

Beach Instability at the Mouth of the Cape Fear River

A succession of navigation dredging projects in the Cape Fear River has created an increasing problem of erosion at beaches at the river mouth that can only be addressed, but not solved, by regular replenishment projects.

Beaches are dynamic, with constant shifting of sand. Erosion takes place in storms, only to be restored by natural forces. Sand moves along the shoreline and is exchanged with sand from the nearby ocean floor. The process has been exhaustively studied but is not fully understood.

What is understood is that deepening of inlets by dredging navigation channels creates “sediment sinks” that capture sand moving in the littoral drift, interrupting the natural process. The result is erosion of beaches without natural replenishment.

The Cape Fear River had a natural depth of ten to twelve feet at the ocean bar at the mouth when first charted. The beaches, unmolested, were stable. A succession of dredging projects from the nineteenth century has increased the depth to 44 feet. That depth was reached in the period 2000-2004.

Prior to that time, erosion had been remedied by occasional artificial replenishment of the sand. But when the depth of 44 feet was reached in the channel, not even biennial replenishment with maintenance dredging spoil has been able to sustain the beaches on either side of the river mouth.

The dredging itself is destructive. In the last dredging cycle, large chunks of the beach on the east shore of the river fell into the dredged trench.

The beaches at the mouth of the Cape Fear River are an essential part of the life cycle of five species of sea turtles. Two species are endangered and two are threatened.

The Wilmington District of the Corps of Engineers is pursuing a plan to dredge even deeper.

