



**Coastal Protection and Restoration  
Authority of Louisiana**

**Office of Coastal Protection and  
Restoration**

**2008/2009 Annual Inspection  
Report**

for

**LAKE PORTAGE LAND  
BRIDGE PROJECT  
(TV-17)**

State Project Number TV-17  
Priority Project List 8

June 17, 2009  
Vermilion Parish

Prepared by:

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## I. Introduction

The Lake Portage Land Bridge Protection Project is a shoreline protection project comprised of 1,540 acres (623 ha) located in Vermilion Parish, Louisiana. The project area is bounded to the south by the Gulf of Mexico and to the north by Vermilion Bay, and surrounds Lake Portage within the Paul J. Rainey Wildlife Sanctuary and the Louisiana State Wildlife Refuge, west of Southwest Pass (figure 1). This area has exhibited wetland loss of approximately 6 acres (2.4 ha) during the period 1968-1997, as indicated by habitat change analyses conducted by the USGS National Wetlands Research Center (NWRC) in Lafayette, Louisiana and the Louisiana Department of Natural Resources (LDNR). Currently, approximately 81 percent of the 1,540 total acres (623 ha) is classified as emergent marsh and the remaining 19 percent as shallow open water. The estimate of wetland loss during the next 20 years with no action taken is 24 acres (9.7 ha), or 2% of the remaining emergent marsh area.

The marsh area is characterized as brackish, with vegetation dominated by *Spartina patens* (marshhay cordgrass), *Schoenoplectus robustus* (sturdy bulrush), *Schoenoplectus americanus* (chairmaker's bulrush), and *Juncus roemerianus* (needlegrass rush). Spoilbank vegetation is dominated by *Sesbania drummondii* (rattlebox) and *Baccharis halimifolia* (saltbush). Vegetation occurring adjacent to the shoreline is characterized by *Distichlis spicata* (saltgrass), *Borrchia frutescens* (bushy seaside tansy), *Spartina alterniflora* (smooth cordgrass), *Schoenoplectus pungens* (common three-square), and *Fimbristylis castanea* (marsh fimbry) (USDA-NRCS 2002).

Wetland loss in the project area has occurred in the form of conversion of beach and brackish marsh to open water. The high-energy of the Gulf of Mexico has accelerated wave-induced erosion of the southern shoreline. A shoreline change study by Byrnes et al. (1995) found the mean shoreline retreat rate for the chenier plain from Cheniere au Tigre to Southwest Pass to be 9.5 ft/yr (2.9 m/yr) between 1883 and 1994. This loss has resulted primarily from erosional scouring from the same littoral currents that can also contribute to sediment accretion. These littoral currents from the Atchafalaya River and Wax Lake Outlet to the east cause sediment accretion during periods of slow velocity, and cause scouring as current velocity increases due to storms and anthropogenic factors such as the removal of reef shell from Southwest Pass near Marsh Island.

The objective of this project is to backfill the canal associated with the Trunkline Gas Company Pipeline located to the north and south of Lake Portage, using approximately 44,000 yd<sup>3</sup> (33,640 m<sup>3</sup>) of dedicated dredge material. The canal is approximately 5,976 ft (1,821 m) long, 90 feet (27 m) wide and 3 feet (0.9 m) deep. Refurbishment of the east levee of the canal will also be required in order to allow for marsh creation to a sufficient elevation. The south end of the canal is connected to the Gulf of Mexico on high tides by a small tributary approximately 4 ft (1.2 m) wide and 2 ft (0.61 m) deep. The canal is otherwise insulated to the south from the Gulf by approximately 1,800 ft (548.6 m) of marsh.

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

The purpose of the annual inspection of the Lake Portage Land Bridge Project (TV-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, OCPR 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, 2004). 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 Lake Portage Land Bridge Project are outlined in Section IV.

An inspection of the Lake Portage Land Bridge Project (TV-17) was held on June 17, 2009 under sunny skies and hot temperatures. In attendance were Darrell Pontiff, Tommy McGinnis and Mark Mouldous from OCPR, Dale Garber, representing NRCS, and Paul Provence representing LDWF. The annual inspection began at approximately 10:20 a.m. at the bulkhead of Area 1 and ended at approximately 12:45 p.m. at the earthen plug/timber bulkhead on the northern end of Area 3.

The field inspection included a complete visual inspection of most of the project features. Staff gauge readings and existing temporary benchmarks where available were used to determine approximate elevations of water and spoil material. 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**

In 1971 Sea Robin Pipeline Company (now owned by Trunkline Gas Co.) constructed a 36-inch natural gas pipeline originating offshore in the Gulf of Mexico. It traverses north and south through the Louisiana Wildlife Management Area Game Preserve and the Paul J. Rainey Wildlife Sanctuary, through Vermilion Bay to Henry, Louisiana. Pre-cast articulating concrete block mat systems were constructed at the Gulf shoreline. They are modular in design and are attached by stainless steel cables. They protect underlying subgrades while allowing beneficial vegetative growth. An earthen dike was also constructed approximately midway between the Gulf and Lake Portage, as was a wooden bulkhead at the south shore of Lake Portage. Since that time significant erosion has begun to occur on both the east and west sides of the Gobi Mats. Also, the earthen dike and wooden bulkhead have been breached leaving the pipeline canal susceptible to tidal exchange between the Gulf and Lake Portage and eventually Vermilion Bay.

The proposed Lake Portage Land Bridge Project will backfill the gas pipeline canal to a settled target elevation (2.0 NAVD88) from Vermilion Bay to the Gulf of Mexico with

material dredged from Vermilion Bay. The 1,540-acre project area is bounded by Vermilion Bay to the north and the Gulf of Mexico to the south, and is comprised of approximately 81 percent emergent marsh and 19 percent open water.

The work within the project consisted of building up existing spoil banks around Areas 1 and 3 for containment of the dredged material. Material was then hydraulically dredged from within Vermilion Bay and pumped into the containment areas. Also, dredge material was pumped into an unconfined Area 2 which is south of the confined Area 1. The dredge material was pumped to an elevation of +3.5 within Areas 1 and 3, and to an elevation of +2.0 in Area 2. The final constructed features of this project include the placement of 40,900 cubic yards of hydraulically dredged material within Areas 1, 2 and 3.

Also, approximately 8,527 linear feet of existing spoil was raised in locations as needed to form a containment dike to an elevation of +4.0 around Areas 1 & 3. Where raising of the existing spoil was necessary, the containment dike was constructed with a minimum 6 foot top width with 3 horizontal to 1 vertical side slopes.

A 15 inch diameter PVC pipe with weir notch was installed in the south containment dike of Area 3 that drains the contained area into Lake Portage. Construction was completed in December, 2004.

Hurricane Rita in 2005 totally inundated this area of southwest Louisiana however the project features sustained minimal adverse effects. In 2008, Hurricane Ike again inundated this area and once again no damages were sustained.

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

**General Maintenance:** Below is a summary of completed maintenance projects and operation tasks performed since May 2004, the construction completion date of the Lake Portage Landbridge Project (TV-17).

No maintenance has been required on this project.

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

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

##### **Area 1 (Station 0+00 to 22+99, between Lake Portage and Earthen Plug)**

Area 1 is in good condition and vegetation has continued to expand from the containment banks moving towards the center of the channel and is 100 per cent vegetated. As a result of the inspection of Area 1, OCPR and NRCS agree that no corrective actions will be required this year. (Photos: Appendix B, Photo 1).

### **Area 2 (Station 0+00 to 18+26, between Earthen Plug and Gulf of Mexico)**

Area 2 is also in good condition and is fully vegetated, such that this reach was preexisting with additional dredge material added through this project to fill in any trenasses. Some erosion at the ends of the concrete mats along the Gulf shoreline has occurred over time and part of the mat system is showing signs of failure. Although the concrete mat system is not a feature to be maintained as part of this project, this area is experiencing erosion that may threaten the integrity of the overall project. Therefore, OCPD and NRCS agree that maintenance will be required at this time. (Photos: Appendix B, Photos 2, 3, 4 & 5).

### **Area 3 (Station 0+00 to 18+06, between Vermilion Bay and Lake Portage)**

Area 3 also is in good condition. The northern part of this reach is fully vegetated, mainly due to the fact that this reach was constructed first, and has been in place since May, 2003. There is some minor erosion occurring on each side of the northern timber bulkhead which will need to be monitored on future annual inspections. OCPD and NRCS agree that this area is in good condition and no maintenance will be required at this time. (Photos: Appendix B, Photos 6).

### **Vegetation and ecological observations** (Submitted by Tommy McGinnis, OCPD)

#### **Unit 1** (southern shore of Lake Portage south to Unit 1/2 earthen plug)

From Lake Portage, the signature contours of the pipeline canal are distinguishable from the adjacent shoreline vegetation dominated by Roseau cane (*Phragmites communis* Trin.) as the elevated spoil banks composed of saltbush (*Baccharis halimifolia* L.) and Roseau cane grade down to the less elevated smooth cordgrass (*Spartina alterniflora* Lois.). Just behind the bulkhead for about fifty feet, vegetation cover is 70-85% composed of large patches of smooth cordgrass standing in shallow water. Thereafter in unit 1, the inside of the pipeline area has completely filled-in with a healthy vegetative community dominated by smooth cordgrass and sturdy bulrush (aka. leafy three-square; *Schoenoplectus robustus* Pursh) indicative of low lying marsh; the only notable nonvegetated areas were animal trails. Footing within the pipeline area was firm. The elevated spoil banks along the pipeline and the earthen plug at the south end of Unit 1 are composed of saltbush, marshhay cordgrass (*Spartina patens* (Ait.) Muhl), and salt grass (*Distichlis spicata* (L.) Greene) which is common in higher-elevation brackish marsh.

#### **Unit 2** (between unit 1 and the Gulf of Mexico)

Unit 2 was only slightly distinguishable from the adjacent marsh (smooth cordgrass/marshhay cordgrass) by the prevalence of salt grass which is indicative of higher elevation marsh presumably from the sediment addition. At the south end of Unit 2, dune species, bushy seaside tansy (*Borrchia frutescens* (L.) DC.) and marsh fimbry (*Fimbristylis* sp. Vahl), mix with the high marsh species, marshhay cordgrass and salt grass, as the soil becomes more

sandy and higher elevation approaching the Gobi mats. Adjacent to the pipeline area, the Gulf of Mexico is eroding into the lower, unprotected marsh composed mainly of smooth cordgrass along the edge and marshhay cordgrass further inland.

**Unit 3** (between Lake Portage and Hell Hole/Vermilion Bay)

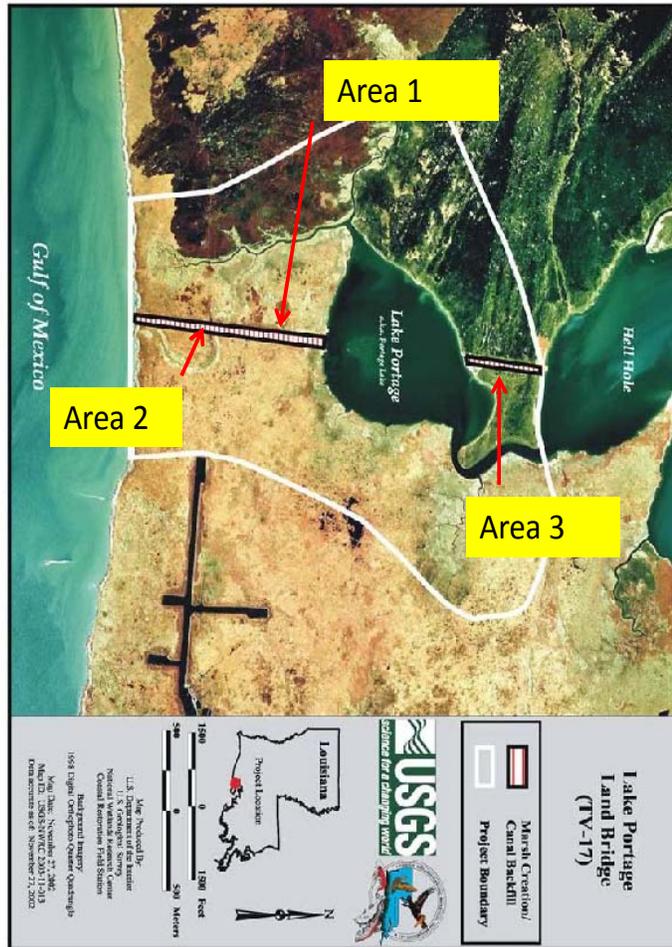
The vegetation at the southern end of Unit 3 was indistinguishable from the surround marsh (Roseau cane and marshhay cordgrass) except for a strip of smooth cordgrass extending about 10 feet into Lake Portage along the shoreline. Much of the Hell Hole shoreline is eroding into the marsh resulting in extensive scouring behind the east and west sides of the bulkheads at the northern end of Unit 3. The vegetation appears healthy behind the bulk head; it is a mix of smooth cordgrass, Roseau cane, black needle rush (aka. needlegrass; *Juncus roemerianus* Scheele.), and saltbush. The adjacent marsh is typical brackish marsh composed of smooth cordgrass, marshhay cordgrass, black needle rush, and occasional Roseau cane. The pipeline area appeared to be fully vegetated with the same vegetation is the adjacent marsh as far as could be seen from the north and south shorelines.

## **VI. Conclusions and Recommendations**

Overall, the Lake Portage Land Bridge Project is in good condition and functioning as designed. However, the erosion problem occurring at the Gulf shoreline will need to be addressed. Preliminary survey work has been completed to develop an accurate estimate of costs and subsequent CWPPRA funding request will be initiated in FY 2010.

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

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## **Appendix B**

### **Photographs**



Photo 1, Area 1, View looking south at timber bulkhead.



Photo 2, Area 2, West side of concrete mats.



Photo 3, Area 2, Close up view of erosion on west side of concrete mats.



Photo 4, Area 2, East side of concrete mats.



Photo 5, Area 2, View looking north.



Photo 6, Area 3, near bulkhead on north end.

## **Appendix C**

### **Three Year Budget Projection**

**LAKE PORTAGE/ TV-17 / PPL 8**  
**Three-Year Operations & Maintenance Budgets 07/01/2009 - 06/30/2012**

<u>Project Manager</u>	<u>O &amp; M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
Pat Landry	Darrell Pontiff	NRCS	Darrell Pontiff

	2009/2010	2010/2011	2011/2012
<b>Maintenance Inspection</b>	\$ 5,737.00	\$ 5,909.00	\$ 6,086.00
<b>Structure Operation</b>			
<b>Administration</b>		\$ -	\$ -
<b>Maintenance/Rehabilitation</b>			

09/10 Description:

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

10/11 Description:

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

11/12 Description:

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

	2009/2010	2010/2011	2011/2012
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 5,737.00</b>	<b>\$ 5,909.00</b>	<b>\$ 6,086.00</b>

<b><u>O &amp; M Budget (3 yr Total)</u></b>	<b>\$ 17,732.00</b>
<b><u>Unexpended O &amp; M Budget</u></b>	<b>\$ 79,399.00</b>
<b><u>Remaining O &amp; M Budget (Projected)</u></b>	<b>\$ 61,667.00</b>

## **Appendix D**

### **Field Inspection Form**

Annual Inspection Report  
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MAINTENANCE INSPECTION REPORT CHECK SHEET

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

Date of Inspection: June 17, 2009 Time: 10:20 a.m.

Structure No. N/A

Inspector(s): Darrell Pontiff, Tommy McGinnis, Mark Mouledous (OCP),  
 Paul Provence(LDWF), Dale Garber (NRCS)

Structure Description: Shoreline Protection

Water Level +1.6 at TV-18 staff gage  
 Weather Conditions: Sunny and hot

Type of Inspection: Annual

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Timber Bulkhead / Caps	Good				
Steel Grating	N/A				
Salinity Readings					
Concrete Mats	Good			2,3,4	Some erosion each side of concrete mats along Gulf shoreline.
Timber Piles	Good				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	Good			1,5,6	Area 3 fully vegetated, Area 2 existing vegetation, Area 1 fully vegetated.
Signage / Supports	Good				
Rip Rap (fill)	N/A				
Earthen Embankment	Good				
Dredge Spoil	Good				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**