune or other limiting landward feature (may be a wall or road) and extend across the beach and offshore to the depth of closure.



In the case of University Beach the transects initiate at the Northern curb of Ocean Drive and extend offshore to an offshore distance of >900 ft and elevations of -5.4 NGVD 29.

How to Create a Beach Profile?









Location 1 Profile



Location 2 Profile



Location 3 Profile

What Does Beach Profile Data Look Like?

Lets take a Look at the University Beach as our example:



The beach profile survey conducted at University Beach consisted of 12 transect lines inside of the beach cell and 7 lines outside of the groins as shown in the figure above.

The transect lines are oriented perpendicular to the shore and extend from the north curb of Ocean Drive down the bluff, across the beach and offshore to a maximum offshore elevation of between -7 and -9 ft. Historic overlays of beach profile data collected along Profile Br4 at University Beach illustrate the gradual modification of the slope after construction. The data represents the period from post-construction August 2001 to May 2004. This profile is located between the central and western detached breakwaters.



Historic overlays of beach profile data collected along Profile Br3 at University Beach show significant accretion in the lee of the detached breakwater. The data represents the period from pre-construction October 2000 to May 2004. This profile is located in the center of the central detached breakwater.



So What is Beach Profile Data Used For?

Beach profile data provides valuable information describing the morphology, and key beach features such as the beach, sand bars and nearshore. By comparing recent data to past data scientists can calculate the volume of sand that is lost or gained over a specific time interval. This helps resource managers determine when to nourish a beach and how much sand to place.

Example: loss of beach after hurricane Ike (2008)



Each survey consists of XYZ datasets. Numerical models can then be applied to create terrain models and calculate volumetric change. Often Geographic Information System (GIS) software is utilized for this task. The 2-D data is generated as a station offset file which provides a distance (x) from a known control point with an associated elevation(y)from the 3-D data set and consists of a distance from the control point and an elevation. The 2-D data is then graphed to provide a cross sectional view of the beach. This type of graphical representation shows features such as beach berm and sand bars and can be compared to previous data to calculate volumetric change and determine movement of key features.

Using the CHRGIS Beach Profile Tool

Step 1:

-select a beach location from the drop-down list - AND select the profile segment for that beach

Coastal Habitat Restoration GIS

BEACH PROFILE ANALYSIS

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Update Graph

Using the CHRGIS Beach Profile Tool



the beach profile survey data is presented on the graph