

## **2005-6 CAPTIVA AND SANIBEL ISLANDS BEACH RENOURISHMENT PROJECT FACTS SHEET**

### **I. INTRODUCTION**

Captiva Island is part of Lee County which is located on the lower western peninsula coast of Florida. Captiva Island is a barrier island separated from the main land by Pine Island Sound. It is accessible by causeway and through Sanibel Island. The recent renourishment plan called for fill along the entire shoreline of Captiva Island between Redfish Pass and Blind Pass, and the rehabilitation and extension of the Redfish Pass Groin. The project for Sanibel placed fill along the northern 6,000 feet of shoreline. The project incorporated a county park at Bowman's Beach (Figure 1). The total project design volume for Captiva and Sanibel Islands was 1,020,000 cy and 305,000 cy respectively. The 2005-6 project was the second renourishment of the Corps project and third major nourishment project on the island.

The Captiva Island 2005-6 Renourishment Project was designed to achieve the objectives described in the following local plans and agreements:

CEPD Comprehensive and Emergency Maintenance Plans

Interlocal Agreement on Blind Pass

Florida Department of Environmental Protection (FDEP) Strategic Beach Management Plan, Corps of Engineers' Lee County Beach Erosion Control Project-Captiva Island Segment

Blind Pass and Redfish Pass Inlet Management Plans

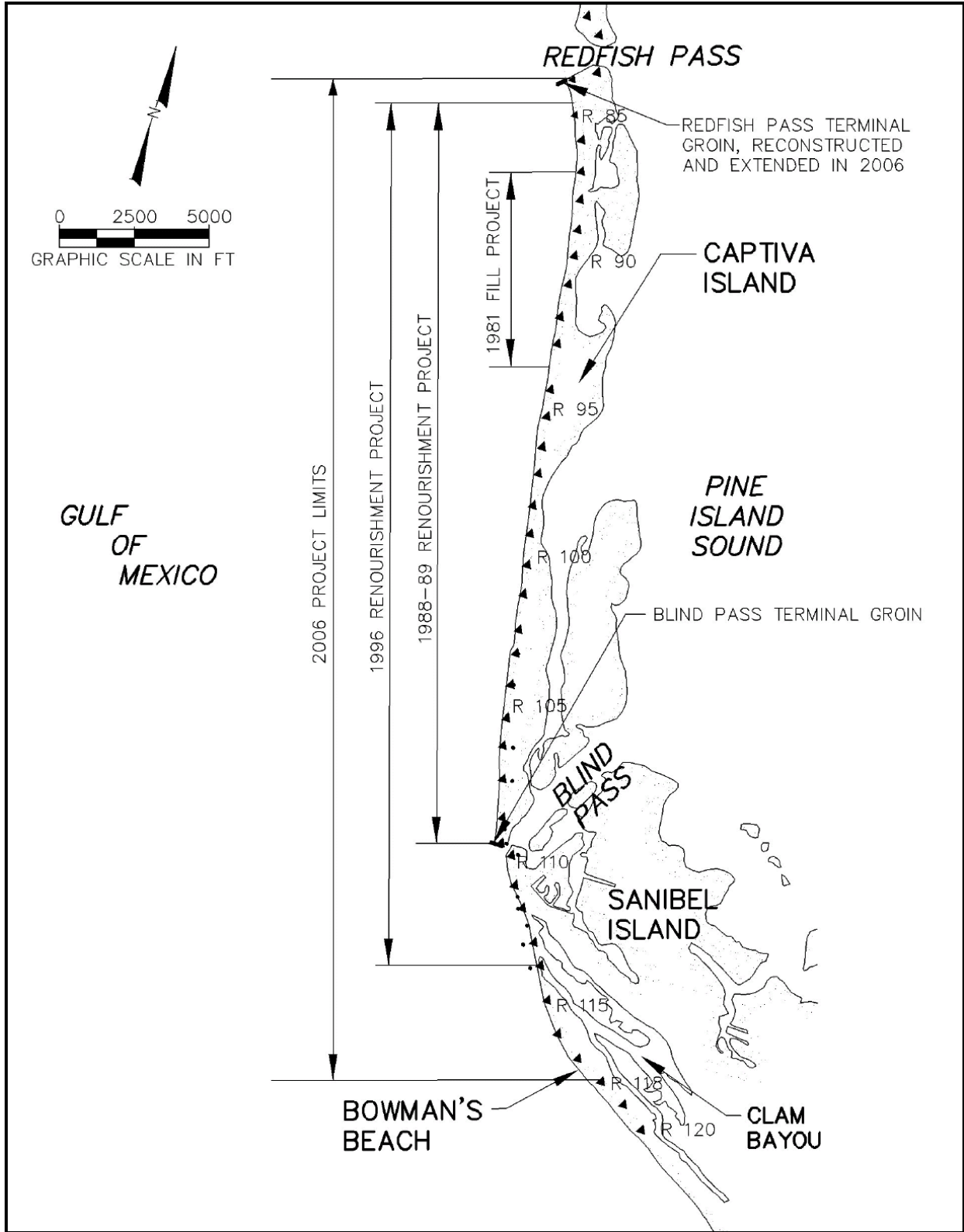
Bowman's Beach Interlocal Agreement

The project also qualifies for emergency FEMA and Corps funding to replace storm losses.

### **II. PROJECT CONSTRUCTION**

Project construction began under the supervision of the U.S. Army Corps of Engineers (USACE) on September 3, 2005. The contract for the project was awarded to Great Lakes Dredge & Dock, Company (GLDD). GLDD used two medium sized hopper dredges to construct the project, the Dodge Island and the Manhattan Island. Construction started on Captiva Island in the vicinity of R94 via the central pipeline corridor, followed by the northern pipeline corridor at R88.5, then the southern pipeline corridor at R104. Fill placement for Captiva Island was completed on January 3, 2006. The project included a groin rehabilitation and dune vegetation. The groin rehabilitation was built with 9,036 tons of limestone boulders. See Figure 1 for the 2006 project limits compared to historic project limits.

Construction on northern Sanibel Island started on January 7, 2006. The northern reach of the island was severely scarped before construction. There were two gaps in the fill volume on northern Sanibel Island. No fill was placed between the Blind Pass groin and R110.5, nor in the Clam Bayou area between R114 and R115. The northern Sanibel construction reach was completed on January 30, 2006. The 2005-6 beach and groin project cost \$15.6 million.



**FIGURE 1: LOCATION MAP**

### III. 2004/05 STORM CHARACTERISTICS

The 2004/05 storms spent some part or had feeder bands in or around Lee County. The construction plans used by the Corps addressed impacts caused by the 2004 hurricanes, but only partially addressed 2005 hurricane losses, since they occurred during construction. The following storms impacted the project area, with Charlie making landfall just north of Captiva Island.

| <b>2004 Storms</b>    | <b>Duration</b>   | <b>Intensity</b>  |
|-----------------------|-------------------|-------------------|
| Tropical Storm Bonnie | 8/03/04 - 8/14/04 | 65 mph, 1001 mbar |
| Hurricane Charley     | 8/09/04 - 8/14/04 | 150 mph, 941 mbar |
| Hurricane Frances     | 8/25/04 - 9/10/04 | 145 mph, 935 mbar |
| Hurricane Ivan        | 9/02/04 - 9/24/04 | 165 mph, 910 mbar |
| Hurricane Jeanne      | 9/13/04 - 9/28/04 | 120 mph, 951 mbar |

| <b>2005 Storms</b>    | <b>Duration</b>     | <b>Intensity</b>  |
|-----------------------|---------------------|-------------------|
| Tropical Storm Arlene | 6/08/05 - 6/13/05   | 70 mph, 989 mbar  |
| Hurricane Cindy       | 7/03/05 - 7/07/05   | 75 mph, 991 mbar  |
| Hurricane Dennis      | 7/04/05 - 7/13/05   | 150 mph, 930 mbar |
| Hurricane Emily       | 7/10/05 - 7/21/05   | 160 mph, 929 mbar |
| Hurricane Katrina     | 8/23/05 - 8/31/05   | 175 mph, 902 mbar |
| Hurricane Rita        | 9/17/05 - 9/26/05   | 180 mph, 895 mbar |
| Hurricane Wilma       | 10/15/05 - 10/25/05 | 185 mph, 882 mbar |

Duration periods are from development to dissipation. Intensity is the highest recorded mile per hour and the lowest recorded atmospheric pressure in millibars.



The pictures illustrate the progress of the Captiva Island project. The first picture shows the critical road section on Captiva Island in 1988, before the first restoration project in this region. This road section is the evacuation route for most of the island. The second picture (10/11/2005) was taken after construction. The quality of the sand exceeded expectation by the residence and matched the historic beach characteristics.

#### IV. PROJECT DESCRIPTION

The project was constructed by the Corps of Engineers based on design and permits developed by Coastal Planning & Engineering, Inc. (CPE) for Captiva Erosion Prevention District (CEPD). The as-built volume of 1,352,931 cubic yards was placed along 6.4 miles of shoreline between Redfish Pass (R84) at the northern end of Captiva Island and Bowman's Beach (R118) on Sanibel Island. Captiva Island received 1,017,387 cubic yards along the 4.9 miles of shoreline between Redfish Pass (R84) and Blind Pass (R109). Northern Sanibel Island (R110.5 to R116) received 244,630 cubic yards and Bowman's Beach (R116 to R118) received 90,914 cubic yards. Table 1 summarizes the design, pay and as-built volumes over each of the project reaches.

**TABLE 1  
CONSTRUCTION VOLUME SUMMARY**

| PROJECT AREA                             | DISTANCE<br>IN FEET | VOLUMES IN CUBIC YARDS |                  |                  |
|--|---------------------|------------------------|------------------|------------------|
|  |                     | DESIGN                 | PAY              | AS-BUILT         |
| CAPTIVA ISLAND<br>R84 TO R109            | 25,731              | 1,020,000              | 978,380          | 1,017,387        |
| NORTHERN SANIBEL ISLAND<br>R110 TO R116N | 5,258               | 225,000                | 238,590          | 244,630          |
| BOWMAN'S BEACH<br>R116S TO R118N         | 2,125               | 80,000                 | 88,106           | 90,914           |
| <b>TOTAL</b>                             | <b>33,114</b>       | <b>1,325,000</b>       | <b>1,305,076</b> | <b>1,352,931</b> |

The project was a combination of renourishment and storm repair. The project goal included 156,000 cubic yards of emergency fill under the Corps' emergency program (FCCE), 23,000 cubic yards for emergency repair under FEMA Category G program, and the remainder is normal Corps renourishment volume. On Sanibel Island, 46,500 cubic yards initially qualified for support by FEMA's Category G program, 178,500 cubic yards for normal renourishment under an interlocal agreement, and 80,000 cubic yards for new construction on Bowman's Beach. In addition to fill placement, the Redfish Pass terminal groin at the northern end of Captiva Island was reconstructed and extended to help improve sand retention.

The project increased the beach width on the two islands as measured during the post-construction survey by the amounts shown below:

**Construction Changes Added Beach Width (feet) from September 2005:**

|                        |               |       |
|------------------------|---------------|-------|
| <b>Captiva Island:</b> | February 2006 | 76 ft |
| <b>Sanibel Island:</b> | February 2006 | 90 ft |



# CAPTIVA ISLAND NOURISHMENT PROGRAM LONG-TERM COMPARISON (1988-2006)

CAPTIVA ISLAND PROJECT WAS DESIGNATED AN ASBPA'S TOP RESTORED BEACH OF 2006

