



Coastal Protection and
Restoration Authority of Louisiana

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

2014 Annual Inspection Report

for

**TERREBONNE BAY SHORE
PROTECTION
DEMONSTRATION**

State Project Number TE-45
Priority Project List 10

March 2014
Terrebonne Parish

Prepared by:

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I. Introduction

The Terrebonne Bay Shore Protection Demonstration Project (TE-45) is an 8-year demonstration project located north of Terrebonne Bay and east of Bayou Terrebonne along the shoreline of Lake Barre in Terrebonne Parish, Louisiana.

The Terrebonne Bay Shore Protection Demonstration Project (TE-45) is co-sponsored by the United States Fish and Wildlife Service (FWS) and the Coastal Protection and Restoration Authority (CPRA). The project was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The project was approved on the tenth (10th) Priority Project List.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Terrebonne Bay Shore Protection Demonstration (TE-45) Project is to inspect the physical condition of each treatment technique and determine if any deficiencies exist that would affect or alter the evaluation of the shoreline protection treatments. The inspection results are then used to produce an annual inspection report containing description of treatments, field inspection findings, an overall project features map, photographs taken during the inspection and an updated operations and maintenance budget for the upcoming three (3) years. The overall project features map can be found in Appendix A, field inspection photographs in Appendix B and a summary of the three (3) year O&M budget in Appendix C.

Since this project is a demonstration project, no provisions were included for operations, maintenance and rehabilitation of any of the project features other than to conduct annual inspections during the eight (8) year demonstration period (O&M Plan 2009). The 2014 inspection was the sixth (6th) of eight inspections performed since the project was completed in December 2007.

The annual inspection of the Terrebonne Bay Shore Protection Demonstration Project (TE-45) took place on March 31, 2014. In attendance were Travis Byland, Adam Ledet, and Glen Curole from CPRA and Robert Dubois from US Fish and Wildlife Service. The inspection began at approximately 10:30 am at Reach A and ended at approximately 12:00 pm at Reach E. The trip included a visual inspection of the nine shoreline protection structure installations (three treatment types at each of the three reaches), the tie-in units, and all warning signs for the project. Photographs of the structures are included in Appendix B.

III. Project Description and History

Because of marsh loss in the area, Lake Barre is no longer a distinct feature from Terrebonne Bay to the south. Consequently, the interior salt marshes have become exposed to the forces

of waves and tides causing higher saline waters to enter into the fragile less saline ecosystems further inland, causing extensive marsh loss (O&M Plan, 2009)

The purpose of the demonstration project is to demonstrate, evaluate, and document the effectiveness of three (3) different shoreline and foreshore protection techniques designed to reduce erosion and promote the growth of oyster reefs along the northern marshes of Lake Barre. The project consists of three (3) shoreline sites, Reaches A, B, and E. Each of the three (3) shoreline protection treatments, Triton Gabion Mats filled with rock, A-Jacks Concrete Armor Units, and Reefblks Steel Rebar Triangular Units with Oyster Shell Bags, were installed in 300' lengths at each of the three (3) shoreline reaches. Reaches A and B are located along the western shoreline of Lake Barre just east of Bayou Terrebonne. Reach E is located to the east of Reaches A and B along a marsh island remnant of the northern shoreline of Lake Barre. (O&M Plan 2009)

Construction of the project began in September 2007 and was completed in December 2007. The project has an 8-year demonstration period that began in December 2007.

The principal project features (see Appendix A) include:

Triton™ Gabion Mats Filled with Rock

Gabion mats are pre-fabricated with geotextile grid materials formed into baskets and interconnected to form a mat. The mats are filled with rock. Each mat is 20-foot long by 5-foot wide by 12 inches thick and anchored at the corners. Mats are installed alongside each other on the bank to form the shoreline protection feature.

A-Jacks™

A-Jacks are individual, pre-fabricated, concrete barrier units that have the shape of toy jacks. Each unit measures 24 inches and weighs 78 pounds. The individual units are tied together in groups with galvanized steel cable. The units are installed in an interlocking double row in shallow water adjacent to the eroding shoreline bank and are placed on a base comprised of a geotextile layer and 6 inches of crushed stone. The units are anchored every 10 feet with galvanized steel cable and 20' galvanized steel rod with anchor.

ReefBlks™

ReefBlks are pre-fabricated, double-frame, steel, triangular units that hold mesh bags filled with oyster shells. They are designed to emulate and create new artificial oyster reef. Each unit has a 5-foot triangular base and measures 2 feet high. Each unit is welded to another unit at a corner to form 10-foot wide unit pairs. The units are installed on a base comprised of a geotextile layer and 6 inches of crushed stone. The units are installed in shallow water adjacent to the eroding shoreline bank. The units are anchored every 10 feet with galvanized steel cable and 20' galvanized steel rod with anchor.

IV. Summary of Past Operation and Maintenance Projects

No maintenance projects or operation tasks have been performed since completion of the Terrebonne Bay Shore Protection Demonstration Project (TE-45). As a demonstration project, there are no funding provisions in the project O&M budget for maintenance events. Only the costs associated with annual inspections are provided in the project O&M budget.

V. Inspection Results

Reaches A, B, and E

The project inspection began at the southern extent of Reach A and proceeded north to the northern extent of Reach B. A water level reading of +1.8' NAVD88 was taken from the staff gauge near Reach E at approximately 11:30 pm. Due to this high surface water elevation, all of the shoreline protection structures at the three sites (Reach A, Reach B, and Reach E) were submerged and were not visible for the duration of the inspection. The inspection resumed at the eastern extent of Reach E and proceeded to the west. Again, the high water level had all structures submerged. Two warning signs were observed to be damaged, one located on Reach B and another on Reach E.

VI. Conclusions and Recommendations

There is no apparent damage to the shoreline protection project features, therefore no rehabilitation of the existing structures are necessary. With TE-45 being a demonstration project, there is no funding for operations of the structures or maintenance. Past inspection reports indicate that some settlement of the structures has occurred, but survey data is needed to measure the extent of the settlement. The previous inspection report indicated that the area of water behind the Gabion Mats on the southern end of Reach E appears to be increasing. This could not be verified on this trip due to the high water level. The damage to the two warning signs appears to be due to high winds or extreme weather. Since there are no funds to replace the signs and the signs are still visible, there are no recommendations for maintenance at this time.

Appendix A

Project Features Map

PROPOSED ACCESS ROUTE

| PT. | EASTING | NORTHING |
|-----|--------------|------------|
| 1 | 3,525,417.00 | 282,847.00 |
| 2 | 3,519,781.00 | 286,266.00 |
| 3 | 3,515,417.47 | 284,890.84 |
| 4 | 3,510,963.49 | 285,698.91 |
| 5 | 3,509,757.60 | 287,689.42 |
| 6 | 3,520,415.46 | 287,799.08 |
| 7 | 3,520,965.95 | 293,976.39 |
| 8 | 3,523,120.64 | 293,724.29 |
| 9 | 3,523,236.51 | 295,048.15 |

PLACID PIPELINE

TE-45-SM-01
N 297,516.43
E 3,510,866.28
ELEV. 4.009'

BAYOU COURANT

24 TENNESSEE GAS PIPELINE

BAYOU TERREBONNE

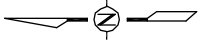
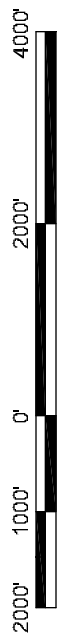
LAKE BARRE

PLACID PIPELINE

4" TEXACO PIPELINE

- NOTES:
- DNR HAS ACQUIRED ALL OR PORTIONS OF TWO OYSTER LEASES IN REACH E THAT WILL BE IMPACTED BY CONSTRUCTION AS PRESENTED BELOW:
LEASE NO. 33135 - 7 ACRES ACQUIRED BY DNR FROM G.I. JOE, INC., EMPIRE LA
LEASE NO. 31661 - 14 ACRES ACQUIRED BY DNR
 - THERE ARE NO OYSTER LEASES THAT WILL BE IMPACTED IN REACH A
 - ALL BARGES SHALL BE LIGHT LOADED FOR TRANSPORTATION OF EQUIPMENT AND MATERIALS. NO PROP WASHING OR DREDGING SHALL BE ALLOWED.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOBILIZING, COMPLETING THE REQUIRED CONSTRUCTION ACTIVITIES, AND DEMOBILIZING WITHOUT CROSSING OR OTHERWISE IMPACTING UNACQUIRED OYSTER LEASES SHOWN ON SHEET 3.
 - THE AERIAL PHOTOGRAPHY WAS TAKEN IN THE FALL OF 2005.

AS-BUILT



LEGEND

| | |
|--|-----------------------|
| | REACH |
| | PIPELINE |
| | OYSTER LEASE |
| | BENCHMARK |
| | PROPOSED ACCESS ROUTE |

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION

617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

TERREBONNE BAY SHORE PROTECTION
DEMONSTRATION PROJECT

STATE PROJECT NUMBER: TE-45

FEDERAL PROJECT NUMBER:

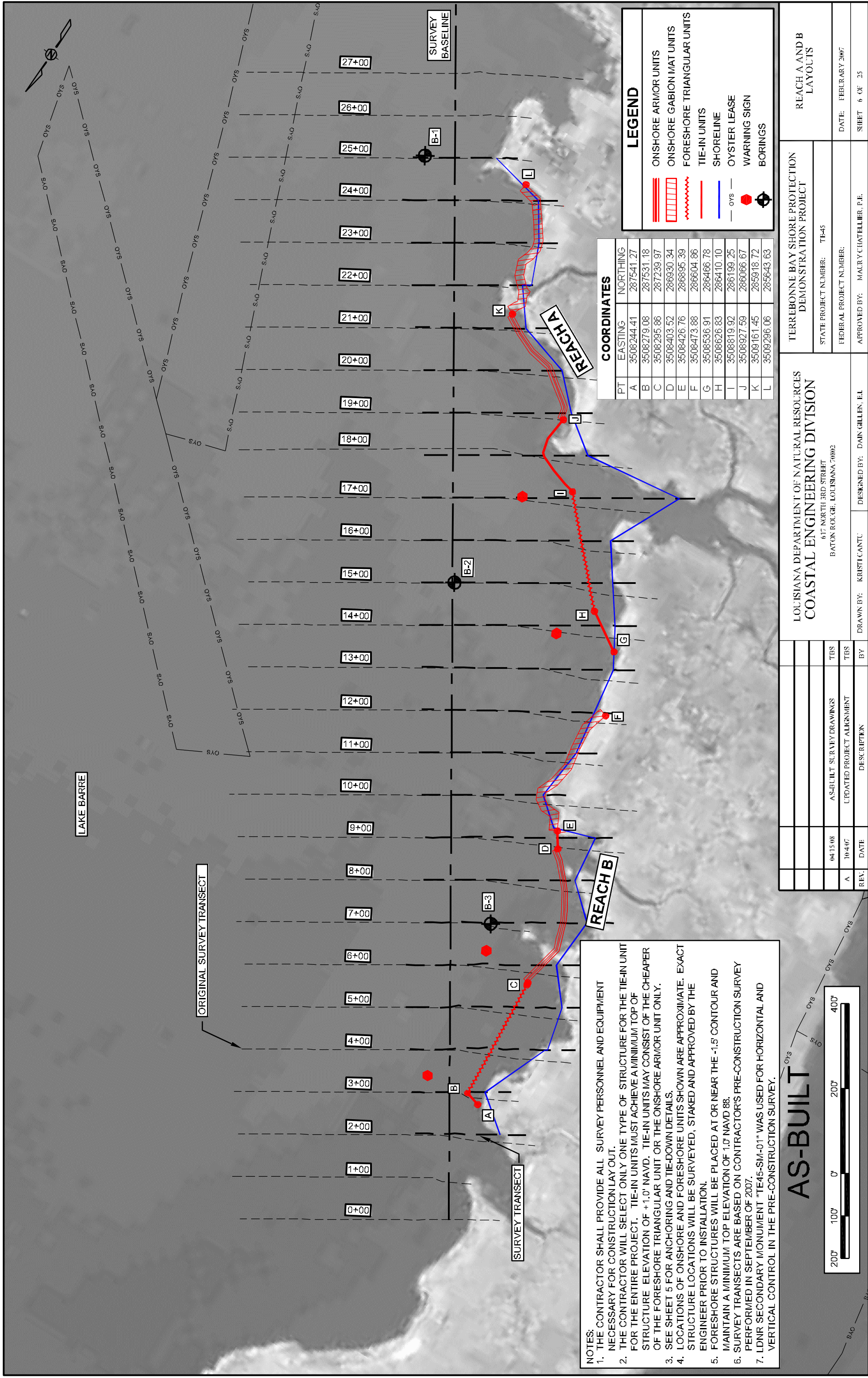
APPROVED BY: MAURY CHATELIER, P.E.

DRAWN BY: KRISTI CANTU
DESIGNED BY: DAIN GILLIN, E.I.

PLAN VIEW

DATE: FEBRUARY 2007

SHEET 3 OF 25



Appendix B

Photographs



Photo 1: Reach A Gabion Mats looking southwest



Photo 2: Gabion Mats located on the southern end of Reach A looking southwest



Photo 3: View of submerged Reach A A-Jacks looking west



Photo 4: View of Reach B Gabion Mats looking northwest



Photo 5: Gabion Mats located on the northern end of Reach B looking west



Photo 6: View of submerged Reef Blks on Reach B



Photo 7: View of submerged Gabion Mats on Reach E looking north



Photo 8: View of damaged warning sign on Reach B

Appendix C

Three Year Budget Projection

Terrebonne Bay Shore Protection Demonstration / TE45 / PPL10
Three-Year Operations & Maintenance Budgets 07/01/2014 - 06/30/2017

| | | | |
|------------------------|--------------------------|------------------------|--------------------|
| <u>Project Manager</u> | <u>O & M Manager</u> | <u>Federal Sponsor</u> | <u>Prepared By</u> |
| | Dearmond | USFWS | Byland |

| | 2014/2015 | 2015/2016 | 2016/2017 |
|-------------------------------|-------------|-------------|-------------|
| Maintenance Inspection | \$ 6,569.00 | \$ 6,779.00 | \$ 6,982.00 |
| Structure Operation | \$ - | \$ - | \$ - |
| Administration | \$ - | | \$ - |
| USACE Administration | \$ - | \$ - | \$ - |

Maintenance/Rehabilitation

13/14 Description:

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

14/15 Description:

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

15/16 Description:

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

| | 2014/2015 | 2015/2016 | 2016/2017 |
|------------------------------|-------------|-------------|-------------|
| Total O&M Budgets | \$ 6,569.00 | \$ 6,779.00 | \$ 6,982.00 |

| | |
|---|---------------------|
| O&M Budget (3 yr Total) | \$ 20,330.00 |
| Unexpended O&M Funds | \$ 42,382.00 |
| Remaining O&M Budget (Projected) | \$ 22,052.00 |