



Coastal Protection and
Restoration Authority of Louisiana

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

2015 Annual Inspection Report

for

**POINT AU FER ISLAND
HYDROLOGIC RESTORATION**

State Project Number TE-22
Priority Project List 2

August 28, 2015
Terrebonne Parish

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I. Introduction

The Point Au Fer Island Hydrologic Restoration Project encompasses 5,230 acres of intermediate and brackish marsh and open water on Point Au Fer Island located approximately 30 miles south of Morgan City, Louisiana, in Terrebonne Parish. Point Au Fer Island lies approximately 6 miles southeast of the mouth of the Atchafalaya River. The island is bordered by the Gulf of Mexico to the south, Atchafalaya Bay to the west, Four League Bay to the north and northeast, and Oyster Bayou tidal pass to the east (See Appendix A).

Construction of the Point Au Fer Island Hydrologic Restoration Project is co-sponsored by the National Marine Fisheries Service (NMFS) 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) enacted on November 29, 1990 as amended. The Project was approved on the second (2nd) Priority Project List.

The property associated with the Point Au Fer Island Hydrologic Restoration Project is owned by the Point au Fer LLC, and the Roman Catholic Church – Arch Diocese of New Orleans.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Point Au Fer Island Hydrologic Restoration (TE-22) Project is to evaluate the constructed project features in order to identify any deficiencies. The inspection results are used to prepare a report detailing the condition of the project features and recommending any corrective actions considered necessary. Should it be determined that corrective actions are needed, CPRA shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, construction, and 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 which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance, and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since construction of the Point Au Fer Island Hydrologic Restoration (TE-22) Project is outlined in Section IV.

The annual inspection of the Point Au Fer Island Hydrologic Restoration Project (TE-22) took place on two separate days. The first trip was held in conjunction with the Lake Chapeau Hydrologic Restoration and Marsh Creation (TE-26) project on May 6, 2015, to inspect the Phase II and Phase III rock dike shoreline protection along the Gulf of Mexico. In attendance were Adam Ledet, Stuart Brown and Brian Babin from CPRA, John Foret and Donna Rogers with NMFS and Randy Moertle representing the landowners. The second trip was held on May 7, 2015 to inspect the canal plugs and Transco Canal rock dike shoreline protection. In attendance for the second trip were Adam Ledet, Elaine Lear and Brian Babin from CPRA, John Foret and Donna Rogers with NMFS and Randy Moertle representing the landowners. The annual inspection included a visual inspection of the constructed project features. Photographs taken during the inspection are shown in Appendix B.

III. Project Description and History

Approximately 8% of Louisiana's coastal marshes have been converted to open water canals and their associated spoil banks (Neill and Turner, 1987). In most cases, the construction of these canals alters wetland hydrology and contributes to wetland loss in coastal Louisiana. Similar alterations to the natural drainage pattern at Point au Fer Island have occurred from the dredging of oil and gas access canals through the interior of the island. Strong tidal flows occur between Locust Bayou in the southwest and Four League Bay in the northeast (NMFS, n.d.). Point au Fer Island has experienced decreased salinities as sediments and fresh water from Atchafalaya Bay have circulated through the islands' interior marshes. Increased fresh water flow and sediment input have not been effectively utilized due to changes in hydrologic patterns and the presence of artificial levees (NMFS, n.d.).

The marsh habitat on Point Au Fer Island is predominately brackish marsh with intermediate marsh in the interior of the island. In the years leading up to construction of the project, certain areas of Point Au Fer Island had become weakened with avenues for saltwater intrusion from the Gulf of Mexico threatening (Monitoring Plan, 1998). The Mobil Canal levee (Phase II area) had been breached during Hurricane Andrew, and the southern end of Transco Canal (Phase I area) had almost been breached by the Gulf of Mexico.

The project was designed and constructed in order to reduce marsh loss and the potential for saltwater intrusion from storm surges and high tides (Phase I), to restore hydrologic circulation close to conditions present before dredging of the pipeline canals (Phase I), and to reduce the chance of breaching of the shoreline between the Gulf of Mexico and Mobil Canal during overwash events (Phase II and III). The specific goals established to evaluate the effectiveness of the project were to (1) reduce the rate of marsh loss (Phase I), (2) reduce the rate of canal widening (Phase I), and (3) maintain or decrease local shoreline erosion rate within the project area (Phase II and III) (Comprehensive Monitoring Report No. 1, 2001).

The Point Au Fer Island Hydrologic Restoration Project was constructed in three (3) phases. Phase I consisted of seven (7) canal plugs located in two pipeline canals. Four (4) timber plugs, Plugs No. 1, 2, 7, and 8, were constructed in Hester Canal (east-west). One (1) timber plug, Plug No. 6, and two (2) reef shell plugs, Plugs No. 3A and 4, were constructed in Transco Canal (north-south). Construction of the Phase I canal plugs was completed in December 1995. Phase II consisted of approximately 3,600 linear feet of rock shoreline protection of Areas 1, 2, and 3 along the Gulf of Mexico adjacent to the Mobil Canal. Phase II construction was completed in May 1997. Phase III consisted of extending the rock shoreline protection 3,037 linear feet to the east (Area 4) and 625 linear feet to the west (Area 5). Prior to construction of Phase III, a change order added an additional lift of rock over 388 linear feet of the Phase II shoreline protection to repair a breach area located near the east end of Phase II. Additionally, Phase I Plug No. 4 was rebuilt with dredged material. Also, the existing Transco Canal steel bulkhead/rock plug (Plug No. 4A), located approximately 200 feet south of Plug No. 4, was reinforced by placing Petraflex mats (articulated concrete mats, 8' x 20' x 9") along the Gulf shoreline to the west and east of the existing Plug No. 4A. A total of 67 mats were placed on the west side and 58 mats were placed on the east side of Plug No. 4A. Phase III construction was completed in June 2000 (Phase III Final Report, 2000).

The principle project features include:

Phase I: Construction of timber and shell plugs in Hester and Transco Canals.

- Plug No. 1 – 200 linear feet (LF), Timber bulkhead plug in the Hester Canal located near Mosquito Bay.
- Plug No. 2 – 270 LF, Timber bulkhead plug in Hester Canal just west of Transco Canal.
- Plug No. 3A – 240 LF, Reef shell construction located in the Transco Canal north of Hester Canal.
- Plug No. 4 – 225 LF, Reef shell construction located in Transco Canal near the Gulf of Mexico.
- Plug No. 6 – 180 LF, Timber bulkhead plug located in Transco Canal just south of Hester Canal.
- Plug No. 7 – 200 LF, Timber bulkhead plug located in Hester Canal just east of Transco Canal.
- Plug No. 8 – 180 LF, Timber bulkhead plug located at the east end of Hester Canal near Bay Castagnier.

Phase II: 3,600 linear feet of rock shoreline protection of the beach separating the Gulf of Mexico from the Mobile Canal.

- Area 1 – 1,800 linear feet of rock dike protecting the beach along the Gulf of Mexico separating Mobil Canal and the Gulf.
- Area 2 – 400 linear feet of rock dike protecting the beach along the Gulf of Mexico near the west end of Mobil Canal.
- Area 3 – 1,400 linear feet of rock dike along the shoreline of the Gulf between Area 1 and Area 2, constructed with funds provided by Mobil Oil Company.

Phase III: Modifications/additions to the rock shoreline protection of the beach separating the Gulf of Mexico from the Mobil Canal.

- Area 4 – 3,037 linear feet extension of the Phase II rock structure on the east end.
- Area 5 – 625 linear feet extension of the Phase II rock structure on the west end.
- Additional 16 inch lift of rock placed over 388 feet of the Phase II rock structure near the east end of Phase II.
- Plug No. 4A (Transco Canal steel bulkhead/rock plug) – Petreflex mats (articulated concrete mats, 8' x 20' x 9") placed along the Gulf shoreline to the west (67 mats) and east (58 mats) of the existing steel sheet pile bulkhead (Plug No. 4A).

The Point Au Fer Island Hydrologic Restoration Project (TE-22) has a twenty-year (20 year) project life which began in December 1995 (Phase I), May 1997 (Phase II), and June 2000 (Phase III).

IV. Summary of Past Operation and Maintenance Projects

Below is a summary of completed maintenance projects and operation tasks performed since construction of the Point Au Fer Island Hydrologic Restoration Project (TE-22).

June 2000 – Phase I Plug No. 4 was rebuilt with dredged material, and Petraflex mats (articulated concrete mats, 8' x 20' x 9") were placed along the shoreline to the west and east of the existing Transco Canal steel bulkhead/rock plug (Plug No. 4A) at the Gulf. A total of 67 mats were placed on the west side and 58 mats were placed on the east side of Plug No. 4A. This work was performed by Johnny F. Smith Truck & Dragline Service, Inc. of Slidell, LA as part of the Phase III construction contract and funded out of the project O&M budget. The total construction cost for this maintenance event was \$237,874.

August 2005 – The east end of Phase III (Area 4) rock dike was extended approximately 300 linear feet to the shoreline using LaDOTD Class 250 lbs. riprap on geotextile fabric. At Plug No. 4A (Transco Canal steel bulkhead/rock plug) the east mats were capped with LaDOTD Class 250 lbs. riprap. Also, a rock dike (approximately 200 linear feet of 250 lbs riprap on geotextile fabric) was constructed from the east end of the mats to the shoreline. At Plug No. 8 (Phase I) in Hester Canal, in order to close a breach around the south end, the bulkhead was extended approximately 60 linear feet to the south using vinyl sheet pile bulkhead. Also, three Submar mats (articulated concrete mats, 8' x 20' x 4.5") were placed at the end to prevent scour. It should be noted that a small breach repair to Weir No. 3 of the TE-26 Lake Chapeau project, extending the rock to the south bank, was also included in this maintenance activity. This project was surveyed, designed, and inspected by Picciola & Associates, Inc. of Cutoff, Louisiana. The project was constructed by Luhr Bros., Inc. of Alexandria, LA. The total construction cost for this maintenance event was \$391,382.

Fall 2013 – A rehabilitation of the Transco Canal rock dike and the Phase II & III rock dike (separation Mobil Canal from the Gulf of Mexico) was initiated by CPRA. T. Baker Smith was contract by CPRA to prepare the plans and specifications, and permit documents for the project. Subsequent to bidding of the project, CPRA and NMFS decided to put this project on hold as a result of end of life discussion initiated by the CWPPRA Task Force.

V. Inspection Results

Plug No. 1 – Timber Bulkhead Plug

The timber bulkhead Plug No. 1 located on the west end of Hester Canal near Mosquito Bay appears to be in good overall condition. The embankment tie-ins have no signs of breaching or erosion. All structural components are intact with some signs of weathering of the timber members. The warning signs and supports are also in fair condition. There are no recommendations for corrective actions at this time other than replacing the aluminum

warning signs prior to project close-out. (Appendix B; Photo 19 – additional photos of Plug No.1 were not useable)

Plug No. 2 – Timber Bulkhead Plug

The timber bulkhead Plug No. 2 located just east of Plug No. 1 in Hester Canal appeared to be in good condition. All structural components are intact with no visible signs of damage; however, the timber members did appear to be weathered. The embankment tie-ins are in good condition with no visual signs of erosion. The warning signs and supports were in fair condition. Although the timber bulkhead and its tie-ins have no noticeable defects, the structure is not operating effectively due to a large breach (approximately 70 feet) in the bankline on the south side of the structure which allows tidal flow around Plug No. 2. There are no recommendations for corrective action at this time other than replacement of aluminum warning signs prior to project close-out. (Appendix B; Photos 17 & 18)

Plug No. 3A – Shell Plug

The shell Plug No. 3A located in Transco Canal just north of Hester Canal is in poor condition. As previously reported, the shell plug has eroded in the center of the structure leaving the plug crest below the water line allowing water to pass over the structure. According to the as-built drawings and construction plans, the shell plug was constructed to elevation +4.0 NGVD. The embankment tie-ins are still intact and have no signs of erosion or breaching around the ends. The warning sign and supports on the west side are in good condition, but the sign on the east side is missing. At this time repairing the shell plug is not recommended due to construction access constraints; however, this plug should continue to be monitored on future site visits. (Appendix B; Photo 9)

Plug No. 4 – Shell Plug

Plug No.4 is located at the end of Transco Canal at the Gulf of Mexico. The plug was not accessible during this site visit due to shallow waters in Transco Canal and small craft advisories in the Gulf of Mexico. Reports from the 2014 inspection indicated that Shell Plug No. 4 is in poor condition and that the structure has been eroded below the waterline for several years. There is no reason to believe that the condition of Plug No.4 has worsened over the past year; however, we will make an attempt next year to verify our assumptions. There is no recommended maintenance for this structure at this time as all past maintenance efforts have been focused on Plug No. 4A (Transco Canal Bulkhead) located approximately 200 feet south of Plug No. 4 at the Gulf of Mexico. (Photos not available)

Plug No. 4A – Transco Canal Gulf bulkhead

Plug No.4 is also located at the end of Transco Canal at the Gulf of Mexico and was not accessible for inspection due to shallow waters in the Transco Canal and watercraft advisories in the Gulf. It was indicated in the 2014 inspection report that shoreline erosion continues to be a problem along the east embankment tie-in. The erosion directly behind the mats on the east side of the structure has been slowed or halted since the maintenance rock lift in 2005. Sand material has accumulated behind the rock lift and the deposited material is now vegetated. On the other end of the structure, the west mats have settled and are over washed during normal tidal events. In addition, due to erosion around the embankment tie-in, the mats no longer connect to the shoreline. This allows tidal exchange behind the mats similar to the east end before the 2005 maintenance. At the existing Transco bulkhead, tidal exchange

occurs between the Gulf and Transco Canal where water passes behind the bulkhead and over the rocks into the canal. This has been observed in previous inspections but seems to be increasing. The steel sheetpile and tie-rods are heavily corroded and should continue to be monitored. (Photos not available)

In 2010 it was recommended to survey the area for comparison to the as-built construction drawings to determine the best course of action to prevent breaching of the Gulf into the Canal. The survey was completed in August 2011 and it was determined the rock dike is in need of refurbishment. As of June 2013, the refurbishment project design and permit documents were completed, but the project has been put on hold pending future decisions.

Plug No. 6 – Timber Bulkhead Plug

The Plug No. 6 timber bulkhead showed signs of deflection (wavy pattern across canal) shortly after construction. The deflection is now more apparent during the annual inspection than what was observed during construction. Also, there is a separation of the bulkhead (or missing board) near the embankment tie-in on the east side of the structure. This separation is allowing small amounts of water to pass through the bulkhead. The warning signs and supports appear to be in overall fair condition. The bank tie-ins are in good condition with no signs of erosion or breaching. Since this project is close to the end of its 20 year life, we are not recommending maintenance of the structure other than replacement of the aluminum warning signs prior to close-out. (Appendix B; Photos 13 through 16)

Plug No. 7 – Timber Bulkhead Plug

The timber bulkhead Plug No. 7 located on the east end of Hester Canal just west of Plug No. 8 appeared to be weathered but still in good condition. All of the structural components are intact with no visible signs of damage. There is a small hole in one of the boards in the timber bulkhead which allows water to transfer through the structure. Due to the size of the hole and the small amount of water that is able to flow through, we are not recommending corrective actions at this time. The embankment tie-ins have no signs of erosion or breaching. The warning signs and supports are faded and the letters and reflective material barely visible. We are not recommending any maintenance of Plug No.7 except replacement of the aluminum warning signs prior to project close-out. (Appendix B; Photos 10 through 12)

Plug No. 8 – Timber Bulkhead Plug

The timber bulkhead plug located on the east end of Hester Canal near Bay Castaguier appeared to be weathered but remains in fair condition. The warning signs attached to the structure are in fair to poor condition. The letters and reflective material on the sign have faded over time and may be difficult to see at night. There is also a large breach around the vinyl bulkhead and Sub-Mar mats on the south side of the structure allowing water to flow around the plug. The embankment tie-in on the north side of the structure has no signs of erosion or breaching. Since the project is close to the 20 year project life, we are not recommending any maintenance to the structure itself. However, we are recommending that the warning signs be replaced prior to closing the project out. (Appendix B; Photos 1 through 3)

Phase II – Areas 1, 2 & 3; Phase III – Area 4 and Area 5 Rock Dike

Due to the difficulty in accessing the rock dike structure, we were unable to view the condition of the structure. We will make another attempt next year to access the rock dike along the gulf. Due to the approaching 20 year end of project life, we are not recommending any maintenance to the rock dike along the gulf shoreline.

VI. Conclusions and Recommendations

As mentioned in Section V of this report, there are a number of deficiencies noted with the timber and rock plugs on the interior of Point au Fer Island, and the rock dike along the gulf as indicated in past inspection reports. Some of these deficiencies have existed since the project was constructed and are not feasible to repair or rehabilitate at this time. Considering the difficulty and expense involved with accessing these sites and the approaching end of the 20 year project life, NMFS and CPRA have decided not to pursue maintenance of any of the project features. However, we are recommending that all of the warning signs located at each site be replaced due to wear and fading of the text and reflective material. Prior to close-out of the project, CPRA will prepare documents for replacement of signs to adequately mark the existing structures constructed under the Point au Fer Island Hydrologic Restoration (TE-22) project.

References:

Louisiana Department of Natural Resources – Coastal Engineering Division. 2002. Operation, Maintenance, Rehabilitation Plan for the Point au Fer Island Hydrologic Restoration Project (TE-22). Louisiana Department of Natural Resources, Thibodaux, Louisiana.

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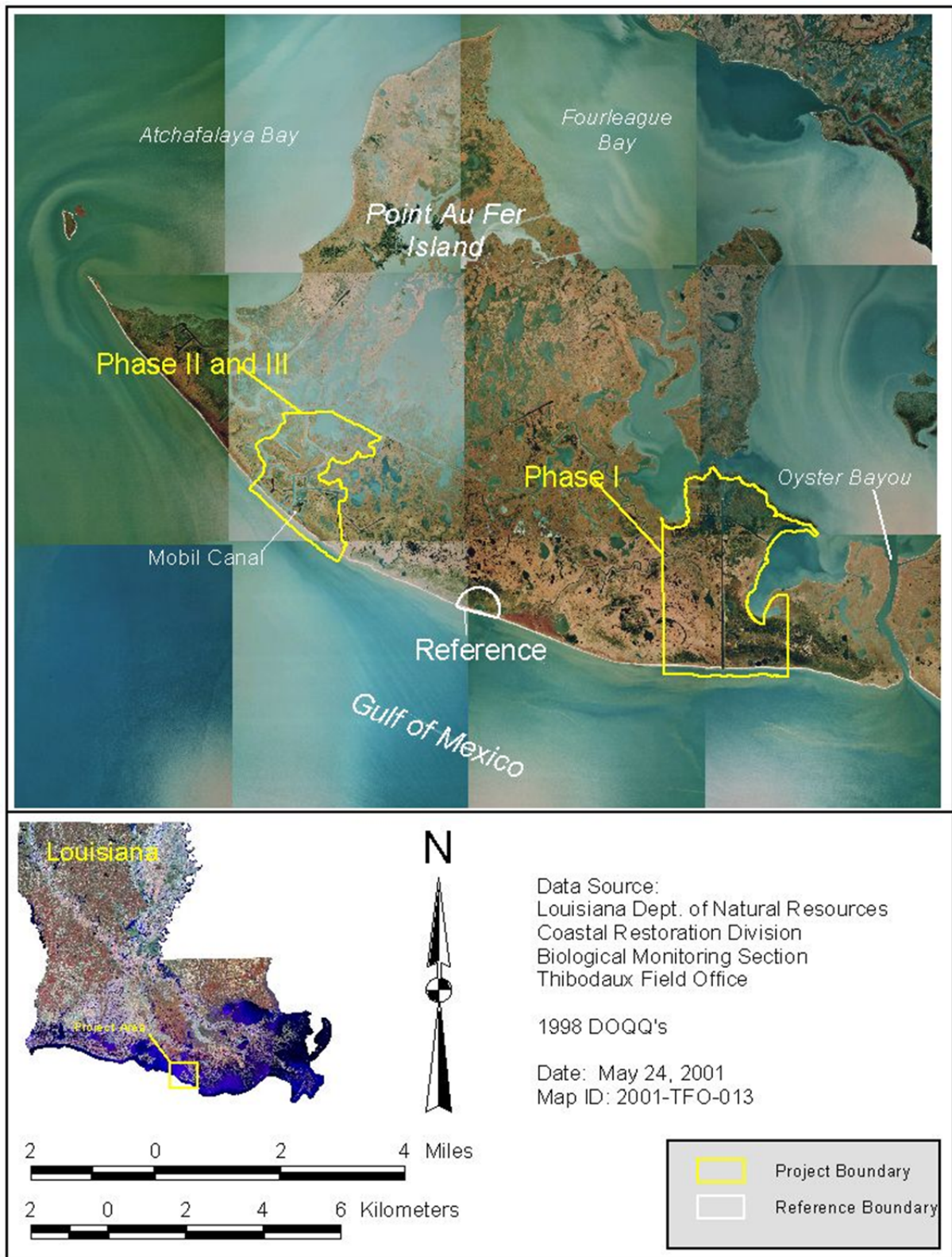
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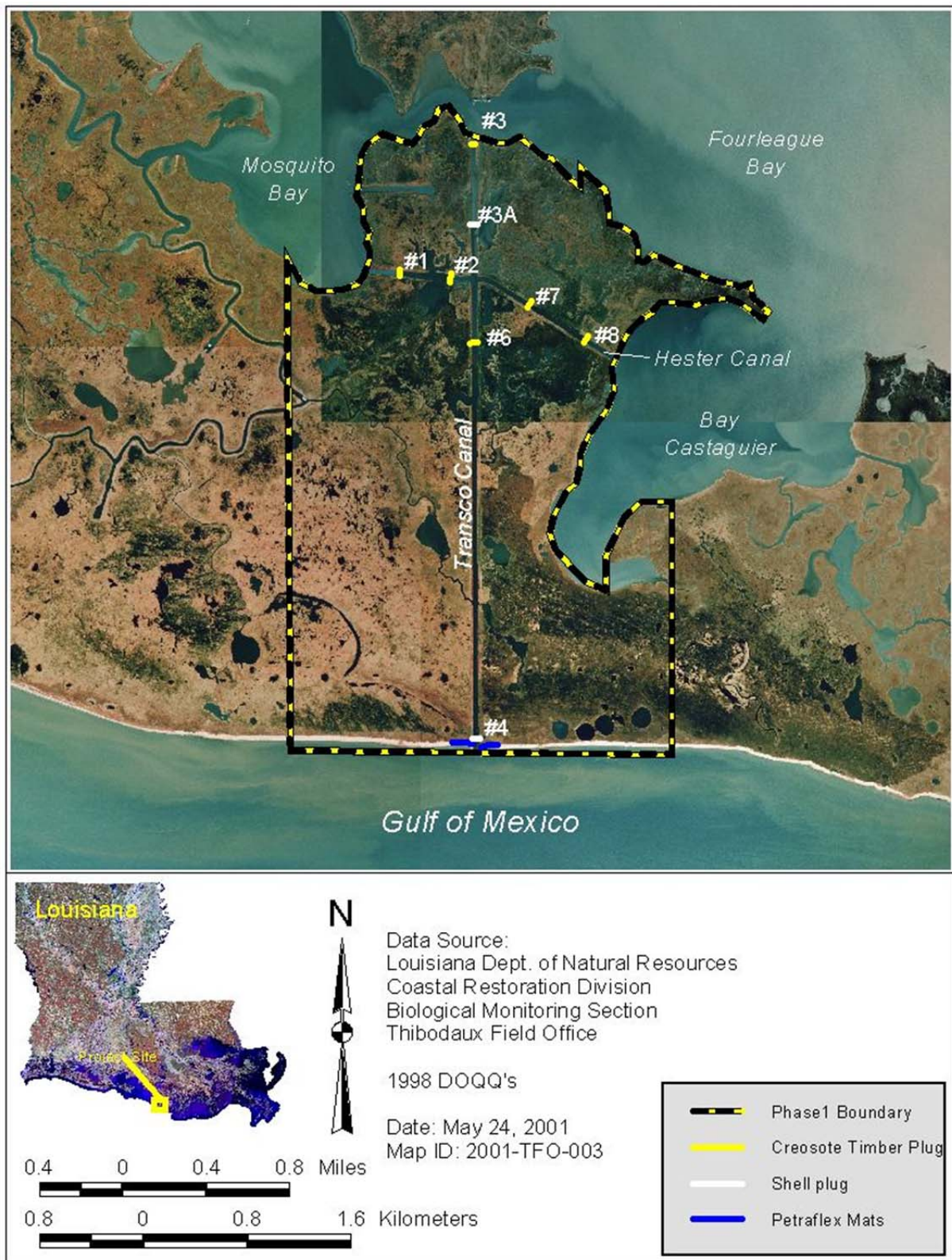
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Appendix A

Project Features Map







Appendix B

Photographs



Photo 1: Timber sheetpile plug and tie-in to marsh on north side of Structure No.8 along Hester Canal.



Photo 2: Timber sheetpile plug and warning signs at the center of Hester Canal at Structure No.8.



Photo 3: Vinyl sheetpile plug extension installed along Hester Canal on the south side of Structure No.8 in 2003.



Photo 4: Remnants of rock plug on the east side of Structure No.3 between Mosquito Bay and Four League Bay at the head of Transco Canal.



Photo 5: West side of rock plug at Structure No.3 between Mosquito Bay and Four League Bay at the head of Transco Canal.



Photo 6: East side of rock plug at Structure No.3 between Mosquito Bay and Four League Bay at the head of Transco Canal.



Photo 7: Original oil field concrete bulkhead between the rock plug of Structure No.3 at the head of Transco Canal.



Photo 8: Concrete bulkhead and rock plug on the west side of Structure No.3 at the head of Transco Canal.



Photo 9: View of submerged rock plug and warning sign at Structure No.3A along Transco Canal.



Photo 10: View of timer bulkhead plug at Structure No.7 along the east reach of Hester Canal.



Photo 11: Timber sheetpile plug tie-in at marsh on the north side of Structure No.7 along Hester Canal.



Photo 12: Timber sheetpile plug tie-in at marsh on the south side of Structure No.7 along Hester Canal.



Photo 13: Center section of timber sheetpile plug at Structure No.6 along Transco Canal.



Photo 14: View of timber sheetpile plug and the west bank tie-in at Structure No. 6 along Transco Canal.



Photo 15: View of timber sheetpile plug and the east bank tie-in at Structure No.6 along Transco Canal.



Photo 16: View of large bow in the timber sheetpile Plug No.6 at the center of Transco Canal.



Photo 17: View of the timber sheetpile plug and bank tie-in on the south side of Structure No.2.



Photo 18: View of the timber sheetpile plug and bank tie-in on the north side of Structure No.2.



Photo 19: View of the timber sheetpile plug and bank tie-in on the north side of Structure No.1.



Photo 20: View of the small channel leading to Structure No.4 at the end of Transco Canal along the Gulf of Mexico shoreline.

Appendix C

Three Year Budget Projection

POINT AU FER ISLAND HYDROLOGIC RESTORATION / TE22 / PPL2
Three-Year Operations & Maintenance Budgets 07/01/2015 - 06/30/2018

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>Ledet</i>	<i>NMFS</i>	<i>Babin</i>

	2015/2016	2016/2017	2017/2018
Maintenance Inspection	\$ -	\$ -	\$ -
Structure Operation	\$ -	\$ -	\$ -
CPRA Administration	\$ 30,353.00	\$ 30,955.00	\$ 31,884.00
NMFS Administration	\$ 6,540.00	\$ 6,736.00	\$ 6,938.00

Maintenance/Rehabilitation

15/16 Description:	Annual Inspection and Project Closeout.
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<i>E&D</i>	
<i>Construction</i>	
<i>Construction Oversight</i>	
<i>Sub Total - Maint. And Rehab.</i>	\$ -

16/17Description	Annual Inspection and Project Closeout
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<i>E&D</i>	
<i>Construction</i>	
<i>Construction Oversight</i>	
<i>Sub Total - Maint. And Rehab.</i>	\$ -

17/18Description:	Annual Inspection and Project Closeout
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<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

	2015/2016	2016/2017	2017/2018
<u>Total O&M Budgets</u>	\$ 36,893.00	\$ 37,691.00	\$ 38,822.00

<u>O&M Budget (3 yr Total)</u>	\$ 113,406.00
<u>Unexpended O&M Funds</u>	\$ 1,660,839.00
<u>Remaining O&M Budget (Projected)</u>	\$ 1,547,433.00

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

Project: **TE-22 Point Au Fer Island Canal Plugs**

FY 15/16 –

NMFS Administration:	\$	6,540
CPRA Administration	\$	30,053
Operation:	\$	0
Maintenance:	\$	0

Operation and Maintenance Assumptions:

Annual Inspections are based on new rate schedule. It is estimated to take 60 hrs to compile photos and create report.

CPRA Direct Costs

Inspection:

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

Report:

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

CPRA – 30 hrs @ \$73/hr.	<u>\$ 2,190</u>
Total Direct CPRA Costs:	\$11,666

Project Closeout

NMFS – 30 hrs @ \$218/hr.	\$ 6,540
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CPRA Indirect Costs

Inspection:

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

Report:

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

CPRA – 30 hrs @ \$154.88/hr.	<u>\$ 4,646</u>
Total Indirect CPRA Costs:	\$18,387

FY 16/17–

Administration (NMFS)	\$ 6,736
CPRA Administration	\$ 30,955
Operation:	\$ 0
Maintenance:	\$ 0

Operation and Maintenance Assumptions:

CPRA and NMFS administration included for time and charges related to project closeout phase. Increase of 3% for inflation on inspection/report and administration charges.

FY 17/18 –

Administration (NMFS)	\$ 6,938
CPRA Administration	\$ 31,884
Operation:	\$ 0
Maintenance:	\$ 0

Operation and Maintenance Assumptions:

CPRA and NMFS administration included for time and charges related to project closeout phase. Increase of 3% for inflation on inspection/report and administration charges.

2015-2018 Accounting

O&M Budget (Lana Report):	\$3,126,375.00
Expended O&M Funds (Lana Report)	\$1,465,536.00

Unexpended O&M Funds:	\$1,660,839.00
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