

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

# **2017 Annual Inspection Report**

for

# North Lake Mechant Landbridge Restoration Project (TE-44)

State Project Number TE-44 Priority Project List 10

December 4, 2017 Terrebonne Parish

Prepared by:

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# I. Introduction

The North Lake Mechant Landbridge Restoration Project (TE-44) is located in Terrebonne Parish, Louisiana approximately 15 miles southwest of Theriot, Louisiana and lies within the Penchant sub-basin of the Terrebonne hydrologic basin. The project area is bounded by Lake Mechant to the south, by Lake Pagie to the west, by Bayou DeCade to the north, and by the natural levee of Small Bayou LaPointe to the east. The project encompasses approximately 7,570 acres of predominantly open water and intermediate marsh habitat with some fresh marsh in the northwest and brackish marsh in the southeast (Belhadjali, 2004).

These marshes form a critical land bridge barrier that separates the fresh and intermediate marshes north of Bayou DeCade from the brackish waters and marine, tidally-dominated Lake Mechant system to the south (LDNR, USFWS, 2004). The TE-44 project is intended to protect and restore the North Lake Mechant land bridge and the Small Bayou LaPointe Ridge. Construction consisted of the creation and nourishment of approximately 901 acres of marsh north of Lake Mechant using dredged material from northern Lake Mechant; construction of approximately 89,270 linear feet of earthen containment dike; construction of approximately 2,200 linear feet of armored earthen dike; repair of an existing earthen plug; and construction of 8 canal plugs including the replacement of an existing fixed-crest weir (O&M Plan, 2011).

The project has a twenty (20) year project life, which began in December, 2010. The principal project features include:

- Earthen Plug No. 1
- Earthen Plug No. 2
- Rebuilt Earthen Plug (No. 3)
- Earthen Plug No.4
- Rock Plug No. 1
- Rock Plug No. 2
- Sheetpile Plug No. 1
- Sheetpile Plug No. 2
- Sheetpile Plug No. 3
- Sheetpile Weir (existing weir replacement)
- Armored Earthen Dike (2,200 Linear Feet)
- Hydraulic-Dredged Fill Material (901 acres of marsh)

# **II.** Inspection Purpose and Procedures

The purpose of the annual inspection of the North Lake Mechant Landbridge Restoration (TE-44) 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 recommendations of any corrective actions considered necessary (O&M Plan, 2011). Should it be determined that corrective actions are needed, the CPRA shall provide, in the report, a detailed

cost estimate for engineering, design, supervision, inspection, construction, and contingencies, as well as an assessment of the urgency of such repairs (O&M Plan, 2011). The annual inspection report also contains a summary of maintenance projects which were completed since the construction of the original project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance, and rehabilitation (O&M Plan, 2011). 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 North Lake Mechant Landbridge Restoration Project are outlined in Section IV.

The annual inspection of North Lake Mechant Landbridge Restoration (TE-44) Project took place on April 4, 2016. In attendance were Brian Babin and Todd Hubbell with CPRA, and Robert Dubois with US Fish and Wildlife Services. The inspection began around 9:00 a.m. at Rock Plug 2 and concluded around 11:30 a.m. near the northern end of the concrete articulated mats along Bayou Raccourci. The trip included a visual inspection of the project features, structures and marsh creation areas. Photographs of the project features are shown in Appendix B.

# **III. Project Description**

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

# Earthen Plug No. 1

This canal plug is located at Lat.  $29^{\circ}20'36.3"$ , Long.  $90^{\circ}59'36.3"$  along the eastern shoreline of Lake Pagie in an existing canal. It was constructed from dredged material from the canal on a geotextile fabric layer. The plug is 165 feet long (direction along the shoreline) by 50 feet wide. The plug was constructed to an elevation of +4.0' NAVD88.

# Earthen Plug No. 2

This plug is located at Lat.  $29^{\circ}21'31.3"$ , Long.  $90^{\circ}53'40.0"$  along the southern bank of Small Bayou LaPointe. It was constructed from dredged material on a geotextile fabric layer. The borrow area is located in the open water area south of the plug. The plug is 105 feet long (direction along the bank) by 60 feet wide. The plug was constructed to an elevation of +3.0' NAVD88.

# Earthen Plug No. 3 (Rebuilt)

This existing plug is located at Lat.  $29^{\circ}20'24.5"$ , Long.  $90^{\circ}56'04.4"$  at the south end of a canal south of Raccourci Bay. The existing earthen plug was rebuilt using dredged material placed on geotextile fabric to an elevation of +4.0' NAVD88.

#### Earthen Plug No.4

This plug is located at Lat. 29°20'55.2", Long. 90°55'14.7", across the Small Bayou LaPoint between Rock Plug No. 1 and Earthen Plug No.3. The earthen plug was constructed using dredge material from Small Bayou LaPoint to an elevation of approximately +4.0' NAVD. This plug was not included in the original design of the project but was added to the proposed features during construction.

# Rock Plug No. 1

This plug is located at Lat. 29°21'10.9", Long. 90°54'24.6" along the southern bank of Small Bayou LaPointe. The plug was constructed using DOTD Class 250 lb Riprap to an elevation of +4.0' NAVD88 with a 10-foot crest width and 3 to 1 side slopes on a geotextile fabric base. The plug is 260 feet long.

# Rock Plug No. 2

This canal plug is located at Lat. 29°21'40.9", Long. 90°53'28.9" just east of Small Bayou LaPointe in an intersecting pipeline canal. The plug was constructed using DOTD Class 250 lb Riprap to an elevation of +4.0' NAVD88 with a 10-foot crest width and 3 to 1 side slopes on a geotextile fabric base. The plug is 166 feet long.

# Sheet Pile Plug No. 1

This plug is located at Lat.  $29^{\circ}20'22.2"$ , Long.  $90^{\circ}59'09.2"$  along the southern bank of an access canal between Lake Pagie and Lake Mechant. The plug was constructed using PDA-27 Grade 42 steel sheet pile sections to an elevation of +4.0' NAVD88. The sheet pile was installed to a maximum depth of -35.0' NAVD88. The plug is 207 feet long with earthen wingwalls constructed at both ends to an elevation of +5.0' NAVD88. The wingwalls were constructed from dredged material and armored with articulated concrete mats on geotextile fabric.

# Sheet Pile Plug No. 2

This canal plug is located at Lat.  $29^{\circ}20'00.2"$ , Long.  $90^{\circ}58'32.2"$  in an access canal between Lake Pagie and Lake Mechant. The plug was constructed using PDA-27 Grade 42 steel sheet pile sections to an elevation of +4.0' NAVD88. The sheet pile was installed to a maximum depth of -23.0 feet NAVD88. The plug is 282 feet long with earthen wingwalls constructed at both ends to an elevation of +5.0' NAVD88. The wingwalls were constructed from dredged material and armored with articulated concrete mats on geotextile fabric.

#### Sheet Pile Plug No. 3

This canal plug is located at Lat.  $29^{\circ}20'22.2"$ , Long.  $90^{\circ}56'12.3"$  in an access canal south of Raccourci Bay. The plug was constructed using PDA-27 Grade 42 and 50 steel sheet pile sections to an elevation of +4.0' NAVD88. The sheet pile was installed to a maximum depth of -44.5' NAVD88. The plug is 177 feet long with earthen wingwalls constructed at both ends to an elevation of +5.0' NAVD88. The earthen wingwalls were constructed from dredged material and armored with articulated concrete mats on geotextile fabric.

#### Sheet Pile Weir (existing weir replacement)

This canal plug/weir is located at Lat.  $29^{\circ}20'19.8"$ , Long.  $90^{\circ}57'19.5"$  in a natural channel north of Lake Mechant. An existing timber pile and timber sheeting weir was removed near this location. The new weir was constructed using PDA-27 Grade 42 steel sheet pile sections to an elevation of +4.0' NAVD88. The sheet pile was installed to a maximum depth of -34' NAVD88. A 40-foot wide weir opening was constructed to an elevation of 0.0' NAVD88 near the center of the channel. The plug is 116 feet long with earthen wingwalls constructed at both ends to an elevation of +5.0'NAVD88. The earthen wingwalls were constructed from dredged material and armored with articulated concrete mats above a geotextile fabric.

#### Armored Earthen Dike

This dike is located along the east bank of Bayou Raccourci, a natural channel between Raccourci Bay and Lake Mechant, along the western boundary of Fill Area 6. The dike was constructed using dredged in-situ material from within Fill Area 6 to an elevation of +4.0' NAVD88 with a 4-foot crest width, 4 to 1 side slopes on a geotextile fabric base. The earthen dike was armored with articulated concrete mats. The mats are 20 feet long by 8 feet wide and consist of individual 4.5-inch thick concrete cells cast onto a copolymer fiber rope. The dike is 2,200 feet long. This site includes aluminum warning signs mounted on a 30' treated timber piling with galvanized hardware.

# Dredged Material Fill Areas

Marsh creation target fill elevations of +3.5' and +4.0' NAVD 88 and marsh nourishment target fill elevations of +2.5' were met. All earthen containment dikes were constructed to an elevation of 4.0' NAVD88 with a 3-foot crest width and 4 to 1 side slopes. Although these project features have been constructed as part of the North Lake Mechant Landbridge Restoration Project, there are no provisions in the O&M Plan for marsh nourishment of the newly created marsh areas.

Fill Area 1 - 57.7 acres located east of Lake Pagie bordered by a constructed, continuous earthen containment dike to the north and east; a pipeline canal to the south; and the shoreline of Lake Pagie to the west.

Fill Area 2A – 141.0 acres located north of Lake Mechant along the eastern shoreline of Lake Pagie. This area is bordered by constructed earthen containment dikes and the eastern shoreline of Lake Pagie to the west; a pipeline canal to the north; existing marsh and a constructed earthen containment dike to the east; and Fill Area 2B to the south.

Fill Area 2B - 108.7 acres located north of Lake Mechant along the eastern shoreline of Lake Pagie. This area is bordered by constructed earthen containment dikes and the eastern shoreline of Lake Pagie to the west; Fill Area 2A to the north; existing marsh and a constructed earthen containment dike to the east; and Lake Mechant to the south.

Fill Area 2/3 - 24.7 acres bordered by existing marsh and a constructed earthen containment dike to the south; a pipeline canal to the north; Fill Area 2A to the west and Fill Area 3 to the east.

Fill Area 3 - 134.0 acres bordered by Lake Mechant to the south; a pipeline canal to the north and east; and a constructed, continuous earthen containment dike to the west.

Fill Area 4 – 124.8 acres bordered by Lake Mechant and existing marsh to the south; a pipeline canal to the west; a constructed, continuous earthen containment dike to the north; and a natural channel and existing marsh to the east. This fill area includes approximately 24 acres of marsh nourishment at the east end where fill placement was limited to a maximum of 6 to 12 inches above existing marsh.

Fill Area 5 - 28.6 acres located north of Lake Mechant bordered by a constructed, continuous earthen containment dike to the west and a natural channel to the east.

Fill Area 5-1-90.1 acres located south of Bay Raccourci bordered by Bayou Raccourci to the west and a natural channel to the east, and existing marsh and a constructed earthen containment dike to the west.

Fill Area 6 - 47.8 acres located north of Lake Mechant bordered by Bayou Raccourci and a constructed armored earthen dike to the west; a constructed earthen containment dike along the southern shoreline of Raccourci Bay to the north; and existing marsh to the east. This fill area includes approximately 16 acres of marsh nourishment at the southern end where fill placement was limited to a maximum of 6 to 12 inches above existing marsh.

Fill Area 7 - 31.0 acres bordered by a constructed earthen containment dike along the southern shoreline of Raccourci Bay to the north, existing marsh to the south, and an access canal to the east.

Fill Area 8 - 113.2 acres bordered by a constructed, continuous earthen containment dike to the north and the Small Bayou LaPointe ridge to the south.

# **IV.** Summary of Past Operation and Maintenance Projects

As report on previous inspection reports, Steel Sheetpile No.2 was severely damaged during Hurricane Issac in 2012 where large portions of the structure had collapsed across of the existing channel. CPRA initiated a claim in 2013 with the Federal Emergency Management Agency (FEMA) as the structure was damaged during a natural disaster. In May 2015, FEMA rejected CPRA's claim for funding the repair of the steel sheetpile structure. CPRA has appealed FEMA's decision and is currently awaiting a ruling on the appeal. Since 2012, the structure has continued to deteriorate and more of the sheetpile panels have fallen below the water line becoming a potential hazard to navigation. Due to the uncertainty in the timing of available funding for the structure replacement, CPRA and USFWS decided to install floating warning buoys with navigational lighting on both sides of the structure. Pharos Marin Automatic Power, Inc. was contracted through CPRA to install the necessary navigational aids. The installation was completed in October 2017 at a cost of approximately \$9,700.

# V. Inspection Results

#### Rock Plug No. 1

The Rock Plug 1 structure located along the south bank of Small Bayou LaPointe across the old Lil' Deuce Cut appears to be in very good condition. There are no visible signs of settlement since construction or evidence of erosion and washouts around the embankment tie-ins. The timber warning signs and buoys were also in good condition. There are no recommendations for corrective action at this time. (Appendix B, Photos 4 through 6)

# Rock Plug No. 2

Rock plug 2 appears to be in fair condition. At the time of the inspection, the rock plug was over-grown with vegetation making it difficult to view the structure. We were unable to inspect the bank tie-ins due to the amount of vegetation covering the structure. We did not notice any signs of breaching on either end of the structure, or flow around the structure. The warning signs in front of the structure were in fair condition with only slight damage to the southwest sign which has been vandalized and damaged by a shotgun. (Appendix B, Photos 1 through 3)

# Earthen Plug No. 1

The Earthen Plug 1 structure located on the eastern edge of Lake Pagie appeared to be in good condition. The plug was viewed from the "Y" canal and was heavily vegetated with no signs of erosion or washouts of the bank tie-ins. There are no recommendations for corrective action at this time. (Appendix B, Photos 20)

#### Earthen Plug No. 2

The Earthen Plug 2 structure located along the south bank of Small Bayou LaPointe Ridge appeared to be in good condition. However, we did notice a breach in south bank of ridge embankment east of Plug No.2 which was approximately 25 ft. wide. This breach was not present at the time that the project was constructed and may need to be repaired during the next scheduled maintenance event. We will continue to monitor this breach on future site visits. (Appendix B, Photos 30)

#### Earthen Plug No. 3

Earthen Plug No. 3 is located between fill areas 7 & 8 in the vicinity of Sheetpile Plug No.3. The structure is difficult to identify and access due to the presence of tall cut grass in front of the structure and very shallow water along the bankline. We were unable to see the structure to determine if any settlement or erosion has occurred. (No photos were taken)

#### Earthen Plug No. 4

Earthen Plug No. 4 was not included in the original design of the project but was added to the proposed features during construction. It is located along the Small Bayou LaPointe Ridge between Rock Plug 1 and Fill Area 8. At some point after construction, the earthen plug was vandalized by cutting a small breach in the earthen embankment. The breach has completely eroded away with a small portion of the earthen plug connecting the north bank. Due to the remote location of this structure, any corrective action would require a marsh excavator tracking long distances to make repairs. We will continue to work with the landowner and federal sponsor on identifying other areas of the ridge that may be breached or eroded and include these repairs in the first scheduled maintenance event. (Appendix B, Photo 7 and 8).

#### Armored Earthen Dike

The Armored Earthen Dike on the west bank of Bayou Raccourci appears to be in fair condition. The articulated concrete blocks were coupled by copolymer rope and installed over a newly constructed earthen embankment. At the time of the inspection, the articulated mats were inundated with woody vegetation emerging through the gaps in the concrete blocks and in front of the mats. The woody vegetation that is growing through the mats raises some concerns regarding the stability of the rope as the trees/shrubs continue to grow. The vegetative growth will be monitored during future inspections. We also notice that isolated sections of the mat appeared to be sliding towards the channel creating a separation of the concrete blocks at several locations causing a strain on the copolymer rope. Also, there are some variations in height of the embankment along the length of the armored earthen dike. This is believed to be caused by differential settlement of the dredged material and the weight of the articulated mats. These areas of concern will be monitoring closely on future site visits to determine if corrective actions are needed. (Appendix B, Photos 24 through 29)

#### Sheetpile Weir (existing weir replacement)

Overall, the sheetpile weir structure appears to be in good condition. There were no visual signs of corrosion or damage to the sheet pile or top channel cap. There doesn't appear to be any erosion or washouts around the embankment tie-ins as well. The warning signs and

supports are also in good condition. There are no recommendations for corrective action at this time. (Appendix B, Photos 21 through 23)

#### Sheetpile Plug No. 1

Sheet pile plug 1 is located along the south bank of the northwest reach of the "Y"Canal, just north of Lake Mechant. There are no signs of settlement or excessive corrosion of the sheet pile, cap, warning signs or supports. The embankment tie-ins are armored with articulated concrete mats and also show no signs of settlement or erosion around structure. The structure appears to be stable and functioning as intended. However, there is a breach in the bank on the western side that leads to a long canal. It is uncertain whether tidal exchange is present, the opening will be closely monitored. There are no recommendations for corrective actions at this time. (Appendix B, Photos 17 through 19)

#### Sheetpile Plug No. 2

The Sheetpile Plug 2 suffered catastrophic structural damage due to Hurricane Isaac in August 2012. It appears that a large water level differential during the storm caused the bottom of the free standing wall to kick-out and the structure to fail. A large portion of the center section of the sheet pile wall has collapsed over into the channel allowing water to pass through/over the structure. The structure is damaged in such a way that there are minimal options for repairing the structure, it must be removed and then replaced. CPRA has initiated a claim with the Federal Emergency Management Agency (FEMA) as the structure was damaged during a natural disaster. In May 2015, FEMA had rejected CPRA's claim for funding the repair of the steel sheetpile structure. CPRA has appealed FEMA's decision and is currently awaiting a ruling on the appeal. Floating warning buoys and navigational lighting was recently installed on both sides of the structure to warn boaters of the obstruction across the channel. (Appendix B, Photos 12 through 16)

#### Sheet Pile Plug No. 3

Overall, Sheet Pile Plug No. 3 appeared to be in good condition with no damage or corrosion of the steel sheetpile or channel cap. The bank tie-ins and articulated mats were also in good condition with no erosion or washouts present, and the warning signs on the structure were intact and visible. There are no recommendations for corrective action at this time. (Appendix B, Photos 9 through 10)

#### Y Canal – Southern Tip

From previous inspections, concerned persons informed CPRA of a thinning portion of land at the southern tip of the "Y" canal. The narrow strip of land is covered with vegetation and oyster shell fragments and appears to experience regular overtopping during high water events. It will likely breach in the future and should be plugged during the next maintenance activity.

# **VI.** Conclusions and Recommendations

Other than the catastrophic structural failure of Sheetpile Plug 2 caused by Hurricane Isaac, the vandalism at Earthen Plug No.1 sometime after construction, and the breach in south bank of the Small Bayou LaPointe Ridge, all of the project features/structures are in

fair to good overall condition. Regarding the FEMA claim for Sheetpile No.2, CPRA has filed an appeal to FEMA's initial ruling and is currently awaiting a decision from FEMA on the appeal. We will also continue to monitor the narrowing land at the bottom of the "Y" canal and any other areas of concern. It is anticipated that the first maintenance event to address all of the project deficiencies outlined in this report will occur once a final ruling on the FEMA claim is resolved and funding is in place for the replacement of Steel Sheetpile No.2.

- Belhadjali, K. 2004. Ecological Review—North Lake Mechant landbridge Restoration, Construction Unit 2. Coastal Protection and Restoration Authority of Louisiana. Baton Rouge, Louisiana. 14 pp.
- Louisiana Department of Natural Resources, U.S. Fish and Wildlife Service. 2004. 95% Design Report—North Lake Mechant landbridge Restoration (TE-44). Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)., Louisiana. 19 pp.
- Louisiana Office of Coastal Protection and Restoration. 2011. Operation, Maintenance and Rehabilitation Plan —North Lake Mechant landbridge Restoration (TE-44). Baton Rouge, Louisiana. 8 pp plus Appendices.

Appendix A

**Project Features Map** 



Appendix B

Photographs



Photo No.1 – view of rock plug No.2, warning sign and floating pipeline markers looking east.



Photo No.2 – view of rock plug No.2, warning sign and floating pipeline markers looking east.



Photo No.3 – view of rock plug No.2, warning sign and floating pipeline markers looking east.



Photo No.4 – view of Rock Plug No.1 along Small Bayou Lapointe Ridge at the old Lil' Deuce opening looking south.



Photo No.5 – view of east bank tie-in of rock plug No.1 along Small Bayou Lapointe ridge at the old Lil' Duece opening looking south.



Photo No.6 – view of west bank tie-in of rock plug No.1 along Small Bayou Lapointe ridge at the old Lil' Duece opening looking south.



Photo No.7 – view of breach in earthen plug crossing Small Bayou Lapointe ridge west of Rock Plug No.1



Photo No.8 – view of breach in earthen plug crossing Small Bayou Lapointe ridge west of Rock Plug No.1



Photo No.9 – view of Sheetpile Plug No.3 between Fill Areas No.7 and No.8 looking north.



Photo No.10 – view of southwest bank tie-in along Sheetpile Plug No.3 between Fill Areas No.7 and No.8.



Photo No.11 – view of northeast bank tie-in along Sheetpile Plug No.3 between Fill Areas No.7 and No.8.



Photo No.12 – view of the east side of damaged Sheetpile Plug No. 2 between Lake Mechant and the intersection of the "Y' Canal.



Photo No.13 – view of the center section of damaged Sheetpile Plug No. 2 between Lake Mechant and the intersection of the "Y' Canal.



Photo No.14 – view of the west side of damaged Sheetpile Plug No. 2 between Lake Mechant and the intersection of the "Y' Canal.



Photo No.15 – closer view of the damage on the east side of Sheetpile Plug No. 2 near bank tiein.



Photo No.16 – closer view of the damage on the west side of Sheetpile Plug No. 2 near bank tiein.



Photo No.17 – view of west bank tie-in along Sheetpile Plug No.1 looking southwest.



Photo No.18 – view of east bank tie-in along Sheetpile Plug No.1 looking southeast.



Photo No.19 – view of Sheetpile Plug No.1 along northeast leg of the "Y" Canal.



Photo No.20 – view of Earthen Plug No.1 at the west end of the northeast leg of the "Y" Canal near Lake Pagie.



Photo No.21 – view of weir replacement structure across existing channel off of Bayou Raccourci.



Photo No.22 – view east bank of weir replacement structure across existing channel off of Bayou Raccourci.



Photo No.23 – view west bank of weir replacement structure across existing channel off of Bayou Raccourci.



Photo No.24 – view of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No.25 – view of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No.26 – view of the gap in concrete blocks of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No.27 – view of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No.28 – view of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No.29 - view of the articulated concrete mats on the east bank of Bayou Raccourci.



Photo No. 30 - breach in south bank of Small Bayou LaPointe Ridge east of Earthen Plug No.2.

Appendix C

**Three Year Budget Projection** 

# North Lake Mechant Landbridge Restoration (TE-44) Three-Year Operations & Maintenance Budgets 07/01/2017- 06/30/20

Project Manager	O & M Manager	Federal Sponsor	Prepared By
	Ledet	USFWS	Babin
	2017/2018	2018/2019	2019/2020
Maintenance Inspection	\$ 15,536.00	\$ 16,002.00	\$ 16,481.00
Structure Operation	\$ -	\$ -	
CPRA Administration	\$ 12,426.00	\$ -	\$ -
COE Administration	\$ -	\$ -	\$ -
Maintenance/Rehabilitation			
17/18 Description	Earthen Plug Refurbishmer	nt	
E&D	\$ 19,725.00		
Construction	\$ 59,375.00		
Construction Oversight			
Sub Total - Maint. And Rehab.	\$ 79,100.00		
	· · · · ·		
18/19 Description			
E&D		\$ -	
Construction		\$ -	
Construction Oversiaht		\$ -	
	Sub Total - Maint And Rehab	\$ -	
		<u> </u>	
19/20 Description:			
E&D			\$-
Construction			\$-
Construction Oversight			\$-
		Sub Total - Maint. And Rehab.	\$ -
			<u>.</u>
	2017/2018	2018/2019	2019/2020
Total O&M Budgets	\$ 107,062	\$ 16,002	\$ 16,481
	· · ·	· ·	· ·
O&M Budget (3 Yr Total)			\$ 139.545
Unexpended O&M Funds			\$ 860.339
Remaining O&M Funds			\$ 720 794
			ψ 120,194

# **OPERATIONS & MAINTENANCE BUDGET WORKSHEET**

#### Project: North Lake Mechant Landbridge Restoration (TE-44)

FY 17/18 –		
CPRA Administration		\$ 27,962
Operation:		\$ 0
Maintenance:		\$ 79,100
E&D:	\$ 19,725	
Construction:	\$ 59,375	
Construction Oversight:	\$ 0	

#### **Operation and Maintenance Assumptions: Maintenance Event No.1**

General Breach Repairs: Since the project was completed, we have noticed that the earthen embankments along the Small Bayou Lapointe Ridge are thin and endanger of breaching (very little marsh protecting the ridge). Below are estimated costs for refurbishing sections of the embankment.

<u>Maintenance Event No.1</u>			
Earthen Embankment Refurbishme	ent		
Construction Cost:			
Mobilization:		\$ 20,000	
Embankment Construction:		\$ 25,000	
(500 lf. @ \$50/lft.)			
Seeding/Fertilizing:		\$ 2,500	
Construction Cost:		\$ 47,500	
Contingency (25%):		\$ 11,875	
<b>Total Estimated Construction Co</b>	\$ 59,375		
Engineering:	\$7,125		
(12% Construction Cost)			
Surveying:	\$2,800		
(1days @ 2,800/day)			
Inspection:	\$6,800		
(80 hr. @ \$85/hr.)			
Construction Admin:	\$3,000		
Total Professional Services		<b>\$ 19,725</b>	
<b>Total Overall Estimated Project</b>	\$79,100		

CPRA Direct Costs	
Maintenance No.1	
CPRA Engineer 4 – 50 hrs. @ \$68/hrs.:	\$ 3,400
CPRA Engineer6 – 12 hrs. @ \$78/hr.	<u>\$ 936</u>

# \$ 4,336

Inspection:	
CPRA Engineer 3 – 12 hrs@ \$68/hr.:	\$ 816
CPRA Engineer 6 – 12 hrs @ \$78/hr.	\$ 936
CPRA Scientist $4 - 10$ hrs @ \$56/hr.	\$ 560
	$\frac{\frac{1}{2}}{\frac{5}{2}}$
Report	φ <b>2</b> ,012
CDD A Engineer 6 40 hrs @ \$78/hr	\$ 2 120
CPRA Engineer $6 - 40$ hrs. $(20, 578)$ hr.	\$ 3,120
Total Direct CPRA Costs:	\$ 9,768
CPRA Indirect Costs	
Maintenance No.1	
$\overline{\text{CPRA Engineer 4}} = 50 \text{ hrs.} @ \$127/\text{hr.}$	\$ 6.350
CPRA Engineer $6 - 12$ hrs @ \$145/hr	\$ 1 740
	<u>\$ 8 000</u>
Inspection	φ 0,070
CDD A Engineer 2 12 hrs@ \$107/hrs	¢ 1.504
CPRA Engineer $3 - 12$ nrs@ $5127/nr$ .:	\$ 1,524
CPRA Engineer 6 – 12 hrs @ $145/hr$ .	\$ 1,740
CPRA Scientist $4 - 10$ hrs @ $104/hr$ .	<u>\$ 1,040</u>
	\$ 4,304
<u>Report:</u>	
CPRA Engineer 40 hrs. @ \$145/hr.	\$ 5,800
Total Indirect CPRA Costs:	\$18,194

FY 18/19 –			
Administration			\$ 0
O&M Inspection & Report			\$ 16,002
Operation:			\$ 0
Maintenance:			\$ 0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

# **Operation and Maintenance Assumptions:** O&M Inspection and Report – 3% inflation

# **CPRA Direct Costs**

Inspection: \$2,312 x 3% = **\$2,381** Report: \$3,120 x 3% = **\$3,214** 

<b>Total Direct CPRA</b>	Costs:
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#### **CPRA Indirect Costs**

Total Indirect CPRA Costs:	\$10,407
\$5,800 x 3% = <b>\$5,974</b>	
Report:	
\$4,304 x 3% = <b>\$4,433</b>	
Inspection:	

FY 19/20 -			
Administration			\$ 0
O&M Inspection & Report			\$ 16,481
Operation:			\$ 0
Maintenance:		\$ 0	
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

#### **Operation and Maintenance Assumptions:**

O&M Inspection and Report – 3% inflation

#### **<u>CPRA Direct Costs</u>**

<u>Inspection:</u> \$2,381 x 3% = **\$2,452** <u>Report:</u> \$3,214 x 3% = **\$3,310** 

Total Direct CPRA Costs:

\$ 5,762

#### <u>CPRA Indirect Costs</u> <u>Inspection:</u> \$4,433 x 3% = **\$4,566** <u>Report:</u> \$5,974 x 3% = **\$6,153**

# Total Indirect CPRA Costs: \$10,719

#### **O&M** Accounting:

Total O&M Budget (Lana Report):	\$ 916,383
CPRA Expenditures to Date (LaGov)	\$ 56,044
Unexpended O&M Budget:	\$ 860,339