



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

**2005/2006 Annual Inspection  
Report**

for

**FOUR MILE CANAL TERRACING  
AND SEDIMENT TRAPPING  
PROJECT**

State Project Number TV-18  
Priority Project List 9

October 4, 2005  
Vermilion Parish

Prepared by:

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## **I. Introduction**

The Four Mile Canal Terracing and Sediment Trapping (TV-18) project is located approximately 4 miles (6.44 km) south of Intracoastal City in Vermilion Parish, Louisiana, and includes Little White Lake and the portion of Little Vermilion Bay immediately west of Four-Mile Canal also known as the Vermilion River Cutoff (Appendix A). The total project area comprises approximately 2,269 acres.

The Four Mile Canal Terracing and Sediment Trapping 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 ninth Priority Project List. The Four Mile Canal Project has a twenty year (20 year) economic life, which began in May 2004.

## **II. Inspection Purpose and Procedures**

The purpose of the annual inspection of the Four Mile Canal Terracing and Sediment Trapping Project (TV-18) 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, 2005). 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 Four Mile Canal 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 Four Mile Canal Terracing and Sediment Trapping Project (TV-18) was held on October 4, 2005 under clear skies and mild temperatures. In attendance were Stan Aucoin, Herb Juneau, Darrell Pontiff, Pat Landry, Christine Thibodeaux, and Beau Tate from LDNR, and John Foret of NOAA Fisheries. All parties met at the Lafayette Field Office of CED and traveled to Intracoastal City in Vermilion Parish, LA. The annual inspection began at the site of the terraces constructed in Little White Lake.

The field inspection included a visual inspection of the project site. Staff gauge readings were used to determine approximate elevations of water and earthen terraces. 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 Flood Control Act of 18 August 1941 enacted by the United States Congress provided for improvements in the Vermilion River. Vermilion River Cutoff, an 8 ft by 80 ft (2.44 m by 24.38 m) channel from the -8 foot contour in the Vermilion Bay to the Gulf Intracoastal Waterway (GIWW) was constructed for improving navigation from Lafayette, LA to the -8 foot (-2.44 m) contour in Vermilion Bay and to improve flood control from Port Barre, LA to the Vermilion Bay via Bayou Teche, Bayou Fusilier and Vermilion River. The materials excavated to build the canal were deposited in spoil banks along the canal. This prevented the river waters from nourishing the adjacent marsh (USACE 1993; HNTB 2002). The main cause of marsh loss in this area is believed to be shoreline erosion. From the 1978 Louisiana Department of Transportation and Development (LDOTD) inventory and assessment of shoreline erosion in coastal Louisiana, the Abbeville 15 minute Quadrangle, which depicts Vermilion Bay near Onion Bayou, documents an erosion rate of 1.6 ft/yr (0.5 m/yr) and just adjacent to that in the Cheniere Au Tigre & Abbeville 15 minute Quadrangle, which is Vermilion Bay (Mud Point to Lake Cleodis) has an erosion rate of 2.6 ft/yr [0.8 m/yr] (Adams et al. 1978). Shoreline change, specifically in the project area, calculated by USGS was 2.86 ft/yr (0.87 m/yr) and island area change was 0.64 acres/yr (0.26 ha/yr [2003]). A combination of wave and wake erosion continues to deteriorate this area, which is relatively unprotected and affected by storm events emerging from Vermilion Bay. This erosion prevents sub-aerial marsh development from sediments introduced to the area by the GIWW through the Vermilion River and Four-Mile Canal (LDNR 1999).

The construction of terraces in Little White Lake and Vermilion Bay will buffer existing marsh against shoreline erosion by reducing wave and wake energy. Marsh will immediately be created by planting *S. alterniflora* along the crowns and slopes of the constructed terraces. Additionally, new marsh will be created as freshwater and suspended sediments introduced from Four Mile Canal and the Vermilion River are dispersed through the project area via conveyance channels, and trapped in the shallow open water adjacent to the terraces. In doing so, terraces may indirectly reduce water-column turbidity within the project area. This, in conjunction with decreased wave and wake energy, will create habitat suitable for the colonization by submerged aquatic vegetation (SAV). Fisheries habitat may be enhanced by the marsh edge created by the terraces and the propagation of SAV. Conveyance channels may also promote the exchange of organisms and organic material within and through the project area (2005 DNR OM&M Report).

The principal project features include:

1. 26,300 linear feet of earthen terraces constructed in Little White Lake
2. 40,300 linear feet of earthen terraces constructed in Little Vermilion Bay
3. Smooth Cordgrass plantings on all terraces

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

##### **General Maintenance:**

None as yet required.

##### **2005 Structure Operations:**

There are no active operations associated with this project.

#### **V. Inspection Results**

##### **Site 1—Earthen terraces**

The terraces appear to be in fairly good condition. No excessive erosion has taken place as a result of Hurricane Rita. There was some oilfield trash found on the southwestern most terraces in Little White Lake. On the Little Vermilion Bay portion of the project, some significant erosion is still occurring on the terraces immediately adjacent to the Vermilion River Cut Off. These terraces will continue to be closely monitored. Interior terraces were unable to be closely inspected due to the closures, that were installed in some of the borrow excavations, but appear in excellent condition with substantial growths of the vegetation that was planted. No sections on the excavated channels to determine sediment deposited were taken on this inspection. No maintenance needed at this time. (Photos: Appendix B, Photo 1-2)

##### **Site 2—Vegetation plantings**

Vegetation has spread throughout the terraces. Although stressed due to inundation with high salinity water from the hurricane, recovery is expected. No maintenance needed at this time.

#### **VI. Conclusions and Recommendations**

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The Four Mile Canal Terracing and Sediment Trapping Project is in very good condition and functioning as intended. Staff gauges should be installed at convenient locations when other survey work in the area is required.

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



# Four Mile Canal Terracing and Sediment Trapping (TV-18)

 Terrace\*  
 Project Boundary  
 \* denotes proposed features


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

Background Imagery:  
 1998 Digital Orthophoto Quarter Quadrangle  
 Map Date: November 13, 2002  
 Map ID: 2002-11-535  
 Data accurate as of: November 13, 2002



## **Appendix B**

### **Photographs**

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Photo 1—Oilfield debris on terrace in Little White Lake



Photo 2—eroded terrace near Vermilion River Cut Off

## **Appendix C**

### **Three Year Budget Projection**

**FOUR MILE CANAL/ TV18 / PPL 9**  
**Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08**

<u>Project Manager</u> Herb Juneau	<u>O &amp; M Manager</u> Herb Juneau	<u>Federal Sponsor</u> N/A	<u>Prepared By</u> Stan Aucoin
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	2005/2006	2006/2007	2007/2008
<b>Maintenance Inspection</b>	\$ 4,955.00	\$ 5,250.00	\$ 5,407.00
<b>Structure Operation</b>			
<b>Administration</b>		\$ -	\$ -
<b>Maintenance/Rehabilitation</b>			

**05/06 Description:**

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

**06/07 Description:**

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

**07/08 Description:**

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

	2005/2006	2006/2007	2007/2008
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 4,955.00</b>	<b>\$ 5,250.00</b>	<b>\$ 5,407.00</b>

<b><u>O &amp; M Budget (3 yr Total)</u></b>	<b>\$ 15,612.00</b>
<b><u>Existing O &amp; M Budget</u></b>	<b>\$ 1,656.00</b>
<b><u>Remaining O &amp; M Budget (Projected)</u></b>	<b>\$ 13,956.00</b>

## **Appendix D**

### **Field Inspection Form**

**MAINTENANCE INSPECTION REPORT CHECK SHEET**

Project No. / Name: TV-18 Four Mile Canal

Date of Inspection: October 4, 2005 Time:

Structure No. N/A

Inspector(s): Stan Aucoin, Darrell Pontiff, Pat Landry, Herb Juneau,  
Christine Thibodeaux, Beau Tate (DNR) John Foret (NMFS)

Structure Description: Terracing and Sediment Trapping

Water Level +1.6' NAVD

Type of Inspection: Annual

Weater Conditions: Clear and mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps					
Steel Grating					
Stop Logs					
Hardware					
Timber Piles					
Timber Wales					
Galv. Pile Caps					
Vegetation	Good				Stressed due to Hurricane Rita. Recovery expected.
Signage /Supports					
Rip Rap (fill)					
Eathern Embankment Terraces	Good				Expected erosion on sacrificial terraces. Significant erosion on terraces adjacent to Vermilion River Cut Off.

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

## **Appendix E**

### **Locations to be Monitored**