



Coastal Protection and
Restoration Authority of Louisiana

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

2014 Annual Inspection Report

for

**GIWW/ CLOVELLY HYDROLOGIC
RESTORATION**

State Project Number BA-02
Priority Project List 1

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Lafourche Parish

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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 (1st) Priority Project List. (CPRA O&M Plan, 2002).

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 May 5th, 2014 under clear skies and calm conditions. In attendance were Travis Byland, Adam Ledet and Brian Babin with CPRA, and Quin Kinler with NRCS. All attendees met at the

Clovelly Canal Boat Launch and the inspection began at approximately 11:30am and concluded at 1:30pm.

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, where available, were documented and used to estimate approximate water elevations, elevations of rock weirs, earthen embankments, lake-rim dike and other project features.

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 Unit No.1 has a twenty-year (20 year) project life beginning in November 1997. The twenty-year (20 year) project life of Construction Unit No.2 began 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 is 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 have been 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 has been approved and is 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 are 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

V. Inspection Results

CONSTRUCTION UNIT NO.1

Structure 2 – Fixed crest rock weir with boat bay

Structure 2 is a three (3) level fixed crest weir constructed of rock riprap material. Previous inspections have shown that settlement has occurred along the structure, in both of the sections between the bank and the boat bay, and also the bottom sill of the boat bay. This structure was recapped with 130# class rip-rap to its original design elevation as part of the 2012 Maintenance Project. During the inspection, there were no areas where settlement was observed since the end of 2012 Maintenance Project. The warning signs and navigational aids on Structure 2 are in good condition and do not require maintenance at this time.

Structure 4 – Fixed crest rock weir with boat bay

Structure 4 is also a three (3) level fixed crest weir constructed of rock riprap material. The structure was recapped with 130# class rip-rap to its original design elevation as part of the 2012 Maintenance Project. During the inspection, there were no areas where settlement was observed since the completion of the 2012 Maintenance Project. There has been significant erosion observed on the southern end of the structure since the end of the 2012 Maintenance Project. Only a small strip of marsh embankment approximately 30 feet wide is preventing the structure from a full breach on the south side. This potential breach will be addressed by the 2014 Maintenance Project has been authorized. The warning sign on the southern end of the structure appears to be partially disconnected from its supports, as the top of the sign remained secure to the support but the bottom of the sign could be observed moving with the wind. It is recommended this warning sign be refastened to the support before it becomes completely detached. The other newly installed warning sign and its support timber are in good condition and do not require maintenance at this time.

As previously reported, there was a breach identified in the western shoreline of Bay L'Ours between Structure 2 and Structure 4. The breach is believed to be caused by the retreating shoreline reaching the edge of an interior pond. There are no recommendations for repair at this time; however, this breach will continue to be monitored on future inspections.

Structure 7– Fixed crest rock weir w/ boat bay

Structure 7 appeared to be in fair condition with some settlement of the rock riprap material but no visual damage to the weir or erosion around the embankment tie-ins. Because the settlement of the Structure 7 has been minor and uniform causing no breaching of the structure, it was not included in the 2012 Maintenance Project, but the structure will continue to be monitored during future inspections. All warning and navigational signs and their supports appear to be in good condition.

Structure 8– Rock rip-rap weir

Structure 8 is a small rock weir with a boat bay located just north of Structure 7. This 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. Since the gate was destroyed, the landowner has installed a series of floating barrels to restrict access. At the time of this inspection, the floating barrels were not in place to restrict access. These floating barrels will continue to be monitored during future inspections.

Structure 43 – Rock rip-rap channel plug

We were unable to visually inspect Structure 43 due to vegetation blocking the visibility of the structure. A small breach that had formed around the eastern end of the rock plug allowing water to flow around the structure was identified during previous inspections. This breach was unable to be located due to the vegetation that has grown on the structure, but will continue to be monitored during future inspections. All warning signs and support structures appear to be in good condition, and at this time, there are no recommendations for maintenance.

Structure 91 – Rock plug with culvert and flap gate

Structure 91 rock plug appeared to be in good overall condition. There were no signs of rock settlement or erosion around the embankment tie-ins. Previous inspections revealed the sheet metal covering the timber piles supporting the corrugated metal pipe were rusted and corroded. The newly installed galvanized timber pile caps that were installed as part of the 2012 Maintenance project appeared to be in good condition. A large piece of debris was holding the flap gate in the open position. We attempted to remove the debris as best as possible so that the gate could return to the closed position. Also, the warning sign for the structure has been damaged by vandals as it appears the sign has endured several shots from a shotgun. Because the sign is still legible, there are no recommendations for maintenance at this time, but it will continue to be monitored on future inspections for further damage.

CONSTRUCTION UNIT NO.2

Structure 1 – Fixed crest rock weir w/ barge bay

Structure 1 appeared to be in good overall condition with no observable settlement or displacement of the rock riprap material. Previous inspections had found considerable damage to the four (4) timber pile dolphins at the opening of the barge bay. This damage was believed to be caused by an oilfield barge navigating the opening of the structure and includes the vertical piles splitting, piles displaced from original position, scarring on the surface of the piles, and the complete destruction of one of the four dolphin structures. Due to the poor condition of the timber dolphins, they were replaced and fitted with new signs as part of the 2012 Maintenance Project. Also, as a precaution, the timber dolphins were installed one (1) foot further apart to allow barges to move more freely through the barge bay without future damage to the structure. At the time of the inspection, the timber pile dolphins appeared to be in good condition with no signs of damage. There are no recommendations for maintenance at this time.

Structure 4A & 4B – Rock rip-rap channel plug

As part of the 2012 Maintenance Project, Structure 4A & 4B was recapped to its original design elevation and extended to Structure 4. The 2008 survey profile showed this structure had settled approximately 1.5' to 2.0' along the entire length of the structure. In addition to the settlement, and partially caused by hurricanes Gustav and Ike, the marsh around the plug had suffered extensive erosion. On the south side of the plug there was a very large opening in the shore line approximately 1,000 feet wide. The Maintenance Project recapped the existing structure to an elevation of 3.5' NAVD88 using 130# class rock riprap and also closed the opening by extending the structure approximately 1,000 linear feet to the embankment tie-in of Structure 4 at an elevation of 3.5' NAVD88 using 130# class rock riprap. During construction of the extension, a change order allowed the contractor to install two warning signs with timber supports in the location of the fish dips. At the time of inspection, there was no observed settlement or displacement of Structure 4A & 4B or the extension since the end of the 2012 Maintenance Project. There are no recommendations for maintenance at this time.

Structure 14A – Fixed crest rock weir with barge bay

Structure 14A was also rehabilitated during the 2012 Maintenance Project. Observations from previous annual inspections and supporting data from the 2008 survey showed severe settlement and scour near the bottom of the barge bay with depths ranging from the original constructed height of -6.5' NAVD88 to as low as -15.0' NAVD88. During the Maintenance Project, the structure was recapped with a heavier 250# class rock riprap to prevent further scouring to the original design elevation of -6.5' NAVD88 at the bottom of the barge bay and +4.0 at the crest of the weir. At the time of the inspection the structure appears to be in good condition, as there is no observed settlement of the rock since the end of construction. As mentioned in previous inspections, the timber dolphin piles were in poor condition with visible cracks and surface damage. Three of the timber dolphin piles and their navigational aids were replaced as part of the 2012 Maintenance Project. The timber pile on the southeast side of the structure was replaced in 2006 and remains in good condition. There are no recommendations for maintenance at this time.

Structure 35 – Variable crest weir, water control structure

Structure 35 is in overall good condition with some signs of minor 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.

Structure 90 – Rock rip-rap channel plug

Structure 90 appears to be in overall good condition with no rock settlement/ displacement or erosion around the embankment tie-ins. All warning signs and supports are in good condition also. There are no recommended corrective actions at this time.

Lake Rim Restoration

The Lake Rim structure was recapped as part of the 2012 Maintenance Project. As indicated on previous inspections and surveys, the rock dike has displayed minor to moderate settlement along the entire length of the structure. The most notable segments included segments between Stations 7+00 and 13+00, 36+00 and 41+00, and the intersection near the mouth of Breton Canal. As part of the maintenance project, the Lake Rim structure was recapped with 130# class rock riprap to its original design elevation of +3.0' NAVD88 from the north bank along Breton Canal to southern embankment tie-in of Structure 2. During construction, the Lake Rim structure did not settle from the weight of the extra rock as much as anticipated, which left the contractor with an excess of rock riprap inside of the bid quantity. This additional rock was used to place a second lift of rock along the north bank of Breton Canal, Structure 4, and the Lake Rim structure. The 2012 Maintenance Project as-built drawings show the constructed elevation of the Lake Rim structure to be approximately +3.5' NAVD88 to +4.0' NAVD88 after the second lift. At the time of inspection, there appeared to be no further settlement of the structure since the end of maintenance. There are no recommendations for maintenance at this time.

Earthen bank stabilization

There were five (5) breaches included in the 2012 Maintenance Project. Breach 1 is located along the north bank of Breton Canal just southwest of the first location canal from Bay L' Ours and is approximately 20' wide. Breach 2 is located along the northeast bank of the second location canal north of Breton Canal and is approximately 10' wide. Breach 3 is located on the south bank of the same location canal as Breach 2 and is approximately 25' wide. Breach 4 is located on the west bank of an oilfield canal that intersects Breton Canal east of Structure No. 1 and is 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 in situ material from the adjacent canal bottoms to reconstruct the earthen dike. The material was allowed to dry before it was shaped, seeded, and fertilized. At the time of the inspection all of the breach repairs appeared to be in good condition with full vegetation and no signs of settlement. Breach 1 did show some signs of erosion on its northeast side facing Breton Canal. This erosion does not seem to be worsening since the last inspection. Due to the minor erosion not affecting the overall stability of the breach repair, there are no recommendations for maintenance at this time; however this location will continue to be monitored on future annual inspections.

VI. Conclusions and Recommendations

The GIWW to Clovelly Hydrologic Restoration Project (BA-02) appears to be in good overall condition. There were no significant changes to the project structures observed since the end of the 2012 Maintenance Project, which was designed and constructed to rehabilitate any deficiencies found during previous annual inspections. During the 2014 Annual Inspection, only minor deficiencies of the project structures were observed. One area of concern that was also noted in the 2013 Annual Inspection is a small breach on the east side of Structure 43 and another breach on the west shoreline of Bay L'Ours between Structure 2 and Structure 4. While there are no recommendations for maintenance in these areas at this time, they will continue to be monitored on future annual inspections to determine if any repairs will be needed. The thinning embankment on the south side of Structure 4 is an area of major concern as a full breach would make the structure ineffective. At the time of this report, CPRA and NRCS are currently discussing options for preventative maintenance that would prevent a breach of this structure from occurring.

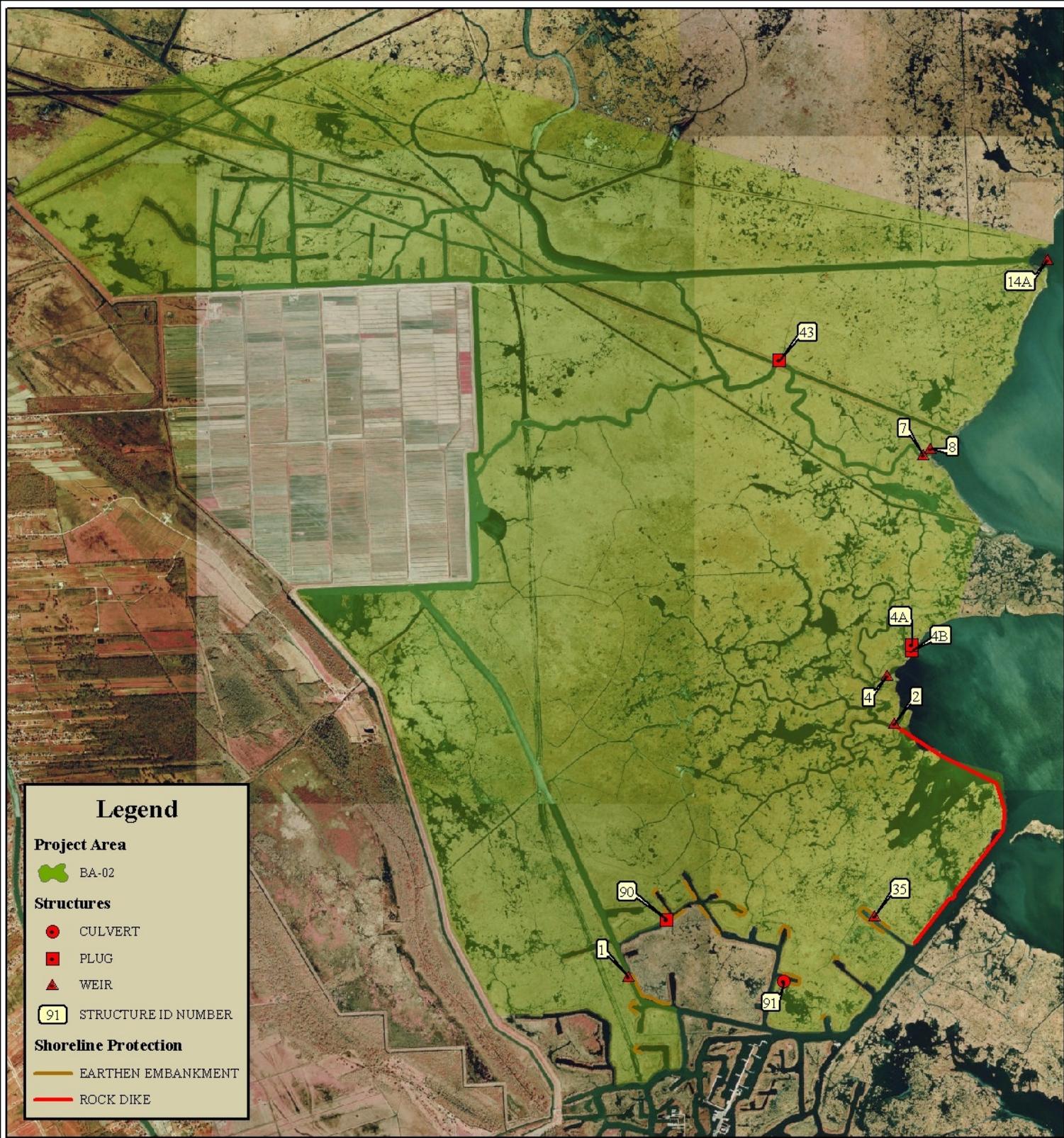
References:

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.

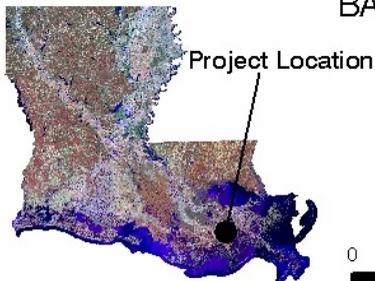
CPRA, Pyburn & Odom, Inc. 2002. *Operation, Maintenance and Rehabilitation Plan for the GIWW to Clovelly Hydrologic Restoration Project (BA-02)*. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, Louisiana, Pyburn & Odom, Inc. Baton Rouge. 8 pp plus Attachments.

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.

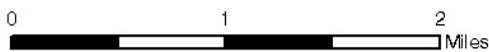
Appendix A
Project Features Map



BA02 - GIWW to Clovelly Hydrologic Restoration



PROJECT FEATURES MAP



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

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Photo 1: View of vegetation covering Structure 43 looking north.



Photo 2:View of Structure 43 looking north. The rock plug is not visible through the vegetation.

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Photo 3: Overall view of Structure 1 rock riprap weir, looking southwest



Photo 4: Close up view of the embankment tie-ins on the east side of Structure 1

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Photo 5: Close up view of the embankment tie-ins on the west side of Structure 1



Photo 6: View of Breach Closure No. 5 which was part of the 2012 Maintenance Project

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Photo 7: View of Breach Closure No. 5 which was part of the 2012 Maintenance Project



Photo 8: View of Breach Closure No. 4 which was part of the 2012 Maintenance Project

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Photo 9: Overall view of Structure 91 rock plug with culvert and flap gate, looking southwest



Photo 10: Close up view of Structure rock plug

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Photo 11: Close up of gated culvert at Structure 91. Debris has the gate blocked open.



Photo 12: Overall view of Structure 90 rock plug, looking southwest

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Photo 13: Close up view of the embankment tie-in on the southeast side of Structure 90



Photo 14: Close up view of the embankment tie-in on the northwest side of Structure 90

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Photo 15: View of Breach Closure No. 2 which was part of the 2012 Maintenance Project



Photo 16: View of Breach Closure No. 2 which was part of the 2012 Maintenance Project

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Photo 17: View of Breach Closure No. 2 which was part of the 2012 Maintenance Project



Photo 18: View of Breach Closure No. 3 which was part of the 2012 Maintenance Project

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Photo 19: View of Breach Closure No. 3 which was part of the 2012 Maintenance Project



Photo 20: View of Breach Closure No. 3 which was part of the 2012 Maintenance Project

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Photo 21: View of Breach Closure No. 1 which was part of the 2012 Maintenance Project



Photo 22: View of Breach Closure No. 1 which was part of the 2012 Maintenance Project

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Photo 23: Overall view of Structure 35 variable crest weir, looking northeast



Photo 24: Close up view of Structure 35 warning signs, railings, steel bulkhead, and operating crane

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Photo 25: View of the southernmost end of the Lake Rim rock dike refurbishment in Breton Canal



Photo 26: View of the Lake Rim rock dike refurbishment from Breton Canal, looking north

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Photo 27: View of the Lake Rim rock dike refurbishment from Breton Canal, looking north



Photo 28: View of the Lake Rim rock dike refurbishment from Breton Canal, looking northwest

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Photo 29: View of the Lake Rim rock dike refurbishment from Breton Canal, looking northwest



Photo 30: View of the Lake Rim rock dike refurbishment from Breton Canal, looking north

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Photo 31: View of Lake Rim fish dip and warning sign from Little Lake, looking west



Photo 32: View of Lake Rim fish dip and warning sign from Little Lake, looking southwest

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Photo 33: Overall view of Structure 2 fixed crest rock weir with boat bay, looking west



Photo 34: View of warning sign and rock recap on the northern side of Structure 2



Photo 35: View of the warning sign and embankment tie-in on the south side of Structure 4



Photo 36: View along the rock recap of Structure 4, looking northwest

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Photo 37: View of new warning sign and transition between Structure 4 and Rock Dike Extension



Photo 38: View of Rock Dike Extension from Little Lake, looking north

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Photo 39: View of warning signs and transition from Rock Dike Extension to Structure 4A&4B



Photo 40: View of the northernmost end of Structure 4A&4B, looking north

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Photo 41: Overall View of Structure 7 fixed crest rock weir with boat bay, looking west



Photo 42: View of the warning sign and embankment tie-in on the southern end of Structure 7

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Photo 43: View of the warning sign and embankment tie-in on the northern end of Structure 7



Photo 44: View of Structure 8 rock riprap channel plug, looking north

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Photo 45: Overall view of Structure 14 fixed crest rock weir with barge bay from Little Lake looking west



Photo 46: View of the rock recap on the northern side of Structure 14 from Little Lake, looking northwest

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Photo 47: View along the rock recap on the northern side of Structure 14 from the barge bay, looking northeast



Photo 48: View of the rock recap on the southern side of Structure 14, looking southwest

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Photo 49: View along the southern side of Structure 14 from Clovelly Canal, looking southeast

Appendix C

Three Year Budget Projection

GIWW TO CLOVELLY, PHASES 1 & 2 / BA-O2 / PPL1
Three-Year Operations & Maintenance Budgets 07/01/2014 - 06/30/17

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	A. Ledet	NRCS	T. Byland

	2014/2015	2015/2016	2016/2017
Maintenance Inspection	\$ 6,650.00	\$ 6,850.00	\$ 7,055.00
Nav. Aid Inspection/Maint.	\$ 4,000.00	\$ 4,000.00	\$ 5,000.00
Structure Operation	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
State Administration	\$ 23,188.00	\$ 3,284.00	\$ 3,383.00
Federal Administration	\$ -	\$ -	

Maintenance/Rehabilitation

14/15 Description: Composite dike along shoreline between Structures 2 and 4 (Option A)

E&D	\$ 111,312.00
Construction	\$ 1,223,025.00
Construction Oversight	\$ 120,000.00
Sub Total - Maint. And Rehab.	\$ 1,454,337.00

15/16 Description: Routine Maintenance: navigation aid maintenance and structure operations

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

16/17 Description: Routine Maintenance: navigation aid maintenance and structure operations

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

	2014/2015	2015/2016	2016/2017
Total O&M Budgets	\$ 1,498,175.00	\$ 24,134.00	\$ 25,438.00
Total O&M Budget 2014 through 2017			\$ 1,547,747.00
Unexpended O&M Budget			\$ 1,866,221.00
Remaining O&M Budget (Projected)			\$ 318,474.00

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 14/15 –

OCPR Administration	\$ 23,188*
O&M Inspection & Report	\$ 6,650
Structure Operations:	\$ 10,000
Maintenance:	\$1,458,337
E&D:	\$ 111,312
Construction:	\$1,223,025
Construction Oversight:	\$ 120,000
General Maintenance:	\$ 4,000

Operation and Maintenance Assumptions:

Structure Operations: water control structure operated twice annually for a total of \$5,000 per operation. $(2)(\$5,000) = \$10,000$ plus \$2,000* for OCPR administration.

General Maintenance: Water control structure, navigation aids repair. Construction: \$4,000. Administration: \$1,188*

2014 Maintenance Project – Composite Rock Dike along shoreline between Structures 2 and 4. Below is the estimated project cost this maintenance project:

Construction Cost:

Mobilization/Demobilization:	\$ 150,000
Construction Surveys:	\$ 30,000
Access/Floatation Dredging:	\$ 50,000
Temporary Warning Signs/Lights: (5 @ 3,000 each)	\$ 15,000
Composite Rock Dike: (1,700 lft. @ \$425/lft.)	\$ 722,500
Geotextile Fabric: (7,000 sq.yds @ \$8.00/sq.yd.)	\$ 56,000
Permanent Warning Signs; (4 @ \$5,000 each)	\$ 20,000
De-Energize Power Lines: (Lump Sum)	\$ 20,000
Construction Cost:	\$1,063,500
Contingency (15%)	<u>\$ 159,525</u>
Total Overall Estimated Construction Cost:	\$1,223,025

Engineering, Design, Construction Oversight

Engineering/Design: (ASCE log scale)	\$ 85,612
Surveying: (5 Days @ \$4,500/day)	\$ 22,500
Permitting: (40 hrs @ \$80/hr.)	\$ 3,200
Construction Inspection: (1,200 hrs @ \$85/hrs.)	\$ 102,000
Construction Oversight: (150 hrs. @ \$120/ hr.)	\$ 18,000
CPRA Administration:	\$ 20,000
Total E&D and Construction Oversight:	\$ 251,312
Total Overall Estimated Budget:	\$1,474,337

FY 15/16 –

OCPR Administration	\$ 3,284*
O&M Inspection & Report	\$ 6,850
Structure Operations:	\$ 10,000
Maintenance:	\$ 4,000
E&D:	\$ 0
Construction:	\$ 0
Construction Oversight:	\$ 0
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 plus \$2,000* for OCPR administration.

General Maintenance: Water control structure, navigation aids repair. Construction: \$4,000. Administration: \$1,284*

FY 16/17 –

O CPR Administration		\$ 3,383*
O&M Inspection & Report		\$ 7,055
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. $(2)(\$5,000) = \$10,000$ plus \$2,000* for O CPR administration.

General Maintenance: Water control structure, navigation aids repair. Construction: \$5,000. Administration: \$1,284*

2014-2017 Accounting

Current O&M Funding (Lana Report)	\$5,044,228
Expenditures from DNR Accounting	\$3,091,551
NRCS MIPR	\$ 86,456

Unexpended O&M Budget: \$1,866,221