State of Louisiana
Coastal Protection and Restoration Authority of Louisiana (CPRA)

2012 Operations, Maintenance, and Monitoring Report

For

Sediment Trapping at the Jaws (TV-15)

State Project Number TV-15
Priority Project List 6

June, 2012
St. Mary Parish

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2012 Operations, Maintenance, and Monitoring Report
For
Sediment Trapping at the Jaws (TV-15)

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Preface

This report includes monitoring data collected through December 2011, and annual Maintenance Inspections through May 2012.

The 2012 report is the 2rd report in a series of reports. For additional information on lessons learned, recommendations and project effectiveness please refer to the 2005 Operations, Maintenance, and Monitoring Report on the CPRA web site.

I. Introduction

The Sediment Trapping at the Jaws (TV-15) project was part of CWPPRA PPL 6 and is sponsored by the National Marine Fisheries Service (NMFS) and comprises approximately 4,543 acres (1,838 ha). Ninety-one percent, 4,139 acres (1,675 ha), of the project is classified as open water, while the remaining 404 acres (163 ha) is classified as fresh and intermediate marsh (CRMS spatial viewer land/water 2008, Barras et al. 2008). The project is located near "The Jaws" in the northeast segment of West Cote Blanche Bay, approximately 10 miles southwest of Franklin, Louisiana in St. Mary Parish (figure 1).

The area has experienced major hydrologic changes since the construction of the Gulf Intracoastal Waterway (GIWW) in the 1920's, which created a hydrologic connection between the project area and the sediment-laden Atchafalaya River. During southeast winds, sediment-laden water is also being delivered to the project area via West Cote Blanche Bay (Walker et al. 1997). Canal construction has greatly increased the tidal exchange between East and West Cote Blanche Bays and the interior marshes (Good et al. 1995).

These hydrologic alterations have changed the marsh type and water salinities accordingly. The area surrounding "The Jaws" supported vegetation typical of brackish marsh in 1949 (O'Neil 1949) and in 1968 (Chabreck et al. 1968). However, starting in 1978 the area was classified as fresh marsh (Chabreck and Linscombe 1978, 1988, and 1997). This conversion took place as fresh water from the Atchafalaya River began reaching Vermilion Bay. More recent investigations of the marsh in and around the project have classified the area as a fresh and intermediate marsh in 2001 and 2007 (Chabreck and Linscombe 2001 and Sasser and Visser 2008). Approximately 10% of the shallow open water areas prior to project implementation were dominated by submerged aquatic vegetation (SAV) such as *Vallisneria americana* (water celery), *Najas quadalupensis* (southern naiad), *Myriophyllum spicatum* (Eurasian watermilfoil), and *Heteranthera dubia* (star grass).

Marsh loss between 1957 and 1990 in the nearby Cote Blanche Hydrologic Restoration (TV-04) project area was calculated by USDA-NRCS personnel to be more than 2,400 acres (971.5 ha), approximately 73 acres (29.5 ha)/yr during the 33 year span. Shoreline erosion was

calculated to be 15 ft/yr (4.5 m/yr), based on planimetric analyses of aerial photography for this period.

The soils in and around most of the project area are Kenner muck, a semifluid organic soil, and Balize silt loam, a very fluid mineral soil, which are both frequently flooded (Soil Survey Staff NRCS).

The project features include earthen terraces, conveyance channels, and plantings designed to reduce shoreline erosion, enhance sediment deposition, and lock placed soils in position. The terraces were designed to slow down water leaving the GIWW so suspended sediment would be deposited in the shallow water adjacent to the terraces and along the shore of West Cote Blanche Bay. The construction of terraces was also intended to protect the existing marsh against shoreline erosion by reducing wave and wake energy and creating marsh by planting along the slopes of the constructed terraces. The construction of the terraces was intended to reduce fetch, current, and turbidity between terraces, while inducing sediment deposition which results in the creation of mud flats and SAV beds in formally shallow open water areas. The dredging of distributary channels has increased freshwater and sediment flow into the project area. The high sediment availability makes the project area a good site for creating marsh by trapping sediments from the GIWW and West Cote Blanche Bay though this has not been the case as of yet. Fisheries habitat may also be enhanced by the marsh edge created by the terraces and the propagation of SAV beds on the mud flats.

The project goals include:

1. Protect the banks of "the Jaws" and existing marshes from shoreline erosion.

2. Create 1,821 acres (735 ha) of marsh habitat.

3. Greatly increase the quantity of submerged aquatic vegetation habitat.

The construction of Sediment Trapping at the Jaws (TV-15) was completed in December 2004 and is functioning as intended to date. Approximately 40,100 linear ft (12,223 m) of terraces just southwest of the Jaws (figure 2) were constructed to deter wave erosion and enhance sediment deposition. The terraces were arranged in a deltaic ridge alignment in the near shore open water area. The terraces were built to + 4.0 ft (+1.2 m) NAVD88 with a 6 ft crown and 4:1 ft side slopes. Post consolidation elevation of all terraces was expected to be greater than 2 ft NAVD88. The distributary channels are located on the landward side of the terraces and were constructed to a maximum width of 50 ft and maximum depth of 12 ft below the existing water bottom. In order to minimize erosive energies, the terrace slopes were planted with approximately 38,500 *Schoenoplectus californicus* (California bulrush) and *Zizaniopsis miliacea* (giant cutgrass) plants.

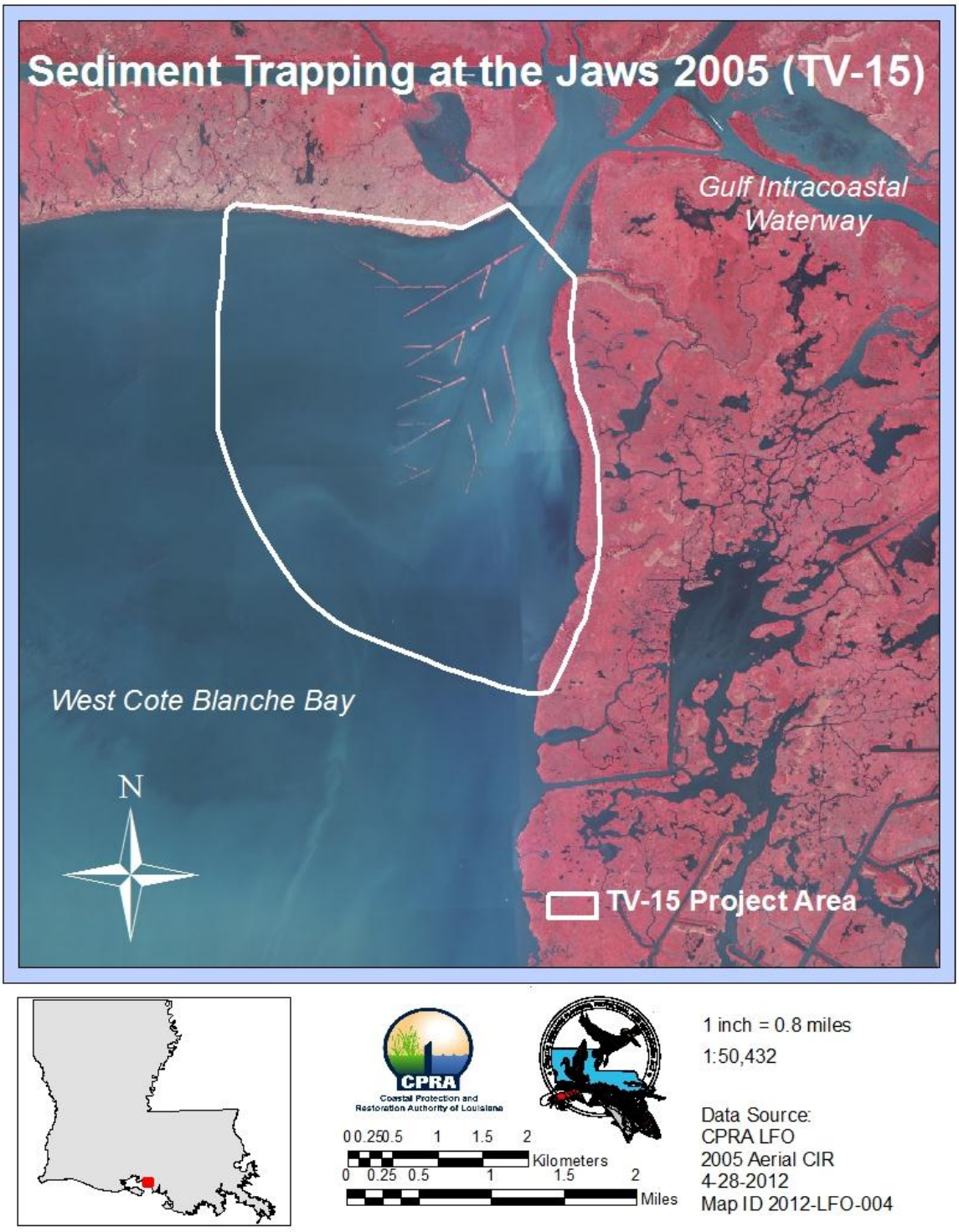

Figure 1. The Sediment Trapping at the Jaws (TV-15) project, post construction with terraces clearly visible in 2005.

II. Maintenance Activity

a. Project Feature Inspection Procedures

The purpose of the annual inspection of the Sediment Trapping at the Jaws Project (TV-15) 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 (O&M Plan, 2005).

An inspection of the Sediment Trapping at the Jaws Project (TV-15) was held on May 30, 2012 under partly cloudy skies and hot temperatures. In attendance were Stan Aucoin and Jody White from CPRA Lafayette; John Foret from NOAA Fisheries and Dale Garber from NRCS for inspection on another project. The annual inspection began at the northern most terrace.

The field inspection included a visual inspection of randomly selected areas of the project site. Staff gauge readings, when available, and existing temporary benchmarks were used to determine approximate elevations of water and terraces. Photographs were taken (see Appendix A) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix C).

b. Inspection Results

Earthen Terraces/Vegetation

The terraces remain in very good condition. Settlement on the ends of the terraces has stabilized. GPS locations were obtained at the end of three terraces for future comparison. Vegetation on the terraces is thriving. The noted varieties were Giant Cut Grass, Elephant Ear, Bullwhip, Bull tongue, and Willow trees. In addition, Parrot Feather and Hyacinths were noted adjacent to the terraces. Vegetation still exists in areas where terraces have settled substantially. There was no apparent damage from nutria as seen before. Warning signs were all in place and stable. Submerged and emergent aquatic vegetation between the terraces continues to expand. Channels remain clear. No need for any maintenance at this time. (Appendix A, Photos 1–4)

c. Maintenance Recommendations

i. Immediate/ Emergency Repairs

ii. Programmatic/ Routine Repairs

No maintenance is recommended at this time.

d. Maintenance History

There has been no required maintenance on this project.

III. Operation Activity

a. Operation Plan

There are no water control structures associated with this project; therefore no Structural Operation Plan is required.

b. Actual Operations

There are no water control structures associated with this project; therefore, no Structural Operation Plan is required.

IV. Monitoring Activity

Pursuant to a CWPPRA Task Force decision on August 14, 2003 to adopt the Coastwide Reference Monitoring System-*Wetlands* (CRMS-*Wetlands*) for CWPPRA, updates were made to the TV-15 Monitoring Plan to merge it with CRMS-*Wetlands* and provide more useful information for modeling efforts and future project planning while maintaining the monitoring mandates of the Breaux Act. There are zero CRMS sites located in the project area, but data from eight adjacent CRMS sites was used 527, 494, 493, 543, 545, 517, 496, and 489.

a. Monitoring Goals

The objectives of the Sediment Trapping at the Jaws project are to reduce shoreline erosion rates, create marsh in shallow open water areas with the construction and planting of earthen terraces and the expansion of existing SAV beds to encompass inter terrace areas and near shore locations.

The following goals will contribute to the evaluation of the above objectives:

1. Evaluate land/water ratios within the project area.
2. Evaluate the condition of the established emergent and planted vegetation on the terraces.

b. Monitoring Elements

Aerial Photography:

Aerial photography and satellite imagery will be collected for the entire coast through Coastwide Reference Monitoring Stations-W*etlands (*CRMS-*Wetlands)*. The aerial photography will be analyzed for CRMS-*Wetlands* stations at one meter resolution. The satellite imagery will be analyzed to determine land and water areas for the entire coast. This imagery will be a subset and used to evaluate changes in land and water areas within the TV-15 project area at a coarse (30m) resolution. Aerial Photography for the Teche/Vermilion Basin was collected (1m) and analyzed for years 2005 and 2008 and when obtained by CRMS thereafter. The 2005 aerial photography was analyzed in high resolution for land water classification of the TV-15 project area (figure 2).The CRMS spatial viewer provided historic data for land water quantification in the project area starting in 1956. The years analyzed for land water quantities through the CRMS viewer were 1956, 1978, 1988, 2004, 2006, and 2008. The data provided by this tool is at a large spatial scale and is designed to show trends in land loss, not exact acreages.

CRMS Supplemental

In addition to the project specific monitoring elements listed above, a variety of other data is collected at CRMS-*Wetlands* stations which can be used as supporting or contextual information. Data types collected at CRMS sites include hydrologic from continuous recorders, vegetative, physical soil characteristics, discrete porewater salinity, surface elevation change, vertical accretion and land-water analysis of a 1 km^2 area encompassing the station (Folse et al. 2012). For this report, vegetation data from CRMS0543 and CRMS0545 was used to examine emergent vegetation of the protected back marsh, and land/water data was used form CRMS sites 543 and 545 in the area to provide local land-change trends (figure 4). Elevation change data from CRMS 527, 494, 493, 543, 545, 517, 496, and 489 were examined to qualitatively judge the major factors in land loss, e.g. how large of a factor is net elevation change in land change (figure 4).

c. Monitoring Results and Discussion

Aerial photography:

Project-specific aerial photography (1:40,000 scale) of the TV-15 project area was obtained on December 20, 2004, just after construction was completed from which land and water were classified (figure 2 and table 1). Project-specific photography has not been obtained again since the original imagery in 2004. Anecdotal evidence shows large mud flats and SAV beds have formed in between the deltaic ridges and the original shoreline creating quality estuarine fisheries habitat and protecting back marshes from wave energy (figure 3). The historic land loss in the project area from 1956 through 1988 reduced the amount of marsh from near 650 acres to a little over 300 acres, approximately a 50% reduction in land mass (figure 5). This was mostly due to shore line erosion from wave energy. From 1988 to 2004 the marsh gained land potentially due to continuous sediment availability from the GIWW via the Atchafalaya River. The construction of terraces in the project area in late 2004 early 2005 created an

acreage spike which was immediately reversed by 2008 as hurricanes added to the normal erosive forces in the Jaws. The total land area of the original terraces and surrounding shoreline has been reduced due to wave and storm energies (figure 5), but the accumulation of sediment in the form of extensive mud flats when quantified would reduce the acreage of water within the project area. The extent of mud flat formation in and around the terrace framework is roughly 800 acres or 20 percent of the project area (ArcMap10). This trend has been seen in similar Coastal Wetlands Planning, Protection and Restoration Act projects (CWPPRA) in the same Hydrologic Basin, TV-18 and TV-12.

Elevation Change

Subsidence and accretion data collected at CRMS 527, 494, 493, 543, 545, 517, 496, and 489 yields some insight as to the nature of land loss in the vicinity of TV-15 (figure 4). These near shore sites are generally maintaining elevation roughly equal to the rate of relative sea level rise (RSLR) which indicates land loss is likely to be dominated by shoreline erosion and not marsh collapse due to inundation (figure 6). The elevation change rates ranged from +2.21 cm/yr to -2.91cm/yr relative to RSLR, but generally were closer to + or - 0.5 cm/yr. These values show elevation change rates along the coast of East and West Cote Blanche Bay are variable but with respect to RSLR are generally stable. CRMS site 489 had a large positive elevation change rate (+2.21 cm/yr). This is likely due to its proximity on the shoreline of East Cote Blanche Bay. This location receives sediment overwash from the surrounding water bottoms and shoreline erosion during strong winds and storms. The typical cycle in these locations is accretion building up the site until it becomes the shoreline itself and then erodes. Site 494 shows the opposite trend with a large negative elevation change rate (-2.91cm/yr). The reason for this serious loss in elevation is possibly hyper subsidence in a small area surrounding the site as this is an isolated event along both Cote Blanche Bay rims. The mechanism for this subsidence is a difficult question to answer and could be the decomposition of very organic soils, but is more likely some deeper geologic processes.

Vegetation

The marsh vegetation community behind the terrace and deltaic infrastructure consists mainly of *Sagittaria lancifolia* (bull tongue), *Cicuta maculata* (spotted water hemlock), *Phragmites australis* (common reed), *Vigna luteola* (hairypod cowpea), *Typha* spp. (cattail), and *Panicum hemitomon* (maidencane) (CRMS 2011 vegetation survey). Total percent cover of the vegetation within the CRMS sites behind TV-15 has increased following the hurricane season of 2005, with the species specific percent cover stabilizing at well over 100 % annually. The floristic quality Index (FQI) of these sites is low as fresh marshes have more non-native, nuisance species, and annuals that tend to receive lower scores. However the species richness is very high with greater than ten species found at each site during the 2011 vegetation sampling period (figure 7). This cannot be directly coupled to the project's effect but is representative of marsh type in the project area.

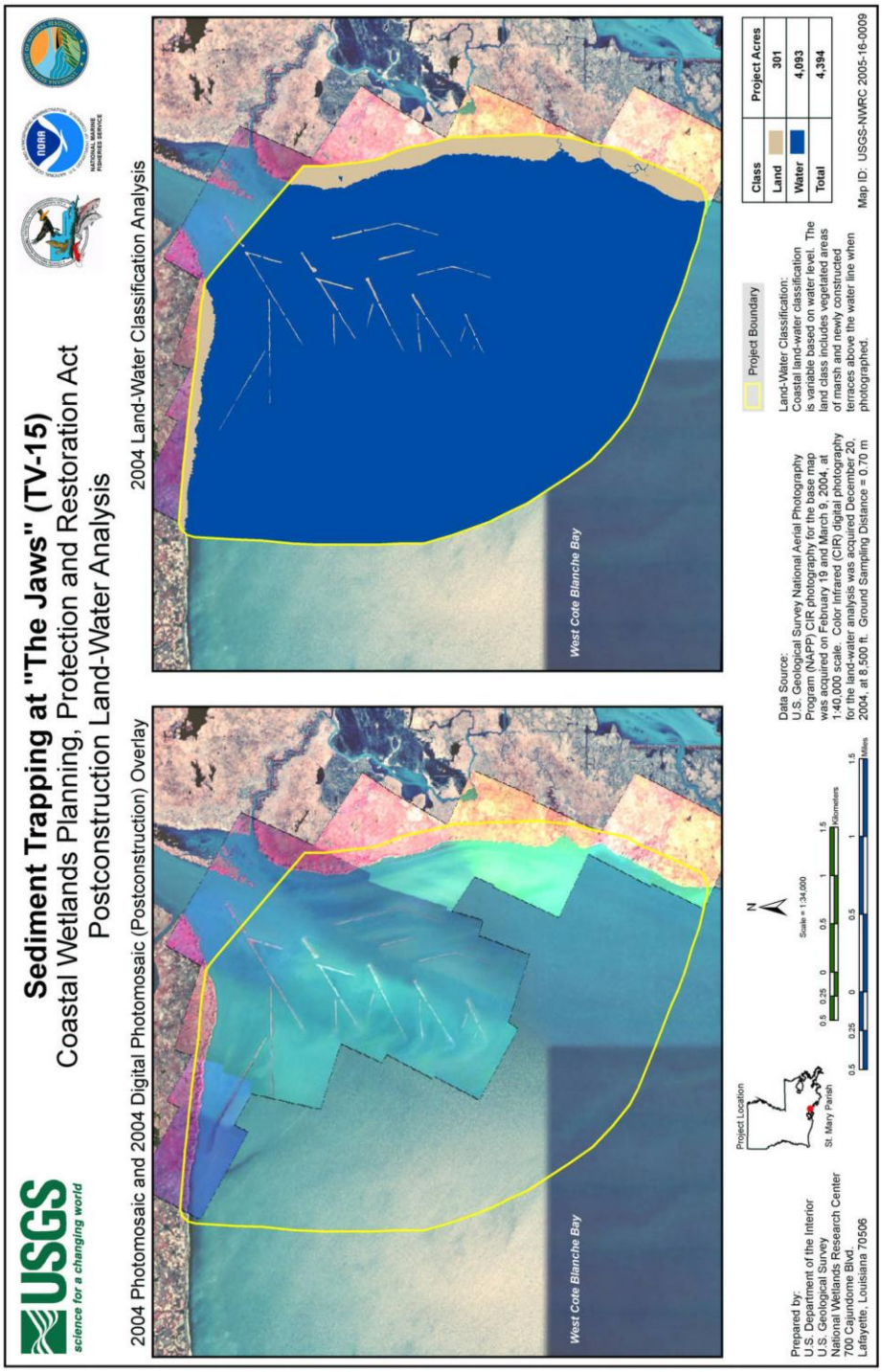

Figure 2. Land/water analysis of aerial photography taken December 20, 2004, showing the acreage of land and water in the project area of the Sediment Trapping at the Jaws (TV-15).

Table 1. Acreages of land and water from the 2004 land-water analysis of the Sediment Trapping at the Jaws (TV-15) project area, no new imagery has been processed for this project. This project specific acreages differs from the below land change figure 5 acreages as they have slight deviations in project area and are at different scales of resolution.

Class	Project Acres	Percentage (%)
Land	301	7
Water	4093	93
Total	4394	100

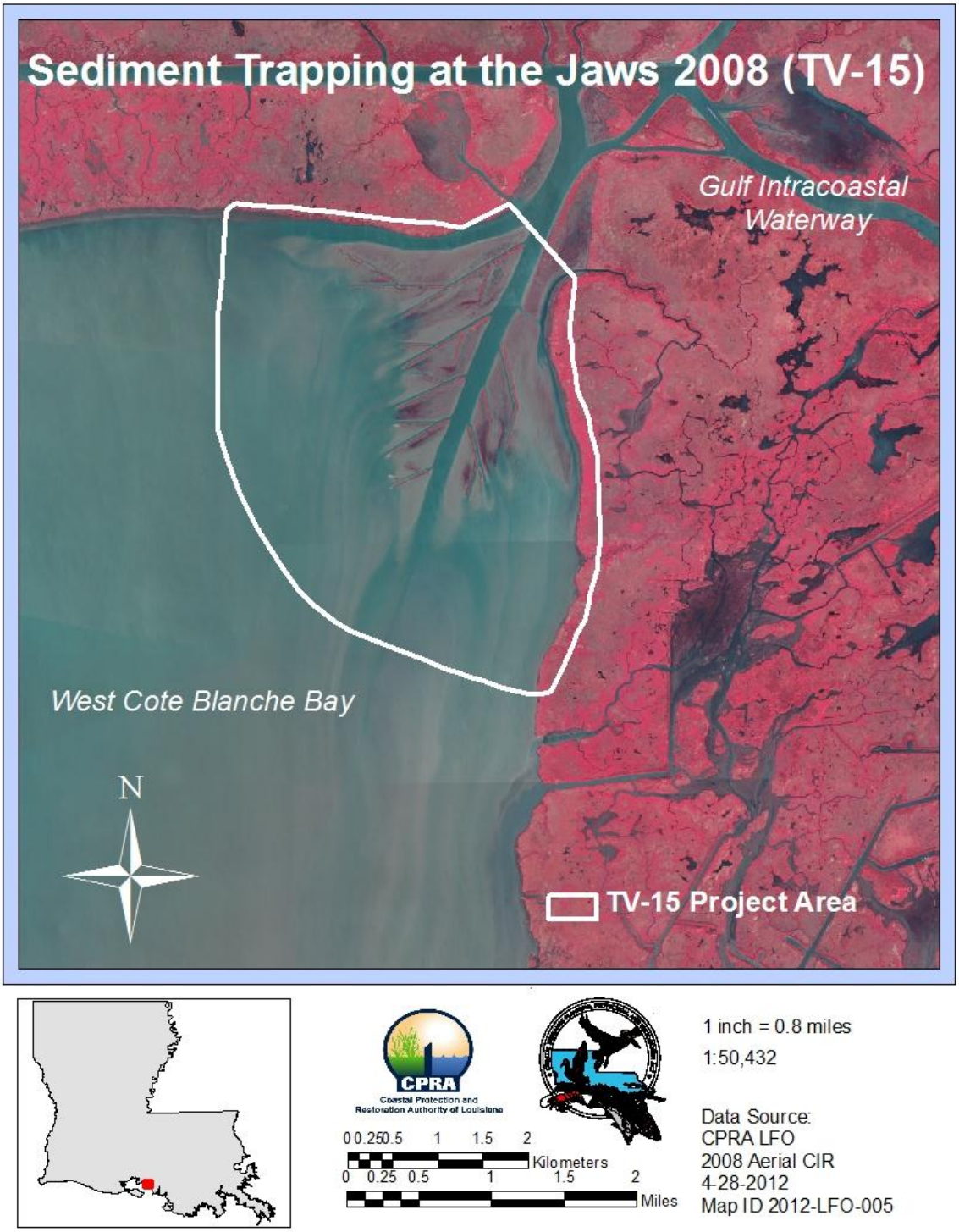

Figure 3. The areas in between and around the constructed deltaic ridges of TV-15 have trapped substantial amounts of sediment as visible in 2008.

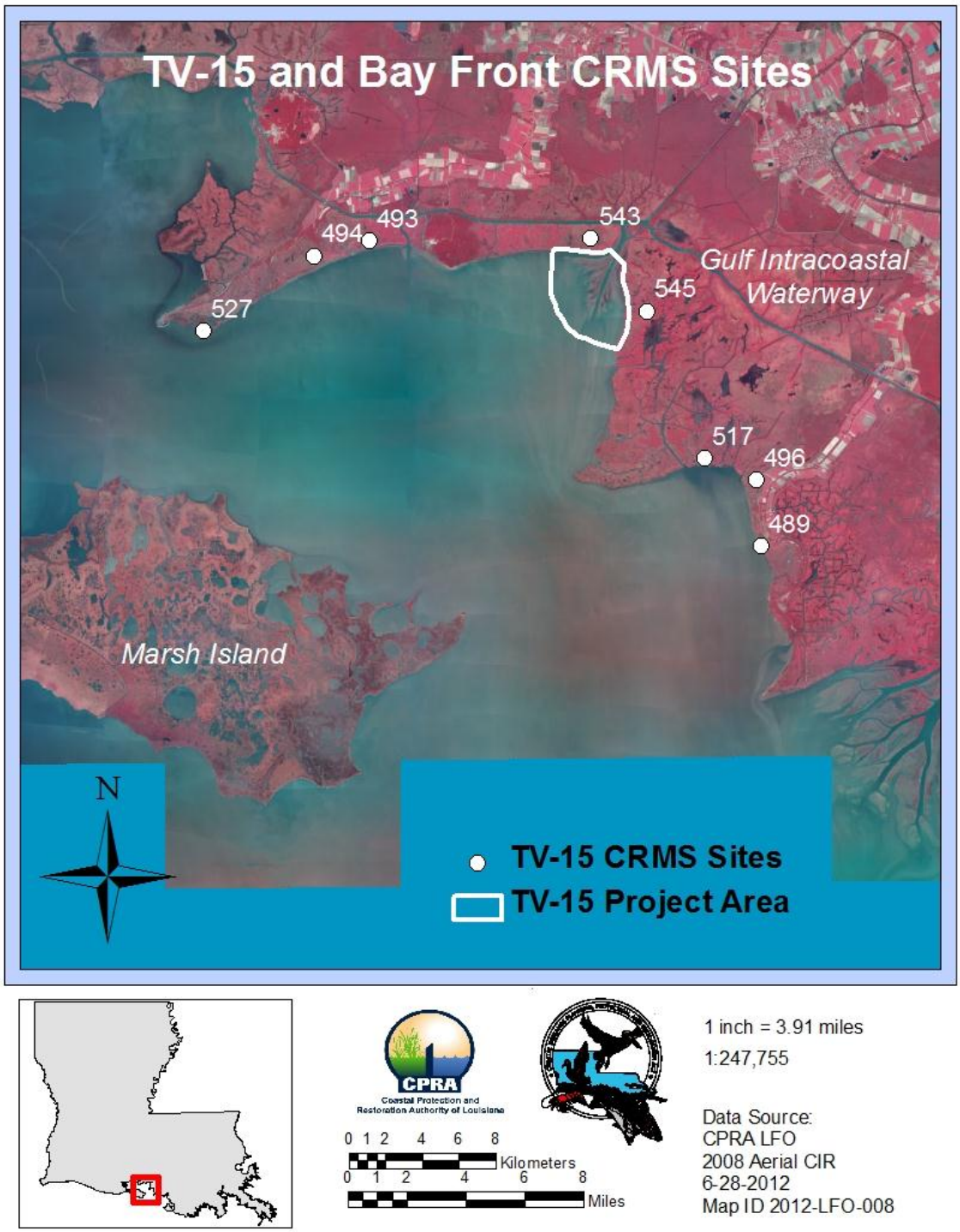

Figure 4. The location of CRMS sites with similar bay front exposers to that of TV-15 on East and West Cote Blanche Bay.

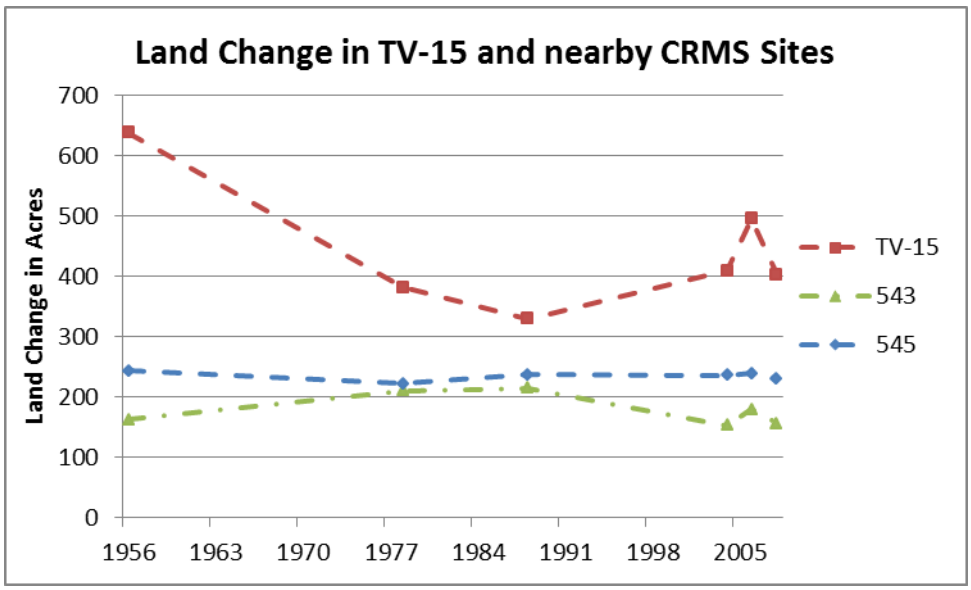

Figure 5. General trends in land change of TV-15 and local CRMS sites near the Jaws, most of the land loss in the project area was likely caused by shoreline erosion (CRMS spatial viewer land/water, Barras et al. 2008).

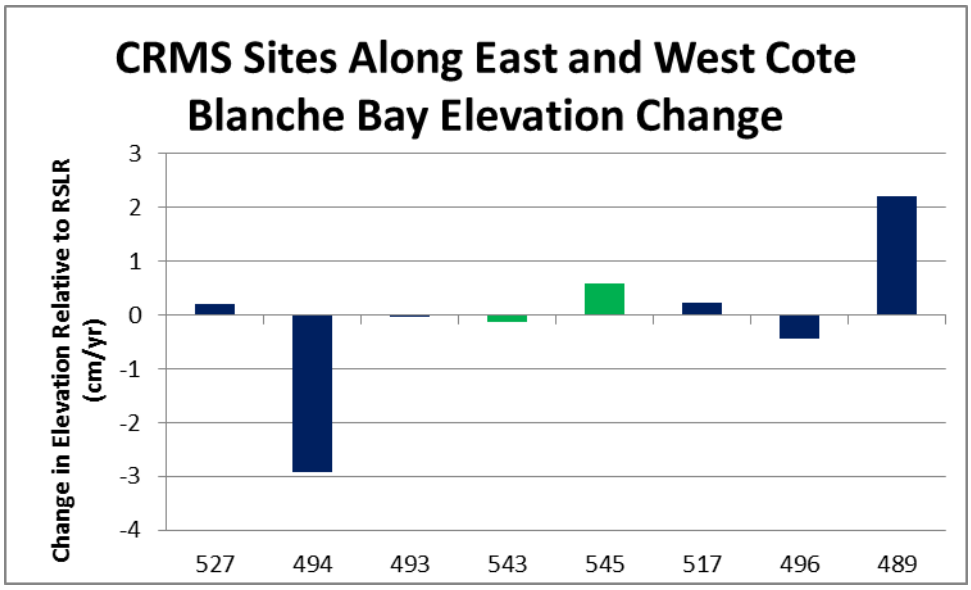

Figure 6. Net elevation change compared to RSLR along the coast of east and west Cote Blanche Bay in an east west orientation. The general trend is stability as most sites are keeping up with RSLS; the notable exception is CRMS 494 which is experiencing serious elevation loss. CRMS 543 and 545 which are behind TV-15 are shown in green.

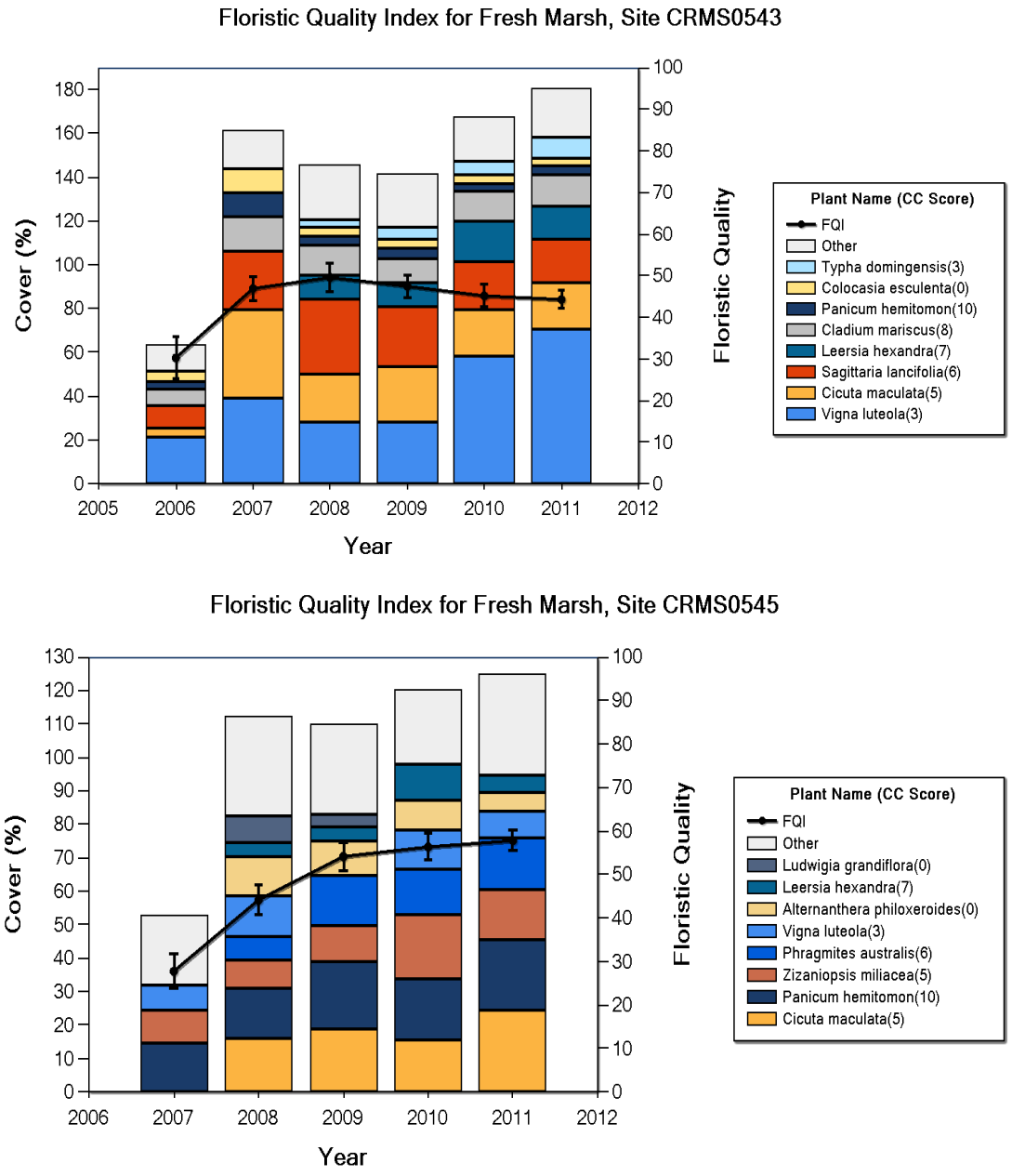

Figure 7. CRMS sites 545 and 543 are productive fresh marshes located behind the protective mud flats and terraces of TV-15.

V. Conclusions

a. Project Effectiveness

The sediment trapping at the Jaws project is in good condition and appears to be functioning as intended.

New subaerial land formation appears to be very low at best and slow land loss is the more likely scenario in the project area in the form of terrace and shoreline erosion. That stated the development of extensive mud flats between the terraces and on the landward sides of the created deltaic ridges have generated estuarine habitat and helped protected the back marshes from more extensive shoreline erosion. There is the potential for marsh formation between the deltaic ridges but it might require dedicated plantings on exposed mud flats to expedite the process.

The terraces are in very good condition and settlement appears to have stabilized. Vegetation on the terraces is thriving and continues to expand. Nutria damage noted in prior inspections is no longer apparent.

The planted vegetation *Schoenoplectus californicus* (California bulrush) has colonized most of the lower part of the terraces as they become intertidal. The crowns of the higher terraces are covered in a mix of vegetation dominated by *Salix nigra* (black willow) and *Colocasia* (coco yam). The inter terrace deltaic mud flats are dominated by SAV's, floating vegetation, and some emergent *Zizaniopsis miliacea* (giant cutgrass).

Overall, the project has created an effective sediment trap and shoreline erosion protection complex and is expected to maintain this function. More robust analysis could be conducted with additional aerial photography analysis which would require additional funding.

b. Recommended Improvements

In order to evaluate earthen terrace settlement and any vertical accretion between the terraces, a structural assessment survey performed by a licensed engineering/ land surveying firm is recommended. Also as previously mentioned capturing land water analysis that also categorizes the amount of mud flat present would be a powerful quantitative assessment of the project's performance.

c. Lessons Learned

Initial geo-technical reports indicated that this project would be difficult if not impossible to construct. Based on the apparent success of the TV-15 terraces, consideration should be given to build additional projects of this type in this area in the future. The deltaic terrace framework appears to be at capacity for creating more mud flats, additional terracing may be

required if continued sediment trapping is desired. The conversion of intertidal mudflats to emergent wetland may require an extra step of dedicated planting.

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Appendix A
(Inspection Photographs)

Photo No. 1--Typical Terrace

Photo No. 2--Typical Terrace and Warning Sign

Photo No. 3--Emergent Vegetation Between Terraces

Photo No. 4 - Gap Left Between Terraces Closing

Appendix B
(Three Year Budget Projection)

SEDIMENT TRAPPING AT THE JAWS/ TV15 / PPL 6

Three-Year Operations & Maintenance Budgets 07/01/2012 - 06/30/2015

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Pat Landry	*Stan Aucoin*	*N/A*	*Stan Aucoin*

	2012/2013 (-8)	2013/2014 (-9)	2014/2015 (-10)
Maintenance Inspection	$ 6,269.00	$ 6,457.00	$ 6,651.00
Structure Operation			
State Administration		$ -	$ -
Federal Administration		$ -	$ -
Maintenance/Rehabilitation			

12/13 Description:

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

13/14 Description: Structural Assessment Survey of Terraces and Accretion between Terraces

E&D	$ 15,000.00	
Construction	$ -	
Construction Oversight	$ -	
Sub Total - Maint. And Rehab.	$ 15,000.00	

14/15 Description:

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

	2012/2013 (-8)	2013/2014 (-9)	2014/2015 (-10)
Total O&M Budgets	$ 6,269.00	$ 21,457.00	$ 6,651.00

O &M Budget (3 yr Total)	**$ 34,377.00**
Unexpended O & M Budget	**$ 242,742.00**
Remaining O & M Budget (Projected)	**$ 208,365.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

SEDIMENT TRAPPING AT THE JAWS/ PROJECT NO. TV-15 / PPL NO. 6 / 2012/2013

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$6,269.00	**$6,269.00**
General Structure Maintenance	LUMP	0	$0.00	**$0.00**
Engineering and Design	LUMP	0	$0.00	**$0.00**
Operations Contract	LUMP	0	$0.00	**$0.00**
Construction Oversight	LUMP	0	$0.00	**$0.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	0	$0.00	$0.00
FEDERAL SPONSOR Admin.	LUMP	0	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

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	
Rock Dike	0	0.0	0	$65.00	$0.00
Bank Paving	0	0.0	0	$60.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$8.00	$0.00
Navigation Aid		EACH	0	$0.00	$0.00
Signage		EACH	0	$0.00	$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	0	$0.00	$0.00
Materials		LUMP	0	$0.00	$0.00
Mob / Demob		LUMP	0	$0.00	$0.00
Contingency		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: **$6,269.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

SEDIMENT TRAPPING AT THE JAWS/ PROJECT NO. TV-15 / PPL NO. 6 / 2013/2014

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$6,457.00	**$6,457.00**
General Structure Maintenance	LUMP	0	$0.00	**$0.00**
Engineering and Design	LUMP	0	$0.00	**$0.00**
Operations Contract	LUMP	0	$0.00	**$0.00**
Construction Oversight	LUMP	0	$0.00	**$0.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	0	$0.00	$0.00
FEDERAL SPONSOR Admin.	LUMP	0	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	Structural Assessment Survey of Terraces and Accretion between Terraces				
	Secondary Monument	EACH	0	$0.00	$0.00
	Staff Gauge / Recorders	EACH	0	$0.00	$0.00
	Bathymetry/ Topography	LUMP	1	$15,000.00	$15,000.00
	TBM Installation	EACH	0	$0.00	$0.00
	OTHER				$0.00
				TOTAL SURVEY COSTS:	**$15,000.00**

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	
	Rock Dike	0	0.0	0	$65.00	$0.00
	Bank Paving	0	0.0	0	$60.00	$0.00
		0	0.0	0	$0.00	$0.00
	Filter Cloth / Geogrid Fabric		SQ YD	0	$8.00	$0.00
	Navigation Aid		EACH	0	$0.00	$0.00
	Signage		EACH	0	$0.00	$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	0	$0.00	$0.00
	Materials		LUMP	0	$0.00	$0.00
	Mob / Demob		LUMP	0	$0.00	$0.00
	Contingency		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: **$21,457.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

SEDIMENT TRAPPING AT THE JAWS/ PROJECT NO. TV-15 / PPL NO. 6 / 2014/2015

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$6,651.00	**$6,651.00**
General Structure Maintenance	LUMP	0	$0.00	**$0.00**
Engineering and Design	LUMP	0	$0.00	**$0.00**
Operations Contract	LUMP	0	$0.00	**$0.00**
Construction Oversight	LUMP	0	$0.00	**$0.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	0	$0.00	$0.00
FEDERAL SPONSOR Admin.	LUMP	0	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

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	
Rock Dike	0	0.0	0	$65.00	$0.00
Bank Paving	0	0.0	0	$60.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$8.00	$0.00
Navigation Aid		EACH	0	$0.00	$0.00
Signage		EACH	0	$0.00	$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	0	$0.00	$0.00
Materials		LUMP	0	$0.00	$0.00
Mob / Demob		LUMP	0	$0.00	$0.00
Contingency		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: **$6,651.00**

Appendix C
(Field Inspection Notes)

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-15 Sediment Trapping at the Jaws

Date of Inspection: May 30, 2012 Time: 10:35 am

Structure No. N/A

Inspector(s):Stan Aucoin, Jody White (CPRA)
John Foret (NMFS) and Dale Garber (NRCS) for other

Structure Description: Terraces/Vegetation

Water Level Inside: 1.4 ft at gage on point of 1st terrace Outside: N/A

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	Good			4-Jan	Vegetation is thriving and expanding. SAV are in plentiful in shallow water.
Signage /Supports	Good			2	Signs are intact.
Rip Rap (fill)	N/A				
Earthen Embankment (terraces)	Excellent			1, 2, 4	Terraces are in very good condition.

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?