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

# 2017 Annual Inspection Report

for

# GIWW/ CLOVELLY HYDROLOGIC RESTORATION

State Project Number BA-02
Priority Project List 1

May 1, 2017
Lafourche Parish

Prepared by:

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## Appendices

# I. Introduction

The GIWW to Clovelly Hydrologic Restoration Project encompasses approximately 14,948 acres of marsh habitat located in the Barataria Basin near the Gulf Intracoastal Waterway (GIWW) in Lafourche Parish, Louisiana. The project is bounded to the north by an arbitrary line through the marsh from the shoreline of Little Lake to the hurricane protection levee northwest of Clovelly Farms, to the west by the South Lafourche hurricane protection levee, to the south by Breton Canal and Superior Canal, and the east by Little Lake and Bay L' Ours. (Appendix A – Project Features Map).

The GIWW to Clovelly (BA-02) project is a hydrologic restoration project consisting of four (4) fixed crest weirs, one (1) variable crest weir, four (4) canal plugs, one (1) channel plug with culvert and flap-gate, 5,665 linear feet of lake rim restoration and approximately 5,023 linear feet of earthen bank stabilization. The purpose of the project is to protect and nourish intermediate marsh in the project area by restoring natural hydrologic conditions, promote greater use of available freshwater and nutrients, limit rapid water level exchange, slow water exchange through over-bank flow, and reduce rapid salinity spikes and saltwater intrusion (Lear, E. 2003).

The GIWW to Clovelly Hydrologic Restoration Project (BA-02) is co-sponsored by the Natural Resource Conservation Service (NRCS) and the Coastal Protection and Restoration Authority (CPRA) of Louisiana. The project was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) and enacted on November 29, 1990 as amended. The GIWW to Clovelly (BA-02) project was approved on the first (1$^{st}$) Priority Project List. (CPRA O&M Plan, 2002). CPRA and NRCS have agreed that the 20 year life of the project would begin at the end of Construction Unit No.2 (CU#2), November 2000.

# II. Inspection Purpose and Procedures

The purpose of performing an annual inspection is to evaluate the constructed project features, identify any deficiencies, prepare a report detailing the condition of such features, and to recommend corrective actions needed, if any. Should it be determined that corrective actions are needed, CPRA shall provide, in report form, a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan, 2002). The annual inspection report also contains a summary of maintenance projects undertaken since the constructed features were completed and an estimated project budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year budget projections for operation and maintenance of the GIWW to Clovelly Hydrologic Restoration (BA-02) project are shown in Appendix C. A summary of past operation and maintenance projects undertaken since the completion of the project are outlined in Section IV of this report.

An inspection of the GIWW to Clovelly Hydrologic Restoration Project (BA-02) was held on April 20, 2017. In attendance were Darin Lee, Elaine Lear, and Brian Babin with CPRA, Quin

Kinler, Cody Colvin and Doug Baker with NRCS, and Randy Moertle representing the landowners. All attendees met at the Clovelly Canal Boat Launch and the inspection began at approximately 8:30 am and concluded at 11:00 am. The water level at the time of the inspection was recorded from gauge BA-02-57 located in Superior Canal and was determined to be 1.6' NAVD88 at 10:30am.

The field inspection included a complete visual inspection of all constructed features within the project area. Photographs of all project features were taken during the field inspection and are shown in Appendix B. Staff gauge readings were documented and used to estimate approximate water elevations, elevations of rock weirs, earthen embankments, lake-rim dike and other project features at the time of the inspection. One foot was added to the water depths obtained from the handheld fathometer due to the instrument being approximately 12 inches below the water line when the depths were taken.

## III. Project Description and History

Within the GIWW to Clovelly Hydrologic Restoration (BA-02) project, the average rate of change from marsh habitat to non-marsh habitat (including wetland loss to both open water and commercial development) has been increasing since the 1950's (Lear, 2003). The main reasons for wetland deterioration in the project area as reported by NRCS in the Wetlands Value Assessment (WVA) summary are saltwater intrusion, oil field activities, subsidence, lack of sedimentation, and reduced freshwater influx.

The purpose of the GIWW to Clovelly (BA-02) project is to protect intermediate marsh in the project area by restoring natural hydrologic conditions that promote greater use of available freshwater and nutrients. This will be accomplished by limiting rapid water level changes, slowing water exchange through over-bank flow, reducing rapid salinities increases, and reducing saltwater intrusion (Lear, 2003). The project objectives and specific goals outlined in the 2003 Monitoring Plan prepared by CPRA are as follows:

Project Objectives are:

- Protect and maintain approximately 14,948 acres of intermediate marsh. This will be achieved by restoring natural hydrologic conditions that promote greater freshwater retention and utilization, prevent rapid salinity increases, and reduce the rate of tidal exchange.
- Reduce shoreline erosion through shoreline stabilization

The specific goals for the project are:

- Increase or maintain marsh to open water ratios.
- Decrease salinity variability in the project area.
- Decrease the water level variability in the project area.
- Increase or maintain the relative abundance of intermediate marsh plants.
- Promote greater freshwater retention and utilization in the project area.
- Reduce shoreline erosion through shoreline stabilization.
- Increase or maintain the relative abundance of submerged aquatic vegetation (SAV).

The GIWW to Clovelly Hydrologic Restoration project involves the installation and maintenance of structures in two (2) construction units. Construction Unit No.1 and Construction Units No.2 were completed in November 1998 and October 2000, respectively. These structures were designed to reduce the adverse tidal effects in the project area and promote freshwater introduction to better utilize available freshwater and sediment. If these objectives are met, it is anticipated that the rate of shoreline erosion will be reduced and a hydrologic regime, conducive to sediment and nutrient deposition, will encourage the re-establishment of emergent and submergent vegetation in eroded areas and promote a more historic low energy environment. (Lear, 2003)

The principle project features of Construction Unit No.1 include:

- Structure 2 – Fixed crest rock weir with boat bay.
- Structure 4 – Fixed crest rock weir with boat bay.
- Structure 7 – Fixed crest rock weir with boat bay.
- Structure 8 – Rock rip rap channel plug.
- Structure 43 – Rock rip rap channel plug.
- Structure 91 – Rock plug with culvert and flap gate.

The principle project features of Construction Unit No.2 include:

- Structure 1 – Fixed crest rock weir with boat bay.
- Structure 4B – Rock rip rap channel plug.
- Structure 14A – Fixed crest rock weir with barge bay.
- Structure 35 – Variable crest weir, water control structure.
- Structure 90 – Rock rip rap channel plug.
- 5,665 linear ft. of Lake Rim Restoration
- 5,023 linear ft. of Rock Bank Stabilization
- 11,711 linear ft. of Earthen Bank Stabilization.

Structure 35 has an operation component which consists of a ten (10) ft. wide variable crest section housing twelve (12) timber stop logs. As outlined in the special conditions of project permits, Structure 35 is operated in accordance with the following operation schedule:

- Variable Crest Weir – the stop logs will be set at 0.5 ft. BML from April to November and removed from November to April (weir sill level = 2.0 ft. BML) to allow for sediment and nutrient inflow during spring.

Construction of project features occurred in two construction units. Construction Unit No. 1 was completed in October 1997, and Construction Unit No. 2 was completed in October 2000. CPRA and NRCS have agreed that the twenty-year (20-yr) project life would be based on the end of construction date for Construction 2 in October 2000.

# IV. Summary of Past Operation and Maintenance Projects

**Structure Operations:** In accordance with the operation schedule outlined in the Operations and Maintenance Plan and the special conditions of the permit, Structure 35 has been operated during the months of April and November of each year since April 3, 2002. Operations were temporarily suspended in November 2005 due to marsh damage behind the structure following Hurricane Katrina; however, since that time, the marsh material blocking the structure has degraded and settled to the bottom of the channel creating an opening to the interior marsh which enabled structure operations to resume in November 2007.

**Navigation Aids Maintenance:** Below is a short description of repairs, dates and cost associated with the service of the navigational aids located at Structure 14A:

5/16/02 – Automatic Power of Larose, La. performed maintenance and service to repair navigation lights at Structure 14A. Seventeen (17) flash bulbs were replaced at a total cost of $421.50.

12/16/03 – Automatic Power performed maintenance and service to repair navigation lights at Structure 14A. The battery and flash bulbs were replaced in all four (4) navigation lights at a total cost of $2,189.80.

11/4/04 – Automatic Power performed maintenance and service to repair navigation lights at Structure 14A. One (1) lamp changer, one (1) battery and flash bulbs were replaced at a total cost of $922.23.

11/29/06 – CPRA received public bids for a state-wide maintenance contract for inspection, diagnostic testing, and maintenance of twenty-seven (27) navigational aid systems at ten (10) separate locations state-wide. Four (4) of the twenty-seven (27) navigational aid structures included in this contract are located within the GIWW to Clovelly project area at Structure 14A. The state-wide contract was awarded to the lowest bidder, Automatic Power, Inc. of Larose, La., in the amount of $83,424. This contract is a one (1) year contract with an option to extend for another two (2) years. The notice to proceed with inspections, diagnostic testing and maintenance was issued in February 2007. This contract was rebid in 2009 for another three (3) year extension, and was again awarded to the lowest bidder, Automatic Power, Inc. of Larose, LA. The contract bid again in 2013 and has been awarded to Wet Tech Energy, Inc. of Milton, La.

**2012 Maintenance Project:** This project was the first major maintenance event since the completion of the original project. Since the 2008 Annual Inspection of the GIWW to Clovelly Hydrologic Restoration (BA-02) project, a number of deficiencies had been documented that required corrective actions and/or refurbishment. In February 2010, CPRA initiated maintenance of the GIWW to Clovelly Hydrologic Restoration - 2012 Maintenance Project by contracting MWH Americas, Inc. of Baton Rouge to perform the design. Prior to beginning the design, John Chance Surveyors, Inc. of Lafayette was contracted to perform the necessary design surveys to supplement the data obtained from the 2008 surveys. The plans and specifications for the project were completed in May 2011 and were reviewed by both

CPRA and NRCS. The modification to the overall maintenance permit obtained in 2007 to include the breach closure between Structures 4A and 4 was approved and was included the final bid package. The final bid documents were submitted to the Louisiana Office of State Purchase to be bid. The bid process took place in August 2011 and the maintenance project contract along with the bid alternate was awarded to DQSI, Inc. The construction administration and inspection services were being handled by Providence/GSE of Houma, LA. Mobilization of DQSI to the jobsite and work on the breach repairs began in December 2011. Construction of the project was completed in June 2012 and final acceptance was on July 24, 2012. The 2012 Maintenance Project was completed for a total cost of $3,435,923.58, which includes construction by DQSI, surveys by John Chance, E&D by MWH, and administration and inspection by Providence/GSE. A summary of the work completed in the 2012 Maintenance Project is found below:

- Four (4) timber pile clusters and navigational aids replaced on Structure 1
- Three (3) timber pile clusters and navigational aids replaced on Structure 14A
- Approximately 10,600 linear feet of the Lake Rim rock dike refurbished
- Approximately 1,000 linear foot rock dike extension created from Structure 4 to Structure 4A & 4B
- Structure 4A & 4B recapped to original design elevation
- Structure 4 and Structure 2 recapped to original design elevation
- Structure 14A barge bay recapped to original design elevation
- Five (5) breach closures along existing oilfield canals in southern section of the project area

**2015 Maintenance Project** – is the second major maintenance project since the completion of the original project. During the years following the 2012 Maintenance Project, significant erosion of the marsh shoreline occurred between Structures 2 and 4. This area is the only section of marsh shoreline that was not protected by a hardened structure along the shoreline of Bay L' Ours between Structure 4A and Breton canal. Additional funding was secured from the CWPPRA Task Force to increase the O&M budget to accommodate the cost for remedial action in this area. The project consists of approximately 1,750 linear feet of rock dike along the existing shoreline to close the unprotected area between Structures 2 and 4. The contract was awarded to DQSI, LLC of Covington in the amount of 1,457,850 and the project was substantially completed in May 2017.

# V. Inspection Results

## CONSTRUCTION UNIT NO.1

### Structure 2 – Fixed Crest Rock Weir with Boat Bay

Structure 2 was recapped with 130# class riprap to its original design elevation as part of the 2012 Maintenance Project. Soundings taken during the inspection along the boat bay section of weir averaged 5.0' depth. Based on the staff gauge reading in Superior Canal and soundings taken over the structure, the adjusted elevation is estimated to be -4.4' NAVD. The as-built drawings from 2012 show a final constructed elevation of -5.0' NAVD. Since it is

unlikely that the elevation has increased since the previous inspection, we believe that there was an error in the elevation reading from the handheld fathometer and that the data is incorrect. The weir section located closest to the south bank of the structure appears to be stable and no obvious settlement was observed since the structure was capped in 2012. Based on staff gauge readings, the crest of the south section was approximately 3.0'. The north weir section did seem to settle slightly since it was recapped in 2012. Based on the existing staff gauge, it appears that the elevation of the crest of north weir section was approximately +2.5'. The warning signs on Structure 2 are in good condition and do not require replacement. The structure was in fair to good overall condition and no maintenance will be required at this time. (See Appendix B, Photos 16 through 18)

**Structure 4 – Fixed Crest Rock Weir with Boat Bay**

Structure 4 was also capped with riprap in 2012 to bring the crest to its original elevation. At the inspection, Structure 4 was in good condition with no visual signs of settlement or rock displacement. On previous inspections, it was noted that the marsh on the southern tie-in continues to erode and has detached from the rock weir. The southern tie-in has been repaired and the rock dike extended along the shoreline to connect to Structure 2 under the 2015 Maintenance Project. It was also noted previously that the warning signs have deteriorated and need replacement. CPRA is currently receiving bids for a multi-project sign replacement project which includes signs along Structure 4 and 4A of the GIWW to Clovelly (BA-02) project. We expect the sign replacement project to be completed by the end of September 2017. (See Appendix B, Photo 14 and 15)

**Structure 7– Fixed Crest Rock Weir w/ Boat Bay**

Structure 7 appeared to be in fair condition with noticeable settlement of the rock riprap material on each side of the boat bay. Based on water elevations from the CRMS station along Superior Canal, we estimated the crest elevation of the rock weir on both sides of the boat bay to be between 1.5' and 1.6'. There was no visual damage to the weir or erosion around the embankment tie-ins. Soundings taken at the boat bay indicated a water depth of approximately 6.8', which would correspond to an elevation of -5.2' after adjustments. The original as-built drawings show the crest elevation at the boat bay was constructed to -4.4'. Settlement since construction of Structure 7 is estimated to be approximately 1.0'. We are not recommending maintenance of Structure 7 at this time. All warning signs and their supports appear to be in good condition. (See Appendix B, Photos 5 through 7)

**Structure 8– Rock Riprap Weir**

Structure 8 is a small rock weir with a boat bay located just north of Structure 7. The existing channel is very narrow and access is limited. From a distance, the structure appears to be in fair condition with minimal settlement of the riprap material and no erosion or washouts around the bank tie-ins. This structure was originally constructed with a steel gate to prevent access into the interior marsh, but this gate was destroyed during Hurricanes Gustav and Ike. The landowner had replaced the steel gate with floating barrels. Currently, the barrels are gone and the structure is open to access. There are no plans for maintenance of the structure or to replace the gate or barrels. (See Appendix B, Photos 8)

**Structure 43 – Rock Riprap Channel Plug**

Structure 43 is not visible from the canal due to heavy vegetation and water hyacinth blocking the structure. During past inspections, it was noted that a small opening had developed on the east side of the structure connecting the interior marsh to the canal. We were unable to locate the opening or see any water flow around the structure. Since the breach has been identified on previous inspections, we will continue to look for water flow around the structure on future inspections. All warning signs and support structures appear to be in good condition, and at this time, there are no recommendations for maintenance. (See Appendix B, Photo 39)

**Structure 91 – Rock Plug with Culvert and Flapgate**

Overall, Structure 91 rock plug appeared to be in good condition. The rock structure was covered with heavy vegetation and woody debris; however, it appears to be in good condition with no obvious settlement or breaches around the structure. The timber piles supporting the corrugated metal pipe and flap gate was in fair condition and appeared to operational. There are no plans for maintenance of Structure 91 at this time. (See Appendix B, Photos 34)

## CONSTRUCTION UNIT NO.2

**Structure 1 – Fixed Crest Rock Weir w/ Barge Bay**

Overall, Structure 1 appeared to be in good condition with no visual signs of settlement or damage of the rock structure or erosion along the bank tie-ins. The four (4) timber dolphin structures at the entrance of the barge bay opening were replaced in 2012 and are in good condition. The directional arrow signs are knocked down or turned inward and should be replaced during the next maintenance event. (See Appendix B, Photos 36 through 38)

**Structure 4A & 4B – Rock Riprap Channel Plug**

Structures 4A and 4B were recapped in 2012 to its original design elevation. A rock dike closure was also constructed from Structure 4A to Structure 4 to close a large opening in the marsh. The rock dike closure was approximately 1,000 linear feet long and was built to a +3.5 elevation. Structure 4A, 4B and the rock dike closure were all in good condition with little or no visual signs of settlement. We did notice erosion on the north side of Structure 4B where the marsh has retreated. This is a normal occurrence where a hardened structure abruptly ends. We will continue to monitor the northern end of Structure 4B on future site visits. The warning signs have deteriorated and are in need of replacement. CPRA is currently bidding a sign replacement project which includes the replacement of these signs. There are no recommendations for additional maintenance at this time. (See Appendix B, Photos 9 through 13)

**Structure 14A – Fixed Crest Rock Weir with Barge Bay**

Structure 14A was also rehabilitated in 2012. The structure was recapped with a heavier 250# class rock riprap to the original design elevation of -6.5’ at the barge bay to prevent further scouring of the channel bottom, and +4.0’ along the first 100’ of the crest on both sides of the barge bay. Depth soundings were taken along the center of the barge bay which indicated that the water depths were approximately 6.8’. Based on this depth, the adjusted bottom sill elevation of the barge bay was approximately -6.2’. Based on our observations, the structure appears to be in good condition, as there is no visible settlement of the rock since 2012. The

navigation aid structures and warning signs also appear to be in good condition. The south bank tie-in to the shoreline is experiencing slight erosion, but appears to be stable. There are no recommendations for maintenance of Structure 14A at this time. (See Appendix B, Photos 1 through 4)

**Structure 35 – Variable Crest Weir, Water Control Structure**

Overall, Structure 35 has moderate corrosion on the bulkhead cap, handrails and deck. The stop logs, cables, signs and supports appear to be in good condition and operable. At the time of inspection the channel from the weir to the interior marsh was open and there appeared to be adequate flow through the interior marsh and structure. The embankment tie-ins also appear to be in good condition with no erosion or washouts. We are not recommending any repairs or corrective actions at this time. (See Appendix B, Photos 26 through 29)

**Structure 90 – Rock Riprap Channel Plug**

Structure 90 was difficult to access and view due to heavy vegetation on the structure and in the canal leading to the structure. From what we were able to view, the structure appeared to be in good condition with no obvious settlement or breach around the bank tie-ins. The warning signs and supports were also in good condition. There are no recommendations for maintenance of Structure 90 at this time. (See Appendix B, Photos 35)

**Lake Rim Restoration**

The lake rim structure was also refurbished in 2012 and appeared to be in good condition. The existing rock structure was recapped to a crest elevation of +3.5’ to 4.0’ along the north bank of Breton Canal and Bay L’ Ours to Structure 2. There are no visual signs of settlement or displacement of the rock along the structure and the warning signs are in good condition. There are no recommendations for maintenance at this time. (See Appendix B, Photos 18 through 25)

**Earthen Bank Stabilization**

There were five (5) breaches repaired during the 2012 Maintenance Project. Breach 1 was located along the north bank of Breton Canal just southwest of the first location canal from Bay L’ Ours and was approximately 20’ wide. Breach 2 was located along the northeast bank of the second location canal north of Breton Canal and was approximately 10’ wide. Breach 3 was located on the south bank of the same location canal as Breach 2 and was approximately 25’ wide. Breach 4 was located on the west bank of an oilfield canal that intersects Breton Canal east of Structure No. 1 and was approximately 30’ wide. Another breach, designated as Breach 5, was discovered at the end of a dead end oilfield slip south of Breach 4. The breaches were closed by using material from the adjacent canal bottoms to reconstruct the earthen dike. The material was allowed to dry before it was shaped, seeded, and fertilized. All breach repairs appear to be in good condition with no signs of settlement or erosion. We did note a large breach along the north bank of Breton Canal east of Breach Repair 1. Since this is the one of the only deficiency noted during this inspection, we will continue to monitor this area and offer recommendations at a later date as to necessary remedial action. (See Appendix B, Photos 30 through 33)

# VI. Conclusions and Recommendations

Overall, the GIWW to Clovelly Hydrologic Restoration (BA-02) Project appears to be in good condition with only minor deficiencies noted during the inspection. Deficiencies included approximately five (5) damaged warning signs located in the vicinity of Structures 4, 4A-4B, and along the newly constructed breach closure between Structures 4 and 4A. CPRA is currently bidding a contract for replacement of the damaged warning signs. There is a large opening in the north bank of Breton Canal near Breach Repair 1 that was completed in 2012. CPRA will continue to monitor this breach and make recommendations for remedial action as needed. Overall, the project is in good condition considering that it is approaching the 20 year life and is functioning as intended.

**References:**

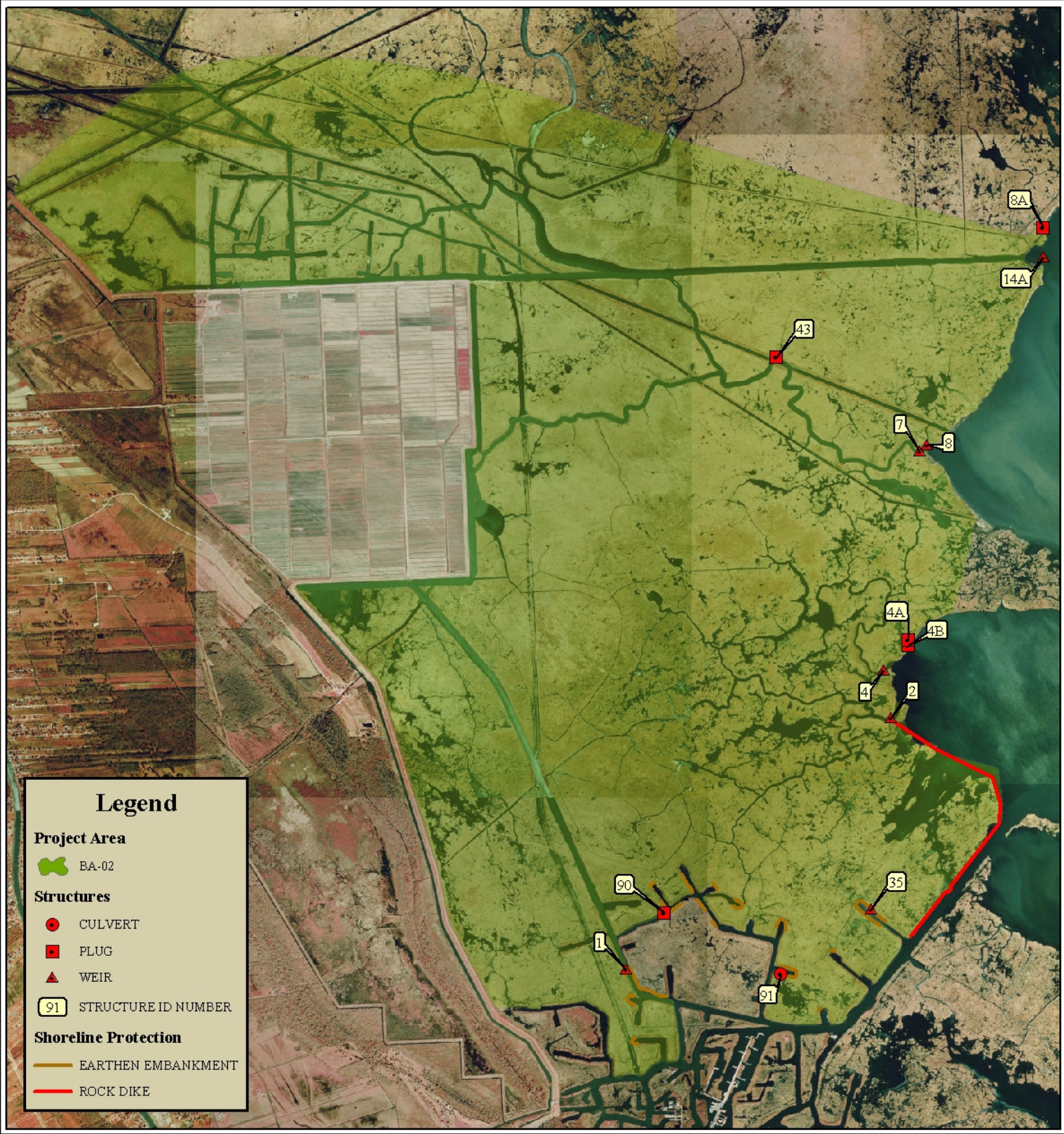
Lear, E. 2003. *Monitoring Plan for the GIWW (Gulf Intracoastal Waterway) to Clovelly Project (BA-02)*, Louisiana Department of Natural Resources, Coastal Restoration Division, 24 pp.

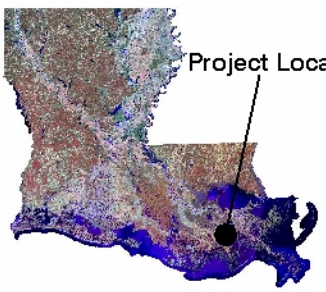
CPRA, Pyburn & Odom, Inc. 2002. *Operation, Maintenance and Rehabilitation Plan for the GIWW to Clovelly Hydrologic Restoration Project (BA-02)*. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, Louisiana, Pyburn & Odom, Inc. Baton Rouge. 8 pp plus Attachments.

Kinler, 2006. *Memorandum, GIWW to Clovelly (BA-02) – Inspection of Little Lake Shoreline South of Site 14A.* Natural Resource Conservation Service, Baton Rouge, La. 5 pp.

# Appendix A

# Project Features Map




# BA02 - GIWW to Clovelly Hydrologic Restoration

## PROJECT FEATURES MAP

0 1 2 Miles

0 2.5 5 Kilometers

N

Data Source:

LA Dept. Natural Resources
Coastal Engineering Division
Thibodaux Field Office

1998 DOQQ

Date: May 26, 2005

Map ID: 2005-TFO-029

# Appendix B

# Photographs

Photo No.1 – view of navigational aid and rock weir with barge bay across Clovelly Canal at Little Lake.


Photo No.2 – view of rock weir along Little Lake on the north side of Structure 14A.


Photo No.3 – view of rock weir and navigational aid along shoreline of Little Lake on south side of Structure 14A.

Photo No.4 – view of rock weir to bank tie-in on the south side of Structure No.14A.

Photo No.5 – view of rock weir with boat bay (Structure 7) from Little Lake.


Photo No.6- view of the rock weir to shore tie-in on the north side of Structure No.7.


Photo No.7 – view of the rock weir to shore tie-in on the south side of Structure No.7.


Photo No.8 – view of the small rock weir (Structure 8) along a channel from the interior marsh.

Photo No.9 – view of the northern end of the rock plug (Structure 4A and 4B) along the shoreline of Bay L' Ours.

Photo No.10 – view of the rock plug (Structures 4A and 4B) along the shoreline of Bay L' Ours.

Photo No. 11 – view of the rock closure structure between Structures (4A/4B) and the rock weir with boat bay (Structure 4).


Photo No.12 – view of the warning sign at the fish dip along the rock closure structure between Structures 4A/4B and 4.


Photo No.13 – view of the warning sign at the fish dip along the rock closure structure between Structures 4A/4B and 4.


Photo No.14 – view of the rock weir with boat bay at Structure 4 from Bay L' Ours.

Photo No.15 – view of the southern end of Structure 4 and new dike under construction.

Photo No.16 – view of rock weir with boat bay at Structure 2 from Bay L' Ours.

Photo No. 17 – view of the northern side of the rock weir with boat bay at Structure 2.


Photo No. 18 – view of the southern side of the rock weir with boat bay at Structure 2.

Photo No. 19 – view of the shoreline protection (lake rim) between Structure 2 and Breton canal.

Photo No. 20 – view of the shoreline protection (lake rim) between Structure 2 and Breton canal.

Photo No. 21 – view of the shoreline protection (lake rim) between Structure 2 and Breton canal.

Photo No. 22 – view of the shoreline protection (lake rim) between Structure 2 and Breton Canal.

Photo No. 23 – view of the shoreline protection (lake rim) along Breton Canal.

Photo No. 24 – view of the shoreline protection (lake rim) along Breton Canal.

Photo No. 25 – view of the north termination of the shoreline protection (lake rim) along Breton Canal.


Photo No.26 – view of the variable crest weir (Structure 35) located along an existing location canal off of Breton Canal.


Photo No.27 – view of boom system for moving stop logs and the interior marsh behind Structure 35.


Photo No.28 – view of the sheet pile wall tie-in to bank on the north side of Structure 35.


Photo No.29 – view of the stop log bay and sheet pile wall tie-in to bank on the south side of Structure 35.

Structure No.30 – view of breach in the north bank of Breton Canal near the location canal where Structure 35 is located.

Photo No.31 – view of the breach repair performed in 2012 along the north bank of Breton Canal.

Photo No.32 – view of breach repair along north bank of second location canal from Bay L' Ours.


Photo No.33 – view of breach repair along south bank of second location canal from Bay L' Ours.


Photo No.34 – view of rock plug with flap-gated culvert (Structure 91) along an interior channel.


Photo No. 35 – view of rock plug (Structure 90) along interior channel near southern boundary of project.


Photo No.36 – view of timber pile dolphins and signs at the entrance to the barge bay at Structure 1.


Photo No.37 – view of west side bank tie-in of rock weir at Structure 1.


Photo No.38 – view of east side bank tie-in of rock weir at Structure 1.


Photo No.39 – view of rock plug and warning sign at Structure 43.

# Appendix C

# Three Year Budget Projection

## GIWW TO CLOVELLY, PHASES 1 & 2 / BA-O2 / PPL1

## Three-Year Operations & Maintenance Budgets 07/01/2017 - 06/30/20

| Project Manager | O & M Manager | Federal Sponsor | Prepared By |
|---|---|---|---|
| | *A. Ledet* | *NRCS* | *B.Babin* |

| | 2017/2018 | 2018/2019 | 2019/2020 |
|---|---|---|---|
| ***Maintenance Inspection*** | $ 19,431.00 | $ 20,015.00 | $ 20,614.00 |
| ***Nav. Aid Inspection/Maint.*** | $ 4,000.00 | $ 5,000.00 | $ 5,000.00 |
| ***Structure Operation*** | $ 10,000.00 | $ 10,000.00 | $ 10,000.00 |
| ***State Administration*** | $ 13,930.00 | $ - | $ - |
| ***Federal Administration*** | $ - | $ - | |
| ***Maintenance/Rehabilitation*** | | | |

17/18 Description: 2015 Maintenance Project, Structure Operations and Nav Aid Maintenance

| | |
|---|---|
| *E&D* | $ - |
| *Construction* | $ 1,334,350.00 |
| *Construction Oversight* | $ 64,270.00 |
| *Sub Total - Maint. And Rehab.* | $ 1,398,620.00 |

18/19 Description: Navigation aid maintenace and structure operations

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

19/20 Description: Navigation aid maintenance and structure operations

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

| | 2017/2018 | 2018/2019 | 2019/2020 |
|---|---|---|---|
| ***Total O&M Budgets*** | **$ 1,445,981.00** | **$ 35,015.00** | **$ 35,614.00** |
| **Total O&M Budget 2017 through 2020** | | | **$ 1,516,610.00** |
| **Unexpended O&M Budget** | | | **$ 1,527,371.00** |
| **Remaining O&M Budget (Projected)** | | | **$ 10,761.00** |

Unexpended budget includes a deduction for NRCS M IPR in the amount of $86,456

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

**Project: BA-02 GIWW to Clovelly Hydrologic Restoration Ph. 1 &2**

**FY 17/18 –**

| | | |
|---|---|---|
| CPRA Administration (2015 Maintenance Project) | | $ 13,930 (est. remaining) |
| Inspection/Report/Maintenance Admin. | | $ 19,431 |
| Structure Operations: | | $ 10,000 |
| Maintenance: | | $1,402,620 |
| E&D: | $ 0 | |
| Construction: | $1,334,350 | |
| Construction Oversight: | $ 64,270 | |
| General Maintenance: | $ 4,000 | |

**Operation and Maintenance Assumptions:**

Structure Operations: water control structure operated twice annually for a total of $5,000 per operation. (2)($5,000) = **$10,000**
General Maintenance: Water control structure, navigation aids repair. Construction: **$4,000**.

**2015 Maintenance Project** – Composite Rock Dike along shoreline between Structures 2 and 4. Below is the estimated project cost this maintenance project:

**Construction Cost:**
DQSI Bid: $1,457,850.16
Paid to date: $123,500
Remaining Balance: $1,334,350

**Engineering, Design, Construction Oversight**

| | |
|---|---|
| Engineering/Design: | $Completed |
| Surveying: | $Completed |
| Permiting: | $Completed |
| Construction Inspection/Oversight: (Stanley Consultants proposal) | $ 64,270 (Remaining) |

**Total E&D and Construction Oversight:** $ 64,270

**Estimated Budget Remaining:** **$ 1,398,620**
(2017 Maintenance Project)

**CPRA Direct Costs**

Structure Operations and General Maintenance:

| | |
|---|---|
| Engineer 4 – 30 hrs @ $49/hr. = | $ 1,470 |
| Engineer 6 – 5 hrs @ $78/hr. = | $ 390 |
| | $ 1,860 |

| | |
|---|---|
| 2015 Maintenance Project: | |
| Engineer 4 – 60 hrs. @ $49/hr. = | $ 2,940 |
| Engineer 6 – 10 hrs. @ $78/hr. = | $ 780 |
| Engineer 7 – 5 hrs @ $84/hr. = | $ 420 |
| | $ 4,140 |
| Inspection: | |
| CPRA Engineer 3 – 12 hrs@ $49/hr.: | $ 588 |
| CPRA Engineer 6 – 12 hrs @ $78/hr. | $ 936 |
| CPRA Scientist 4 – 10 hrs @ $56/hr. | $ 560 |
| | $ 2,084 |
| Report: | |
| CPRA Engineer 6 – 30 hrs. @ $78/hr. | $ 2,340 |
| | |
| Total Direct CPRA Costs: | **$10,424** |

**CPRA Indirect Costs**

| | |
|---|---|
| Structure Operations and General Maintenance: | |
| Engineer 4 – 30 hrs @ $126/hr. = | $ 3,780 |
| Engineer 6 – 5 hrs @ $145/hr. = | $ 725 |
| | $ 4,505 |
| 2015 Maintenance Project: | |
| Engineer 4 – 60 hrs. @ $126/hr. = | $ 7,560 |
| Engineer 6 – 10 hrs. @ $145/hr. = | $ 1,450 |
| Engineer 7 – 5 hrs @ $156/hr. = | $ 780 |
| | $ 9,790 |
| Inspection: | |
| CPRA Engineer 3 – 12 hrs@ $126/hr.: | $ 1,512 |
| CPRA Engineer 6 – 12 hrs @ $145/hr. | $ 1,740 |
| CPRA Scientist 4 – 10 hrs @ $104/hr. | $ 1,040 |
| | $ 4,292 |
| Report: | |
| CPRA Engineer 6 – 30 hrs. @ $145/hr. | $ 4,350 |
| | |
| Total Indirect CPRA Costs: | **$22,937** |

**FY 18/19 –**

| | | |
|---|---|---|
| CPRA Administration | | $ 20,015 |
| Structure Operations: | | $ 10,000 |
| Maintenance: | | $ 5,000 |
| E&D: | $ 0 | |
| Construction: | $ 0 | |
| Construction Oversight: | $ 0 | |
| General Maintenance: | $ 5,000 | |

**Operation and Maintenance Assumptions:**

Structure Operations: water control structure operated twice annually for a total of $5,000 per operation. (2)($5,000) = $10,000
General Maintenance: Water control structure, navigation aids repair. Construction: $5,000.

**CPRA Direct Costs**

| | |
|---|---|
| Structure Operations and General Maintenance: | |
| $1,860 x 3% inflation = | $1,916 |
| Inspection: | |
| $2,084 x 3% inflation = | $2,147 |
| Report: | |
| $2,340 x 3% = | $2,410 |
| Total Direct CPRA Costs: | **$6,473** |

**CPRA Indirect Costs**

| | |
|---|---|
| Structure Operations and General Maintenance: | |
| $4,505 x 3% = | $ 4,640 |
| Inspection: | |
| $4,292 x 3% = | $ 4,421 |
| Report: | |
| $4,350 x 3% = | $ 4,481 |

Total Indirect CPRA Costs: **$13,542**

**FY 19/20 –**

| | | |
|---|---|---|
| CPRA Administration | | $ 20,614 |
| Structure Operations: | | $ 10,000 |
| Maintenance: | | $ 5,000 |
| E&D: | $ 0 | |
| Construction: | $ 0 | |
| Construction Oversight: | $ 0 | |
| General Maintenance: | $ 5,000 | |

**Operation and Maintenance Assumptions:**

Structure Operations: water control structure operated twice annually for a total of $5,000 per operation. (2)($5,000) = $10,000
General Maintenance: Water control structure, navigation aids repair. Construction: $5,000.

**CPRA Direct Costs**

| | |
|---|---|
| Structure Operations and General Maintenance: | |
| $1,916 x 3% inflation = | $1,973 |
| Inspection: | |
| $2,147 x 3% inflation = | $2,211 |
| Report: | |
| $2,410 x 3% = | $2,482 |
| Total Direct CPRA Costs: | **$6,666** |

**CPRA Indirect Costs**

| | |
|---|---|
| Structure Operations and General Maintenance: | |
| $4,640 x 3% = | $4,779 |
| Inspection: | |
| $4,421 x 3% = | $4,554 |
| Report: | |
| $4,481 x 3% = | $4,615 |

Total Indirect CPRA Costs: **$13,948**

**2016-2019 Accounting**

| | |
|---|---|
| Current O&M Funding (Lana Report) | $5,102,119 |
| Expenditures from LAGov | $3,488,292 |
| NRCS MIPR | $ 86,456 |

**Unexpended O&M Budget: $1,527,371**