

A HYDROGRAPHIC INVESTIGATION OF A MIXED-ENERGY INLET: RICH  
INLET, NORTH CAROLINA.

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## ABSTRACT

Management issues related to tidal inlets and their associated environmental impacts have become a primary focus for coastal research in North Carolina. Research needs stem from a variety of issues relating to the targeting of tidal inlets for sand resources for beach fill. Rich Inlet, located approximately 55km northeast of Cape Fear, is one such inlet marked for modification. Detailed hydrographic data for Rich Inlet, as well as for most North Carolina inlets, is extremely limited and in most cases is non-existent. This study provides physical and hydraulic data that are currently being used to formulate an inlet management plan and a baseline for long-term monitoring.

Rich Inlet is a large wave-influenced transitional system that separates Figure Eight Island, a privately developed barrier to the south, from Hutaff Island to the north. A variety of data indicated that the inlet is a flood dominant system. Data from ADCP throat surveys recorded greater maximum flood ( $\sim 1.17\text{m/s}$ ) than ebb ( $\sim 1.05\text{m/s}$ ) current velocities. A water-level meter placed adjacent to the inlet throat recorded longer ebb (6.78hr) than flood (5.63hr) durations. Tidal prism ranged from  $9.4\text{-}21.22 \times 10^6 \text{ m}^3$ . An estimated ebb-tidal delta volume of  $6.7 \times 10^6 \text{ m}^3$  was determined using the average tidal prism. Future inlet modification can have a significant impact on the aforementioned parameters. Alteration of the inlet could potentially lead to an increase in tidal prism and as a consequence an increase in the retention capacity of the ebb-tidal delta. Changes in the extent of the ebb-tidal delta will have a negative impact on adjacent oceanfront shorelines.

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