State of Louisiana

Coastal Protection and Restoration Authority of Louisiana (CPRA)

2024/2025 Annual Inspection Report

for

Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54)

State Project Number CS-54
Priority Project List 20

April 30, 2025
Cameron Parish

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I. Introduction

The Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54) project is a coastal restoration initiative located within the Cameron-Creole Watershed in Cameron Parish, Louisiana, approximately 6.5 miles northwest of Creole and 7.9 miles northeast of Cameron. The project was approved for construction under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) on Priority Project List 20 and developed through a cost-share agreement between the U.S. Fish and Wildlife Service (USFWS) and the Coastal Protection and Restoration Authority (CPRA) of Louisiana. It was designed to work in coordination with existing restoration efforts to improve marsh health within the watershed. Construction began on September 26, 2017, and reached substantial completion on November 13, 2019.

The CS-54 Project has a twenty–year (20 year) project life, which began in November 2019.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54) project is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, CPRA shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs. 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 completion of the CS-54 Project are outlined in Section IV.

An inspection of the CS-54 Project was held on March 17, 2025 under sunny skies, mild temperatures, and windy conditions. In attendance were Jody White, Mark Mouledous, Bernard Wood, Ivy Thibodeaux, Brent Bouy, and Adam Constantin from CPRA Operations, John Savell from USFWS. The inspection began at the South MCA and progressed to the North MCA.

The field inspection included an inspection of all of the project features. Photographs were taken (see Appendix B) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix D).

III. Project Description and History

The Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54) project is located within the boundary of the larger CS-04a Cameron-Creole Project water management area, which began operation in 1989 to address wetland degradation caused by saltwater intrusion, tidal exchange, and hurricane damage. The watershed is bound by the GIWW on the North, a 19-mile lake-rim levee on the West along the eastern shoreline of Calcasieu Lake, the Chenier and Gravity Drainage District levee system on the South, and Hwy 27 on the East. Lake-rim water control structures regulate water levels and salinity between Calcasieu Lake and the watershed. Despite the efforts to control impacts from Calcasieu Lake, long-term exposure to high-salinity water and hurricane-related scour from Hurricanes Rita and Ike, contributed to extensive vegetation loss and marsh conversion to open water. In 2009, CWPPRA funded the CS-49 Cameron-Creole Introduction Project which constructed an additional eight flapgate structure at the Gulf Intracoastal Waterway (GIWW) to allow freshwater to enter the watershed from the north and offset periods of high salinity.

Over the last decade, flood stress has become a driving factor in marsh loss within the watershed where opportunities for drainage into Calcasieu Lake have decreased due to a higher tidal range within the lake. Watershed level design efforts are ongoing through the RESTORE funded CS-87 Calcasieu Sabine Marsh Creation and Hydrologic Restoration Project to add additional flapgated culverts within the lake-rim levee in conjunction with dredging of existing interior conveyance channels and beneficial use marsh creation. This multi-faceted approach is intended to increase drainage capacity through the existing and new water control structures, to reduce the duration of flooding within the watershed, and restore marsh habitat.

The CS-54 Cameron-Creole Grand Bayou Marsh Creation was selected as a candidate for Phase I Engineering and Design, and in January 2011, the U.S. Fish and Wildlife Service (USFWS) entered into a cost-share agreement with the Coastal Protection and Restoration Authority (CPRA) to develop a design that would complement other restoration projects within the watershed. The CS-54 Cameron-Creole Grand Bayou Marsh Creation Project began construction in September of 2017 and was completed in November 2019. Two marsh creation cells were constructed on the Cameron Prairie National Wildlife Refuge and Miami Alternatives property and consists of the Northern Marsh Creation Area (MCA) - 211 acres, and the Southern MCA - 386 acres. The Northern MCA is bordered by North Prong Bayou and the Ducks Unlimited Terracing Project, while the Southern MCA is bordered by North Prong Bayou to the east and Grand Bayou to the south. Two separate features were added as part of the construction contract but were not funded by CWPPRA. These features consisted of a 60-acre confined marsh creation cell located immediately west of the Northern MCA funded by DNR mitigation funds and a portion of the permitted 367-acre of unconfined nourishment area located immediately north of the Southern Cell funded through a DNR interagency agreement.

The construction contract was awarded to Apollo Environmental Strategies, Inc. Earthen containment dikes totaling 16,527 linear feet in the Northern MCA and 22,433 linear feet

in the Southern MCA were constructed. Approximately 3,271,262 cubic yards of hydraulically dredged material from a 407-acre borrow area in East Cove of Calcasieu Lake was pumped to the marsh creation cells and nourishment area. The CS-54 constructed marsh elevations were +2.97 ft NAVD88 Geoid 12B in the Northern MCA and +3.17 and +2.27 ft NAVD88 Geoid 12B in the Southern MCA. Elevations were adjusted (-0.23 FT) from the NAVD88 Geoid 03 as-built elevations. The Southern MCA fill elevation was reduced during construction for the eastern portion of the cell due to prolonged pumping duration and material availability. It was determined from 2022 post-construction monitoring surveys that the Northern MCA averaged a settlement rate of 0.7 ft/year, while the Southern MCA settled at an average rate of 0.58 ft/year.

Goals:
The specific project goals are:

1. Protect the Watershed lake-rim levee from waves generated from the east.
2. Act as a buffer for tidal exchange within the Cameron-Creole Watershed.
3. Rebuild the marsh lost due to scour and storm surge by Hurricanes Rita and Ike.
4. Construct a marsh that will perform comparably to existing healthy marsh in the Cameron-Creole Watershed.

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: Below is a summary of completed maintenance projects and operation tasks performed.

North and South MCA - No Maintenance has been performed since construction.

Structure Operations: There are no active operations associated with this project.

V. Inspection Results

Marsh Creation North Marsh Creation Area

Inspection of the North Marsh Creation Area (MCA) revealed that the emergent marsh platform has developed strong vegetation coverage, indicating positive establishment of the restored marsh. It was also observed that Spartina spartinae was present only at the highest elevation. This was previously identified by the CPRA Monitoring staff in their 2023 Short Summary Report by Adam J. Constantin and Mel Guidry, P.E. Notably, these were the only documented occurrences of this plant species throughout the entire project

area. The conditions present at this location represent potential habitat for the federally threatened Eastern Black Rail. During our site visit, we were able to confirm the presence of Spartina spartinae in the same area. However, the CPRA Monitoring manager noted that without additional measures to stabilize the site, other vegetation is likely to outcompete and overtake this area (Photos: Appendix B, Photos 8-10), potentially reducing its suitability for Spartina spartinae and, consequently, the Eastern Black Rail.

A gap in the dike currently exists in the southwest corner of the MCA. During the site visit, this existing gap was observed to support suitable tidal exchange in the area. Historical site analysis indicates that Mangrove Bayou once traversed through the marsh. In an attempt to reestablish the historic bayou and enhance hydrologic connectivity, additional dike gapping will be added on the north and south side of the MCA. Because elevated marsh fill now occupies the original bayou path in the northern area, this new gap in the dike will be placed farther east at a field-identified location that promotes the desired tidal flow. The second gap will be added in the southern portion of the MCA near the historical bayou exit point. With both the north and south gaps in place, the reformation of Mangrove Bayou through the Northern MCA is anticipated, further supporting drainage, tidal flow, and ecological function. (Photos: Appendix B, Photos 6 & 14)

Marsh Creation South Marsh Creation Area

Inspection of the Southern Marsh Creation Area (MCA) revealed that the emergent marsh platform has developed strong vegetation coverage, showing successful establishment across the site. Existing gaps were observed in both the eastern and western areas of the MCA, allowing for some degree of natural tidal exchange. To further improve hydrologic connectivity and promote healthier marsh function, additional dike gapping will be implemented on the northern and southern portions of the MCA. These planned gaps are intended to help drain and enhance tidal flow throughout the marsh platform. (Photos: Appendix B, Photos 1-5)

VI. Conclusions and Recommendations

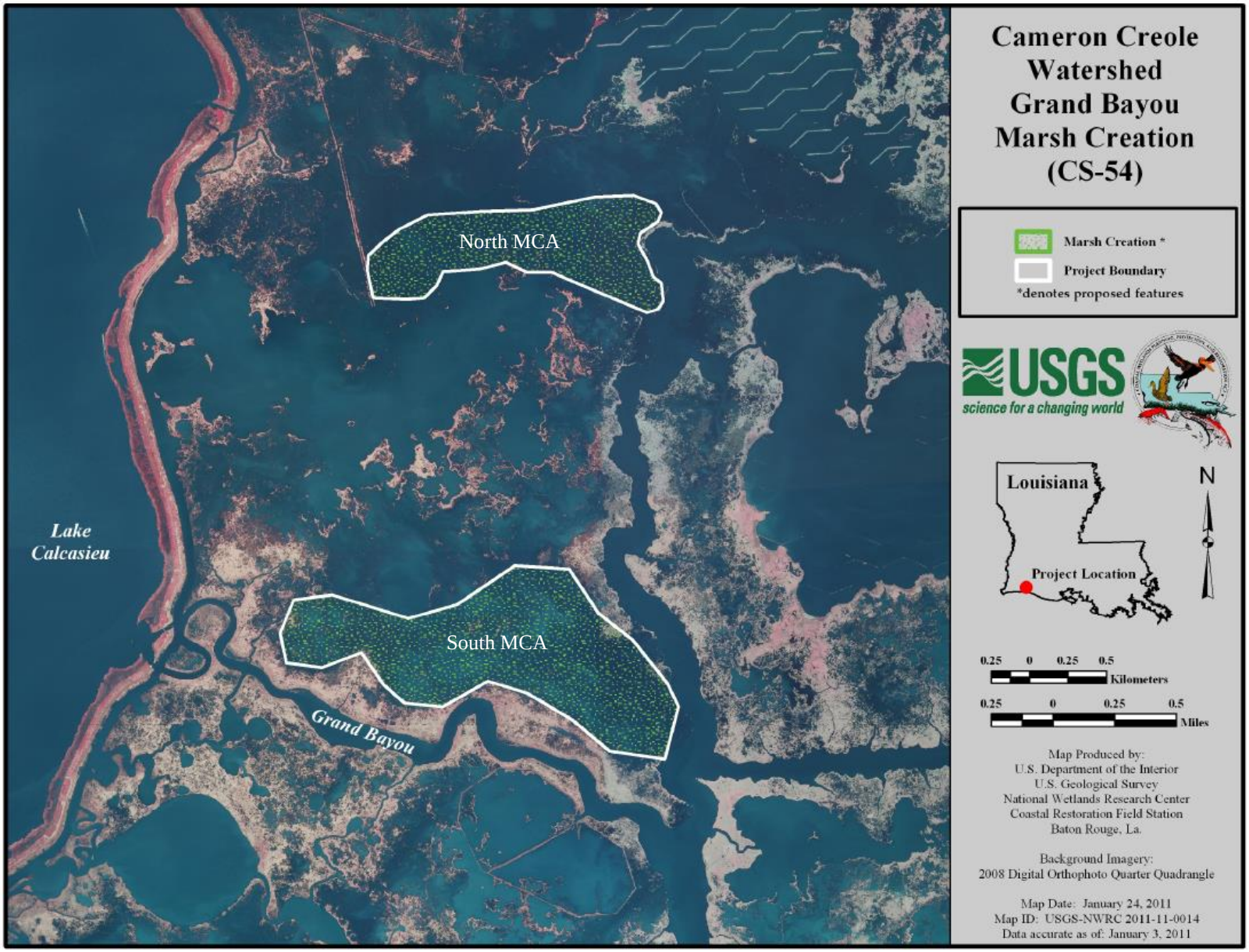
The Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54) project has shown strong early success in achieving its restoration goals. Both the Northern and Southern Marsh Creation Areas (MCAs) have developed healthy emergent vegetation, indicating effective establishment of marsh habitat. The presence of Spartina spartinae in the North MCA—an important species for the federally threatened Eastern Black Rail—demonstrates valuable ecological development, though the long-term viability of this habitat may be at risk due to competition from other vegetation. While some natural tidal exchange is occurring through existing gaps, further enhancement of hydrologic connectivity is needed, particularly through additional dike gapping to reestablish.

Mangrove Bayou connectivity and improve drainage and ecological function. To support long-term project performance, CPRA and USFWS agree that dike gaps as identified from

this site visit in both MCAs should be implemented to improve tidal exchange and enhance marsh hydrology. No maintenance has been conducted since project completion in 2019, but current conditions remain stable.

Appendix A

Project Features Map


North MCA
South MCA
Lake Calcasieu
Grand Bayou
Cameron Creole Watershed Grand Bayou Marsh Creation (CS-54)
Marsh Creation *
Project Boundary
*denotes proposed features
USGS
science for a changing world
Louisiana
Project Location
N
0.25 0 0.25 0.5
Kilometers
0.25 0 0.25 0.5
Miles
Map Produced by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, La.
Background Imagery:
2008 Digital Orthophoto Quarter Quadrangle
Map Date: January 24, 2011
Map ID: USGS-NWRC 2011-11-0014
Data accurate as of: January 3, 2011

Appendix B

Photographs

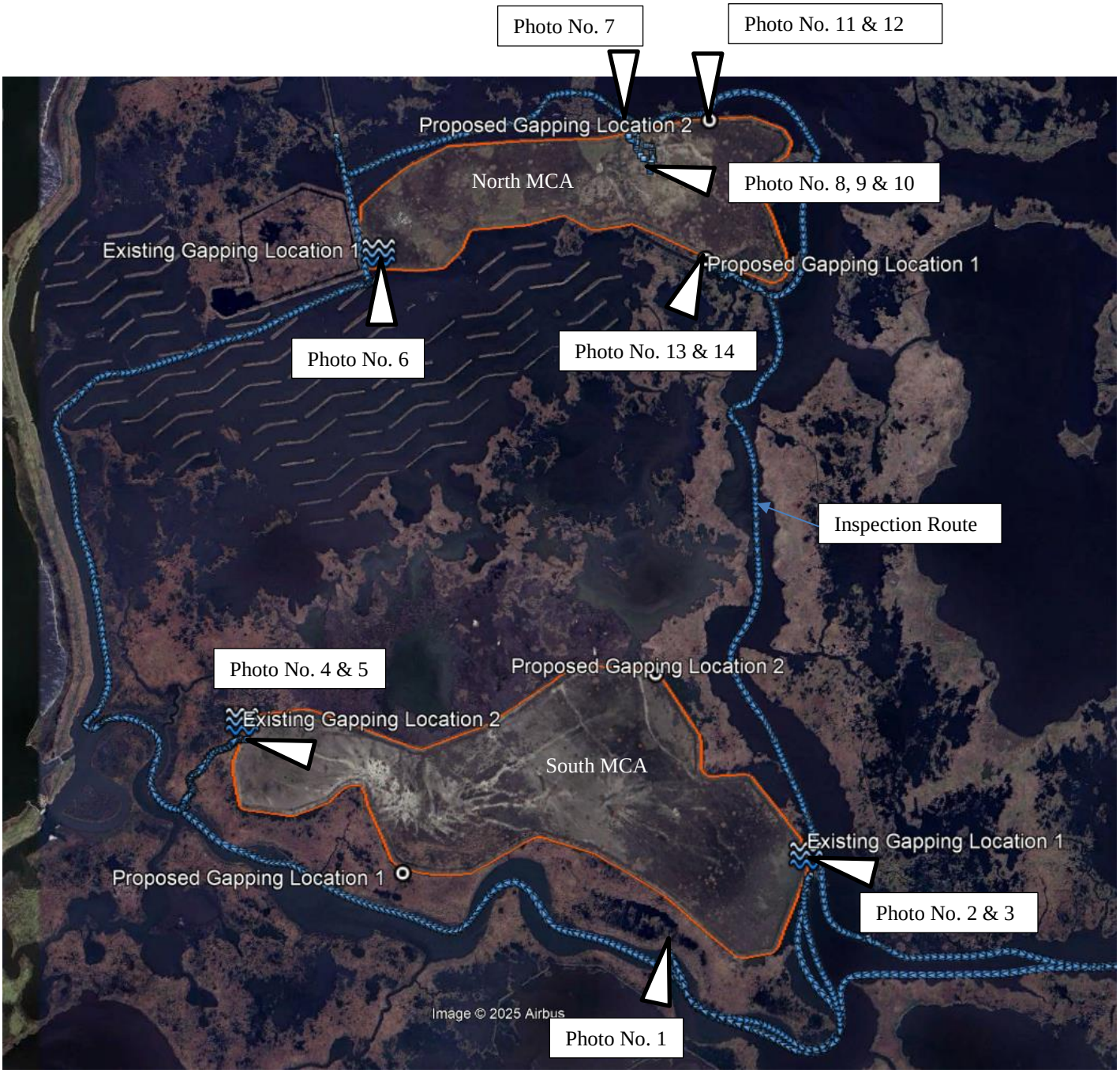


Photo No. 7
Photo No. 11 & 12
Proposed Gapping Location 2
North MCA
Photo No. 8, 9 & 10
Existing Gapping Location 1
Proposed Gapping Location 1
Photo No. 6
Photo No. 13 & 14
Inspection Route
Photo No. 4 & 5
Proposed Gapping Location 2
Existing Gapping Location 2
South MCA
Existing Gapping Location 1
Proposed Gapping Location 1
Photo No. 2 & 3
Image © 2025 Airbus
Photo No. 1

Photo No. 1: South MCA, southeast side, looking northeast over existing marsh toward the exterior containment dike.

Photos No. 2 and 3: South MCA, east side, looking west at an existing gap in the containment dike on the east side of the MCA.

Photo No. 4: South MCA, existing gap at the west side interior of the western containment dike, looking west.

Photo No. 5: South MCA, west side interior of the western containment dike, looking west.

Photo No. 6: North MCA, southwest exterior corner of the southern containment dike, looking north.

Photo No. 7: North MCA, exterior of the northern containment dike, looking south

Photo No. 8, 9, and 10: North MCA, north side of the marsh interior at high point, looking at the vegetation.

Photo No. 11: North MCA, exterior of the northeastern containment dike, looking north.

Photo No. 12: North MCA, exterior of the northeastern containment dike, looking south.

Photo No. 13: North MCA, exterior of the southern containment dike, looking north.

Photo No. 14: North MCA, exterior of the southern containment dike, looking south.

Appendix C

Three Year Budget Projection

Cameron-Creole Watershed Grand Bayou Marsh Creation / CS-54 / PPL 20

Three-Year Operations & Maintenance Budgets 07/01/2025 - 06/30/2028

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Brent Bouy	*Brent Bouy*	*USFWS*	*Brent Bouy*

	2025/2026 (-8)	2026/2027 (-9)	2027/2028 (-10)
Maintenance Inspection	$ 13,500.00	$ -	$ -
Structure Operation			
State Administration	$5,000.00	$ 5,000.00	$ 5,000.00
Federal Administration	$1,000.00	$ 1,000.00	$ 1,000.00
Maintenance/Rehabilitation			

25/26 Description: North and South MCA ECD Gapping

E&D	$13,500.00		
Construction	$60,230.00		
Construction Oversight	$2,500		
Sub Total - Maint. And Rehab.	$ 76,230.00		

26/27 Description

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

27/28 Description:

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

	2025/2026 (-8)	2026/2027 (-9)	2027/2028 (-10)
Total O&M Budgets	**$ 95,730.00**	**$ 6,000.00**	**$ 6,000.00**

O &M Budget (3 yr Total)	**$ 107,730.00**	
Unexpended O & M Budget	**$ 145,084.00**	as of April 2025
Remaining O & M Budget (Projected)	**$ 37,354.00**	

OPERATION AND MAINTENANCE BUDGET WORKSHEET

Cameron-Creole Watershed Grand Bayou Marsh Creation

CS-54 / C.140054.8 / PPL NO. 20/ 2025-2026

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$13,500.00	**$13,500.00**
E&D	LUMP	1	$8,000.00	**$8,000.00**
Construction Admin	LUMP	1	$5,500.00	**$5,500.00**
Construction Inspection	LUMP	1	$2,500.00	**$2,500.00**
ADMINISTRATION				
State Admin.	LUMP	1	$5,000.00	$5,000.00
FEDERAL SPONSOR Admin.	LUMP	1	$1,000.00	$1,000.00
	LUMP	0	$0.00	$0.00
		0		$0.00
			TOTAL ADMINISTRATION COSTS:	**$6,000.00**
MAINTENANCE / CONSTRUCTION				
SURVEY				
SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	$0.00	$0.00
Staff Gauge / Recorders	EACH	0	$0.00	$0.00
Bathymetry/ Topography	LUMP	0	$0.00	$0.00
TBM Installation	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL SURVEY COSTS:	**$0.00**
GEOTECHNICAL				
GEOTECH DESCRIPTION:				
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**
CONSTRUCTION				
CONSTRUCTION DESCRIPTION:	North and South MCA ECD Gapping			
Mob / Demob	LUMP	1	$40,000.00	$40,000.00
Containment Dike Gapping - 4 - (25ft gaps)	LF	100	$40.00	$4,000.00
Construction surveys	LUMP	1	$4,130.00	$4,130.00
Contingency (25%)	%	25%	$48,130.00	$12,100.00
			TOTAL CONSTRUCTION COSTS:	**$60,230.00**
			TOTAL OPERATIONS AND MAINTENANCE BUDGET:	**$95,730.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

Cameron-Creole Watershed Grand Bayou Marsh Creation

CS-54 / C.140054.8 / PPL NO. 20/ 2026-2027

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	0	$13,905.00	**$0.00**
General Structure Maintenance	LUMP	0	$0.00	**$0.00**
Engineering and Design	LUMP	0	$0.00	**$0.00**
Operations Contract & Minor Maitenance	LUMP	0	$0.00	**$0.00**
Other	LUMP	0	$0.00	**$0.00**
ADMINISTRATION				
State Admin.	LUMP	1	$5,000.00	$5,000.00
FEDERAL SPONSOR Admin.	LUMP	1	$1,000.00	$1,000.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
Construciton Admin & Oversight		0	$0.00	$0.00
			TOTAL ADMINISTRATION COSTS:	**$6,000.00**
MAINTENANCE / CONSTRUCTION				
SURVEY				
SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	$0.00	$0.00
Staff Gauge / Recorders	EACH	0	$0.00	$0.00
Bathymetry / Topography	LUMP	0	$0.00	$0.00
TBM Installation	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL SURVEY COSTS:	**$0.00**
GEOTECHNICAL				
GEOTECH DESCRIPTION:				
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**
CONSTRUCTION				
CONSTRUCTION DESCRIPTION:				
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE
Mob / Demob		LUMP	0	$0.00	$0.00
Contingency (25%)		LUMP	0	$0.00	$0.00
General Structure Maintenance		LUMP	0	$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
			TOTAL CONSTRUCTION COSTS:	**$0.00**
		TOTAL OPERATIONS AND MAINTENANCE BUDGET:		**$6,000.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

Cameron-Creole Watershed Grand Bayou Marsh Creation

CS-54 / C.140054.8 / PPL NO. 20/ 2027-2028

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	0	$14,322.15	**$0.00**
General Structure Maintenance	LUMP	0	$0.00	**$0.00**
Engineering and Design	LUMP	0	$0.00	**$0.00**
Operations Contract & Minor Maitenance	LUMP	0	$0.00	**$0.00**
Other	LUMP	0	$0.00	**$0.00**
ADMINISTRATION				
State Admin.	LUMP	1	$5,000.00	$5,000.00
FEDERAL SPONSOR Admin.	LUMP	1	$1,000.00	$1,000.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$6,000.00**
MAINTENANCE / CONSTRUCTION				
SURVEY				
SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	$0.00	$0.00
Staff Gauge / Recorders	EACH	0	$0.00	$0.00
Bathymetry/ Topography	LUMP	0	$0.00	$0.00
TBM Installation	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL SURVEY COSTS:	**$0.00**
GEOTECHNICAL				
GEOTECH DESCRIPTION:				
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**
CONSTRUCTION				
CONSTRUCTION DESCRIPTION:				
Mob / Demob	LUMP	0	$0.00	$0.00
Contingency (25%)	LUMP	0	$0.00	$0.00
General Structure Maintenance	LUMP	0	$0.00	$0.00
OTHER			$0.00	$0.00
OTHER			$0.00	$0.00
OTHER			$0.00	$0.00
			TOTAL CONSTRUCTION COSTS:	**$0.00**
			TOTAL OPERATIONS AND MAINTENANCE BUDGET:	**$6,000.00**

Appendix D

Field Inspection Form

Annual Inspection Report
Cameron-Creole Watershed Grand Bayou Marsh Creation
State Project No. CS-54

Annual Field Inspection Form for Fiscal Year 2025	
Project Name:	Cameron-Creole Watershed Grand Bayou Marsh Creation
Project No./WBS No.:	CS-54 / C.140054
Date of Inspection:	Monday, March 17, 2025
Time of Inspection:	10:30:00 AM
Inspector(s):	Brent Bouy, Jody White, Mark Mouledous, Bernard Wood, Ivy Thibideaux and Adam Constantin (CPRA -LAF); John Savell, US Fish & Wildlife Services
Weather Conditions:	Sunny with mild temperatures and windy
Structure No.	N/A
Structure Description:	Marsh Creation Area (MCA)
Type of Inspection:	Annual
Water Level Inside:	N/A
Water Level Outside:	N/A

Item	Condition	Photo #	Observations and Remarks
Tidal Exchange	Ok		Additional gapping is needed to improve the tidal exchange and drainage for the North and South MCA.
Drainage			
South MCA	Good	1-5	Vegetation coverage is healthy across the site with natural tidal exchange occurring through existing dike gaps. Planned northern and southern dike gaps will further improve drainage and promote more consistent marsh hydrology.
North MCA	Good	6-14	Emergent marsh is well-established with strong vegetation coverage; Spartina spartinae present at highest elevations. Additional dike gaps are recommended to enhance tidal flow and reestablish Mangrove Bayou for improved hydrologic function.

What are the conditions of the existing levees?	N/A
Are there any noticeable breaches?	N/A
Settlement of rock plugs and rock weirs?	N/A
Position of stoplogs at the time of the inspection?	N/A
Are there any signs of vandalism?	No