

DADE COUNTY BEACH EROSION CONTROL AND HURRICANE PROTECTION PROJECT | Alternative Sand Source Investigation

FACTS & INFORMATION



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THE BACKGROUND

Beach renourishment has been an ongoing practice in southeast Florida since the late 1970s, providing essential economic, environmental and recreational benefit to coastal communities. Renourished beaches and dunes serve as a vital buffer between coastal infrastructure and the destructive forces of ocean waves and surge during storm events.

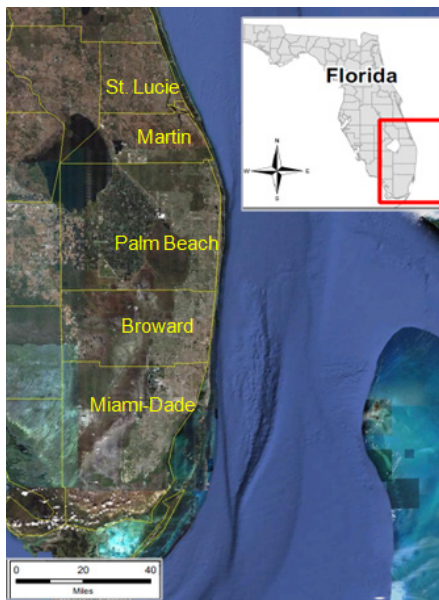


Figure 1: Southeast Florida region (Corps 2009)

The southeast Florida region encompasses five counties (St. Lucie, Martin, Palm Beach, Broward, and Miami-Dade) and approximately 200 miles of Florida shoreline (Figure 1). Throughout the region, twenty-four federal and non-federal beach nourishment projects provide storm damage reduction to infrastructure as well as incidental recreational opportunities for local, national and international visitors.

These constructed beaches mimic the protective and recreational functions of natural beaches, and the resulting benefits of beach nourishment projects are well documented. The 2008 Shore Protection Assessment completed an in-depth evaluation of benefits provided by the Martin County Shore Protection Project during the 2004 hurricane season. The study calculated more than \$11 million in damages were prevented by the project. This equals approximately 20 percent of the 50 year total project cost, realized in one storm season. As an example of recreational benefits, Miami Beach had little beach tourism before construction of the Dade County Beach Erosion Control and Hurricane Protection Project in 1975. Since construction of the project, it is estimated that tourists contribute \$11 billion annually to the Miami Beach economy, almost half of which comes from international tourists.

Sand dredged from offshore borrow sources in state and federal waters is typically used to renourish the beaches. The current practice is for projects to access borrow sources located in close proximity to the project, since they are often the most economical sand sources. Counties are often cost-sharing partners in the projects, along with the state of Florida and the federal government (in the case of federal projects). Many of these projects were initially constructed in the 1970's and 1980's, and are periodically renourished with sand over a typical project life of 50 years.

Renourishment needs of ongoing projects, initiation of new projects, existing environmental resources, and increasing environmental constraints have continued to reduce the available sand supply located offshore, particularly in Broward and Miami-Dade. In these southernmost counties, narrowing of the continental shelf limits investigation and access to sand sources. Currently, sand sources offshore of these two counties fall short of the counties' renourishment needs throughout their projects' remaining periods of federal participation.

Miami-Dade County, in particular, is running out of dependable, economical, and environmentally practicable offshore sand sources. In 1986, a congressional directive authorized the acquisition of non-domestic sand if such material is not available from domestic sources for environmental or economic reasons. Since that time, the U.S. Army Corps of Engineers (Corps) has been investigating the use of non-domestic sand for use on federal projects in southeast Florida, particularly in Miami-Dade County.

Investigations for Miami-Dade County indicated that some sources, particularly Bahamian aragonite, which has been used on non-federal projects in southeast Florida, looked promising. However, in 1999 the fiscal year 1999 Energy and Water Appropriations Bill directed that no funds provided for the Dade County, Florida shore protection project be used for acquisition of foreign source materials unless the Secretary of the Army provides written certification that domestic sources are not available.

PROJECT SCHEDULE:

The Corps is in the process of completing a Limited Re-evaluation Report (LRR) and NEPA documentation to utilize sand as discussed above. It is anticipated that this report will be approved around March 2016. From that point, the Corps would start permit applications and detailed designs with construction contracts awarded in 2016 (subject to appropriations).

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REGIONAL SAND STUDIES:

Studies have been underway to identify alternative sand sources. In addition to non-domestic sources, the studies included domestic sources such as upland sources, sources in deeper offshore waters, sources offshore of other counties in southeast Florida in federal and state waters, and even domestic sources as far away as the Apalachicola River.

In 2007, the Assistant Secretary of the Army for Civil Works directed that all remaining sand offshore of Miami-Dade be used for beach renourishment in the county, to investigate the viability of non-domestic sand sources, and to investigate a regional management plan for use of domestic sources. Subsequently in 2009, a Regional Sediment Management (RSM) Plan for southeast Florida indicated there was just enough domestic offshore sand in the region to support federal and non-federal projects for 50 years. Further economic analysis and discussion with the dredging industry indicated that domestic sources were more dependable and economically viable than non-domestic sources.

In 2012, a collaborative effort between the Florida Department of Environmental Protection (FDEP), the five southeast Florida counties, and the Corps sought to update the 2009 RSM Plan with improved data. The FDEP led the study effort with technical input from the Corps and data provided by southeast Florida counties. Each county determined its sand need for federal and non-federal nourishment projects over the next 50 years. With a 55 percent contingency added to these needs, it was found that 174,101,870 cubic yards of sediment are needed to support placement of planned, full-sized beach nourishment projects through 2062. The FDEP and the Corps carried out geotechnical investigations to locate additional beach quality sand sources. With contingencies applied, it was found that 280,037,956 cubic yards of sand exist offshore of southeast Florida that meet the criteria for this study, established for sand placement on Florida beaches. Therefore, currently known sediment resources offshore of southeast Florida exceed 50-year sediment needs by 100 million cubic yards.

County	Sand Needs (cy)		Sand Availability (cy)		
	50-Year Volume Need	50-Year Need +55% Contingency	2012 Total Volume per County	Volume + Contingency/Confidence	Volume after Needs Met
St. Lucie	18,017,487	27,927,105	175,847,874	106,149,618	78,222,514
Martin	22,111,000	34,272,050	107,593,227	56,160,331	21,888,281
Palm Beach ²	45,577,000	70,644,350	191,951,814	117,728,007	47,083,657
Broward ³	11,650,000	18,057,500	-	-	-18,057,500
Miami-Dade ³	14,968,300	23,200,865	-	-	-23,200,865
	112,323,787	174,101,870	475,392,915	280,037,956	105,936,086
					100,000,000

NEPA PROCESS:

The National Environmental Policy Act (NEPA) requires projects that are federally funded, federally authorized or federally permitted to be analyzed to determine the effects on the human environment and for this analysis to be provided to the public for review and comment. The human environment is defined as the natural, social, economic and cultural resources in the project area. The NEPA process begins with scoping, an effort to work with the public to identify specific resources that may or may not be impacted by the proposed project and determine which resources will be the focus of the impact analysis. After scoping, a NEPA document is prepared and a draft of the document is released to the interested public and stakeholders for review and comment. After review and comment, the comments are addressed and the NEPA document is finalized. After it is final, federal action (authorization, funding, permitting) may move forward.

POTENTIAL SAND SOURCES:

A Limited Re-evaluation Report (LRR) and subsequent NEPA documentation are investigating the use of alternative sand sources for the Dade County Beach Erosion Control and Hurricane Protection Project. The documents are currently under internal review. Alternative sand sources may include, but are not limited to:

- material remaining in previous Miami-Dade County borrow areas
- upland sand sources
- deepwater sites offshore of Miami-Dade County
- borrow areas located in state and federal waters offshore of southeast Florida
- flood and ebb shoal at Bakers Haulover Inlet
- sand relocation from the accreting South Beach area to eroding areas
- carbonate materials (aragonite) from foreign sources

Of these potential sources, seven are recommended by the LRR and NEPA document for approval in order to meet renourishment needs of the project over the remaining period of federal participation. The recommended sand sources include:

- Lummus Park
- Bakers Haulover Ebb Shoal
- M4-R105, located in federal offshore waters approximately 80 miles north of the project area
- SL10-T41, located in federal offshore waters approximately 120 miles north of the project area

- Witherspoon Sand Plant upland sand source
- Ortona Sand Plant upland sand source
- ACI Homestead upland sand source

The use of a particular source would depend on the volume necessary for a specific renourishment.

FOR MORE INFORMATION

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