



Coastal Protection and  
Restoration Authority of Louisiana

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

**2015 Annual Inspection Report**

for

**GIWW/ CLOVELLY HYDROLOGIC  
RESTORATION**

State Project Number BA-02  
Priority Project List 1

August 24, 2015  
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 (1<sup>st</sup>) 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).

## **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<sup>th</sup>, 2015. In attendance were Adam Ledet, Elaine Lear, and Brian Babin with CPRA,

Quin Kinler with NRCS, and Randy Moertle representing the landowner. All attendees met at the Clovelly Canal Boat Launch and the inspection began at approximately 9:30am and concluded at 12:00pm. 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 1.40' NAVD88 at 11:30am.

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, 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. This structure 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 center section of weir averaged 7.1'. Based on the staff gauge reading in Superior Canal, the estimated elevation of the center section was calculated to be approximately -5.7' NAVD. The as-built drawings show a final constructed elevation of -5.0' NAVD, which would indicate the center section had settled nearly 0.7' since completion of the 2012 Maintenance Project. The sections located closest to the banks on each side of the structure appeared to be stable and no obvious settlement was observed. The warning signs on Structure 2 are in good condition and do not require replacement. The overall structure was in good condition and no maintenance will be required at this time. (See Appendix B, Photos 20 through 23)

#### **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. Sounding taken during the inspection revealed an average depth of 6.1' at the center boat bay of the structure. Based on the elevation of the staff gauge located in Superior Canal, the calculated elevation of the boat bay was -4.7' NAVD. The as-built drawings from the 2012 Maintenance Project show a center elevation of -5.5' NAVD. From our calculations, the sounding elevations are higher than the documented as-built elevations from the 2012 Maintenance Project. We are not confident that our soundings are correct and will take additional soundings on the next inspection to try to identify the discrepancy. We did note that the marsh on the southern tie-in continues to erode and has detached from the rock

weir. We recently completed the plans and specification and have submitted them for bidding to extend the rock dike from the southern end of Structure 2 to the north end of Structure 4. Once completed, the shoreline will be protected and erosion should be halted. The sign on the south side of the structure has come loose from the its supports and is hanging on one side. As part of the 2015 Maintenance Project, we will replace this sign and other signs installed during the 2012 maintenance event with new aluminum signs. Overall, the structure is in good condition with exception of the breach on the south side and the damaged sign. These deficiencies will be repaired during the upcoming 2015 Maintenance Project. (See Appendix B, Photos 17 through 19)

#### **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. The settlement of Structure 7 has been uniform with no breaches of the bank tie-ins. 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 6 through 8)

#### **Structure 8– Rock Riprap 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, thus there is no need to replace the gate at this time. (See Appendix B, Photos 9 through 11)

#### **Structure 43 – Rock Riprap Channel Plug**

We were unable to visually inspect Structure 43 due to the woody vegetation and floating water hyacinth blocking access and the visibility of the structure. During prior inspections, there was a small breach identified on the eastern end of the rock plug which allowed water to flow around the structure. Currently, we did not notice the breach or water bypassing the structure. It's possible that the vegetation has plugged the breach, thereby reducing the flow of water 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 47)

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

Structure 91 rock plug appeared to be in good overall condition. It was also difficult to inspect this structure due to the thick woody vegetation covering the entire structure. From what we were able to view, it appears that the structure was 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 good condition as well. New galvanized timber pile caps were installed as part of the 2012 Maintenance project to protect the head of the piling. 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 replacement at this time, but it will continue to be monitored on future inspections for further damage. (See Appendix B, Photos 38 and 39)

## **CONSTRUCTION UNIT NO.2**

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

Structure 1 appeared to be in good overall condition with no obvious settlement or displacement of the rock riprap material or erosion along the bank tie-ins of the structure. The four (4) timber dolphin structures and daymark signs at the entrance of the barge bay opening were replaced during the 2012 Maintenance Event and are currently in good condition. Structure 1 is in good condition and there are no recommendations for maintenance at this time. (See Appendix B, Photos 43 through 46)

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

As part of the 2012 Maintenance Project, Structure 4, 4A & 4B was recapped to its original design elevation and rock dike closure was extended to Structure 4. The existing structures and 1,000 linear feet dike closure were built to an elevation of +3.5' NAVD88 using 130# class rock riprap. Structures 4 and 4A/4B, and the dike closure appear to be in very good condition with no noticeable settlement or degradation of riprap material. During construction of the dike closure, a change order was issued to the contractor to install two warning signs with timber supports in the location of the fish dips. At the time of the inspection, we did notice that several of the wooden signs install along the structure were missing or in poor shape. Under the 2015 Maintenance Project schedule to begin this fall, we have included provisions for the replacing all wood signs with aluminum signs. There are no recommendations for maintenance at this time. (See Appendix B, Photos 12 through 17)

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

Structure 14A was also rehabilitated during the 2012 Maintenance Project. The structure was recapped with a heavier 250# class rock riprap to the original design elevation of -6.5' NAVD 88 at the barge bay to prevent further scouring of the channel bottom, and +4.0' NAVD88 along the crest of the weir. Depth soundings were taken along the center of the barge bay which indicated that the average depths ranged from 7.5' on the north side to 8.3' on the south side. Based on these depths, the average bottom sill elevation of the barge bay ranged between -6.1' to -6.9 NAVD 88. Based on our observations, the structure appears to be in good condition, as there is no visible settlement of the rock since the end of construction. Also, three (3) of the navigation aid timber pile supports and daymark signs were replaced under the 2012 Maintenance Project. The rock weir and navigation aid structures are in good condition and there are no recommendations for maintenance at this time. (See Appendix B, Photos 1 through 5)

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

Overall, Structure 35 is in 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. (See Appendix B, Photos 31 through 33)

### **Structure 90 – Rock Riprap Channel Plug**

Structure 90 appears to be in good condition with no obvious 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. (See Appendix B, Photos 40 through 42)

### **Lake Rim Restoration**

The Lake Rim structure was recapped as part of the 2012 Maintenance Project. The project included the recapping of the entire lake rim 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 bid quantity of rock riprap. 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 the inspection, there appeared to be no further settlement of the structure since the end of 2012 maintenance project. There are no recommendations for maintenance at this time. (See Appendix B, Photos 24 through 30)

### **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 is 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. 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. 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 inspections. (See Appendix B, Photos 34 through 37)

## **VI. Conclusions and Recommendations**

Overall, the GIWW to Clovelly Hydrologic Restoration (BA-02) Project appears to be in good condition with only a few 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. The existing wooden warning signs were rotting and falling apart. We have included the replacement of the wooden signs with aluminum signs under the 2015 Maintenance Project currently bidding through CPRA. There are no other issues that will require maintenance as a result of the 2015 Annual Inspection.

### **References:**

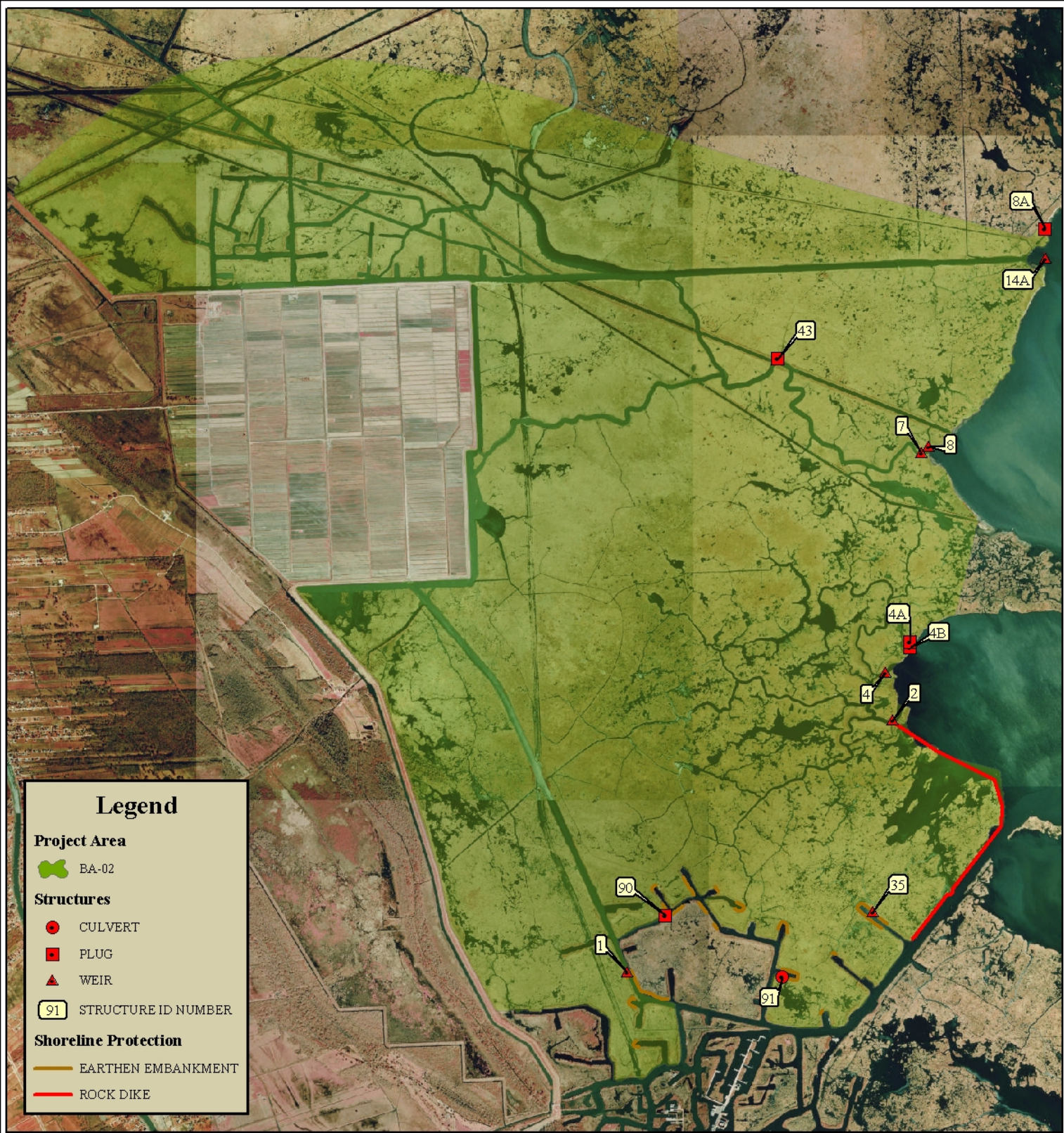
Lear, E. 2003. *Monitoring Plan for the GIWW (Gulf Intracoastal Waterway) to Clovelly Project (BA-02)*, Louisiana Department of Natural Resources, Coastal Restoration Division, 24 pp.

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.

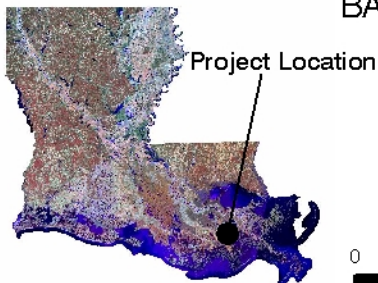
Kinler, 2006. *Memorandum, GIWW to Clovelly (BA-02) – Inspection of Little Lake Shoreline South of Site 14A*. Natural Resource Conservation Service, Baton Rouge, La. 5 pp.

**Appendix A**  
**Project Features Map**

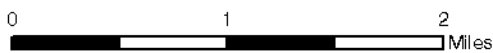




## BA02 - GIWW to Clovelly Hydrologic Restoration



### 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**



Photo 1: View of navigational aid on SW side of Structure 14 A and rock weir in background.



Photo 2: View of rock weir on the south side of the barge bay on Structure 14A.



Photo 3: View of rock Weir at the barge bay on the north side of Structure 14A.



Photo 4: View of navigation aid lights on the NE side of Structure 14a and rock weir in background.





Photo 5: view of the rock weir on the south side of Structure No. 14A.



Photo 6: View of the rock weir on the north side of the boat bay on Structure No. 7.

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Photo 7: View of rock weir on the south side of boat bay on Structure No.7.



Photo 8: Overall view of the rock weir with boat bay of Structure No.7.



Photo 9: View of rock weir and floating barrel gate at Structure No. 8.



Photo 10: View of rock weir and floating barrel gate at Structure No.8.





Photo 11: Viwe of the east side of rock weir and floating barrel gate closure of Structure No.8.



Photo 12: View of the north end of rock plug tie-in at Structures 4A and 4B.



Photo 13: rock plug (Structure 4A & 4B) and rock dike extension to Structure 4 construction in 2012.

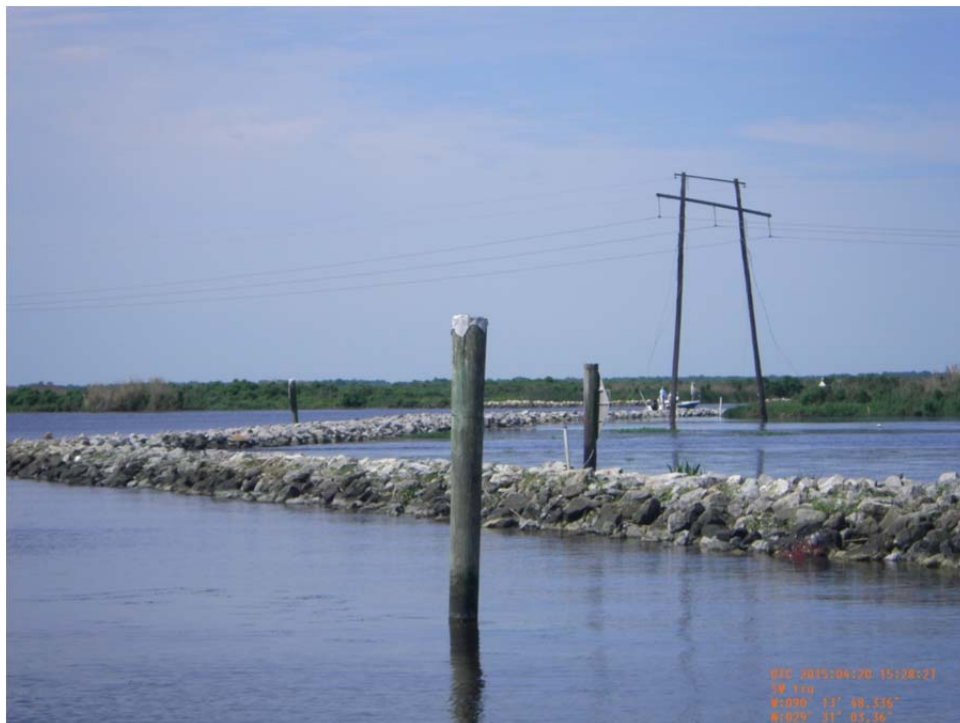


Photo 14: View of rock dike closure between Structure No.4B and Structure No.4 constructed in 2012.



Photo 15: View of rock dike closure between Structure 4B and Structure 4 constructed in 2012.



Photo 16: View of rock dike closure between Structure 4B and Structure 4 constructed in 2012.





Photo 17: View of rock dike closure tie-in to the north side of Structure No.4 constructed in 2012.



Photo 18: Overall view of rock weir with boat bay at Structure No.4.

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Photo 19: View of the rock weir on the south side of the boat bay of Structure No.4.



Photo 20: View of the rock weir on the north side of the boat bay of Structure No.2.





Photo 21: Overall view of the rock weir with boat bay at Structure No.2



Photo 22: View of the south side of the rock weir at Structure No.2

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Photo 23: View of north side of rock weir at Structure No.2.



Photo 24: View of the rock dike lake rim along the south shoreline of Bay L' Ours.



Photo 25: View of rock dike lake rip along the south shoreline of Bay L' Ours.



Photo 26: View of the rock dike lake rim along the south shoreline of Bay L' Ours.





Photo 27: View of the rock dike lake rim along the south shoreline of Bay L' Ours.



Photo 28: View of the rock dike along the north bank of Breton Canal.

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Photo 29: View of the rock dike along the north bank of Breton Canal near transmission power line.



Photo 30: View of rock dike along the north bank of Breton Canal near the first location canal.

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Photo 31: View of variable crest weir Structure No.35 on north bank of location canal off of Breton Canal.



Photo 32: view of sheet pile weir and bank tie-in on the SW side of Structure No.35.



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Photo 33: View of steel sheet pile weir and bank tie-in on the NE side of Structure No.35.



Photo 34: Breach location (Identified in as-built drawings as Breach 2) repaired in 2012 along the second location canal from Bay L' Ours via Breton Canal.

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Photo 35: Breach repaired in 2012 (identified as Breach 3) off of third location along Breton Canal from By L' Ours.



Photo 36: Breach repaired in 2012 (labeled Breach 4) off of third location along Breton Canal from Bay L' Ours.



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Photo 37: - Breach repaired in 2012 (labeled Breach 5) off of third location along Breton Canal from Bay L' Ours.



Photo 38: View of rock weir (Structure 91) with corrugated metal pile and flap gate through embankment.



Photo 39: View of corrugated metal pipe support and flap gate at Structure No.91.



Photo 40: Overall View of Structure 90, a rock rip rap channel plug located in the second location canal on the east bank of Superior Canal from the Hurricane Protection Levee.





Photo 41: View of rock dike plug and warning signs at Structure No.90.



Photo 42: View of rock dike plug and warning signs at Structure No.90.



Photo 43: View of rock weir on the west side, warning signs and barge bay opening at Structure No.1 located along Superior Canal.



Photo 44: view of the rock weir on the east side of Structure No.1 and warning signs.



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Photo 45: View of barge bay opening and timber warning signs at Structure No.1.



Photo 46: View of CRMS Station BA-02-57 staff gauge located north of Structure No.1

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Photo 47: View rock rip rap channel plug (Structure 43) located along Bayou Des Amoreaux.

## **Appendix C**

### **Three Year Budget Projection**

**GIWW TO CLOVELLY, PHASES 1 & 2 / BA-O2 / PPL1**  
**Three-Year Operations & Maintenance Budgets 07/01/2015 - 06/30/18**

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

|                                   | 2015/2016    | 2016/2017    | 2017/2018    |
|-----------------------------------|--------------|--------------|--------------|
| <b>Maintenance Inspection</b>     |              |              |              |
| <b>Nav. Aid Inspection/Maint.</b> | \$ 4,000.00  | \$ 5,000.00  | \$ 5,000.00  |
| <b>Structure Operation</b>        | \$ 10,000.00 | \$ 10,000.00 | \$ 10,000.00 |
| <b>State Administration</b>       | \$ 76,460.00 | \$ 23,354.00 | \$ 24,054.00 |
| <b>Federal Administration</b>     | \$ -         | \$ -         |              |

**Maintenance/Rehabilitation**

|                          |   |
|--------------------------|---|
| <b>15/16 Description</b> | <b>2012 Maintenance Project, Structure Operations and Nav Aid Maintenance</b> |
|--------------------------|---|

|                                      |                        |
|--------------------------------------|------------------------|
| E&D                                  | \$ -                   |
| Construction                         | \$ 1,223,025.00        |
| Construction Oversight               | \$ 120,000.00          |
| <b>Sub Total - Maint. And Rehab.</b> | <b>\$ 1,343,025.00</b> |

|                           |  |
|---------------------------|--|
| <b>16/17 Description:</b> | <b>Navigation aid maintenance and structure operations</b> |
|---------------------------|--|

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

|                           |  |
|---------------------------|--|
| <b>17/18 Description:</b> | <b>Navigation aid maintenance and structure operations</b> |
|---------------------------|--|

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

|   | 2015/2016              | 2016/2017           | 2017/2018              |
|---|------------------------|---------------------|------------------------|
| <b>Total O&amp;M Budgets</b>                  | <b>\$ 1,433,485.00</b> | <b>\$ 38,354.00</b> | <b>\$ 39,054.00</b>    |
| <b>Total O&amp;M Budget 2015 through 2018</b> |                        |                     | <b>\$ 1,510,893.00</b> |
| <b>Unexpended O&amp;M Budget</b>              |                        |                     | <b>\$ 1,715,694.00</b> |
| <b>Remaining O&amp;M Budget (Projected)</b>   |                        |                     | <b>\$ 204,801.00</b>   |

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 15/16 –**

|                         |             |
|-------------------------|-------------|
| CPRA Administration     | \$ 76,460   |
| Structure Operations:   | \$ 10,000   |
| Maintenance:            | \$1,347,025 |
| E&D:                    | \$ 0        |
| 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**

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

**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:<br>(5 @ 3,000 each)  | \$ 15,000          |
| Composite Rock Dike:<br>(1,700 lft. @ \$425/lft.)    | \$ 722,500         |
| Geotextile Fabric:<br>(7,000 sq.yds @ \$8.00/sq.yd.) | \$ 56,000          |
| Permanent Warning Signs;<br>(4 @ \$5,000 each)       | \$ 20,000          |
| De-Energize Power Lines:<br>(Lump Sum)               | \$ 20,000          |
| Construction Cost:                                   | \$1,063,500        |
| Contingency (15%)                                    | <u>\$ 159,525</u>  |
| <b>Total Overall Estimated Construction Cost:</b>    | <b>\$1,223,025</b> |

## Engineering, Design, Construction Oversight

|   |                    |
|---|--------------------|
| Engineering/Design:<br>(ASCE log scale)             | \$Completed        |
| Surveying:<br>(5 Days @ \$4,500/day)                | \$Completed        |
| Permitting:<br>(40 hrs @ \$80/hr.)                  | \$Completed        |
| Construction Inspection:<br>(1,200 hrs @ \$85/hrs.) | \$ 102,000         |
| Construction Oversight:<br>(150 hrs. @ \$120/ hr.)  | \$ 18,000          |
| <b>Total E&amp;D and Construction Oversight:</b>    | <b>\$ 120,000</b>  |
| <b>Total Overall Estimated Budget:</b>              | <b>\$1,343,025</b> |

### CPRA Direct Costs

#### Structure Operations and General Maintenance:

|                                  |          |
|----------------------------------|----------|
| Engineer 4 – 30 hrs @ \$60/hr. = | \$ 1,800 |
| Engineer 6 – 5 hrs @ \$73/hr. =  | \$ 365   |
|                                  | \$ 2,165 |

#### 2012 Maintenance Project:

|                                    |          |
|------------------------------------|----------|
| Engineer 4 – 200 hrs. @ \$60/hr. = | \$12,000 |
| Engineer 6 – 50 hrs. @ \$73/hr. =  | \$ 3,650 |
| Engineer 7 – 20 hrs @ \$79/hr. =   | \$ 1,580 |
|                                    | \$17,230 |

#### 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  |
|                                      | \$ 2096 |

#### Report:

|                                      |          |
|--------------------------------------|----------|
| CPRA Engineer 6 – 60 hrs. @ \$73/hr. | \$ 4,380 |
|--------------------------------------|----------|

Total Direct CPRA Costs: **\$25,871**

### **CPRA Indirect Costs**

#### **Structure Operations and General Maintenance:**

Engineer 4 – 30 hrs @ \$127.30/hr. = \$ 3,819  
Engineer 6 – 5 hrs @ \$154.88/hr. = \$ 774  
\$ 4,593

#### **2012 Maintenance Project:**

Engineer 4 – 200 hrs. @ \$127.30/hr. = \$25,460  
Engineer 6 – 50 hrs. @ \$154.88/hr. = \$ 7,744  
Engineer 7 – 20 hrs @ \$167.61/hr. = \$ 3,352  
\$36,556

#### **Inspection:**

CPRA Engineer 3 – 12 hrs @ \$127.30/hr.: \$ 1,528  
CPRA Engineer 6 – 12 hrs @ \$154.88/hr. \$ 1,856  
CPRA Scientist 4 – 10 hrs @ \$167.61/hr. \$ 1,676  
\$ 5,060

#### **Report:**

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr. \$ 4,380

Total Indirect CPRA Costs: **\$50,589**

### **FY 16/17 –**

|                         |           |
|-------------------------|-----------|
| OCPR Administration     | \$ 23,354 |
| 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:**

\$2,165 x 3% inflation = \$2,230

#### **Inspection:**

\$2096 x 3% inflation = \$2,159

#### **Report:**

\$4,380 x 3% = \$4,511

Total Direct CPRA Costs: **\$8,900**

**CPRA Indirect Costs**

**Structure Operations and General Maintenance:**

\$4,593 x 3% = \$4,731

**Inspection:**

\$5,060 x 3% = \$5,212

**Report:**

\$4,380 x 3% = \$4,511

Total Indirect CPRA Costs: **\$14,454**

**FY 17/18 –**

O CPR Administration \$ 24,054

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:**

\$2,230 x 3% inflation = \$2,297

**Inspection:**

\$2,159 x 3% inflation = \$2,224

**Report:**

\$4,511 x 3% = \$4,646

Total Direct CPRA Costs: **\$9,167**

**CPRA Indirect Costs**

**Structure Operations and General Maintenance:**

\$4,731 x 3% = \$4,873

**Inspection:**

\$5,212 x 3% = \$5,368

**Report:**

\$4,511 x 3% = \$4,646

Total Indirect CPRA Costs: **\$14,887**

**2015-2018 Accounting**

|                                   |             |
|-----------------------------------|-------------|
| Current O&M Funding (Lana Report) | \$5,071,039 |
| Expenditures from LAGov           | \$3,268,889 |
| NRCS MIPR                         | \$ 86,456   |

**Unexpended O&M Budget: \$1,715,694**