



**State of Louisiana
Department of Natural Resources
Coastal Engineering Division**

**2005/2006 Annual Inspection
Report**

for

**CAMERON/CREOLE
WATERSHED HYDROLOGIC
RESTORATION PROJECT
(CS-17)**

State Project Number CS-17
Priority Project List 1

October 24, 2005
Cameron Parish

Prepared by:

Stan Aucoin, Engineering Tech.
LDNR/Coastal Engineering Division
Lafayette Field Office
635 Cajundome Blvd.

Table Of Contents

I. Introduction.....	1
II. Inspection Purpose and Procedures	1
III. Project Description and History.....	2
IV. Summary of Past Operation and Maintenance Projects.....	3
V. Inspection Results	4
VI Conclusions and Recommendations	4

Appendices

- Appendix A Project Features Map
- Appendix B Photographs
- Appendix C Three Year Budget Projections
- Appendix D Field Inspection Notes
- Appendix E Map showing areas to be monitored

I. Introduction

The Cameron Creole Watershed Hydrologic Restoration Project (C/S-17) is located in the Cameron Creole Watershed area in Cameron Parish. The project consists of two sheet pile plugs in the lakeshore borrow canal on the east side of Calcasieu Lake. The objective of the Cameron/Creole Watershed project is to reduce the salt water intrusion and ponding within the Cameron Creole Watershed area with an estimated 850 acres of marsh protection (See Appendix A).

The Cameron/Creole Watershed 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 and approved on the first Priority Project List. The Cameron/Creole Project has a twenty –year (20 year) economic life, which began in February 1997.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Cameron/Creole Watershed Project (CS-17) 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, LDNR 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 (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 completion of the Cameron/Creole Project are outlined in Section IV.

In 2003, the CWPPRA Task Force determined, due to the fact that LDNR was responsible for the operation and maintenance phase of the vast majority of CWPPRA projects, that LDNR would be the responsible party for all Post Storm/Hurricane Assessments. After Hurricanes Katrina and Rita, every project appeared to have been impacted by the storms; therefore, LDNR determined that all projects should be assessed for damages (Broussard, 2006). With concurrence from the federal sponsor, LDNR has decided to use the information obtained during this post hurricane assessment in this Annual Maintenance Inspection.

An inspection of the Cameron/Creole Watershed Project (CS-17) was held on October 24, 2005 under partly cloudy skies and warm temperatures. In attendance were Dewey Billodeau and Pat Landry from LDNR, Jim Ashfield with USFWS, Wayne Melancon with NRCS, Tal McCain with M & M Electric, and Lonnie Harper and James Duddlestone with Lonnie Harper and Associates. All parties met at the Big Pasture boat launch in Cameron Parish, LA. The annual inspection began at approximately 10:00 a.m. at the Grand Bayou structure.

The field inspection included a complete visual inspection of the entire project site. Staff gauge readings and existing temporary benchmarks were used to determine approximate elevations of water, steel bulkhead structures and other project features. Photographs were taken at each project feature (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 consists of 64,000 acres (25,900 ha) of brackish, intermediate, and fresh marsh located in the Calcasieu/Sabine Basin in Cameron Parish, Louisiana (figure 1). This area is part of the Sabine National Wildlife Refuge. Since the original 30 ft (9.15 m) deep dredging of the Calcasieu Ship Channel in the 1940's, salt water intrusion from the Gulf of Mexico into the interior marshes via Calcasieu Lake has caused high rates of marsh loss. As a result, approximately 63,000 acres (25,496 ha) of brackish, intermediate, and fresh marsh on the east side of Calcasieu Lake were lost between 1950 and 1970, and replaced by brackish and saline marsh (Delany 1991). In 1989, a levee and five (5) water control structures (three variable-crest and two fixed crest) with vertical slots were constructed by the United States Fish and Wildlife Service (USFWS) and the Soil Conservation Service (SCS) along the east shore of Calcasieu Lake to reduce the movement of salt water into the watershed. A borrow canal was also constructed along the wetland side of the levee. Management of the five water control structures is controlled by the USFWS and is designed to retard the introduction of saltwater into the Cameron-Creole Watershed.

The five water control structures along Calcasieu Lake are scheduled for operation in two phases. Phase I emphasizes curtailing marsh erosion and reclaiming emergent marsh by implementing a partial drawdown of 0.5 ft (0.15 m) below marsh elevation from February 15-July 15. At least one of the vertical slots in each structure remains open during this time. Phase II, or the maintenance phase, primarily emphasizes curtailing marsh erosion with secondary emphasis on improving fisheries habitat, maintaining and improving wildlife habitat, and increasing species diversity in emergent marsh plants. The crests of all structures are set at 0.5 ft (0.15 m) below marsh level with all slots and the boat bay at Grand Bayou open. Temporary closures of the boat bay and slots are dependent on maintaining salinities below the 5 ppt limit at the east end of East Prong.

Changes in the water movement patterns on the Cameron-Creole Watershed since the water control structures were installed and the management plan was implemented in 1989 have not occurred as anticipated. Saline water continues to move through the structures, and through the borrow canal, resulting in excessive pooling of saline water in the southern end of the watershed (Delany 1991). In the northern project area, water moves rapidly in a counter-clockwise circulation pattern through the Peconi (Bois Connine) Bayou system.

The Cameron-Creole Watershed Borrow Canal Plug project (C/S-17) installed two sheetmetal plugs in the lakeshore borrow canal, one south of Grand Bayou and one south of Mangrove Bayou (figure 2) to isolate management areas and improve hydrologic control. The two C/S-17 plugs require no operations, and will remain at their as-built elevations. The plug

south of Mangrove Bayou, set at 1.5 ft (0.46 m) National Geodetic Vertical Datum (NGVD), will affect 2,500 acres (1,012 ha) in the northern project area. The vegetated marsh in this area is composed of *Spartina patens* (marshhay cordgrass), *Scirpus americanus* (Olney's three-cornered grass), *Paspalum vaginatum* (joint grass), *Typha* spp. (cattail), and *Phragmites australis* (roseau cane). Soils over the majority of the northern project area are comprised of Bancker and Clovelly soil types, except in the northern project area, where a small percentage of Gentilly Muck is present (USDA 1995).

The plug south of Mangrove Bayou will also affect 1,750 acres (708 ha) of broken marsh and shallow open water ponds from 0.5 ft to 2 ft (0.15-0.61 m) deep vegetated by *Ruppia maritima* (widgeon grass), *Myriophyllum spicatum* (Eurasian watermilfoil), and *Ceratophyllum demersum* (coontail). The broken emergent marsh, composed of *S. patens*, is subject to shoreline erosion caused by wind driven wave action across long fetches of open water.

The plug south of Grand Bayou, set at 1.0 ft (0.3 m) NGVD, will allow separate operation of the Grand Bayou and Lambert Bayou structures, affecting 8,000 acres (3,238 ha) of brackish marsh in the southern project area. The vegetated marsh in this area is composed of *S. patens*, *Distichlis spicata* (saltgrass), and *Spartina alterniflora* (smooth cordgrass).

Construction was completed on February 1, 1997. The project objectives are to enhance and improve marsh condition in the northern, southern, and eastern project areas, and to improve present structural management capabilities. The specific project goals are to reduce duration of flooding in the southern project area, reduce water flow in the borrow canal in the northern project area, increase coverage of emergent marsh plants in both the northern and southern project areas, and to increase the relative frequency of occurrence of SAV in the eastern project area.

The principal project features include:

- Structure #1/Mangrove Bayou Structure – interlocking sheetpile plug with boat bay
- Structure #2/Grand Bayou Structure - interlocking sheetpile plug with boat bay

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: Below is a summary of completed maintenance projects and operation tasks performed since February 1997, the construction completion date of the Cameron Creole Watershed Project (CS-17).

2005 – Cameron Creole Maintenance Project – LDNR: (M & M Electric) This maintenance project included the removal and replacement of existing handrails with hot dipped galvanized handrails, and installation of a boat guide in the existing boat bay. Construction was completed in May 2006. The cost associated with the engineering, design and construction of the Cameron Creole Watershed Maintenance Project is as follows:

Construction:	\$ 67,777.00
Engineering & Design:	\$ 4,292.40
Construction Administration:	\$ 3,000.00
Construction Oversight/As built:	\$ <u>2,841.17</u>
Project Total:	\$ 77,910.57

2005 Structure Operations: There are no active operations associated with this project.

V. Inspection Results

Structure #2—Grand Bayou structure

The contractor had removed the existing railing and had his work barge with the new railing moored in the vicinity of the weir. The storm surge broke the barge from its mooring. The barge and material cannot be found. The water level was over the top of the weir. There is bank erosion on both ends of the sheet pile wall. (Photos: Appendix B, Photo 3).

Structure #1—Mangrove Bayou structure

The contractor had completed the installation of the rails and boat guides. The storm surge pushed a steel tank approximately 6'Φ x 8' Lg. across the structure in the vicinity of the warning sign bracket on the west side of the boat passage bay. The tank is on the levee near the Mangrove Bayou structure. Twenty four feet of the pile cap is twisted, bent and pulled away from the sheet piling. The railing east of the boat bay is in good condition. There is bank erosion on both ends of the sheet pile wall. (Photos: Appendix B, Photo 1 & 2).

VI. Conclusions and Recommendations

Overall, the Cameron/Creole Watershed Project is still in fair condition after Hurricane Rita however some maintenance is required as listed above. The recent maintenance event started in 2005 as described above has put the project back in proper condition and is functioning as designed.

Appendix A
Project Features Map



Cameron Creole Plugs (CS-17)

-  Plug
-  Project Boundary



Map Produced By:
 U.S. Department of the Interior
 U.S. Geological Survey
 National Wetlands Research Center
 Coastal Restoration Field Station

Background Imagery:
 Thematic Mapper Satellite Imagery 2000

Map Date: August 1, 2002
 Map ID: 2002-11-645
 Data accurate as of: August 1, 2002

Appendix B
Photographs



Photo 1, Mangrove Bayou Weir No. 1



Photo 2, Mangrove Bayou Weir #1



Photo 3, Bank Erosion On Both Ends Of The Weir On Both Structures

Appendix C

Three Year Budget Projection

CAMERON-CREOLE/ CS-17/ PPL 1

Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08

<u>Project Manager</u> Pat Landry	<u>O & M Manager</u> Dewey Billodeau	<u>Federal Sponsor</u> USFWS	<u>Prepared By</u> Dewey Billodeau
--------------------------------------	---	---------------------------------	---------------------------------------

	2005/2006	2006/2007	2007/2008
<i>Maintenance Inspection</i>	\$ 4,955.00	\$ 5,250.00	\$ 5,407.00
<i>Structure Operation</i>			
<i>Administration</i>	\$ 3,000.00	\$ -	\$ -

Maintenance/Rehabilitation

05/06 Description: Repair two plugs, boat guide and handrails

<i>E&D</i>	\$ 4,292.00
<i>Construction</i>	\$ 67,777.00
<i>Construction Oversight</i>	\$ 2,841
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 74,910.00</u>

06/07 Description

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

07/08 Description:

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

	2005/2006	2006/2007	2007/2008
<u>Total O&M Budgets</u>	\$ 82,865.00	\$ 5,250.00	\$ 5,407.00

<u>O & M Budget (3 yr Total)</u>	\$ 93,522.00
<u>Existing O & M Budget</u>	\$ 134,539.00
<u>Remaining O & M Budget (Projected)</u>	\$ 41,017.00

OPERATION AND MAINTENANCE BUDGET WORKSHEET
CAMERON-CREOLE / PROJECT NO. CS-17 / PPL NO. 1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$4,955.00	\$4,955.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$4,292.00	\$4,292.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$2,841.00	\$2,841.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	\$1,500.00	\$1,500.00
FEDERAL SPONSOR Admin.	LUMP	1	\$1,500.00	\$1,500.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$3,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary Monument	EACH	0	\$0.00	\$0.00	
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00	
Marsh Elevation / 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		
	0	0.0		\$60.00	\$0.00	
	0	0.0	0	\$0.00	\$0.00	
	0	0.0	0	\$0.00	\$0.00	
Filter Cloth / Geogrid Fabric	SQ YD			\$12.00	\$0.00	
Navigation Aid	EACH			\$4,000.00	\$0.00	
Signage	EACH			\$3,000.00	\$0.00	
General Excavation / Fill	CU YD	0		\$0.00	\$0.00	
Dredging	CU YD	0		\$0.00	\$0.00	
Sheet Piles (Lin Ft or Sq Yds)			0	\$0.00	\$0.00	
Timber Piles (each or lump sum)			0	\$0.00	\$0.00	
Timber Members (each or lump sum)			0	\$0.00	\$0.00	
Hardware	LUMP	1		\$0.00	\$0.00	
Materials	LUMP	1		\$0.00	\$0.00	
Mob / Demob	LUMP	1		\$10,000.00	\$10,000.00	
Contingency	LUMP	1		\$0.00	\$0.00	
General Structure Maintenance	LUMP	1		\$57,777.00	\$57,777.00	
OTHER				\$0.00	\$0.00	
OTHER				\$0.00	\$0.00	
OTHER				\$0.00	\$0.00	
TOTAL CONSTRUCTION COSTS:					\$67,777.00	

TOTAL OPERATIONS AND MAINTENANCE BUDGET:

\$82,865.00

Appendix D

Field Inspection Form

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-17 Lake Portage Landbridge

Date of Inspection: October 20, 2005 Time: 10:00 a.m.

Structure No. N/A

Inspector(s): Darrell Pontiff, Troy Blair, Justin Blake, Loland Broussard

Structure Description: Shoreline Protection

Water Level N/A

Type of Inspection: Annual

Weather Conditions: Clear and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Timber Bulkhead / Caps	Good				Some erosion each side of timber bulkhead north side of Area 3.
Steel Grating					
Salinity Readings					Intracoastal City - 4 ppt, Vermilion Bay - 9 ppt, Area 1 channel - 14 ppt, Gulf of Mexico - 16.5 ppt
Concrete Mats	Good				Some erosion each side of concrete mats along Gulf shoreline.
Timber Piles	Good				
Timber Wales					
Galv. Pile Caps					
Vegetation	Good				Area 3 fully vegetated, Area 2 existing vegetation, Area 1 vegetation spreading.
Signage /Supports	Good				
Rip Rap (fill)					
Earthen Embankment	Good				
Dredge Spoil	Good				Channel area wet, storm surge water draining, slight settlement.

What are the conditions of the existing levees?
 Are there any noticeable breaches?
 Settlement of rock plugs and rock weirs?
 Position of stoplogs at the time of the inspection?
 Are there any signs of vandalism?

Good
 No
 N/A
 N/A
 No

Appendix E

Locations to be Monitored