

West Belle Pass Barrier Headland Restoration Project (TE-52)



The West Belle Pass Barrier Headland suffers some of the highest shoreline retreat rates in the nation at approximately 50 feet/year. Furthermore, the barrier headland has recently been breached, which is negatively impacting the headland's function. Port Fourchon, one of the nation's most critical ports, is located just north of the project area.

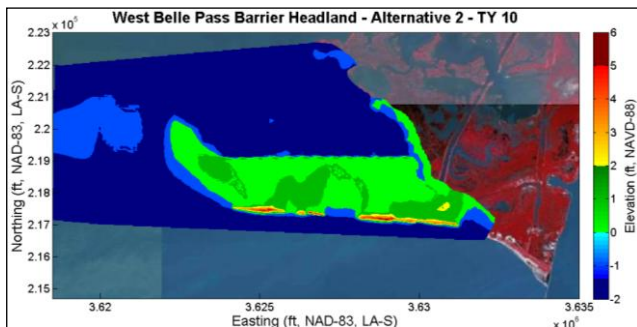
Client: Louisiana Office of Coastal Protection and Restoration, co-sponsored by NOAA-NMFS

Design Summary: 1.8M cy of beach fill
1.9M cy of marsh fill

Borrow Area: 4.6M cy of sand and 4.0M cy of marsh fill

Key Elements: Coastal engineering design
Extensive Delft3D modeling
WVA Assessment
Borrow area development

Six alternatives were fully developed to bracket a variety of solutions and costs, including a variety of beach creation, marsh restoration, and structural options. Comprehensive Delft3D modeling was conducted to evaluate the performance of the various alternatives over the 20-year project life.

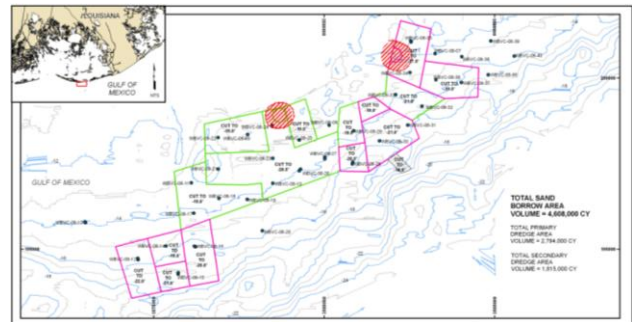


Delft3D output showing the 10-year projection for Alternative 2 using a WVA color scale.

The Delft3D modeling was a valuable tool to the project team when comparing alternatives and

assessing the benefit of items such as a terminal groin or raising the marsh elevation by 0.5 feet. Delft3D was also applied to determine if there would be any impacts to adjacent islands from dredging the borrow areas.

CPE's geologists developed a sand fill borrow area and a marsh fill borrow area. The sand borrow area is located 9 miles west of the project area and contains 4.6M cy of sand. A marsh borrow area is located 2.8 miles south of the project area and contains 4.0M cy of marsh fill material.



Sand Borrow area in Little Pass Timbalier

Testimonial

“From its conception, the West Belle Pass Barrier Headland Restoration project presented several logistical and engineering challenges to the State and Federal sponsors. The CPE team addressed these challenges by researching the history of the project area, mobilizing an intensive field data collection effort, performing state of the art hydrodynamic modeling, and devising several feasible design alternatives. Their approach was a unique combination of coastal engineering expertise and common sense.....and it was accomplished within a very aggressive design schedule.” Rudy Simoneaux, PE, OCPR

The project has been selected for construction through the CWPPRA process and is tentatively scheduled for construction in 2010.