State of Louisiana
Coastal Protection and Restoration Authority

2017 Annual Inspection Report

for

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

State Project Number TE-52
Priority Project List 16

October 31st, 2017
Lafourche Parish

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Table of Contents

Appendices

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).

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 July 20th, 2017. In attendance were Benjamin Hartman and Glen Curole with CPRA, and Donna Rogers and Brandon Owens with the National Marine Fisheries Service. The attendees met at a launch near Port Fourchon and traveled to the project area by boat. The inspection began around 10:00 AM at the sheetpile structure within the northern containment dike and concluded around 12:00 at the same location. 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 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

An additional 20,000 plugs of smooth cordgrass were planted on May 8-10th 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.

A second job for 2017 has been designed to establish a hydrologic connection between Timbalier Bay and the ditch behind the northern primary containment dike. This will cause more of the marsh platform to vegetate, improving habitat conditions. Specifically, the scope of work includes creating three 50.0' gaps in the containment dike plus removing the existing sheet pile wall.

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 southwesternmost tip. Longshore transport has eroded sand along the length of the beach face, depositing material immediately west and fueling the growth of a large spit. The dune scarping from Belle Pass to near Sta. 105 is continuing to increase and there are signs that water from storm activity regularly accesses the interior from the southeast. Shoreline retreat has been measured at four locations along the beach dune, with the highest erosion occurring on the eastern side. Their location and measured retreat are as follows: Sta. 120+00, 271.00'; Sta. 100+00, 251.00'; Sta. 85+00, 119.00'; and Sta. 60+00, 97.00'. 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.

Marsh Fill

Minor erosion has occurred around the edges of the sheet pile wall; the western tip extends into open water with the shoreline 10 feet back towards the south and east. The marsh fill appears to be in good condition. There are no signs of extensive settlement and vegetation is continuing to emerge 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. This gap in the containment dike is providing a hydrologic connection to the channel that was formed as a result of the containment dike borrow area. The northern containment dike has a few low areas which may soon form gaps, providing additional connectivity to the interior marsh. To speed this up, the Thibodaux Regional Office of CPRA has put together a scope of work to create three 50.0' gaps in the northern containment dike plus remove the existing 200' steel sheet pile wall.

The 20,000 plugs of smooth cordgrass planted along the northern edge of the marsh fill have vegetated well. The annual inspection was held approximately 2 months after installation and the planted vegetation is indistinguishable from naturally vegetated sections. Thick vegetation prevented the inspection from continuing into the marsh platform.

Sand Fencing

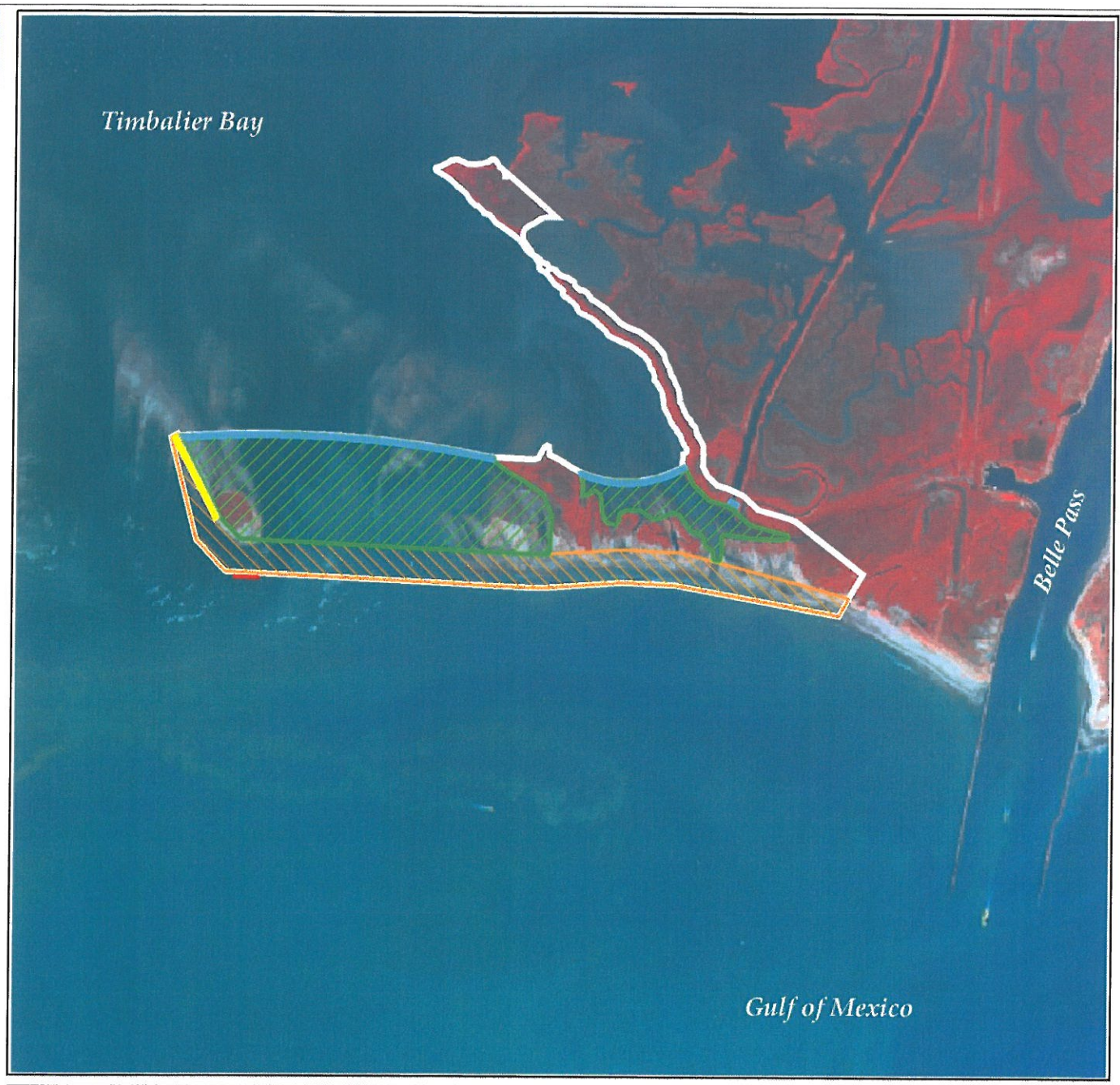
Along the dune, scarping has undercut the foundation and the fencing is completely destroyed. Only the reach from Sta. 45+00 to Sta. 55+00 has any sand fence remaining and it is not in good condition. Approximately 100' of fencing near Sta. 55+00 headed northwest has been damaged and is lying on the 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

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 have shielded the marsh from high shoreline retreat and provided a source of material for spit development. The eastern dune has been leveled, with nothing left to scarp. Without placement of additional sand, new sand fencing is not needed. A large spit of sand has formed on the western end of the headland as a result of longshore sediment transport. The formation of this spit was expected and provides excellent habitat for shorebirds and other marine species. The marsh appears to be in good condition and is not experiencing any excessive settlement. The northern containment dike is on the verge of breaching, which will help to provide a hydrologic connection to the interior portions of the marsh. Regardless of further breaching, we are currently in the process of removing the steel sheet pile wall and constructing gaps in northern containment dike. 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

USGS
science for a changing world

Project Location

N

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

* denotes proposed features

0.25 0 0.25 0.5 Kilometers

0.25 0 0.25 0.5 Miles

Scale 1:25,000

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

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

Appendix B

Photographs

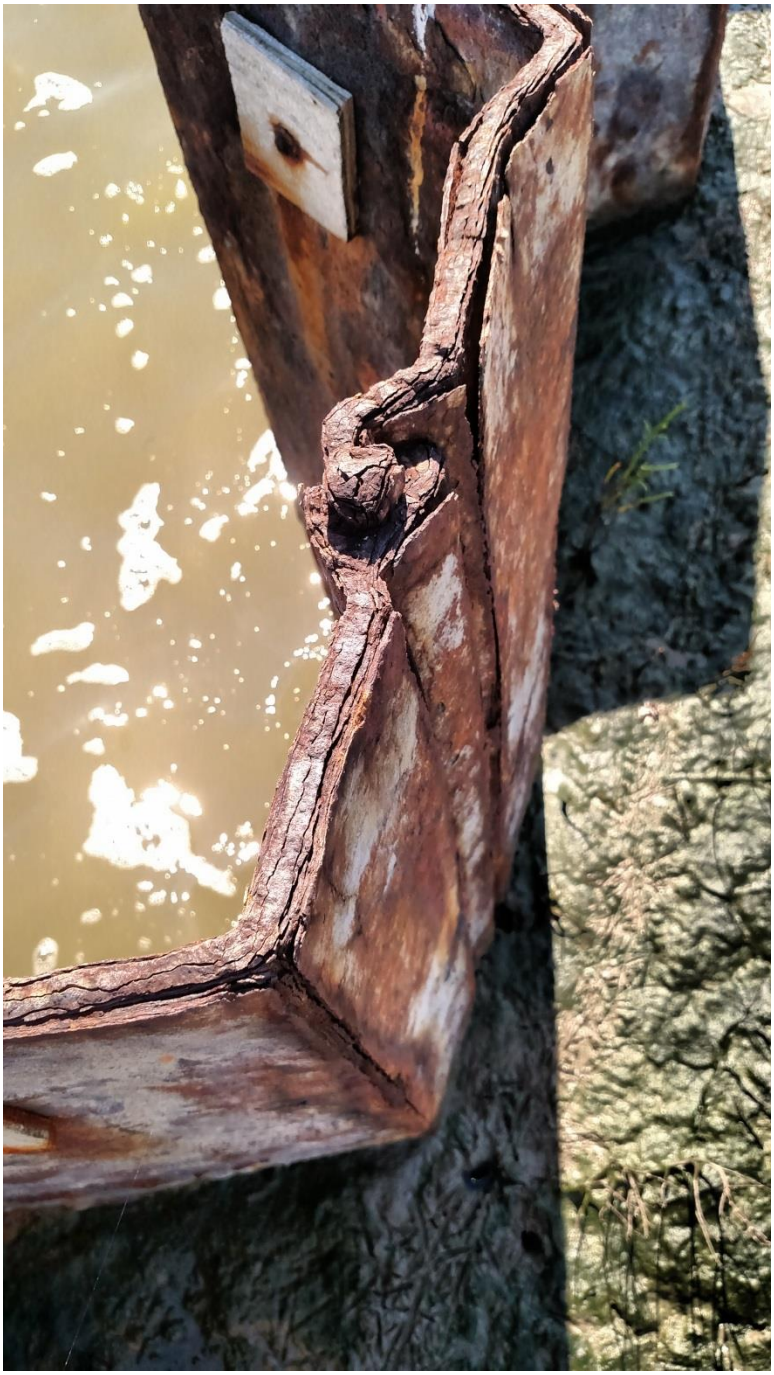


Photo 1: Close-up view of sheet pile condition

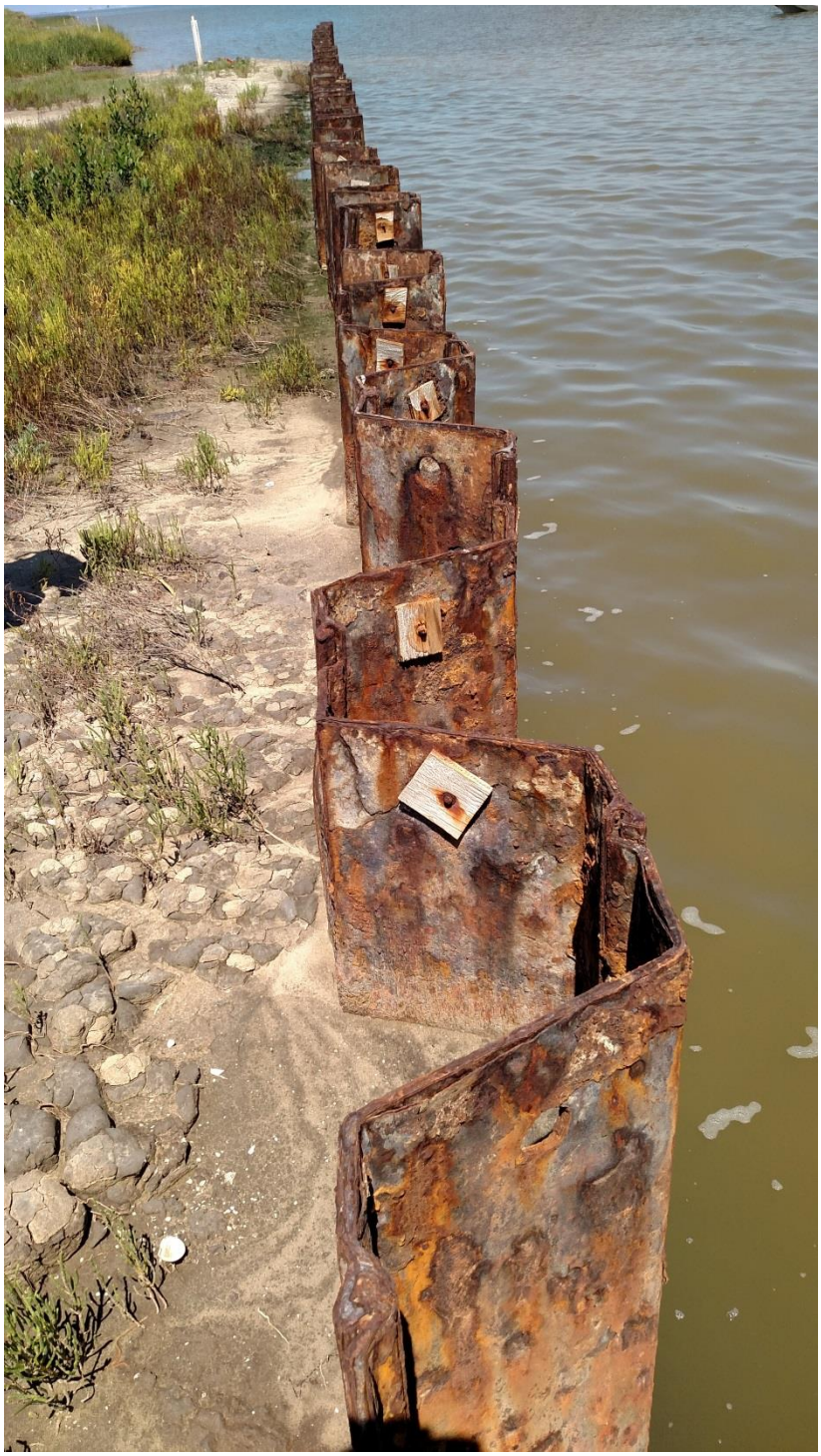


Photo 2: View of sheet pile plug in northern containment dike, looking west.

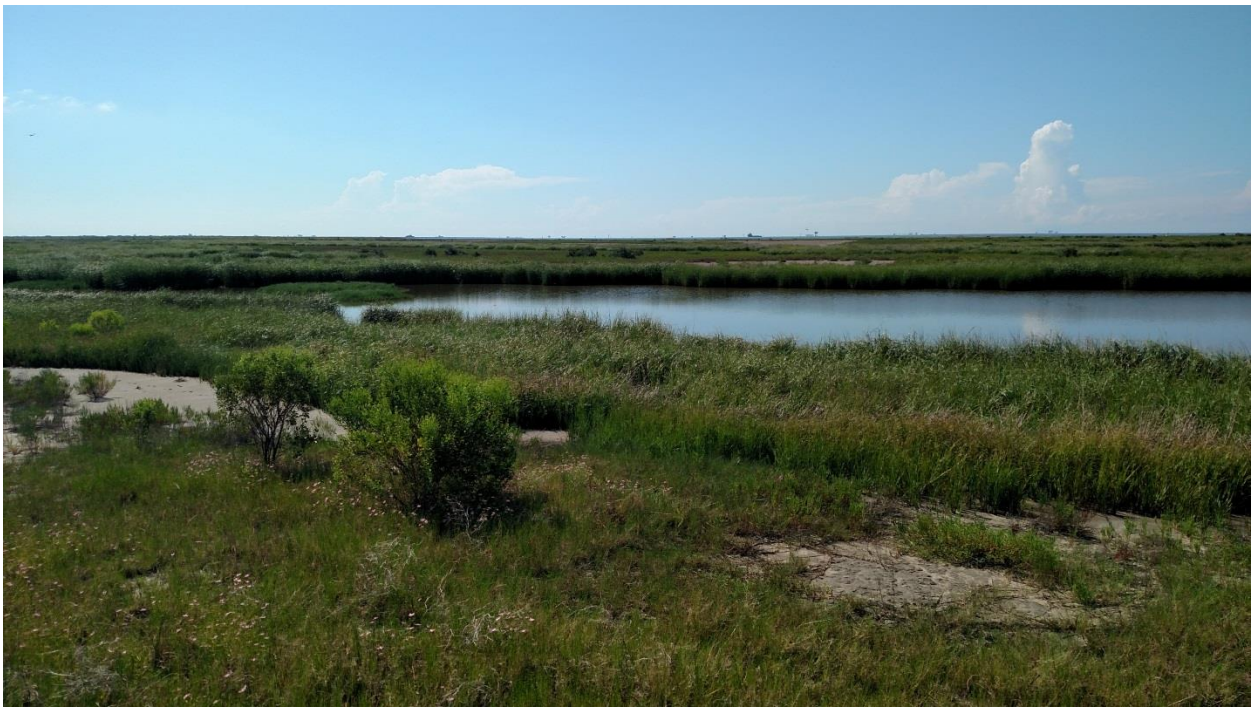


Photo 3: View of small impounded area with freshwater vegetation just southeast of sheet pile wall.

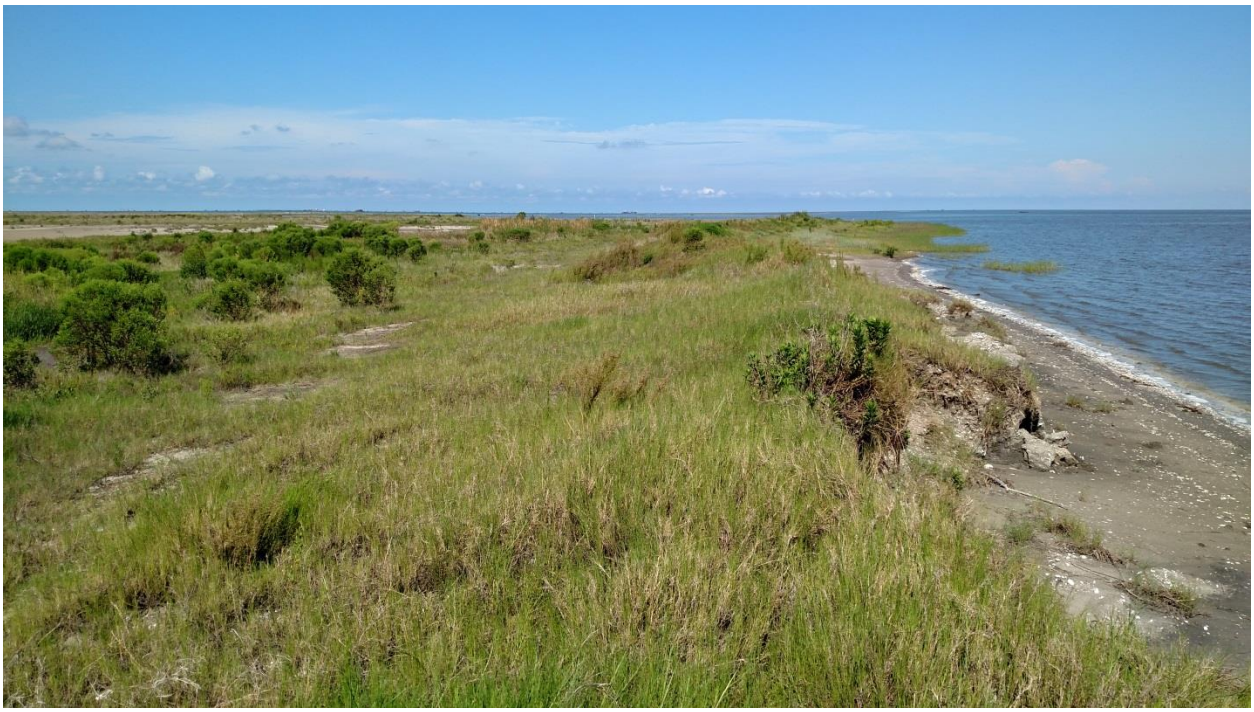


Photo 4: View of northern primary containment dike west of sheet pile wall.

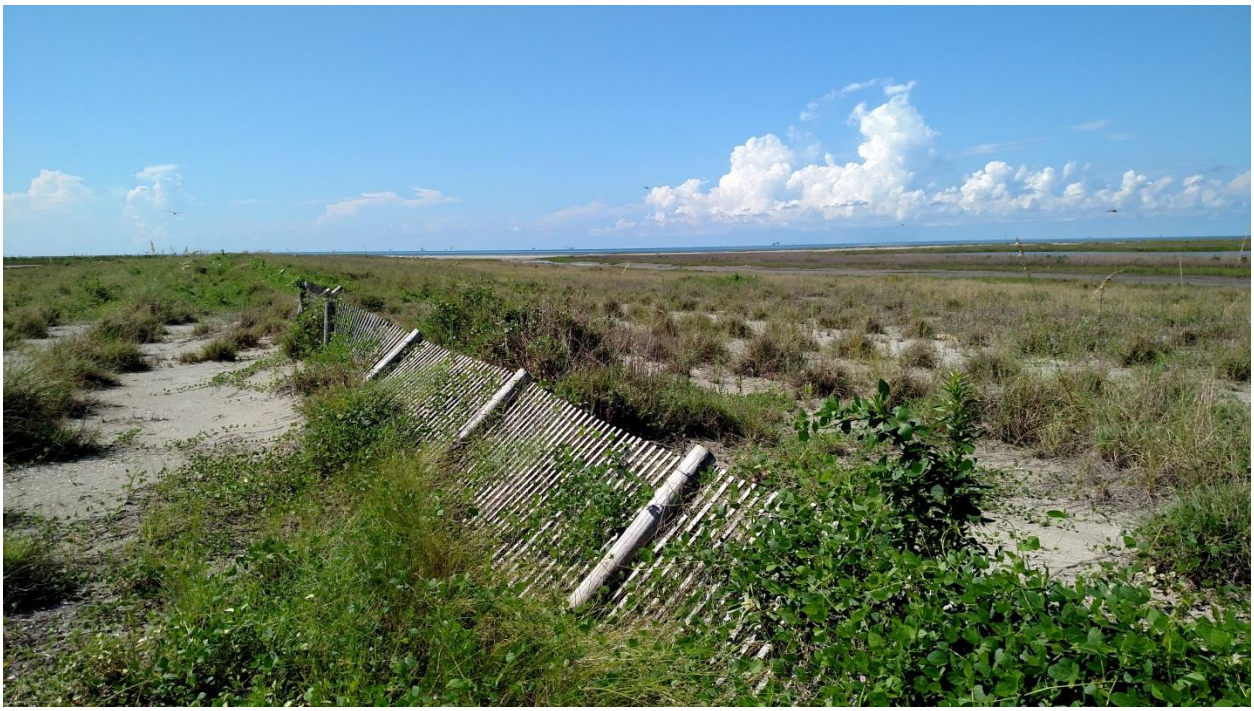


Photo 5: View of successful vegetative planting & sand fence, looking south.

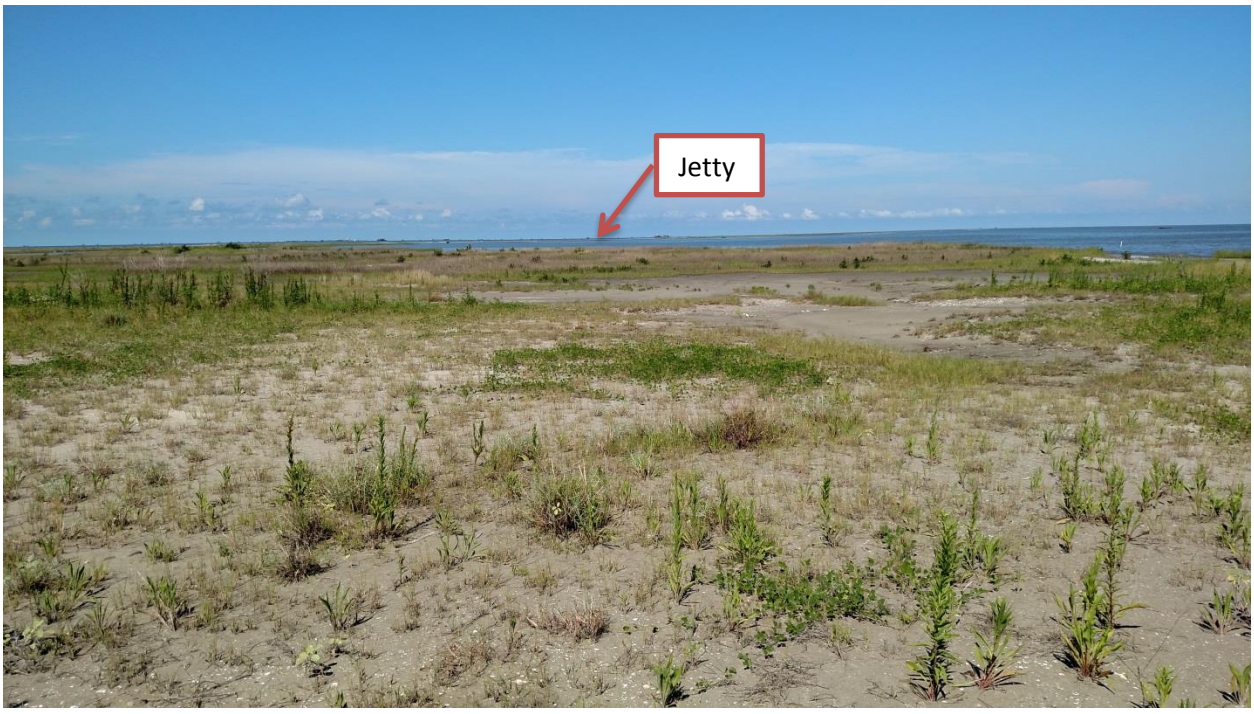


Photo 6: View of northern part of jetty from the center of western marsh fill edge.

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.

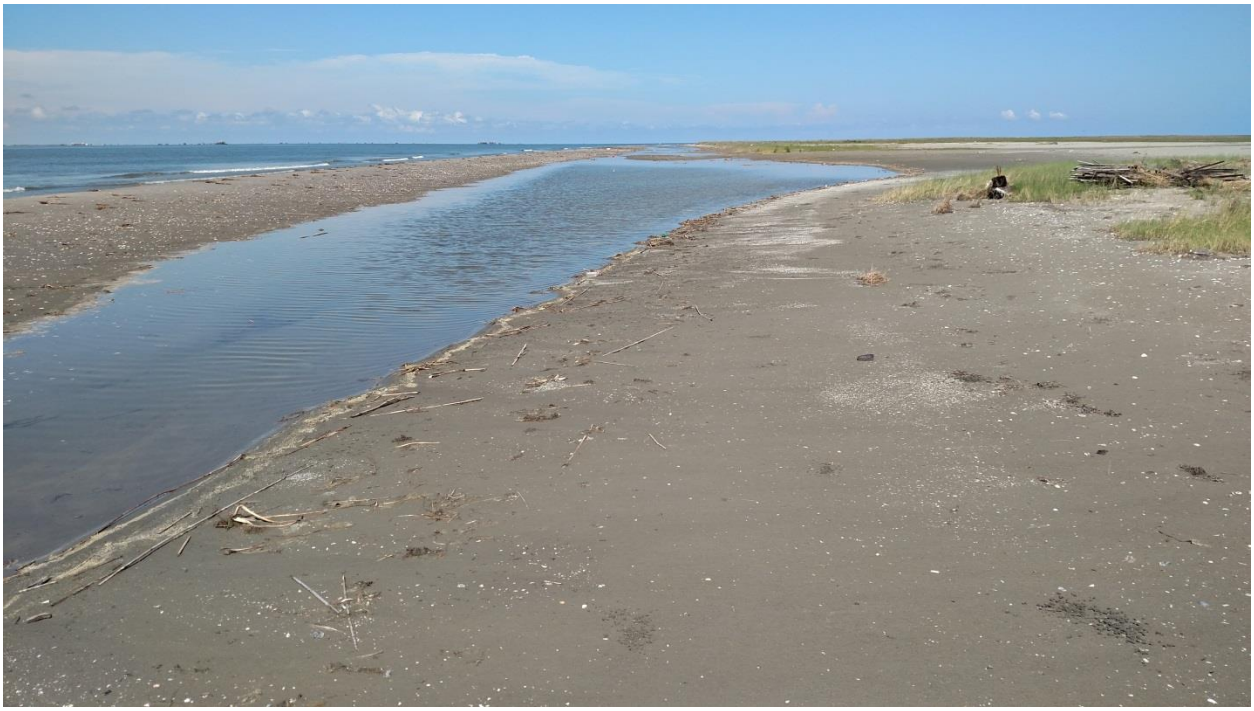


Photo 8: View of jetty beach face, looking west from southern tip of sand fence.

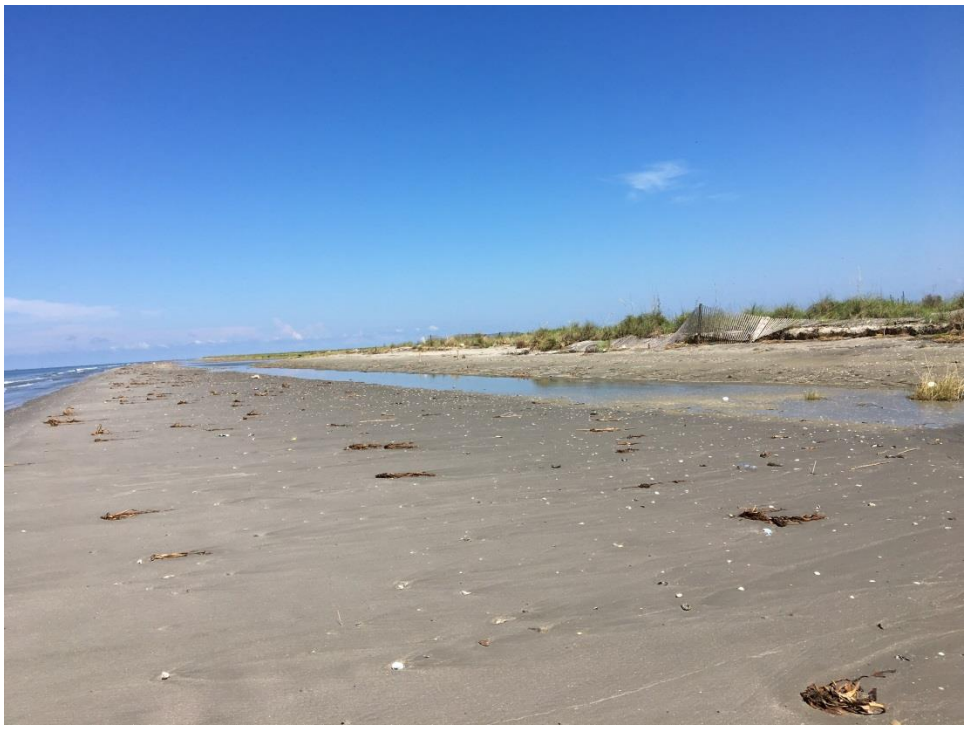


Photo 9: View of beach dune and sand fencing looking west.

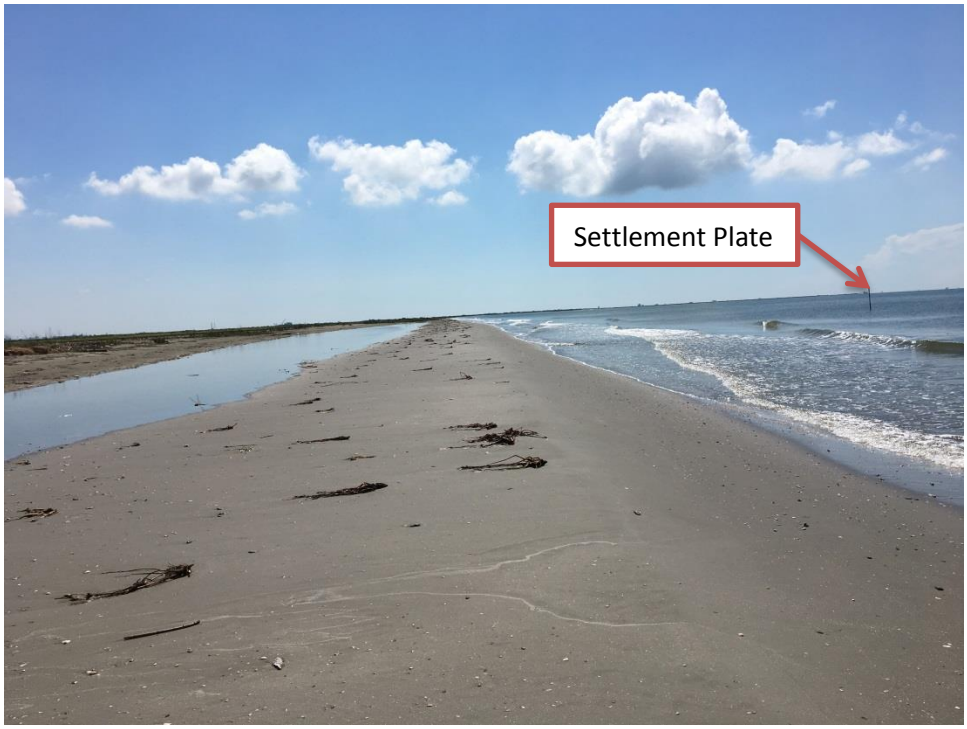


Photo 10: View of beach erosion, looking east. Note: settlement plate installed on the center of the dune is currently in the Gulf.

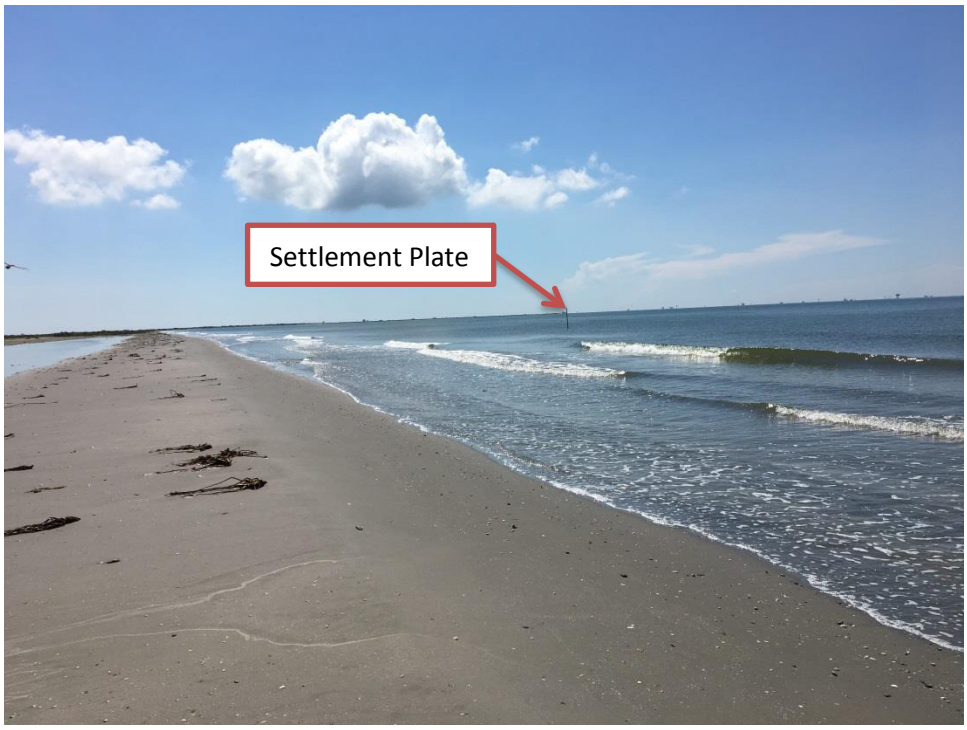


Photo 11: View of settlement plate, which used to be in the center of the dune.

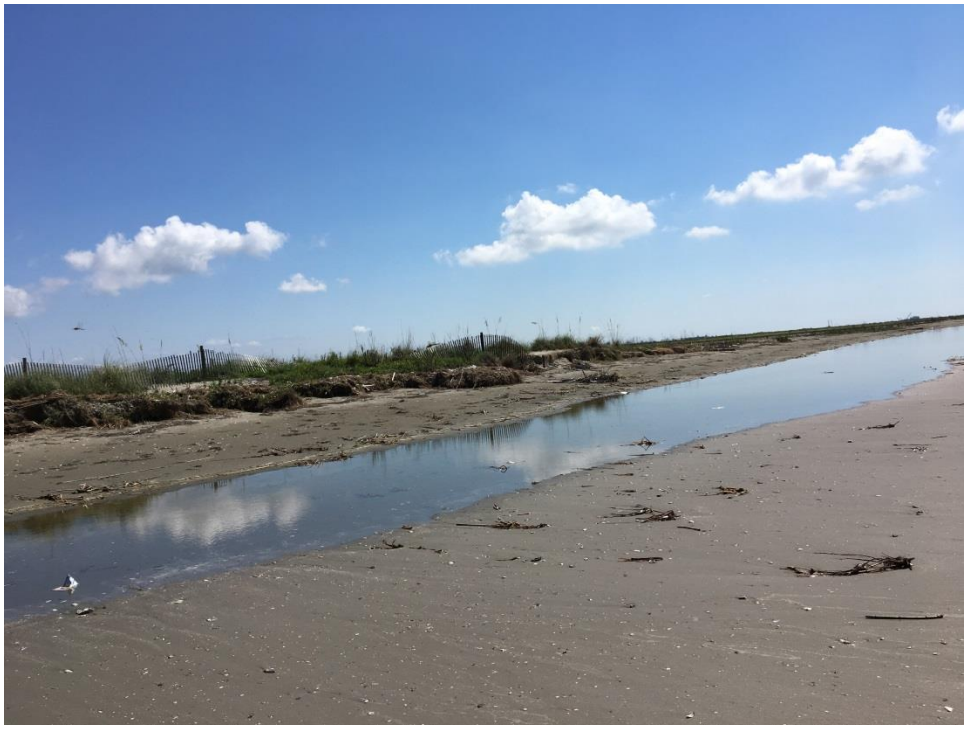


Photo 12: View of dune erosion and damaged sand fencing.

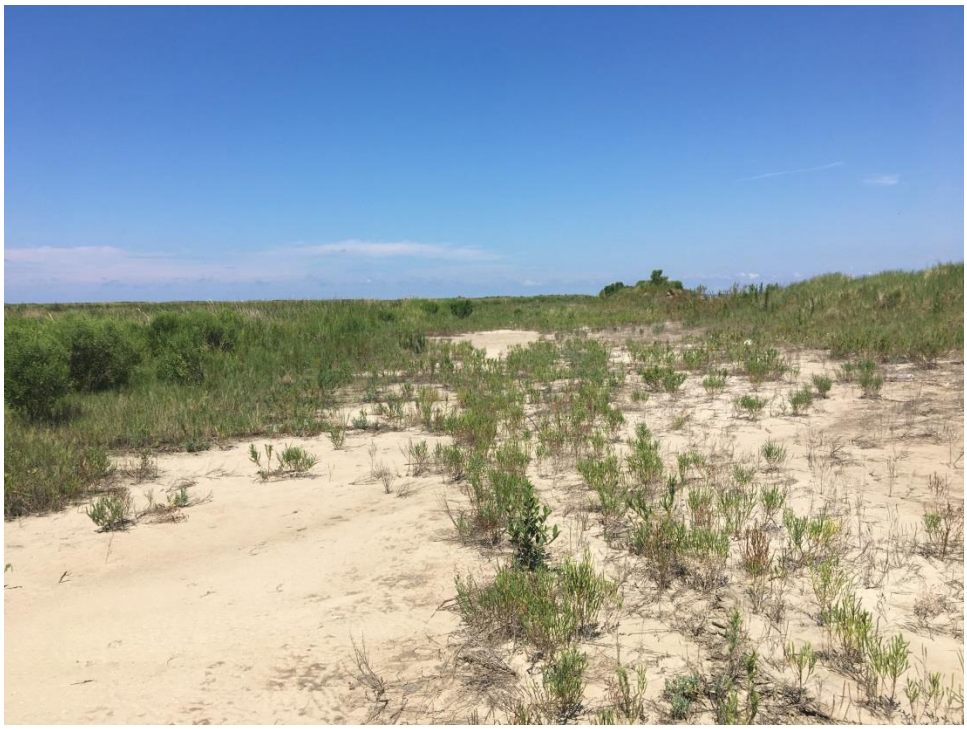


Photo 13: View of area behind primary containment dike

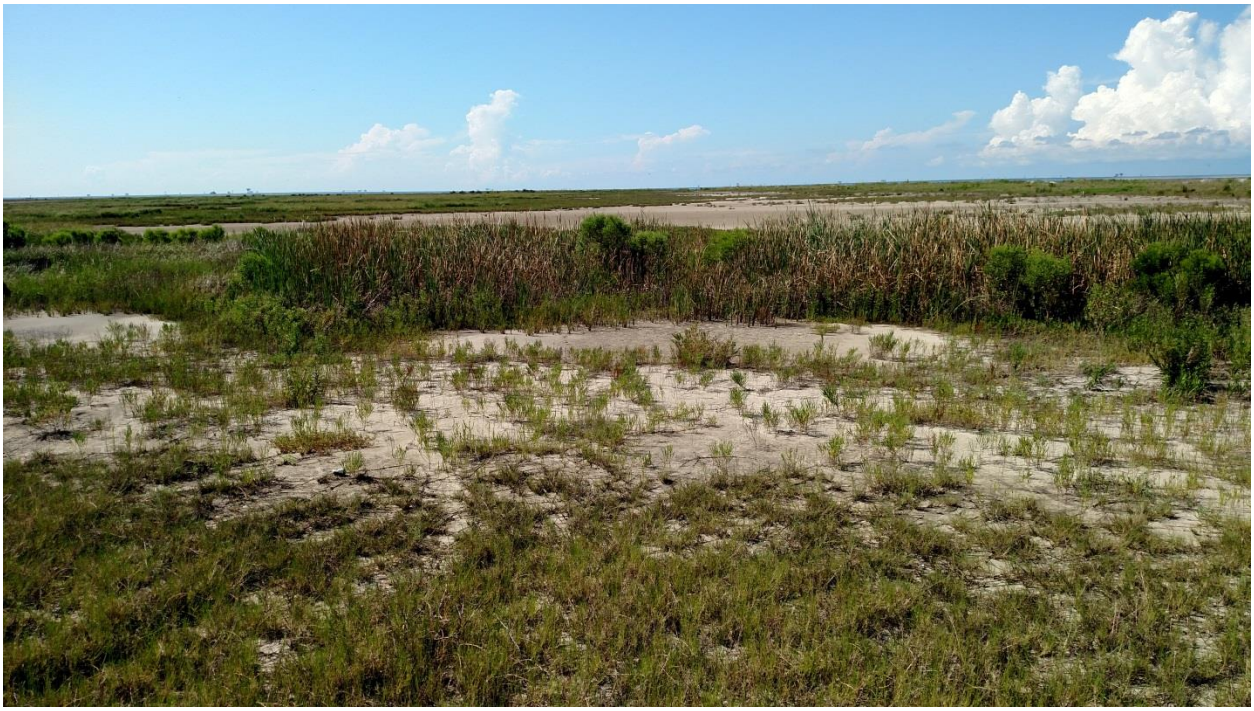


Photo 14: View of last non-vegetated section located in the center of the marsh platform, on the western edge of project.

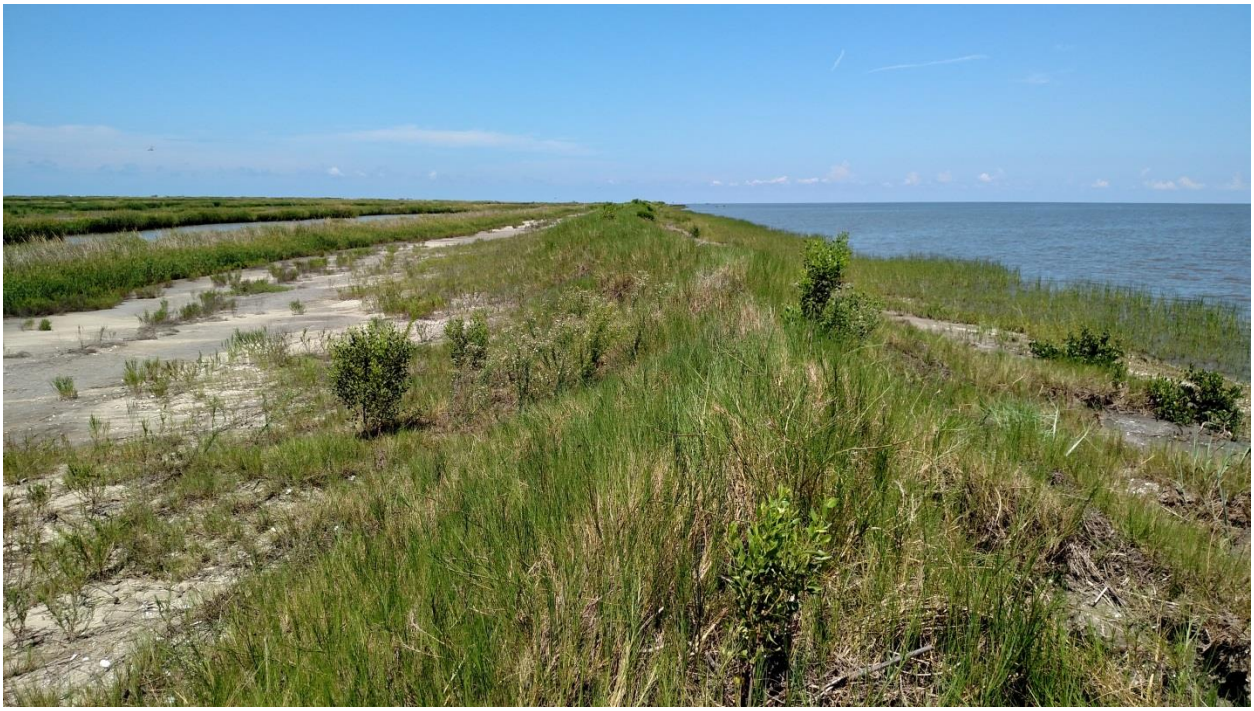


Photo 15: View along containment dike and access canal near southeastern corner of marsh fill.

Appendix C

Three Year Budget Projection

WEST BELLE PASS BARRIER HEADLAND RESTORATION (TE-52)
Three-Year Operations & Maintenance Budgets 07/01/2017- 06/30/20

Project Manager	O & M Manager	Federal Sponsor	Prepared By
	Hartman	*NMFS*	*Babin*

	2017/2018	2018/2019	2019/2020
Maintenance Inspection	$ 15,536.00	$ 16,002.00	$ 16,482.00
Structure Operation	$ -	$ -	
CPRA Administration	$ 12,260.00		
NMFS Administration	$ 25,000.00	$ 5,000.00	$ 5,000.00
Maintenance/Rehabilitation			

17/18 Description: Remove existing steel sheetpile, degrade back containment dike

E&D	$ 4,669.00
Construction	$ 134,375.00
Construction Oversight	$ 33,667.00
Sub Total - Maint. And Rehab.	$ 172,711.00

18/19 Description: Maintenance Inspection

E&D	
Construction	
	$ -
Sub Total - Maint. And Rehab.	$ -

19/20 Description: Maintenance Inspection

E&D	$ -
Construction	$ -
Construction Oversight	$ -
Sub Total - Maint. And Rehab.	$ -

	2017/2018	2018/2019	2019/2020
Total O&M Budgets	**$ 225,507.00**	**$ 21,002.00**	**$ 21,482.00**

O&M Budget (3 Yr Total)	**$ 267,991.00**
Unexpended O&M Funds	**$ 2,308,618.00**
Remaining O&M Funds	**$ 2,040,627.00**

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

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

FY 17/18 –		
CPRA Administration		**$ 12,260**
Maintenance Inspection		**$ 15,536**
NMFS Administration:		**$ 25,000**
Operation:		$ 0
Maintenance:		**$ 172,711**
E&D, Const. Oversight:	$ 38,336	
Construction:	$ 134,375	

Maintenance Event No.1 – remove existing steel sheet pile from back dike and degrade back dike to marsh elevation.

Construction Cost Breakdown

Mobilization (Lump Sum):	$ 50,000
Remove sheet Pile: (Approx. 150 lft.)	$ 20,000
Degrade Back Dike: (Approximately Approx. 5,000 Lft) $7.50/ Lft	$ 37,500
Total:	$ 107,500
Contingency (25%):	$ 26,875
TOTAL:	**$ 134,375**

Maintenance Event No.1 - Design, Construction Administration and Inspection

E&D: (9% x Construction):	$ ~~23,344~~ 80% complete($4,669 Remaining)
Surveying:	~~$ 15,000~~ Completed
Permitting:	~~$ 5,000~~ Completed
Construction Administration: (100 hrs. @ $100/hr.)	$ 10,000
Inspection: (200 hrs @ $80/hr.)	$ 16,000
Total:	$ 30,669
Contingency: (25%):	$ 7,667
TOTAL:	**$ 38,336**

Total Estimate Project Budget: $ 172,711

CPRA Direct Costs

Maintenance Event No.1 – CPRA Administration

Engineer 3 (40 hrs @ $68/ hr.):	$ 2,720
Engineer 6 (20 hrs. @ $78/ hr.):	$ 1,560
Total Direct Cost:	**$ 4,280**

CPRA Indirect Costs

Maintenance Event No.1 – CPRA Administration

Engineer 3 (40 hrs @ $127/ hr.):	$ 5,080
Engineer 6 (20 hrs. @ $145/ hr.):	$ 2,900
Total In-Direct Cost:	**$ 7,980**

CPRA Direct Costs

Inspection:	
CPRA Engineer 3 – 12 hrs@ $68/hr.:	$ 816
CPRA Engineer 6 – 12 hrs @ $78/hr.	$ 936
CPRA Scientist 4 – 10 hrs @ $56/hr.	$ 560
	$ 2,312
Report:	
CPRA Engineer 6 – 40 hrs. @ $78/hr.	$ 3,120
Total Direct Costs:	**$ 5,432**

CPRA In-Direct Costs

Inspection:	
CPRA Engineer 3 – 12 hrs@ $127/hr.:	$ 1,524
CPRA Engineer 6 – 12 hrs @ $145/hr.	$ 1,740
CPRA Scientist 4 – 10 hrs @ $104/hr.	$ 1,040
	$ 4,304
Report:	
CPRA Engineer 6 – 40 hrs. @ $145/hr.	$ 5,800
Total In-Direct Costs:	**$10,104**
NMFS Administration:	**$25,000**

FY 18/19 –

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

CPRA Direct Costs

Inspection:		
CPRA Engineer 3 – 12 hrs@ $68/hr.:	$	816
CPRA Engineer 6 – 12 hrs @ $78/hr.	$	936
CPRA Scientist 4 – 10 hrs @ $56/hr.	$	560
	$	2,312
Report:		
CPRA Engineer 6 – 40 hrs. @ $78/hr.	$	3,120

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

CPRA Indirect Costs

Inspection:		
CPRA Engineer 3 – 12 hrs@ $127/hr.:	$	1,524
CPRA Engineer 6 – 12 hrs @ $145/hr.	$	1,740
CPRA Scientist 4 – 10 hrs @ $104/hr.	$	1,040
	$	4,304
Report:		
CPRA Engineer 6 – 40 hrs. @ $145/hr.	$	5,800

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

FY 19/20 –

Administration			**$ 16,482**
NMFS Administration:			**$ 5,000**
O&M Inspection & Report			$ 0
Operation:			$ 0
Maintenance:			$ 0
E&D:	$	0	
Construction:	$	0	
Construction Oversight:	$	0	

CPRA Direct Costs

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

CPRA In-direct Costs

$10,407 x 3% = Total Indirect CPRA Costs: $ 10,719

O&M Accounting:

Total O&M Budget (Lana Report):	$ 2,478,866
CPRA Expenditures to Date (LaGov):	$ 170,248
Unexpended O&M Budget:	$ 2,308,618