

Shifting Sands: Truck Haul Dune Restoration Helps Replenish Florida's Shores



BY JANET BENTE ROMERO, APPLIED TECHNOLOGY & MANAGEMENT, INC

From a bird's eye view, it appeared to be much like ants launching into repair mode following a disturbance of their mound. Not long after the devastating hurricanes that pummeled Florida during the 2004 season, columns of trucks were soon seen transporting sand to depleted dunes and shores...

The unparalleled five named storms (Tropical Storm Bonnie and Hurricanes Charley, Frances, Ivan, and Jeanne) that landed along Florida's coasts during the 2004 season made it one of the busiest for the state on record.

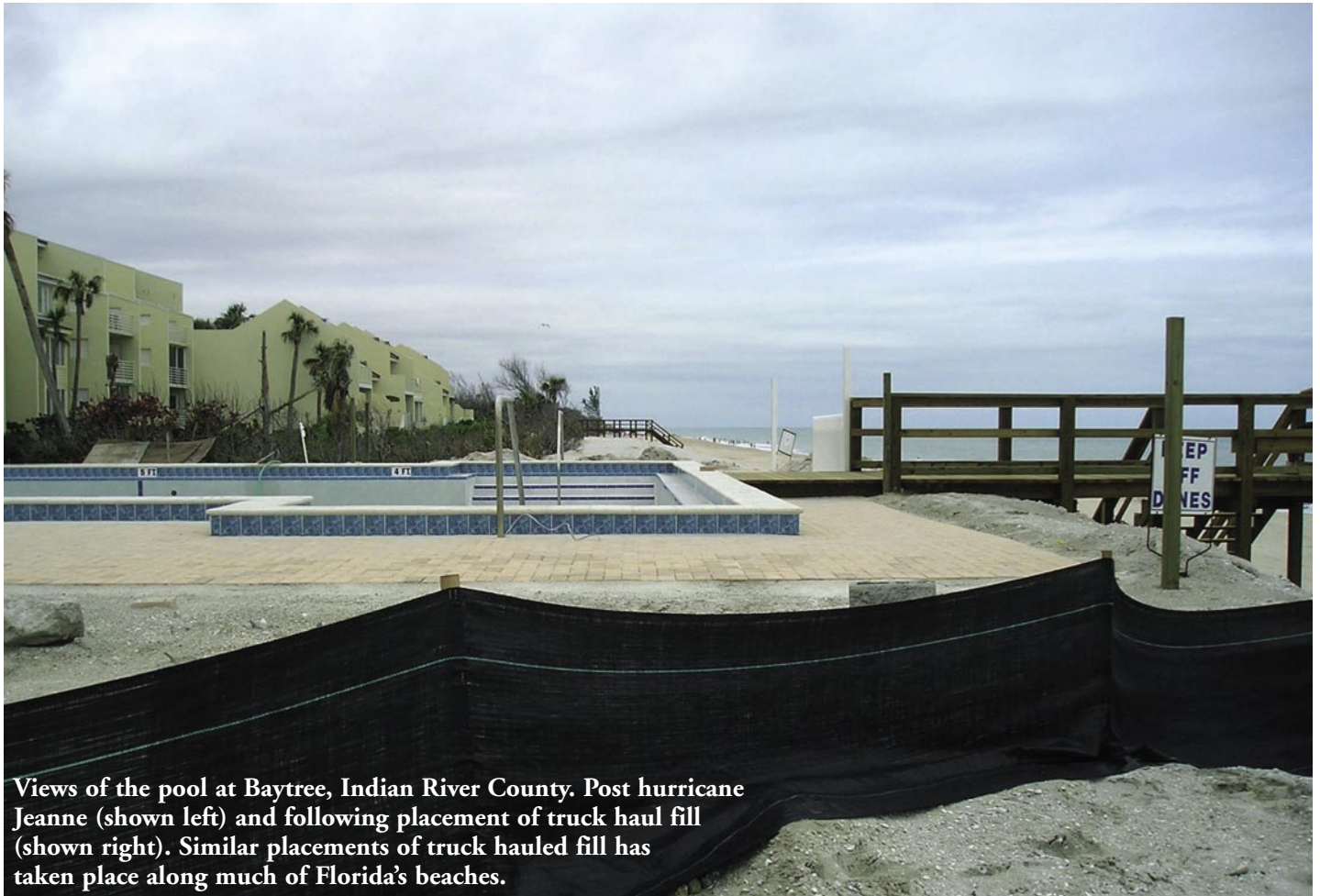
The Florida Department of Environmental Protection (FDEP) Bureau of Beaches and Coastal Systems (BBCS) immediately launched an assessment of the impacts to Florida's coasts following the storms. The BBCS's comprehensive assessment methods included multiple damage assessment teams, continuous digital oblique aerial videography of the impacted coastal shorelines, and coordination with the Federal Emergency Management Association (FEMA), the US Army Corps of Engineers, local government agencies, and agency consultants. Of Florida's 1,350-plus miles of shoreline, it was

determined that the majority of the state's 825 miles of sandy beaches were impacted to some degree during the 2004 hurricane season.

ALL HANDS ON DECK

With the level of devastation and lessons learned from hurricanes of years past, FDEP quickly recognized the need to facilitate the incorporation of Florida's citizens and local governments in the recovery effort. Following each of the four hurricanes, the State issued Emergency Final Orders (EFOs) that provided emergency authorization for repairs, replacement, restoration, and certain other measures necessary because of the storms. Under the EFOs, certain statutes and rules were suspended for up to 90 days so as not to prevent, hinder, or delay necessary action in coping with the emergency.

The EFOs in effect afforded local governments, businesses, and property owners of impacted counties with regulatory relief for debris removal, emergency structure repair, and for certain coastal counties, dune restoration, and/or sand placement landward of the mean high water line. At the same time, the coastal agencies of local governments maintained authority to control activities traditionally regulated by local building permits and/or beach management plans. The EFOs allowed for activities to repair or restore dunes and upland property to pre-storm conditions. Any coastal armoring involving fixed and rigid structures of any kind that extended into the water was not authorized under the EFOs and required the same permitting process in place prior to the storms.



Views of the pool at Baytree, Indian River County. Post hurricane Jeanne (shown left) and following placement of truck haul fill (shown right). Similar placements of truck hauled fill has taken place along much of Florida's beaches.

A Consolidated EFO issued by FDEP in November 2004, provided an additional 60 days of authorization for repairs beyond the existing individual EFOs. The Consolidated EFO was extended twice, with March 22, 2005 as the last date for action under that authority.

PAVING THE WAY FOR RECONSTRUCTION

Along with the “relaxed” statutes and rules afforded under the EFOs, the Florida Legislature also passed a special bill to appropriate supplemental emergency funding for the restoration of the state’s storm-damaged beaches. *SB 14A* authorized more than \$68M, with \$64.6M from General Revenue and \$3.8M from the Land Acquisition Trust Fund. Of this funding, \$53.8M was earmarked for beach restoration studies and dune restoration projects, and \$3.8M was earmarked for the restoration of state parks located along sandy beaches.

FEMA has been the principal federal agency supporting Florida’s recovery from the 2004 hurricane season. Of the more than \$4.8 billion in disaster assistance for Hurricanes Charley, Frances, Ivan, and Jeanne that FEMA has approved to date,

well over \$100M has been obligated for emergency dune restoration in front of private and public property around the state.

Even as the EFOs were issued and funding was made available, permitting requirements for traditional beach restoration (the dredging and pumping of sand from off-shore sources) were not waived. To address the emergency need for sand, local coastal agencies were required to identify, secure/purchase, transport, place, and grade sand from upland sources. The majority of these activities were contracted out in a truck haul effort of unprecedented magnitude in the state.

THE SURGE OF POST-STORM ACTIVITY

Many of Florida’s east-coast counties’ coastal agency representatives didn’t have a chance to catch their breath post-storm before they were fielding a barrage of phone calls from distraught property owners anxious to have sand placed between their property and the waterline. Yet before the first grain could be placed, local government agencies were required to secure the written permission of each property owner.

Some coastal counties, including Palm Beach County, had remedied this problem years before by securing blanket permission with the establishment of dune management easements. When the initial easements were established, there were a number of individuals holding out from signing on. However, according to Bud Howard of Palm Beach County Department of Environmental Resource Management, “when [the holdouts] saw the trucks full of sand arriving after the storms, they were ready to sign.”

In Brevard County, post-storm signature collection was a major obstacle. It took real detective work to simply locate the more than 800 coastal property owners, many of whom were unable to inhabit their residences after the storms and were living in hotels or with family and friends.

Even with permission to place sand, it proved difficult for some counties to contract sufficient hauling capacity for the volumes of sand required. Post-storm, most trucking contractors throughout the state were tied up in continuing contracts or engaged with the emergency transportation of roofing materials to all

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areas of the state. To meet the demand, many transportation contractors sought “reinforcements” in the form of trucks and drivers from other regions, specifically the Northeast and Midwest.

The availability of suitable sand varied from county to county as well. Although the Florida Inland Navigational District (FIND) made available dredge spoil from a number of its sites, the location of these sites – often accessible only via rural or residential roads – made extraction and use of the high quality spoil difficult, if not impossible. Other sources of sand included inland quarries, some of which could not generate the material fast enough for the trucks that were queued up to take it away. The transfer of sand in excess of 75 miles one way from inland sources was not uncommon.

Beach access proved to be another significant challenge for local agencies overseeing the restoration effort. Many pre-storm access points were covered in the storms, and FDEP prohibited the establishment of any new access routes between dunes. Agency staff were often required to negotiate permission from property owners to route trucks of sand through private land. Negotiation attempts were not always successful, as many property owners were reluctant to serve as a thoroughfare for hundreds to thousands of truckloads of sand

– regardless of their personal need for the same. In some instances, the initiation of restoration was delayed by weeks while the logistics were figured out for moving sand farther and via different routes.

TURNING OF THE TIDE?

The total amount of sand transported to beaches for dune restoration via truck haul has yet to be determined. Almost a million total cubic yards were placed in Brevard, Indian River, and Palm Beach Counties alone at a cost of approximately \$30 Million.

Contrast the emergency restoration unit cost to the unit cost of sand placed via ongoing beach restoration and maintenance projects (which range from 20% to 90% lower), and the old adage “an ounce of prevention is worth a pound of cure” really holds up.

According to studies released from the BBCS, the performance of Florida’s maintained beaches – nourished by dredged sand pumped from an off-shore source and shaped into a higher and wider beach profile – was excellent in 2004.

Considering the abundant successful examples, it’s no wonder that ongoing beach restoration and maintenance via sand nourishment has found droves of supporters among FDEP BBCS, county agencies, and private property owners around the state. While the federal budget for periodic beach nourishment has been severely decreased or eliminated under the

current administration, the hopes are that this trend will soon be reversed.

CONCLUSION

Faced with the sand deficit emergency and working within the restrictions for promptly replacing a meaningful fraction of it to the shore, the truck hauls have provided a much needed band aid for Florida’s beaches. “The truck hauls allowed us to jump start the natural recovery of the beaches,” stated Jonathan Gorham, Coastal Resource Manager for Indian River County. “Hopefully,” he added, “it will be 50 years or more before we see another hurricane season like this one.” Virginia Barker, Beach Management Coordinator for Brevard County echoed similar sentiments. “While it has been a very educational process, we hope to pass on what we learned, but never have need for it again.”

With the countdown for the 2005 Hurricane Season already underway, let’s hope so, too. ■

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