



Coastal Protection and
Restoration Authority of Louisiana

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

2015 Annual Inspection Report

for

**GIWW Bank Restoration Project –
Segment 4 (TE-43)**

State Project Number TE-43
Priority Project List 10

September 21, 2015
Terrebonne Parish

Prepared by:

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I. Introduction

The GIWW Bank Restoration Project – Segment 4 (TE-43) is located in Terrebonne Parish, Louisiana, approximately 10 miles east of the Lower Atchafalaya River and approximately 10 miles southwest of Houma, La. Segment 4 is located along the south bank of the Gulf Intracoastal Waterway (GIWW), beginning at the mouth of Bayou Copasaw extending eastward to the southern end of Lake Hackberry.

Within the project area, increased Atchafalaya River flow and marine traffic through the GIWW has resulted in breaches in the shoreline bank and subsequent scouring of the interior marshes (Draft ER, Stead, 2004). The GIWW Bank Restoration of Critical Areas (TE-43) project intends to address this landloss by stabilizing the most severely degraded south bank of the GIWW and slow erosion along approximately 10,500 linear feet of the southern bank of the GIWW over the 20 year project life (Draft ER, Stead, 2004).

The project has a twenty (20) year project life, which began in April 2014. The principal project feature included the construction of a rock dike with a light-weight aggregate core. Due to very poor soil conditions, the rock dike was constructed in two (2) lifts with a 90 day waiting period to allow for initial consolidation of the soils.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the GIWW Bank Restoration of Critical Areas – Segment 4 (TE-43) 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 recommending 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 completion of constructed 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 project is outlined in Section IV.

The annual inspection of GIWW Bank Restoration of Critical Areas – Segment 4 (TE-43) project took place on April 23, 2015. In attendance were Brian Babin and Travis Byland with CPRA, and Doug Baker with the Natural Resource Conservation Service (NRCS). The attendees met at Bob's Bayou Black Marina in Bayou Black, La. The inspection began around 8:45 am at Segment No.1 of the rock dike constructed under the CIAP program to obtain a water level from a gauge installed during construction of that segment. The inspection of Segment 4 of the GIWW Bank Restoration project began at the westernmost end of the project near Bayou Copasaw and proceeded east along the

GIWW bankline to the end of the project at the southern end of Hackberry Lake. The inspection ended around 10:00 a.m. The trip included a visual inspection of the rock dike, bankline, warning signs, navigational aids and settlement plates. Photographs of the inspection are located in Appendix B.

III. Project Description

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

Segment 4 is a continuous 10,579 linear foot composite rock dike section with a light-weight aggregate core along the southern bank of the GIWW, east of the Bayou Copasaw. The rock dike was constructed to a +3.5' NAVD crest elevation with a 3' wide top width and 3:1 side slopes. The structure was constructed above a geotextile fabric material. The spoil material excavated for access was temporarily stock piled and used to fill the floatation channel upon completion of the dike structure. Other features include 2,262 linear feet of rock riprap apron on both ends of Segment 4 between the marsh and dike, nine (9) galvanized steel settlement plates, forty-six (46) timber warning signs and three (3) navigational aid lights at channel locations.

IV. Summary of Past Operation and Maintenance Projects

To date, there have been no maintenance events or project features that required routine maintenance. This section will be used to reference all past maintenance activities on future inspection reports.

V. Inspection Results

The inspection began by traveling to Segment 1 of the rock dike constructed under the Coastal Impact Assistance Program (CIAP) completed in 2012 to obtain a staff gauge reading of the water level at the time of the inspection. The gauge reading indicated an elevation of 2.8' NAVD at 8:45 a.m. This water level reading was used to estimate the crest elevations of the rock dike constructed under Segment 4.

GIWW Bank Restoration of Critical Areas – Segment 4 (TE-43)

The inspection began at the mouth of Bayou Copasaw near the bank tie-in which appeared to be in good condition with no noticeable breaching or erosion. Proceeding eastward along the rock dike from Sta. 00+06 to Sta. 2+50, the rock dike crest was approximately 0.5' above the estimated water elevation of +2.8'. From Sta. 2+50 to Sta. 100+00, the crest was at or well below the estimated water level of 2.8' NAVD. Beyond Sta. 100+00 to the end of the project (Sta. 105+78), the crest of the rock dike

was barely above the water line with a couple of inches exposed. Since the completion of construction, the entire structure has settled below the constructed elevation, in some cases several feet. Soundings were taken near Sta. 87+00 and it was discovered that the rock dike had settled from 4' to 6' in this area. Overall, the rock dike was in poor shape with moderate to severe settlement occurring throughout the length of the project.

All of the warning signs along the length of the project were in good condition with the exception of a sign near Sta. 12+00, which had been pushed over by what appeared to be a collision from a large vessel. The timber pile was leaning over with the sign just above the water line. As expected, all of the settlement plates have settled to various degrees. In some cases, additional segments may be needed to continue future monitoring efforts.

VI. Conclusions and Recommendations

As noted in Section 5 of this report, a visual inspection of the rock dike revealed that the entire structure had experienced moderate to severe settlement, in some cases 4 to 6', due to the poor soil conditions in the area. Since the rock dike was below the water line at time of the inspection, we were unable to determine the true extent of settlement. Therefore, we are recommending a survey profile of the entire structure be conducted to determine the severity of settlement prior to determining a path forward for maintenance. We are also recommending that CPRA and NRCS begin discussions on a possible maintenance event to attempt to raise the dike elevation, if possible. Considering the extent of settlement we are observing, a maintenance lift of rock riprap may or may not be a viable alternative since adding additional weight to the structure may cause further settlement. As for the warning signs and settlement plates, we recommend that the damaged timber pile and sign be replaced during the next maintenance event and additional segments of galvanized pipe be installed on settlement plates that have settled below an elevation that would make it difficult to access for future surveys.

References:

Stead, M.A. May 2004. Draft - Ecological Review of the GIWW Bank Restoration of Critical Areas in Terrebonne. Restoration Technology Section, Coastal Restoration Division, Louisiana Department of Natural Resources. Baton Rouge, La. 12 pp.

Appendix A
Project Features Map



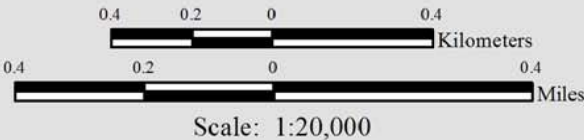
GIWW Bank Restoration of Critical Areas in Terrebonne (TE-43)



- Shoreline Protection
- Project Boundary



Source:
Coastal Protection and Restoration
Authority of Louisiana
Imagery:
2013 National Agriculture
Imagery Program



File Path: //RID2015040107/
Map Date: March 18, 2015

Appendix B
Photographs



Photo 1: View of the staff gauge on the west end of Segment No.1 of the GIWW CIAP project.



Photo 2: View of the rock dike tie-in on the west end of the GIWW Breach Closure Project (CWPPRA) at the entrance of the Copasaw Canal.



Photo 3: View of permanent warning sign (PS-2) and navigational aid light at the west end of the Breach Closure (TE-43) project.



Photo 4: View of the warning sign (PS-2) and navigational aid light at west end of project near Sta. 2+00.



Photo 5: View of rock dike near Sta. 2+00 looking eastward.



Photo 6: View of the submerged rock dike and warning signs near Sta. 5+00 looking southeast.



Photo 7: View of damaged warning sign near Sta. 7+00.



Photo 8: View of the submerged rock dike and warning signs near cove in the bank line (Sta. 16+00).



Photo 9: View of the submerged rock dike and warning sign near Sta. 29+00.



Photo 10: View of the submerged rock dike and warning signs near Sta. 30+00 looking southeast.



Photo 11: View of the submerged rock dike and bank line near Sta. 37+00 looking northeast.



Photo 12: View of warning signs and the submerged rock dike near Sta. 42+00 looking southeast.



Photo 13: View of submerged rock dike and warnings signs near cove in bank line near Sta. 47+00.



Photo 14: View of the submerged rock dike and warnings signs near Sta. 59+00 looking southeast.



Photo 15: View of warning signs and submerged rock dike near Sta. 65+00 looking southeast.



Photo 16: View of warning signs and submerged rock near Sta. 72+00 looking northeast.



Photo 17: View of warning signs and submerged rock dike near Sta. 77+00 looking east.



Photo 18: View of warning signs and submerged rock dike near Sta. 80+00 looking east.



Photo 19: View warning sign and navigational aid lights (PS-20) near Sta. 85+00 looking southeast.



Photo 20: View of rock dike just above water line, warning sign and navigational aid light at the corner of Bayou Copasaw (Sta. 104+50).



Photo 21: View of warning sign and navigational aid lights (PS-24) near the entrance of Bayou Copasaw on the east end of the project.



Photo 22: View of rock dike location at the tie-in to the bank at Bayou Copasaw on the east end of the project.

Appendix C

Three Year Budget Projection

**GIWW Critical Areas/ TE-43 / PPL 10 (2015-2018)
Three-Year Operations & Maintenance Budgets**

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>B.Babin</i>	NRCS	<i>B. Babin</i>
	2015/2016	2016/2017	2017/2018
<i>Maintenance Inspection</i>	\$ 21,217.00	\$ -	\$ 21,446.00
<i>Structure Ops/ Nav Aid</i>	\$ -	\$ -	\$ -
<i>CPRA Administration</i>	\$ -	\$ 26,409.00	\$ -
<i>Maintenance/Rehabilitation</i>	\$ -	\$ -	\$ -

15/16 Description:

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

16/17 Description: Topographic Survey (Profile. Sections)- Rock Dike Surveys

<i>Surveying</i>	\$ 32,894.00
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ 32,894.00

17/18 Description:

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

	2015/2016	2016/2017	2017/2018
<u>Annual O&M Budgets</u>	\$ 21,217.00	\$ 59,303.00	\$ 21,446.00

<u>2015 - 2018 O &M Budget (3 yr Total)</u>	\$ 101,966
<u>Unexpended O & M Funds</u>	\$956,875
<u>Remaining O & M Budget (Projected)</u>	\$854,909

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

Project: TE-43 GIWW Critical Areas Bank Restoration

FY 15/16 –

Administration		\$	0
O&M Inspection & Report		\$	20,217
Operation/Navigational Aid:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

Operation and Maintenance Assumptions:

CPRA Direct Costs

Inspection:

CPRA Engineer 3 – 12 hrs@ \$60/hr.:	\$	720
CPRA Engineer 6 – 12 hrs @ \$73/hr.	\$	876
CPRA Scientist 4 – 10 hrs @ \$50/hr.	\$	500
		\$ 2,096

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$	4,380
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Total Direct CPRA Costs: **\$ 6,476**

CPRA Indirect Costs

Inspection:

CPRA Engineer 3 – 12 hrs@ \$127.30/hr.:	\$	1,528
CPRA Engineer 6 – 12 hrs @ \$154.88/hr.	\$	1,859
CPRA Scientist 4 – 10 hrs @ \$106.08/hr.	\$	1,061
		\$ 4,448

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr.	\$	9,293
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Total Indirect CPRA Costs: **\$13,741**

FY 16/17 –

Administration		\$ 26,409
Operation/Navigational Aid:		\$ 0
Maintenance:		\$ 32,894
E&D:	\$ 32,894	
Construction:	\$ 0	
Construction Oversight:	\$ 0	

Operation and Maintenance Assumptions:

O&M Inspection and Report – 3% inflation

CPRA Direct Costs

Inspection:

CPRA Engineer 3 – 12 hrs @ \$60/hr.:	\$ 720
CPRA Engineer 6 – 12 hrs @ \$73/hr.	\$ 876
CPRA Scientist 4 – 10 hrs @ \$50/hr.	<u>\$ 500</u>
	\$ 2,096

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$ 4,380
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Total Direct CPRA Costs: **\$ 6,476**

Rock Dike Profile and Sections

Professional Land Surveyor: (20 hrs @ \$126/hr.)	\$ 2,520
CAD Operator: (30 hrs @ \$92/hr.)	\$ 2,760
3 Man Survey Crew: (72 hrs. @ \$169/hr.)	\$12,168
Boat (19 – 22 ft.): (6 days @ \$454/day)	\$ 2,724
Trimble GPS Total Station: (6 days @ \$475/day)	\$ 2,850

Deliverables:

Professional Land Surveyor: (10 hrs @ \$126/hr.)	\$ 1,890
Project Chief Draftsman: (25 hrs @ \$100/hr.)	\$ 2,500

Contingency: (20%): \$ 5,482

Total Surveying: **\$32,894**

CPRA Indirect Costs

Inspection:

CPRA Engineer 3 – 12 hrs@ \$127.30/hr.: \$ 1,528
CPRA Engineer 6 – 12 hrs @ \$154.88/hr. \$ 1,859
CPRA Scientist 4 – 10 hrs @ \$106.08/hr. \$ 1,061
\$ 4,448

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr. \$ 9,293

Rock Dike Profile and Sections

CPRA Administration: \$ 6,195
(CPRA Engineer 6 - 40 hrs @ \$154.88/hr.)

Total Indirect CPRA Costs: **\$19,936**

FY 17/18 –

Administration	\$	0
O&M Inspection & Report	\$	21,446
Operation/Navigational Aid:	\$	0
Maintenance:	\$	
E&D:	\$	0
Construction:	\$	0
Construction Oversight:	\$	0

Operation and Maintenance Assumptions:

O&M Inspection and Report – 3% Inflation

CPRA Direct Costs

Total Direct CPRA Costs: \$ 6,670 x 3% Inflation = **\$ 6,870**

CPRA Indirect Costs

Total Indirect CPRA Costs: \$14,153 x 3% Inflation = **\$14,576**

2015-2018 Accounting

Expenditures (LaGov):	\$ 8,179.09
NRCS MIPR:	\$
Total Expenditures:	\$ 8,179.09
Current O&M Funding (LANA Report):	\$ 965,054.00
Current Unexpended O&M Funds:	\$ 956,874.91