

APPLIED COASTAL

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Project: Coastal Processes
Assessment for Brevard
County, Florida

Contact: Department of Justice
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The primary objective of this assessment for Applied Coastal personnel was to document the impact of the construction, operation, and maintenance of Canaveral Harbor on downdrift beach response and to quantify shoreline recession and losses of sand volume associated with beach change. The extent of Harbor-induced impacts on downdrift beaches was determined with historical shoreline-position data for the period April 1948 to February 1970 for quantifying the response of the natural beach (prior to the major fill of 1974/75).

A well-defined zone of shoreline recession, limited to 7,000 ft south of Canaveral Harbor, is associated with the Harbor entrance (1948-1970). A 27,000-ft-long coastal segment south of this point experienced net shoreline advance for the same period. Between February 1970 and May 1996, an interval mainly covering a time period after the major 1974/75 USACE beach fill, net shoreline advance was found, illustrating the effectiveness and persistence of the fill over the past two decades. The sand placed on Brevard



County's beaches by the USACE in 1974/75 extended the shoreline seaward of the 1948 (pre-Harbor) shoreline position and seaward of the September 1972 (pre-fill) shoreline position. The 1974/75 beach fill more than compensated for beach erosion that had occurred since the Harbor was constructed. The erosion-impact zone induced by the Harbor that was present on the beach prior to beach-fill placement was determined to have extended approximately 7,000 ft south of the south jetty. The fill was placed on the beach from the Harbor's south jetty and extended south approximately 10,500 ft. The fill compensated for preexisting erosion over the distance of 7,000 ft, as well as nourished previously accreting areas that are located beyond 7,000 ft south of Canaveral Harbor.

The beach in the 7,000-ft erosion-impact zone covered by the fill has experienced erosion since 1974/75. However, the volume of sand placed on the beaches south of the Harbor in 1974/75, and subsequent smaller fills and nearshore placements in the 1990s, had been effective at maintaining the shoreline seaward of its September 1972 position (pre-fill). Based on analysis of bathymetric data spanning 65 years, the net sand transport rate near the north jetty was calculated as 308,000 cy/year. The associated sand-bypassing rate was calculated as 155,000 cy/year (taking into account the natural beach deposition rate prior to Harbor construction).