

[INDIAN RIVER COUNTY'S PLAN FOR PRESERVING BEACHES](#)

Indian River County has approximately 22.4 miles of barrier island beaches extending from Sebastian Inlet south to Round Island Park, 15.7 miles of which have been classified by the Florida Department of Environmental Protection as “critical erosion” areas (**See Figure 1**). Erosion is defined as the wearing away of land from the beach and dune system by wind, water, or wave action. “Critical Erosion”, as identified by the State of Florida is where natural processes or human activity have caused erosion to such a degree that upland development, recreational interests, wildlife habitat and or cultural resources are being lost or threatened. The Beach Preservation Plan (BPP for short), developed in 1988 and updated in 2009, calls for monitoring erosion along the entire County shoreline, and planning for beach restoration projects where the erosion is at its worst. To measure erosion rates, we conduct detailed professional surveys at points every 1000 feet along the entire 22.4 miles of coastline every other year. The records of these surveys give us a very accurate picture of where beach erosion is the biggest problem, so we can target areas where beach restoration is needed. The shoreline analysis conducted for the BPP divided the County shoreline into eight management sectors (**See Figure 2**). Based on erosion rates and storm damage potential, four sectors have been identified as candidates for large scale beach restoration projects. The County has constructed beach restoration projects in Sectors 1&2, in the north end of the County, and Sector 7, near the south end of the County. We are currently in the process of initiating the Sector 3 beach restoration project, 6.6 miles of beach between Treasure Shores Park and John’s Island. The remaining beach restoration sector, Sector 5, is within the city limits of the City of Vero Beach.

Beach erosion in the Sector 3 project area is due primarily to the effects of the Sebastian Inlet at the north end of the County. In recognition of this fact, the Sebastian Inlet District, which manages the inlet, is a major partner in the funding for the Sector 3 project. Sector 3 extends from the Department of Environmental Protection (DEP) beach monument R-20, north of Treasure Shores Beach Park, to DEP monument R-55, in the Town of Indian River Shores, south of Turtle Trail Beach access

[WHAT IS BEACH RESTORATION?](#)

Beach restoration, sometimes referred to as beach renourishment or sand pumping, is one method used to stabilize a critically eroded beach. Beach-quality sand is dredged from an offshore borrow area and pumped onto the beach or mined from an upland source and transported to the beach by truck. Heavy machinery is used to shape the placed sand into a specifically designed beach profile, including a dune and beach berm (flat portion of the beach seaward of the dune). The dune segment is planted with sea oats and other native salt-tolerant vegetation to help stabilize the dune. The sand used is carefully selected to be a good match to the existing beach in terms of grain size and color, and the beach profile is engineered to maximize shoreline protection while minimizing adverse environmental impacts.

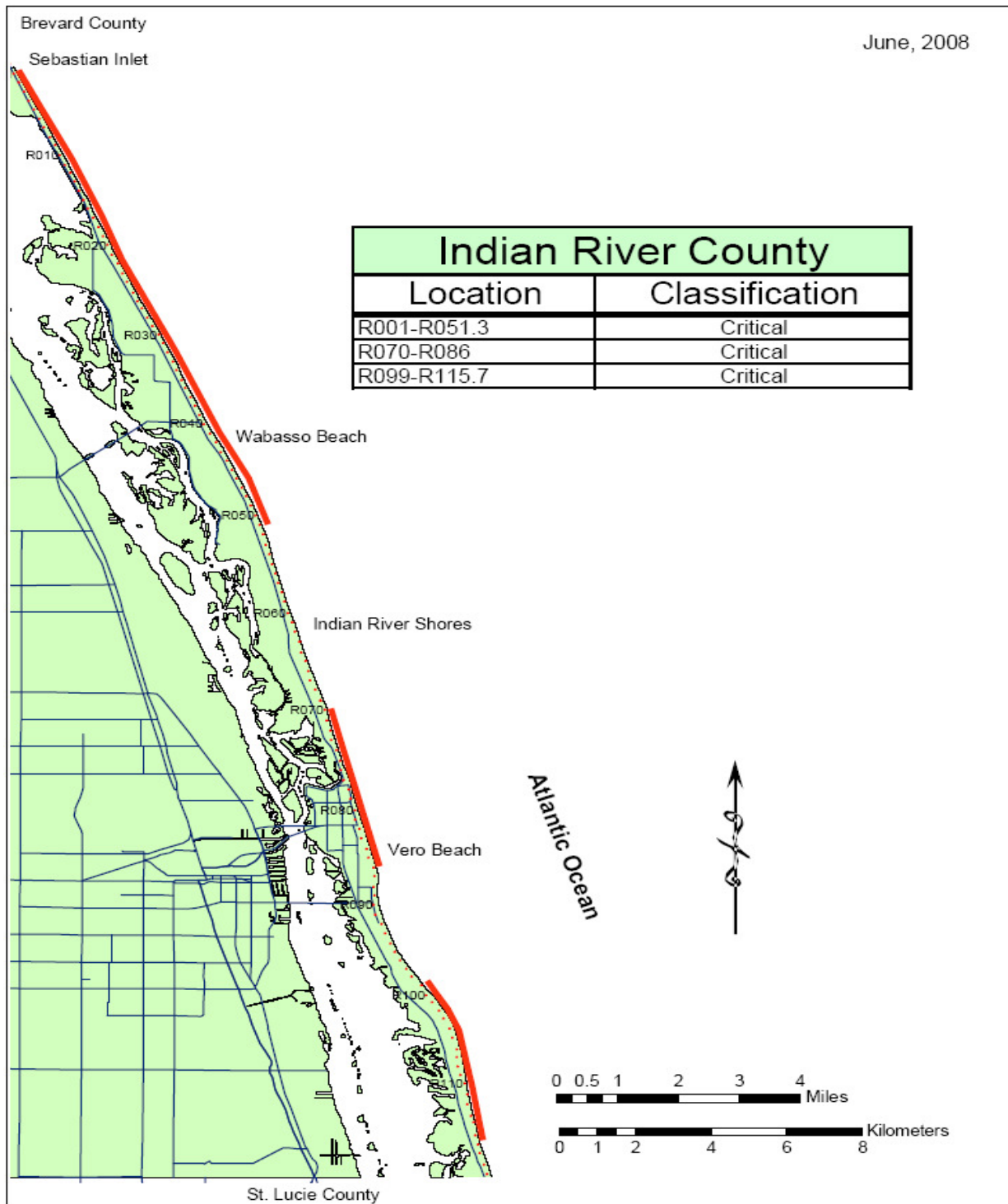


FIGURE 1 - Critically eroded shoreline in Indian River County

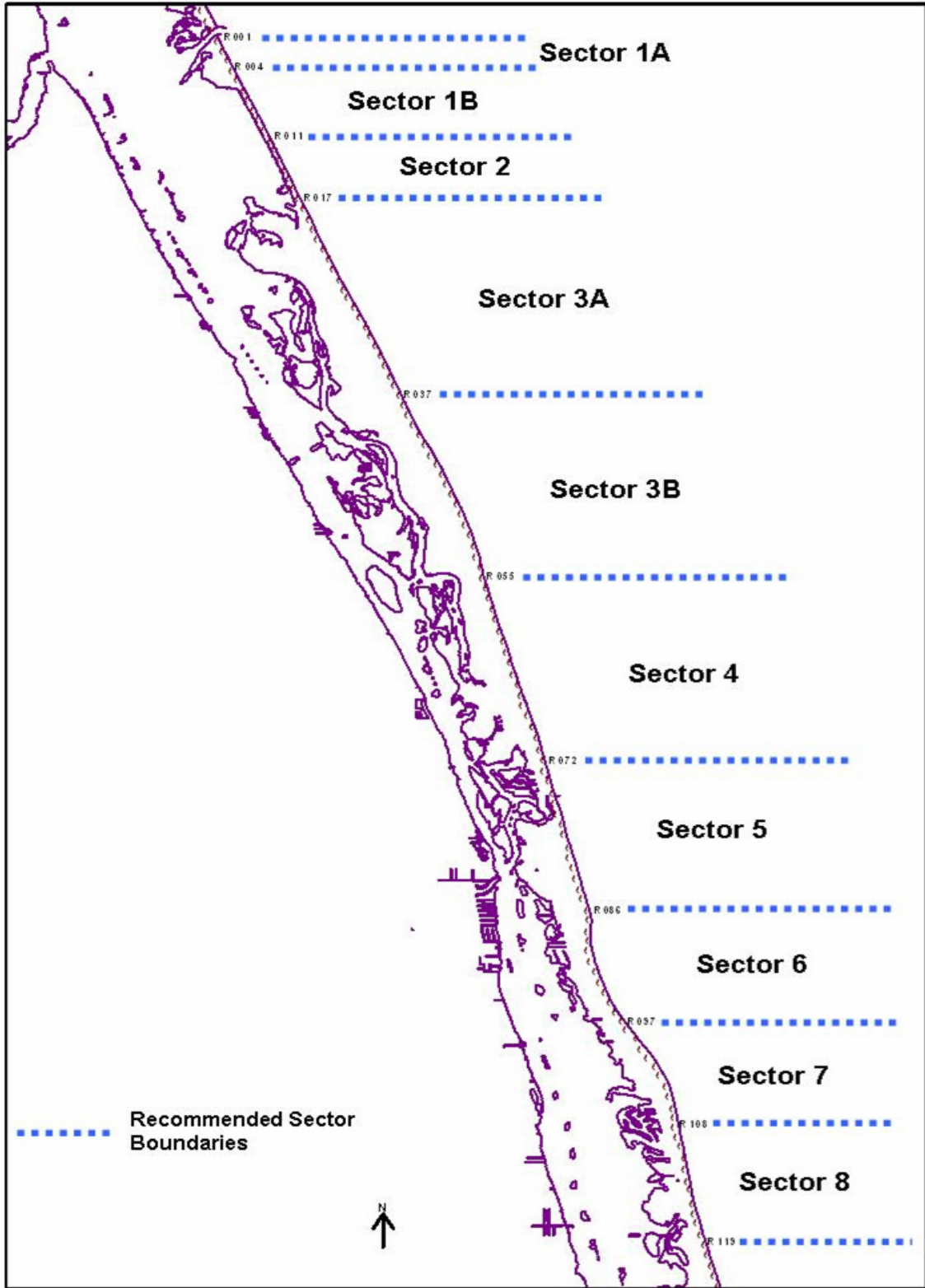


FIGURE 2 - Beach management sector boundaries

PROTECTING THE ENVIRONMENT

Anytime you move so much sand around through fragile coastal environments, there will be some environmental impacts. Our goal in this project has been, through careful design and planning, to minimize the impacts the project will have and to compensate for the unavoidable impacts by appropriate mitigation.

Sea Turtles

Sea turtles use the beaches in our area to lay their eggs each year. The nesting season for marine turtles is the period during which adult female turtles come ashore in the dark, dig a hole using their flippers, and lay 100-150 eggs at a time. After a 45-70 day gestation period, hatchlings emerge from the nest under the cover of darkness and follow the light of the moon to reach the ocean. In Indian River County, the nesting season is designed to be March 1 through October 31. In order to protect the turtles and their hatchlings, the beach restoration project is being constructed in the winter, outside sea turtle nesting season. Although it would be much easier and less expensive to build in the calmer summer months, building in the winter will minimize interference with sea turtles. We will also test the sand on the new beach to make sure it is not too compacted for mother sea turtles to dig their nests, and till the beach to reduce compaction if needed. We will also be monitoring for the formation of escarpments (small “cliffs” on the beach) and leveling them as needed. Finally, for three years after we build the beach, we will monitor the sea turtle nests and how well they are hatching.

Nearshore Reefs

Indian River County is lucky enough to have over 4,000 acres of reef habitat within 1500 feet of shore along its coastline. for an aerial view of the nearshore reef (**See Figure 3**) and for an underwater view (5). While this reef is not a coral reef, like you would find farther south, it does provide important fish habitat and is popular for recreational diving. Since the reefs are so close to shore, building a new, wider beach could result in covering some of that reef habitat with sand. The design for the Sector 3 project is carefully engineered to place sand in such a manner that it is not expected to cover any nearshore reef. To achieve this goal, we are building a smaller, narrower beach where there is reef particularly close to shore.



FIGURE 3 - Aerial of the Nearshore Reef



FIGURE 4 - Nearshore limestone reef, Indian River County (Mike Blatus photo)

FREQUENTLY ASKED QUESTIONS ABOUT BEACH RESTORATION

1) **Why do beach restoration? Aren't you just fighting Mother Nature?**

Beach erosion is not an entirely natural process. Many of man's activities, including the damming of coastal rivers, shoreline armoring, and the construction and maintenance of stabilized inlets, have interfered with the natural longshore flow of sand along the coast and greatly increased erosion. Scientists at the University of Florida have concluded that 80% of the coastal erosion along the Florida east coast is directly attributable to the effects of stabilized inlets. Beach restoration is in large part mitigation for these impacts, and an attempt to restore the natural sand transport system.

2) **What is beach renourishment/restoration?**

Beach restoration, sometimes referred to as beach renourishment or sand pumping, is one method used to stabilize a critically eroded beach. Beach-quality sand is dredged from an offshore borrow area and pumped onto the beach or trucked in from upland mines. Next, heavy machinery shapes the sand to build a proper beach profile.

3) Won't the sand just all wash away in the first storm?

Beach restoration projects do not treat the cause of erosion, just the symptoms, and the newly placed sand will indeed begin to erode after it is placed. However, the sand does not disappear, it moves along the shoreline and serves to restore natural sand transport and feed areas to the south. Beach restoration projects have a design life expectancy, termed the "Renourishment Interval". This is the period of time following construction before additional sand is needed to maintain the project. The renourishment interval for the Sector 3 project is nine years.

4) Who pays for these projects? And what do they cost?

Generally, beach restoration projects are funded through a combination of federal, state, and local sources. In the case of the Sector 3 project, there is no federal funding. The state Department of Environmental Protection has funded 50% of the costs for the engineering design and permitting of Sector 3, and the County is applying for state cost sharing for 50% of the construction cost as well. Local funding sources include approximately 4.6 million dollars from the Sebastian Inlet District and funding from the County's Beach Preservation Fund. The Beach Preservation is derived from a combination of Tourist Tax and Local Option Sales Tax revenue. No property tax revenues are used for beach restoration. If the County is successful in securing the state cost share for the construction, the combination of state cost sharing and the contribution from the Sebastian Inlet District will result in the project being constructed at little or no cost to the County.

Like all large scale public works projects, beach restoration is quite expensive. The selected contractor for the Sector 3 project has bid the work at \$7.270 million dollars.

5) What are the environmental effects of this project?

Anytime you move so much sand around through fragile coastal environments, there will be some environmental impacts. Our goal in this project has been, through careful design and planning, to minimize the impacts the project will have and to compensate for the unavoidable impacts by appropriate mitigation. With sea turtles in mind, a monitoring plan has been established to eliminate any adverse effects caused by the renourishment process. Another concern we face is the protection of the nearshore reef. The Sector 3 project has been designed so as to not impact nearshore reef, and there will be a monitoring and mitigation program in place to insure that if any unanticipated impacts do occur, they will be mitigated for.

GET YOUR QUESTIONS ANSWERED HERE!

Submit your question to James Gray at jgray@ircgov.com Your question will receive a personal answer from County Coastal Engineering staff by return email. Some questions and answers may be added to the “frequently asked questions” section above. In the event your question is selected, your name, email, and other personal information will not be used.