



Coastal Protection and  
Restoration Authority of Louisiana

**State of Louisiana  
Coastal Protection and Restoration  
Authority**

**2018 Annual Inspection Report**

for

**WEST BELLE PASS BARRIER  
HEADLAND RESTORATION  
PROJECT (TE-52)**

State Project Number TE-52  
Priority Project List 16

November 19, 2018  
Lafourche Parish

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## **I. Introduction**

The West Belle Pass Barrier Headland Restoration Project (TE-52) is located in Lafourche Parish, Louisiana southwest of Port Fourchon, along the Caminada-Moreau Headland, between Belle Pass and Raccoon Pass, and forms its northern border with Timbalier Bay. The limits of the specific project area start approximately 2,800 feet from the west bank of Belle Pass and extend approximately 9,300 feet westward. The eastern project limits are based on the western limit of the USACE's beneficial disposal area for material dredged from Belle Pass (Project O&M Plan, 2014). A map showing the project features can be found under Appendix A.

The Caminada-Moreau Headland experiences some of the highest shoreline retreat rates in the nation, measuring over 100 feet a year in some locations. As the gulf encroaches upon the shoreline, sand is removed and the headland erodes. What was once a continuous shoreline spanning several miles has been reduced to less than half its original length. In 2005, Hurricanes Katrina and Rita removed most of the remaining emergent headland and dunes west of Belle Pass, threatening the fragile bay habitat and infrastructure north of the project area (Project Completion Report, 2013). The objective of the project is to increase headland longevity by restoring the dune and marsh platforms and to repair the breaches in the shoreline and prevent creation of new breaches over the 20-year project life.

The project has a twenty (20) year project life, which began in March, 2013. The principal project features include:

- 9,300 linear feet of dune/beach totaling approximately 182 acres
- 333.8 acres of marsh creation/nourishment
- 12,352 linear feet of sand fencing
- 10 settlement plates

## **II. Inspection Purpose and Procedures**

The purpose of the annual inspection of the West Belle Pass Barrier Headland Restoration (TE-52) project is to evaluate the constructed project features in order to identify any deficiencies. The inspection results are used to prepare a report detailing the condition of the project features and recommendations of any corrective actions considered necessary. Should it be determined that corrective actions are needed, the CPRA shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, construction, and contingencies, as well as an assessment of the urgency, of such repairs. The annual inspection report also contains a summary of maintenance projects which were completed since the construction of the original project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance, and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since construction of the West Belle Pass Barrier Headland Restoration (TE-52) are outlined in Section IV.

The annual inspection of the TE-52 project took place on April 25, 2018. In attendance were Benjamin Hartman, Darin Lee, and Glen Curole with CPRA, and Donna Rogers and Jennifer Smith with the National Marine Fisheries Service. The attendees met at a launch near Port Fourchon and traveled to the project area by boat. The trip included a visual inspection of all project features. Photographs of the inspection are located in Appendix B.

### **III. Project Description**

The following completed project features jointly accepted by CPRA and NOAA/NMFS will require operation, maintenance, repair, and/or rehabilitation throughout the twenty (20) year life of the project.

#### Beach Fill (Sta. 45+00 to 150+00)

The beach fill consists of approximately 2,024,252 cubic yards of sandy sediment placed continuously along the length of the gulf shoreline of the project area. The fill had a berm crest elevation of approximately +6.5 feet NAVD from Sta 45+00 to 101+50, +7.5 feet from Sta 101+50 to 130+00, and was +4.5 feet from Sta 130+00 to 150+00. The maximum berm crest width was 293 feet. The landward beach face was constructed with a slope of 1V:30H from the top of the berm crest to the pre-construction grade. The seaward beach face was constructed with a slope of 1V:30H from the top of the berm to +1 feet NAVD and a slope of 1V:60H from the +1 feet to the pre-construction grade.

#### Marsh Fill (Sta. 45+00 to 133+00)

The marsh fill consists of approximately 2,060,208 cubic yards of mixed sediment placed between the constructed dune within the beach fill and the primary dike along the length of the headland. This fill was constructed to an elevation of approximately +3.3 to +5.5 feet NAVD88. Marsh fill material was placed after completion of the beach so that the beach fill could act as the southern containment dike. The primary containment dike was constructed along the length of the northern segment of the marsh fill project limits. A 200-foot long sheet pile wall was constructed on the northern side where Hurricane Isaac had breached the containment dike.

#### Sand Fencing (Sta. 46+43 to 146+34)

Sand fencing was installed along the length of the constructed dune. A single row of fence was installed along the berm crest. The sand fence was comprised of 450-foot sections with 30 feet of overlap between adjacent sections. At the overlaps, the sections were offset 8 feet to allow passage through the fence from the Gulf shoreline to the backing marsh habitats. The total length of installed sand fence was approximately 12,352 feet.

#### **IV. Summary of Past Operation and Maintenance Projects**

##### Vegetative Plantings

20,000 plugs of smooth cordgrass were planted on May 2017 on the marsh platform along the containment dike in non-vegetated areas. This was done to protect the platform from unabated erosion when Timbalier Bay finally establishes a connection with the internal ditch south of the containment dike. At a cost of \$2.50 dollar/plug, Ecological Restoration Services was the low bidder.

##### 2018 Maintenance Event

The 2018 maintenance event included the removal of approximately 200 linear feet of steel sheet pile that was installed during the original West Belle Pass (TE-52) Barrier Headland project to contain dredge fill in an area where conventional earthen containment dikes were insufficient. The project also included the construction of three (3) gaps in the primary containment dike on the bay side to establish a hydrologic connection to Timbalier Bay to promote vegetation on the marsh platform and improve habitat conditions. The gaps were constructed at three (3) separate locations along the back containment dike and were 50' wide at an elevation of 0.0' with 3:1 side slopes. The contractor on this project was Magnolia Dredge and Dock, LLC. and the work was completed for a total contract price of \$98,900.00.

#### **V. Inspection Results**

##### Beach Fill

Overall, as the beach profile is continuing to adapt to the environmental conditions, the beach fill has completely eroded, with only a fragment left on the southwestern most tip. Longshore transport has eroded sand along the length of the beach face, depositing material westward and fueling the growth of a large spit, which has added sand volume and elongated the shoreline by 80 percent. The scarping is continuing to increase and there are signs that water from storm activity regularly accesses the interior marsh from the southeast. As noted in the 2017 inspection report, shoreline retreat measurements were recorded at several locations along the beach dune, with the highest rates of erosion occurring on the eastern side. Settlement plates that were once in the center of the dune are now missing or in open water. There are no recommendations for maintenance at this time; however, addition of sand fill along the shoreline is being considered under other efforts currently in design.

##### Marsh Fill

The marsh fill area appear to be in good condition. There are no signs of widespread settlement and vegetation is emerging near tidal water sources. All containment dikes are fully intact, with the exception of the outfall area near the eastern adjacent marsh left when the weir box was removed and the newly gapped areas constructed under the 2018 Maintenance Project that were completed in May 2018. The gaps in the containment dike

were designed to provide a hydrologic connection to the interior marsh to better promote vegetative growth on the marsh platform.

### Sand Fencing

Along the dune, shoreline erosion noted in the beach fill section above has undercut the foundation and the fencing is completely destroyed. Only the reach from Sta. 45+00 to Sta. 55+00 has any sand fence remaining and it is not in good condition. Approximately 100' of fencing near Sta. 55+00 headed northwest has been damaged and is lying on the ground. Sand fencing from Sta. 105+00 to the eastern project extent is badly damaged or nonexistent. Without placement of additional sand, new sand fencing is not needed. There are no recommendations for maintenance at this time.

## **VI. Conclusions and Recommendations**

As previously reported in past inspection reports, the beach fill along the western edge of the project is eroding at a faster pace than numerical model results suggested, but is otherwise functioning as designed. The beach and dune along the gulf shoreline have nearly eroded away, but continue to shield the marsh from high shoreline retreat rates and provide a source of material for spit development. A large spit of sand has formed on the western end of the headland as a result of longshore sediment transport, elongating the shoreline by 80 percent. The formation of this spit was expected and provides excellent habitat for shorebirds and other marine species. The marsh platform appears to be in good condition and is not experiencing noticeable settlement. In 2018, three (3) gaps in the northern containment dike were constructed which will help to provide a hydrologic connection to the interior portions of the marsh. There are no other recommendations of maintenance to the beach fill, marsh fill, or sand fencing at this time.

**Appendix A**  
**Project Features Map**



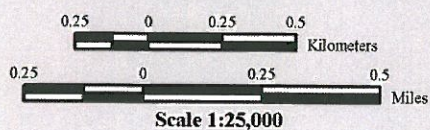


## West Belle Pass Barrier Headland Restoration Project



- Crested Dune \*
- Containment \*
- Breakwater \*
- Marsh Creation \*
- Dune/Beach Fill \*
- Project Boundary \*

\* denotes proposed features



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, LA

Image Source:  
2005 Digital Orthophoto Quarter Quadrangle

Map ID: USGS-NWRC 2006-11-0485  
Map Date: July 19, 2006



## **Appendix B**

### **Photographs**



Photo 1: Close-up view of sheet pile condition



Photo 2: View of sheet pile plug in northern containment dike, looking west.



Photo 3: View of small impounded area with freshwater vegetation just southeast of sheet pile wall.





Photo 4: View of northern primary containment dike west of sheet pile wall.



Photo 5: View of overgrown sand fencing looking east from internal jetty edge.



Photo 6: View of northern part of jetty looking south from the center of western marsh fill edge.



Photo 7: View of jetty from sand fencing on western marsh fill edge. Interior access route for contractors to perform upcoming maintenance event can be seen.





Photo 8: View of jetty beach face, looking west from southern tip of sand fence.



Photo 9: View of beach dune and sand fencing looking east.





Photo 10: View of beach dune and sand fencing looking west.



Photo 11: View of beach erosion, looking east.



Photo 12: View of eroded beach and marsh platform from southern border of marsh creation area.



Photo 13: View of eroded beach and marsh platform from southern border of marsh creation area.





Photo 14: View of eroded beach and marsh platform from southern border of marsh creation area.



Photo 15: View of high areas just south of northern primary containment dike looking east.



Photo 16: View of high areas just south of northern primary containment dike looking west.



Photo 17: View of high areas just south of northern primary containment dike looking east.





Photo 18: View of northern primary containment dike, adjacent ditch, & vegetation.



Photo 19: View of eastern edge of sheet-pile wall.



Photo 20: Ariel veiew of entire project area looking west.



## **Appendix C**

### **Three Year Budget Projection**

**WEST BELLE PASS BARRIER HEADLAND RESTORATION (TE-52)**  
**Three-Year Operations & Maintenance Budgets 07/01/2018- 06/30/21**

<u>Project Manager</u>	<u>O &amp; M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>Babin</i>	<i>NMFS</i>	<i>Babin</i>

	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
<b>Maintenance Inspection</b>	\$ 16,002.00	\$ 16,482.00	\$ 16,977.00
<b>Structure Operation</b>	\$ -	\$ -	
<b>CPRA Administration</b>	\$ -		
<b>NMFS Administration</b>	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00

**Maintenance/Rehabilitation**

<b>18/19 Description</b>	<b>Maintenance Inspection</b>

<i>E&amp;D</i>	
<i>Construction</i>	
<i>Construction Oversight</i>	
<i>Sub Total - Maint. And Rehab.</i>	\$ -

<b>19/20 Description</b>	<b>Maintenance Inspection</b>

<i>E&amp;D</i>	
<i>Construction</i>	
	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

<b>20/21 Description:</b>	<b>Maintenance Inspection</b>

<i>E&amp;D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

	<b>2018/2019</b>	<b>2019/2020</b>	<b>2020/2021</b>
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 21,002.00</b>	<b>\$ 21,482.00</b>	<b>\$ 21,977.00</b>

<b>O&amp;M Budget (3 Yr Total)</b>	<b>\$ 64,461.00</b>
<b>Unexpended O&amp;M Funds</b>	<b>\$ 2,191,407.00</b>
<b>Remaining O&amp;M Funds</b>	<b>\$ 2,126,946.00</b>

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

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

**FY 18/19 –**

CPRA Administration	\$ 16,002
NMFS Administration:	\$ 5,000
Maintenance:	\$ 0
E&D, Const. Oversight:	\$
Construction:	\$

**Annual Inspection**

**CPRA Direct Costs**

Total Direct Costs:                      \$ 5,432 x 3% = \$5,595

**CPRA Indirect Costs**

Total In-Direct Costs:                      \$10,104 x 3% = \$10,407

**NMFS Administration:**                      \$5,000

**FY 19/20 –**

CPRA Administration	\$ 16,482
NMFS Administration:	\$ 5,000
Maintenance:	\$ 0
E&D and Const. Oversight:	\$ 0
Construction:	\$ 0

**Annual Inspection**

**CPRA Direct Costs**

Total Direct Costs:                      \$ 5,595 x 3% = \$5,763

**CPRA Indirect Costs**

Total In-Direct Costs:                      \$10,407 x 3% = \$10,719

**NMFS Administration:**                      \$5,000

**FY 20/21 –**

Administration		\$	<b>16,977</b>
NMFS Administration:		\$	<b>5,000</b>
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

**Annual Inspection****CPRA Direct Costs**

Total Direct Costs:                      \$ 5,763 x 3% = \$5.936

**CPRA Indirect Costs**

Total In-Direct Costs:                      \$10,719 x 3% = \$11,041

**NMFS Administration:**                      \$5,000

**2018 O&M Accounting:**

Total O&M Budget (Lana Report):	\$ 2,478,866
<u>CPRA Expenditures to Date (LaGov):</u>	<u>\$ 287,459</u>
Unexpended O&M Budget:	\$ 2,191,407