

## APPLIED COASTAL

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**Project:** Ebb-Shoal Development and Sediment Bypassing at Ocean City Inlet, MD

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As part of the Coastal Inlets Research Program, Applied Coastal personnel completed a detailed analysis of shoreline and bathymetry change for Ocean City Inlet, MD to quantify ebb shoal evolution and sediment bypassing. These data were used to verify an inlet geomorphic change model for describing sediment transport pathways at entrances. Prior to August 23, 1933, Fenwick/Assateague Island was a continuous barrier beach that was retreating at a rate of 1-2 m/yr. On this date, hurricane winds and waves breached the island, creating an inlet that began to be stabilized by engineering activities within one month of the breach. By 1935, the inlet was stabilized with north and south jetties, creating a disruption in south-directed sediment transport that rapidly led to the development of a large offset in shoreline orientation between Fenwick and Assateague Islands. Concurrently, the ebb shoal expanded seaward and to the south, initially creating a relatively small ebb-shoal deposit that evolved into a bypassing bar between the 1950s and 1960s. The shoal continued to migrate to the south and toward the shoreline until an attachment bar was formed along the northern shoreline of Assateague Island in the late 1980s, creating a pathway by which net south-directed longshore sediment transport could be deposited on the island. Although the attachment bar has not reached depositional equilibrium (i.e., sediment volume is increasing on this portion of the ebb-tidal delta), bypassed sand reaching the attachment bar has resulted in deposition along northern Assateague Island beaches.



September 18, 1933



December 6, 1935



May 18, 2000