



## **22nd PRIORITY PROJECT LIST REPORT**

**PREPARED BY:**

**LOUISIANA COASTAL WETLANDS CONSERVATION AND RESTORATION  
TASK FORCE**

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# **Coastal Wetlands Planning, Protection, and Restoration Act**

## **22<sup>nd</sup> Priority Project List Report**

### **Executive Summary and Status of CWPPRA Program**

In 1990, Congress established the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA, PL 101-646, Title III) to provide for the long-term conservation of Louisiana's coastal wetlands (see Appendix A). Section 303(a) of the CWPPRA directed the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force to initiate a process to identify and prepare a list of coastal wetlands restoration projects in Louisiana to provide for the long-term conservation of such wetlands and dependent fish and wildlife populations in order of priority, based upon the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands, with due allowance for small-scale projects necessary to demonstrate the use of new techniques or materials for coastal wetlands restoration.

Section 303(a) also requires that the list of priority projects be updated and transmitted to Congress annually. According to Section 303 (a), the Task Force initiated an annual Priority Project List (PPL) process in 1991. This report transmits the 22<sup>nd</sup> PPL (PPL 22) and fulfills the requirements of CWPPRA Section 303(a).

Under the development of PPL 22, the public, parish officials, along with state and federal agencies met at four regional coastal meetings to propose projects from the nine identified hydrologic basins. Of the 55 project proposals and 7 demonstration project proposals, 21 projects and 6 demonstration projects were nominated by CWPPRA agencies and qualifying parish representatives at the CWPPRA coast-wide voting meeting on February 22, 2011. Ten candidate projects and four candidate demonstration projects were selected from the list of nominees at the Technical Committee meeting held on April 12, 2012. These PPL 22 candidate projects were evaluated to determine the long-term net wetlands benefits based on a 20-year project life. Benefits were measured in both net acres and net Average Annual Habitat Units (AAHUs). The candidate projects were also evaluated to determine conceptual project designs and cost estimates. Economic analyses were conducted to determine the total fully funded cost estimate for feasibility planning, construction, and 20 years of operations and maintenance. Cost-effectiveness was calculated for each project using the fully funded cost estimate and net wetland benefits over the 20 year project life.

At the end of the PPL 22 development process the Task Force authorized the following four new coastal restoration projects:

- North Catfish Lake Marsh Creation
- Terracing and Marsh Creation South of Big Mar
- Bayou Dupont Sediment Delivery-Marsh Creation 3
- Cameron Meadows Marsh Creation and Terracing



These PPL 22 projects will be implemented in two phases. Phase I will include data collection, engineering and design, environmental impact assessment and regulatory compliance, pre-construction monitoring, and real estate planning. The total Phase I cost for the four new PPL 22 coastal restoration projects is estimated to be \$12,048,748. Phase II would include real estate acquisition, construction, operation and maintenance, and post-construction monitoring. The total Phase II cost for these four projects is estimated to be \$107,963,949. The total net wetland benefit that would be derived by implementing the four PPL 22 projects is estimated to be 1,352 acres or 614 AAHUs over a 20-year period. The Task Force will consider approving Phase II funding for individual PPL 22 projects after Phase I requirements have been met for each.

Since the last PPL report to Congress, the Task Force de-authorized or transferred the following eight projects because they did not represent the best strategy for addressing the immediate and/or long term coastal restoration needs as compared to other priority projects, and/or the project scope was beyond the funding capability of the CWPPRA program:

- Little Pecan Bayou Hydrologic Restoration (ME-17), PPL 9
- White Ditch Resurrection and Outfall Management (BS-12), PPL 14
- Bohemia Mississippi River Reintroduction (BS-15), PPL 17
- Delta Building Diversion North of Fort St. Philip (BS-10), PPL 10
- Spanish Pass Diversion (MR-14), PPL 13
- Benneys Bay Diversion (MR-13), PPL 10
- Weeks Bay Marsh Creation and Shore Protection/Commercial Canal Freshwater Redirection (TV-19), PPL 9
- Avoca Island Diversion and Land Building (TE-49), PPL 12

With the addition of the four new PPL 22 projects and the removal of the de-authorized project, there are a total of 151 active Louisiana coastal restoration projects in the CWPPRA Program. The current estimate for the 151 projects combined is \$2.5B. The current funded estimate for approved phases for all projects is \$1.3B. At the time of the production of this PPL 22 report, \$1.5B has been obligated and \$863M had been expended on the 151 active CWPPRA coastal restoration projects in Louisiana since inception of the program in 1991. Of the 151 active projects, 99 projects have completed construction, 20 projects are under construction, and 32 projects are in various stages of planning and design. The Task Force has determined that these active projects represent the best strategy for addressing the immediate and/or long term needs of Louisiana's coastal wetlands within the available and projected future funding limits of the CWPPRA Program. Given the significant need for coastal wetlands restoration in Louisiana, the Task Force often generates more projects than the CWPPRA program has funding in hand to build. As such, Phase II funding of projects will be based on CWPPRA program funding availability at the time of funding request. Although Congress in 2004 reauthorized CWPPRA through 2019, the program is expected to reach its capacity to authorize new PPL projects within the next few years. Even though CWPPRA has received more than \$80 million each year over the last several years, there continues to be a backlog of construction-ready projects. To offset this back-log, the Task Force continues to de-authorize projects that are beyond the funding capability of the CWPPRA program or do not represent the best strategy for addressing the immediate and long term needs of Louisiana's coastal wetlands under CWPPRA.

# Coastal Wetlands Planning, Protection, and Restoration Act

## 22<sup>nd</sup> Priority Project List Report

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# **Coastal Wetlands Planning, Protection, and Restoration Act**

## **22<sup>nd</sup> Priority Project List Report**

### **Main Report – Volume 1**

#### **I. INTRODUCTION**

Approximately 90 percent of the total coastal marsh loss within the lower 48 states occurs in the State of Louisiana. These losses are due to a combination of human and natural factors, including subsidence, shoreline erosion, freshwater and sediment deprivation, saltwater intrusion, oil and gas production and canals, navigation channels, and herbivory. Louisiana's coastal zone contains 45 percent of all intertidal coastal marshes in the lower forty-eight states; however, it is suffering 80 percent of the entire Nation's annual coastal wetland loss. Since the 1930s, coastal Louisiana has lost over 1,875 square miles, an area more than 25 times larger than Washington D.C. As recently as the year 2000, the annual loss rate was quantified as 24 square miles per year. From 2000 to 2050, 513 square miles are projected to be lost. In addition, the U.S. Geological Survey (USGS) estimated the Hurricanes Katrina and Rita (2005) alone accounted for converting 217 square miles (138,880 acres) of coastal marsh to open water along the Louisiana coast. Concern over this loss exists because of the living resources and national economies dependent on Louisiana's coastal wetlands. These wetlands provide habitat for fisheries, waterfowl, neotropical birds, and furbearers; amenities for recreation and tourism; a buffer for coastal flooding; and a natural landscape for a culture unique to the world. Consequently, benefits go well beyond the local and state levels by providing positive economic impacts to the entire nation.

The coastal wetland loss problem in Louisiana is extensive and complex. Agencies of diverse purposes and missions involved with addressing the problem have proposed many alternative solutions. These proposals have had a wide spectrum of approaches for diminishing, neutralizing, or reversing these losses. An observation of these efforts by federal, state and local governments and the public has led to the conclusion that a comprehensive approach is needed to address this significant environmental problem. In response to this, the Coastal Wetlands Planning, Protection, and Restoration Act (Public Law 101-646) – also known as the Breaux Act – was signed into law by President George H.W. Bush on November 29, 1990. This report documents the implementation of Section 303(a) of the cited legislation.

#### **STUDY AUTHORITY**

Section 303(a) of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA, or the Breaux Act), displayed in Appendix A, directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force to:

. . . initiate a process to identify and prepare a list of coastal wetlands restoration projects in Louisiana to provide for the long-term conservation of such wetlands and dependent fish and wildlife populations in order of priority, based upon the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal

wetlands, taking into account the quality of such coastal wetlands, with due allowance for small-scale projects necessary to demonstrate the use of new techniques or materials for coastal wetlands restoration.

## STUDY PURPOSE

The purpose of this study effort was to prepare the 22nd Priority Project List (PPL) and transmit the list to Congress, as specified in Section 303(a)(3) of the CWPPRA. Section 303(b) of the Act calls for preparation of a comprehensive restoration plan for coastal Louisiana. In November 1993, the Louisiana Coastal Wetlands Restoration Plan was submitted. In December 1998, *Coast 2050: Toward a Sustainable Coastal Louisiana* was signed by all federal and state Task Force members. This plan consisted of several regional ecosystem strategies, which if all implemented could maintain a self-sustaining ecosystem along the Louisiana coast. A broad coalition of federal, state, and local entities, landowners, environmentalists, and wetland scientists developed the plan. In addition, all 20 coastal parishes approved the Coast 2050 plan.

## PROJECT AREA

The entire coastal area, which comprises all or part of 20 Louisiana parishes, is considered to be the CWPPRA project area. To facilitate the study process, the coastal zone was divided into four regions with nine hydrologic basins (Plate 1). Plate 2 contains a listing of project names for each PPL, referenced by number and grouped by sponsoring agency. A map of the Louisiana coastal zone is presented in Plates 3-7, indicating project locations by number of Priority Project Lists 1 through 22. All Plates can be found at the end of this report.

## STUDY PROCESS

The Interagency Planning Groups. Section 303(a)(1) of the CWPPRA directs the Secretary of the Army to convene the Louisiana Coastal Wetlands Conservation and Restoration Task Force (the Task Force), to consist of the following members:

- The Secretary of the Army (Chairman)
- The Administrator, Environmental Protection Agency
- The Governor, State of Louisiana
- The Secretary of the Interior
- The Secretary of Agriculture
- The Secretary of Commerce

The State of Louisiana is a full voting member of the Task Force, with the exception of budget matters, as stipulated in President George H.W. Bush's November 29, 1990, signing statement (Appendix A). In addition, the State of Louisiana may not serve as a "lead" Task Force agency for design and construction of wetlands projects of the PPL.

In practice, the Task Force members named by the law have delegated their responsibilities to other members of their organizations. For instance, the Secretary of the Army authorized the Commander of the U.S. Army Corps of Engineers (USACE) New Orleans District to act in his place as chairman of the Task Force. The other federal agencies

on the CWPPRA Task Force include: U.S. Fish and Wildlife Service (USFWS) of the U.S. Department of Interior, the Natural Resources Conservation Service (NRCS) of the U.S. Department of Commerce, and the U.S. Environmental Protection Agency (USEPA). The Governor's Office of the State of Louisiana represents the state as a Task Force member.

The Task Force established the Technical Committee and the Planning and Evaluation (P&E) Subcommittee, to assist it in putting the CWPPRA into action. Each of these bodies contains the same representation as the Task Force – one member from each of the five federal agencies and one from the state. The P&E Subcommittee is responsible for the actual planning of projects, as well as the other details involved in the CWPPRA process (such as development of schedules, budgets, etc.). This subcommittee makes recommendations to the Technical Committee and lays the groundwork for decisions that will ultimately be made by the Task Force. The Technical Committee reviews all materials prepared by the subcommittee, makes appropriate revisions, and provides recommendations to the Task Force. The Technical Committee operates at an intermediate level between the planning details considered by the subcommittee and the policy matters dealt with by the Task Force, and often formalizes procedures and formulates policy for the Task Force.

The P&E Subcommittee established several working groups to evaluate projects for priority project lists. The Environmental Work Group was charged with estimating the benefits (in terms of wetlands created, protected, enhanced, or restored) associated with various projects. The Engineering Work Group reviewed project and design cost estimates for consistency. The Economic Work Group performed the economic analysis, which permitted comparison of projects on the basis of their cost effectiveness. The Monitoring Work Group established a standard procedure for monitoring of CWPPRA projects, developed a monitoring cost estimating procedure based on project type, and a review of all monitoring plans.

Involvement of the Academic Community. While the agencies sitting on the Task Force possess considerable expertise regarding Louisiana's coastal wetlands problems, the Task Force recognized the need to incorporate another invaluable resource: the state's academic community. The Task Force therefore retained the services of the Louisiana Universities Marine Consortium (LUMCON) to provide scientific advisors to aid the Environmental Work Group in performing Wetland Value Assessments (WVAs). This Academic Advisory Group (AAG) also assisted in carrying out feasibility studies authorized by the Task Force. These include:

- The Louisiana Barrier Shoreline study – March 1995 - March 1999 (managed by the Louisiana Department of Natural Resources [LDNR]\*)
- The Mississippi River Sediment, Nutrient, and Freshwater Redistribution study – March 1995 – July 2000 (managed by the USACE)

Public Involvement. The CWPPRA public involvement program provides an opportunity for all interested parties to express their concerns and opinions and to submit their ideas concerning the problems facing Louisiana’s wetlands. The Task Force and the Technical Committee held six public meetings annually to obtain input from the public. In addition, the Task Force distributes a quarterly newsletter (“Watermarks”) with information on the CWPPRA program and on individual projects.

\*Because of the devastation of hurricanes Katrina and Rita, in December 2005, the Louisiana Legislature restructured the State's Wetland Conservation and Restoration Authority to form the Coastal Protection and Restoration Authority (CPRA). Agencies in the CPRA membership include Louisiana Department of Natural Resources (LDNR).

## II. PLAN FORMULATION PROCESS FOR THE 22<sup>nd</sup> PRIORITY PROJECT LIST

### IDENTIFICATION & SELECTION OF CANDIDATE & DEMONSTRATION PROJECTS

Regional Planning Team (RPT) meetings were held during the period of January 24 through January 26, 2012 to provide a forum for the public and their local government representatives to identify potential projects for implementation under the priority list process. The RPT met to examine basin maps, discuss areas of need and Coast 2050 strategies, and to propose projects and demonstration projects. A separate coast-wide voting meeting was held on February 15, 2012 for the 22<sup>nd</sup> PPL to choose three projects in the Terrebonne, Barataria, and Pontchartrain based on the high loss rates (1985-2006) in those basins, two projects in the Teche/Vermilion, Mermentau, Calcasieu/Sabine, Breton Sound, and Mississippi River Delta Basins, and only one project in the Atchafalaya and because of low land loss rates. In addition, four demonstration projects were selected as nominees. A total of twenty-one projects and four demonstration projects were nominated. A schedule of meetings is shown in Table 1.

**Table 1: RPT Meetings to Propose/Nominate Projects**

Region 1: New Orleans, LA	January 26, 2012
Region 2: New Orleans, LA	January 26, 2012
Region 3: Houma, LA	January 25, 2012
Region 4: Abbeville, LA	January 24, 2012
Coast-wide Voting Meeting, Baton Rouge, LA	February 15, 2012

The Engineering and Environmental Work Groups and the AAG met March 13 and March 14, 2012 to review and reach consensus on preliminary project features, benefits, and fully-funded cost estimates for the twenty-one nominated projects. The Engineering and Environmental Work Groups also identified any potential issues associated with each nominee. The P&E Subcommittee prepared a matrix of nominated projects' cost estimates and benefits and furnished it to the Technical Committee and Coastal Protection and Restoration Authority (CPRA) on April 3, 2012. The matrix is included as Table 2.



**Table 2a: 22<sup>nd</sup> Project Priority List - Candidate Nominee Project Matrix by Basin**

Rg	Basin	Type	Project	Preliminary Fully-Funded Cost Range	Preliminary Benefits (Net Acres Range)	Potential Issues				
						Oysters	Land Rights	Pipelines /Utilities	O&M	Other Issues
1	PO	HR	Small Mississippi River Reintroduction into LaBranche Wetlands	over \$50M	>1,000		X	X	X	X
1	PO	MC	Triangle- Restoring Cypress-Tupelo Swamp & Marsh	\$30M - \$35M	400-450		X			X
1	PO	MC/SP	New Orleans Landbridge Shoreline Stabilization & Marsh Creation	\$15M - \$20M	100-150			X	X	X
2	MR	FD/MC	Pass a Loutre Crevasses	\$5M - \$10M	350-400			X		
2	MR	HR	Pass a Loutre Hydrologic Restoration	\$40M - \$50M	>1,000			X		X
2	BS	MC/TR	Lake Lery Marsh Creation & Terracing	\$30M - \$35M	400-450			X		
2	BS	TR/MC	Terracing & Marsh Creation South of Big Mar	\$20M - \$25M	300-350			X		
2	BA	BI	Elmer's Island Restoration	\$30M - \$35M	250-300	X		X		X
2	BA	MC/SP	Northeast Turtle Bay Marsh Creation & Critical Area Shoreline Protection	\$35M - \$40M	350-400	X		X	X	
2	BA	MC	Bayou Dupont Sediment Delivery - Marsh Creation	\$40M - \$50M	400-450			X		X
3	TE	MC	North Catfish Lake Marsh Creation	\$20M - \$25M	200-250	X		X		
3	TE	MC	Lake Tambour Marsh Creation	\$40M - \$50M	400-450	X		X		
3	TE	FD/TR	Grand Bayou Freshwater Enhancement/Introduction & Terraces	\$25M - \$30M	500-600			X	X	
3	AT	FD	West Wax Lake Wetlands Diversion	\$10M - \$15M	100-150				X	
3	TV	TR/VP	South Little Vermilion Bay Terracing & Planting	\$5M - \$10M	50-100	X	X	X	X	
3	TV	FD/SP	Cote Blanche Freshwater & Sediment Introduction & Shoreline Protection	\$30M - \$35M	700-800				X	
4	ME	MC	East Pecan Island Marsh Creation - Increment 1	\$40M - \$50M	450-500		X	X		
4	ME	FD/TR	Front Ridge Freshwater Introduction & Terracing	\$5M - \$10M	150-200			X	X	
4	CS	MC	Cameron Meadows Marsh Creation & Wetland Restoration	\$35M - \$40M	300-350			X	X	
4	CS	MC	West Cove Marsh Creation & Nourishment	\$10M - \$15M	250-300	X		X		
	Coast wide	MC	Coastwide Competitive Voluntary Canal Backfilling	\$30M - \$35M	900-1,000			X		

Basin codes are: PO=Pontchartrain; MR=Mississippi River Delta; BS=Breton Sound; BA=Barataria; TE=Terrebonne; AT=Atchafalaya; TV=Teche/Vermilion; ME=Mermentau; CS=Calcasieu/Sabine.

Type codes: FD=Freshwater Diversion; HR=Hydrologic Restoration; MC=Marsh Creation; O&M= Operation and Maintenance; SP=Shoreline Protection; TR=Terracing; BI=Barrier Island; VP=Vegetative Plantings.

**Table 2b: 22<sup>nd</sup> Project Priority List Demonstration Nominee Project Matrix**

Demonstration Project Name	Meets Demonstration Project Criteria?	Lead Agency	Total Fully-Funded Cost	Technique Demonstrated
Hay Bale Demo	Yes	COE	\$1,477,648	Evaluate the effectiveness of using hay bales to protect/stabilize eroding shorelines plus trap & accrete sediment landward of the bales and also to evaluate the use of hay bales as containment for dredged material placement sites.
Reconnection of Hydrologically Isolated Wetlands	Yes	NMFS	\$380,799	The primary goal is to assess the size or number of connections necessary to re-establish the hydrology within an isolated (impounded or semi-impounded) wetland and improve the connectivity to the surrounding wetland in order to restore ecological function.
CREPS: Coastal Restoration & Energy Production System	Yes	CPRA	\$2,293,750	Introducing freshwater from the Mississippi River to hydrologically isolated wetlands using directionally drilled pipe under levees and infrastructure. Using water flow to generate electricity to further pump freshwater to targeted wetlands.
Bioengineering of Shorelines & Canal Banks using Live Stakes	Yes	EPA	\$1,685,109	Evaluate the effectiveness of using natural materials to reduce shoreline retreat along bay and lake areas that have experienced excessive amounts of erosion. In addition, evaluate the ability to trap sediment and accrete land behind the shoreline protection features.

The CWPPRA Technical Committee met publicly on April 19, 2012 to consider the preliminary costs, wetland benefits, and potential issues of the twenty nominees. Eleven candidate projects were selected for detailed assessment by the Environmental, Engineering, and Economic Work Groups, and the AAG (Table 4).

Phase 0 analysis of the eleven candidate projects took place May 2012 through September 2012. The Environmental and Engineering Work Groups and AAG met to refine the projects and develop boundaries on May 16, 2012. Interagency field visits were conducted during May and June 2012 at each project site/area with members of the Engineering and Environmental Work Groups and the AAG. Detailed project information packages were developed by the Environmental, Engineering, and Economics Work Groups. These packages included fact sheets addressing "compatibility with Coast 2050," Project Information Sheets containing the benefits analyses, Preliminary Engineering and Design Reports containing the preliminary design and cost estimates, and Economic Analyses containing fully-funded twenty-year project costs. On August 14 through August 16, 2012, the Engineering Work Group met to review and approve the Phase I and II cost estimates developed by the agencies for the ten PPL22 candidates and four PPL22 demonstration candidates. In September 2012, the Environmental Work Group finalized WVAs for each project. The Engineering Work Group reviewed and finalized the final project cost estimates for each project on September 6, 2012. The Economics Work Group reviewed the final project cost estimates and developed annualized costs in the month of October 2012.

The Environmental and Engineering Work Groups and AAG also evaluated and ranked the three demonstration projects. Demonstration projects were evaluated using defined parameters. Within each of these parameters a project was graded as low, medium or high and assigned point scores of 1, 2, or 3, respectively. The summary of the evaluation from the Environmental and Engineering Work Groups and AAG is shown in Table 3. The parameters used to evaluate the demonstration projects were:

(P<sub>1</sub>) Innovativeness - The demonstration project should contain technology that has not been fully developed for routine application in coastal Louisiana or in certain regions of the

coastal zone. The technology demonstrated should be unique and not duplicative in nature to traditional methods or other previously tested techniques for which the results are known. Techniques which are similar to traditional methods or other previously tested techniques should receive lower scores than those which are truly unique and innovative.

(P<sub>2</sub>) Applicability or Transferability - Demonstration projects should contain technology which can be transferred to other areas of the coastal zone. However, this does not imply that the technology must be applicable to all areas of the coastal zone. Techniques, which can only be applied in certain wetland types or in certain coastal regions, are acceptable but may receive lower scores than techniques with broad applicability.

(P<sub>3</sub>) Potential Cost Effectiveness - The potential cost-effectiveness of the demonstration project's method of achieving project objectives should be compared to the cost-effectiveness of traditional methods. In other words, techniques which provide substantial cost savings over traditional methods should receive higher scores than those with less substantial cost savings. Those techniques which would be more costly than traditional methods, to provide the same level of benefits, should receive the lowest scores. Information supporting any claims of potential cost savings should be provided.

(P<sub>4</sub>) Potential Environmental Benefits - Does the demonstration project have the potential to provide environmental benefits equal to traditional methods? Somewhat less than traditional methods? Above and beyond traditional methods? Techniques with the potential to provide benefits above and beyond those provided by traditional techniques should receive the highest scores.

(P<sub>5</sub>) Recognized Need for the Information to be Acquired - Within the restoration community, is there a recognized need for information on the technique being investigated? Demonstration projects which provide information on techniques for which there is a great need should receive the highest scores.

(P<sub>6</sub>) Potential for Technological Advancement - Would the demonstration project significantly advance the traditional technology currently being used to achieve project objectives? Those techniques which have a high potential for completely replacing an existing technique at a lower cost and without reducing wetland benefits should receive the highest scores.

**Table 3: Review of 22<sup>nd</sup> Priority Project List Candidate Demonstration Projects**

Demonstration Project Name	Total Fully-Funded Cost	Parameter (Pn)						Total Score
		P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	
Hay Bale Demo	\$2,126,843	2	2	2	2	2	1	11
Reconnection of Hydrologically Isolated Wetlands	\$1,724,102	1	2	2	3	1	1	10
CREPS: Coastal Restoration and Energy Production System	\$3,357,745	2	1	1	2	1	2	9
Bioengineering of Shorelines and Canal Banks Using Live Stakes	\$2,562,494	2	2	2	2	2	1	11

Demonstration Project Parameters: (P<sub>1</sub>) Innovativeness; (P<sub>2</sub>) Applicability or Transferability; (P<sub>3</sub>) Potential Cost Effectiveness; (P<sub>4</sub>) Potential Environmental Benefits; (P<sub>5</sub>) Recognized Need for the Information to be Acquired; (P<sub>6</sub>) Potential for Technological Advancement. Parameter Grading as to effect: 1= low; 2 = medium; 3 = high

The Environmental and Engineering Work Groups prepared a candidate project information package for the CWPPRA Technical Committee, consisting of updated Project Information Sheets and matrix. The matrix included average annual habitat units (AAHUs), acres created, restored, and/or protected, and costs. The matrix is included as Table 4.

**Table 4: 22<sup>nd</sup> Priority Project List Candidate Project Evaluation Matrix**

Project Name	AAHUs	WVA Net Acres	Total Fully-Funded Cost	Average Annual Cost (AAC)	Cost Effectiveness (AAC/AAHU)	Cost Effectiveness (Cost/Net Acre)
Lake Lery Shoreline Marsh Creation and Terracing	184	403	\$31,377,030	\$2,263,028	\$12,299	\$77,859
Terracing and Marsh Creation South of Big Mar	80	302	\$23,692,705	\$1,717,292	\$21,466	\$78,453
Bayou Dupont Sediment Delivery-Marsh Creation 3	166	383	\$38,279,163	\$2,735,823	\$16,481	\$99,946
Northeast Turtle Bay Marsh Creation and Critical Area Shoreline Protection	282	492	\$40,494,122	\$2,897,273	\$10,274	\$82,305
Elmer's Island Restoration	146	272	\$35,745,200	\$2,549,848	\$17,465	\$131,416
North Catfish Lake Marsh Creation	256	401	\$30,385,887	\$2,201,005	\$8,598	\$75,775
Grand Bayou Freshwater Enhancement and Terracing	607	655	\$30,344,992	\$2,078,687	\$3,425	\$46,328
South Little Vermilion Bay Plantings and Terracing	17	93	\$6,506,921	\$436,858	\$25,698	\$69,967
Front Ridge Freshwater Introduction and Terracing	277	134	\$13,622,423	\$920,110	\$3,322	\$101,660
Cameron Meadows Marsh Creation and Terracing	106	265	\$27,685,820	\$1,974,281	\$18,625	\$104,475

Two public meetings were held in Abbeville, LA, and New Orleans, LA, respectively, November 14 and 15, 2012, to present projects to the public for comment.

The CWPPRA Technical Committee met on December 12, 2012 to select projects for recommendation to the CWPPRA Task Force for Phase I funding. Each agency cast a total of six weighted votes, used to rank the ten candidate projects. Projects were ranked by number of agency votes first and total weighted score second. The top four projects were selected for recommendation to the CWPPRA Task Force for Phase I funding approval. The Technical Committee did not rank or recommend any demonstration projects for the CWPPRA Task Force to approve funding. Due to a three-way tie for the 4<sup>th</sup> and final candidate selection, a tie-breaking re-vote among all agencies for just those three tying candidates, was conducted, yielding Cole’s Bayou Marsh Restoration as the final selection. The results of the CWPPRA Technical Committee vote are outlined in Table 5. On January 24, 2013, the CWPPRA Task Force reviewed the Technical Committee recommendations and moved to adopt the recommendation without change.

**Table 5: 22<sup>nd</sup> Priority Project List Candidate Selection Process – Agency Voting Record**

*Project No.	Nominee Project Name	Coast 2050 Region	USACE	STATE	EPA	FWS	NMFS	NRCS	No. of Votes	Sum of Point Score
TE-112	North Catfish Lake Marsh Creation	R3	6	5	5	5	6	6	6	33
BS-24	Terracing and Marsh Creation South of Big Mar	R2		2	1	6	2	1	5	12
BA-164	Bayou Dupont Sediment Delivery – Marsh Creation 3	R2		6	6	1		4	4	17
CS-66	Cameron Meadows Marsh Creation and Terracing	R4	1	4	3		4		4	12
+	Grand Bayou Freshwater Enhancement and Terracing	R2		3	2	4		3	4	12
+	Northeast Turtle Bay Marsh Creation and Critical Area Shoreline Protection	R2	5			2		5	3	12
+	Lake Lery Shoreline Marsh Creation and Terracing	R2	4			3	3		3	10
+	Elmer’s Island Restoration	R2		1	4		5		3	10
+	Front Ridge Freshwater Introduction and Terracing	R4	3					2	2	5
+	South Little Vermilion Bay Plantings and Terracing	R3	2				1			3

\*Each selected project received a two-letter code to identify its basin; these codes are: PO-Ponchartrain; BS-Breton Sound, MR- Mississippi River Delta; BA-Barataria; TE-Terrebonne; AT-Atchafalaya; TV-Teche/Vermilion; ME-Mermentau; CS-Calcasieu/Sabine.

+ These projects were not selected for funding.

**Table 5: 22<sup>nd</sup> Priority Project List Candidate Selection Process – Agency Voting Record (Tie-Break)**

Nominee Project Name	COE	State	EPA	FWS	NMFS	NRCS	No. of votes	Sum of Point Score
Cameron Meadows Marsh Creation and Terracing	1	1	1		1		4	4
Grand Bayou Freshwater Enhancement and Terracing				1		1	2	2

## EVALUATION OF CANDIDATE PROJECTS

Benefit Analysis (WVA). The WVA is a quantitative, habitat-based assessment methodology developed for use in analyzing benefits of project proposals submitted for funding under the Breaux Act. The WVA quantifies changes in fish and wildlife habitat quality and quantity that are projected to emerge or develop as a result of a proposed wetland enhancement project. The results of the WVA, measured in AAHUs, can be combined with economic data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU protected and/or gained.

The Environmental Work Group developed a WVA for each project. The WVA has been developed strictly for use in ranking proposed CWPPRA projects; it is not intended to provide a detailed, comprehensive methodology for establishing baseline conditions within a project area. It is a modification of the Habitat Evaluation Procedures (HEP) developed by the USFWS (USFWS, 1980). HEP is widely used by the USFWS and other federal and state agencies in evaluating the impacts of development projects on fish and wildlife resources. A notable difference exists between the two methodologies. The HEP generally uses a species-oriented approach, whereas the WVA uses a community approach.

The following coastal Louisiana wetland types can be evaluated using WVA models: fresh marsh (including intermediate marsh), brackish marsh, saline marsh, cypress-tupelo swamp, barrier headland, barrier island, coastal chenier ridge, and bottomland hardwoods. Future reference in this document to "wetland" or "wetland type" refers to one or more of these eight communities.

These models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of the following components:

1. A list of variables that are considered important in characterizing fish and wildlife habitat:
  - a.  $V_1$ --percent of wetland covered by emergent vegetation,
  - b.  $V_2$ --percent open water dominated by submerged aquatic vegetation,
  - c.  $V_3$ --marsh edge and interspersion,
  - d.  $V_4$ --percent open water less than or equal to 1.5 feet deep,
  - e.  $V_5$ --salinity, and
  - f.  $V_6$ --aquatic organism access.
2. A Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and
3. A mathematical formula that combines the Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The WVA models have been developed for determining the suitability of Louisiana coastal wetlands for providing resting, foraging, breeding, and nursery habitat to a diverse

assemblage of fish and wildlife species. Models have been designed to function at a community level and therefore attempt to define an optimum combination of habitat conditions for all fish and wildlife species utilizing a given marsh type over a year or longer.

The output of each model (the HSI) is assumed to have a linear relationship with the suitability of a coastal wetland system in providing fish and wildlife habitat. A comprehensive discussion of the WVA methodology is presented in Appendix B.

Designs and Cost Analysis. During the plan formulation process, each of the Task Force agencies assumed responsibility for developing designs and estimates of costs and benefits for a number of candidate projects. The cost estimates for the projects were to be itemized as follows:

1. Construction Cost
2. Contingencies Cost (25%)
3. Engineering and Design
4. Environmental Compliance
5. Supervision and Administration (Federal and Non-Federal)
6. Supervision and Inspection (Construction Contract)
7. Real Estate
8. Operations and Maintenance
9. Monitoring

In addition, each lead agency provided a detailed itemized construction cost estimate for each project.

An Engineering Work Group was established by the P&E Subcommittee, with each federal agency and the State of Louisiana represented. The Engineering Work Group reviewed each estimate for accuracy and consistency.

When reviewing the construction cost estimates, the Engineering Work Group verified that each project feature had an associated cost and that the quantity and unit prices for those items were reasonable. In addition, the Engineering Work Group reviewed the design of the projects to determine whether the method of construction was appropriate and the design was feasible.

A 25% contingency was applied to construction, operations and maintenance costs on all projects because detailed project specific information such as soil borings, surveys, and hydrologic data were not collected. Construction unit costs, engineering and design, environmental compliance, real estate acquisition, supervision and administration, and supervision and inspection costs were reviewed for reasonableness.

Economic Analysis. The Breaux Act directed the Task Force to develop a prioritized list of wetland projects "based on the cost-effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands." The Task Force satisfied this requirement through the integration of a traditional time-value analysis of life-cycle project costs and other economic impacts, and an evaluation of wetlands benefits using the WVA. The product of these two analyses was an Average Annual Cost per AAHU for each project. These values are used as the primary ranking criterion. The method permits incremental analysis of varying scales of investment and also accommodates the varying salinity types and habitat quality characteristics of projected

wetland outputs.

The major inputs to the cost effectiveness analysis are the products of the lead Task Force agencies and the Engineering and Environmental Work Groups. The various plans were refined into estimates of annual implementation costs and respective AAHUs.

Financial costs chiefly consist of the resources needed to plan, design, construct, operate, monitor, and maintain the project. These are the costs, when adjusted for inflation, which the Task Force uses in budgeting decisions.

The stream of costs for each project was brought to present value and annualized at the current discount rate, based on a 20-year project life. Beneficial environmental outputs were annualized at a zero discount rate and expressed as AAHUs. These data were then used to rank each plan based on cost per AAHU produced. Annual costs were also calculated on a per-acre basis. Costs were adjusted to account for projected levels of inflation and used to monitor overall budgeting and any future cost escalations in accordance with rules established by the Task Force.

Following the review by the Engineering Work Group, costs were expressed as first costs, fully-funded costs, present worth costs, and average annual costs. The Cost per Habitat Unit criterion was derived by dividing the average annual cost for each wetland project by the AAHU for each wetland project. The average annual cost figures are based on price levels for the current year, the most current published discount rate, and a project life of 20 years. The fully-funded cost estimates include operation and maintenance and other compensated financial costs. Fully-funded cost estimates are developed for each project to determine how many projects could be supported through the Authorized program lifetime.





### **III. DESCRIPTION OF CANDIDATE PROJECTS**

This section provides a concise narrative of each candidate project. The project details provided include the Coast 2050 strategy, project location, problem, goals, proposed solution, benefits, costs, sponsoring agency and contact persons, and a map identifying the project area and features if applicable.

## **PPL22 Lake Lery Shoreline Marsh Creation and Terracing**

### **Coast 2050 Strategy:**

Dedicated Dredging, to Create, Restore, or Protect Wetlands; Maintenance of Gulf, Bay and Lake Shoreline Integrity; and, Vegetative Planting (Coastwide Common Strategies)

### **Project Location:**

The project is located in Region 2, Breton Sound Basin, St. Bernard Parish, along the northern and eastern rim of Lake Lery.

### **Problem:**

The marshes forming the northern and eastern shoreline of Lake Lery and directly to the north and east of the former lake shoreline were severely damaged by Hurricane Katrina. Wind-induced waves within Lake Lery could further damage the shoreline and cause accelerated interior marsh loss. Without directly rebuilding these marshes, the lake itself will likely continue to grow and will coalesce with Bayou Terre aux Boeufs and newly open waters north of the lake.

### **Goals:**

The primary goals of the project are to 1) Create/nourish 560 acres of marsh through dedicated dredging, 2) Restore/stabilize approximately 3 miles of Lake Lery shoreline, and 3) Construct 15 acres of terraces.

### **Proposed Solution:**

The project would create 422 acres and nourish an additional 138 acres of marsh along the northern and eastern shore of Lake Lery using material dredged from Lake Lery. The marsh creation/nourishment will restore approximately 3 miles of the lake shoreline. The target elevation for the marsh creation areas will correspond with the elevation of healthy marsh in the surrounding area (1.4 feet NAVD 88 according to PPL21 Lake Lery Candidate project WVA). No planting is included for the creation or nourishment. The project will construct 21,000 feet (15 acres) of terraces in a 299-acre area north of the lake rim. Terraces would be constructed to an elevation of +2.5 feet NAVD 88, with a 15-foot crown width, and would be planted with suitable marsh vegetation 2.5 feet apart with two rows on the crown and each slope.

### **Project Benefits:**

The project would result in approximately 403 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 31,377,030.

### **Preparers of Fact Sheet:**

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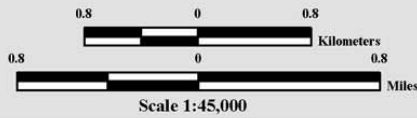
### Lake Lery Shoreline Marsh Creation and Terracing (PPL22 Candidate)



Produced by:  
 U.S. Department of the Interior  
 U.S. Geological Survey  
 National Wetlands Research Center  
 Coastal Restoration Field Station  
 Baton Rouge, La  
 Image Source:  
 2010 NAIP Photography



-  Terrace Field \*
  -  Marsh Creation/Nourishment \*
  -  Borrow \*
  -  Project Boundary \*
- \* denotes proposed features



Map ID: USGS-NWRC 2012-11-0013  
 Map Date: June 22, 2012

## **PPL22 Terracing and Marsh Creation South of Big Mar**

### **Coast 2050 Strategy:**

Coastwide Common Strategies: Dedicated dredging to create, restore, or protect wetlands; Terracing.

Region 2 Regional Ecosystem Strategies: Restore and Sustain Marshes; Manage outfall of existing diversions.

### **Project Location:**

Region 2, Breton Sound Basin, Plaquemines Parish, south of Big Mar and west of Lake Lery

### **Problem:**

From 1932 to 1990, the Caernarvon Mapping Unit lost 14,240 acres of its marsh. Prior to Hurricane Katrina, the greatest lost documented occurred between 1956 and 1974 and coincided with Hurricane Betsy and extensive canal building. Hurricane Katrina devastated the area resulting in substantial marsh loss. According to USGS Open File Report (2006-1274), approximately 39 square miles of marsh around the upper and central portions of Breton Sound were converted to open water by ripping of the marsh or by marsh submergence. Because the framework of the marsh has been devastated, suspended sediments provided by the diversion move through the system and fall out where velocities are reduced such as in Big Mar and Lake Lery.

### **Goals:**

The primary goal is to create terraces in the shallow open water areas south of Big Mar within the Caernarvon Diversion outfall area. Terraces will reduce wave fetch in the large open water areas and promote conditions conducive to growth of marsh vegetation and submerged aquatic vegetation. Additional benefits may be achieved through capturing suspended sediments. Marsh creation is also proposed to reestablish the western shoreline of Lake Lery in association with the Lake Lery Shoreline Restoration Project (BS-16).

### **Proposed Solutions:**

Approximately 65,000 linear feet of terraces (37 acres) will be constructed with in-situ material to reduce fetch and turbidity and capture suspended sediment. Sediments will be hydraulically dredged from Lake Lery and pumped via pipeline to create and restore approximately 334 acres of marsh in the project area.

### **Project Benefits:**

The project would result in approximately 302 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 23,692,705.

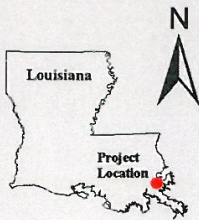
### **Preparer(s) of Fact Sheet:**

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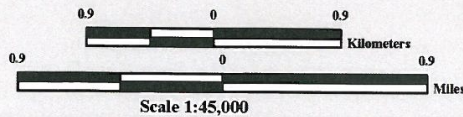


**Terracing and Marsh Creation South of Big Mar  
(PPL22 Candidate)**



Map ID: USGS-NWRC 2012-11-0014  
Map Date: June 22, 2012

-  Terrace Field \*
  -  Marsh Creation/Nourishment \*
  -  Project Boundary \*
- \* denotes proposed features



Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, La

Image Source:  
2010 NAIP Photography

## **PPL22 Bayou Dupont Sediment Delivery – Marsh Creation #3**

### **Coast 2050 Strategy:**

Coastwide Common Strategies: Dedicated dredging to create, restore, or protect wetlands; Offshore and riverine sand and sediment resources.

Region 2 Regional Ecosystem Strategies: Restore and Sustain Marshes.

### **Project Location:**

Region 2, Barataria Basin, Jefferson and Plaquemines Parishes. The borrow location will be in the Mississippi River. The project is immediately adjacent to the Mississippi River Sediment Delivery System project (BA-39).

### **Problem:**

Wetlands in the Barataria Basin were historically nourished by the fresh water, sediment and nutrients delivered by the Mississippi River and its many distributary channels. Following the creation of levees along the lower river for flood control and navigation, these inputs ceased. In addition, numerous oil and gas canals in the area contributed significantly to wetland loss. Recent information suggests that actual subsurface oil and gas withdrawal was a major cause of wetland loss. From 1932 to 1990, the Barataria Basin lost over 245,000 acres of marsh, and from 1978 to 1990, it experienced the highest rate of wetland loss in coastal Louisiana.

### **Goals:**

The primary goal of this project is to create/nourish approximately 415 acres of emergent intermediate marsh using sediment from the Mississippi River. Specific goals include: 1) Create approximately 402 acres of intermediate marsh; 2) Nourish approximately 13 acres of existing intermediate marsh; and 3) Create approximately 2500 linear feet of tidal creeks.

### **Proposed Solution:**

The proposed project consists of features to create/nourish 415 acres of marsh adjacent to the Mississippi River Sediment Delivery System – Bayou Dupont (BA-39) project, again *using sediment from the Mississippi River*. The target elevation of +1.3 feet is estimated to be met at year 10. Approximately 50% of created marsh will be planted using intermediate marsh plant species. Approximately 2500 linear feet of tidal creeks will be created throughout the project area.

### **Project Benefits:**

The project would result in approximately 383 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 38,279,163.

### **Preparers of Fact Sheet:**

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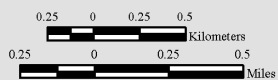


### Bayou Dupont Marsh Creation 3 (PPL22 Candidate)



-  Marsh Creation \*
-  Project Boundary

\* denotes proposed features



Scale: 1:35,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0017  
Map Date: July 25, 2012



## **PPL22 Northeast Turtle Bay Marsh Creation and Critical Area Shoreline Protection**

### **Coast 2050 Strategy:**

Dedicated Dredging to Create Marsh on the Landbridge; Preserve Bay and Lake Shoreline Integrity on the Landbridge; Coastwide: Dedicated Dredging for Wetland Creation.

### **Project Location:**

Region 2, Barataria Basin, Jefferson Parish, northeast of Turtle Bay

### **Problem:**

Historic wetland loss in the area occurs in the form of shoreline erosion along Turtle Bay and interior marsh loss. The interior loss is caused by subsidence, sediment deprivation, and construction of access and pipeline canals. Based on an analysis conducted by USGS, loss rates in the area are estimated to be -0.615% per year for the period 1984 to 2011. Shoreline erosion along the northwest shore of Turtle Bay, in the area proposed to be addressed by this project is approximately 3 to 4 feet per year.

### **Goals:**

The goals of the project are to 1) create approximately 505 acres of marsh and nourish approximately 254 acres of marsh (759 acres total) with dredged material from Turtle Bay, 2) protect approximately 2,335 feet of critical shoreline, and 3) prevent further enlargement of two primary water exchange points.

### **Proposed Solution:**

The proposed project would create approximately 505 acres and nourish approximately 254 acres of marsh using sediment dredged from Turtle Bay. Two types of containment will be utilized for this project: semi-contained and fully contained. For the semi-contained portion, there will be approximately 49 acres of marsh creation and 108 acres of marsh nourishment. For the fully contained portion, there will be approximately 456 acres of marsh creation and 146 acres of marsh nourishment. Containment dikes will be degraded as necessary to reestablish hydrologic connectivity with adjacent wetlands. Approximately 2,335 feet of critical shoreline would be protected and two channel liners would be installed to prevent further enlargement of two primary water exchange points. Maintenance of the shoreline protection feature and channel liners would be included. In case the area does not re-vegetate on its own, the maintenance cost estimate includes funds to plant 25% of the created marsh at Year 3.

### **Project Benefits:**

The project would result in approximately 492 net acres over the 20-year project life.

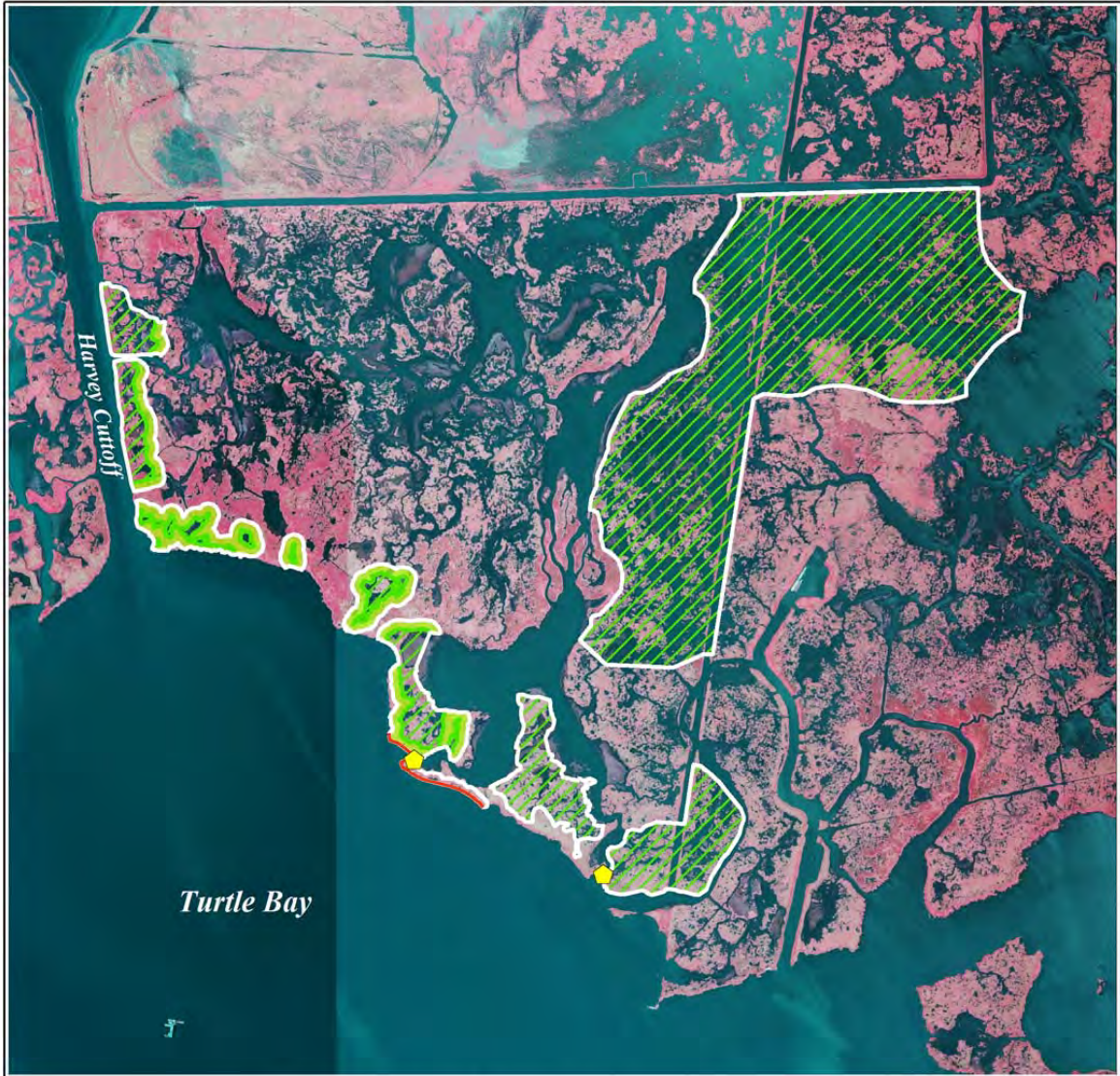
### **Project Costs:**

The total fully-funded cost is \$ 40,494,122.

### **Preparers of Fact Sheet:**

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### NE Turtle Bay Marsh Creation and Critical Shoreline Protection (PPL22 Candidate)



-  Channel Liner \*
-  Shoreline Protection \*
-  Marsh Creation \*
-  Marsh Nourishment \*
-  Project Boundary

\* denotes proposed features

0.25 0 0.25 0.5  
Kilometers

0.25 0 0.25 0.5  
Miles

Scale: 1:30,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0024  
Map Date: July 30, 2012

## **PPL22 Elmer's Island Restoration**

### **Coast 2050 Strategy:**

Coastwide: Dedicated dredging to create, restore, or protect wetlands; Maintenance of Gulf, bay, and lake shoreline integrity;

Regional: Restore/maintain barrier headlands, islands and shorelines

### **Project Location:**

Region 2, Barataria Basin, Jefferson Parish

### **Problem:**

As part of an erosional headland, Elmer's Island is dominated by marine processes including overwash. The island has narrowed and decreased in elevation escalating the rate of overwash and breaching along the headland as well as the spit along Caminada Pass. The island was breached after hurricanes in 2005, 2008, and 2012. The Caminada Headland has receded approximately 970 feet over the last 100 years with about -8 ft/yr along Elmer's Island. The land loss rate in the area is estimated at -0.634 percent/year based on USGS data from 1985 to 2011.

### **Goals:**

The primary project goal is to create salt marsh habitat behind the dune and maintain shoreline integrity and prevent breaching for 20 years as an interim measure until the implementation of a larger beach nourishment/dune restoration projects. This would include primary focus on substantial marsh creation to increase the planform width and conduct interim repairs of portions of the dune and spit. The objective is to create a net positive of back barrier marsh and headland habitat over the project life. Additional goals include avoiding adverse impacts to existing infrastructure and sediment transport to Grand Isle. Additive considerations would be to assess and maintain the lagoon hydrology and assess the spit from a geomorphic, habitat, sediment, hydrology, and protection perspectives.

### **Proposed Solution:**

The proposed features consist of four primary elements (1) 304 acres of marsh creation (with planting), (2) approximately 5,400 feet of dune repair (with planting), (3) breach closure (with planting), and (4) installation of four culverts. Approximately 130,400 cubic yards of sand would be dredged from the ebb shoal of Barataria Pass for the dune and breach repairs.

Approximately 2.2 million cubic yards of sediment would be dredged for marsh creation from an offshore location that would not impact the Caminada Headland or Grand Isle.

### **Project Benefits:**

The project would result in approximately 272 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$35,745,200.

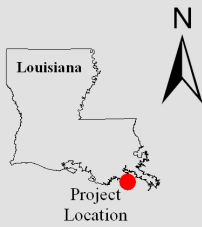
### **Preparers of Fact Sheet:**

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### Elmer's Island Restoration (PPL22 Candidate)



- Culverts \*
- Marsh Creation \*
- Dune Repair \*
- Breach Closure \*
- Project Boundary

\* denotes proposed features



Scale: 1:30,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0033  
Map Date: October 29, 2012

## **PPL22 North Catfish Lake Marsh Creation**

### **Coast 2050 Strategy:**

Coastwide Strategy: Dedicated dredging to create, restore, or protect wetlands.  
Region 3, Strategy 11: Maintain Shoreline Integrity/Stabilize Critical Areas.

### **Project Location:**

Region 3, Terrebonne Basin, Lafourche Parish, Northern Shoreline of Catfish Lake

### **Problem:**

Eastern Terrebonne Basin is significantly isolated from the riverine influences of the Mississippi and Atchafalaya Rivers. Consequently, both subsidence and erosion of shorelines have occurred at some of the highest rates in Louisiana. The northern half of the Catfish Lake shoreline has experienced an average erosion rate of approximately 9.8 ft with some areas losing as much as 40 ft per year. Interior marsh loss along the lake rim has also formed a large pond on the east side of the lake shoreline that has breached and threatens to greatly accelerate wetland loss in the area.

### **Goals:**

The goal of the project is to strategically create marsh and reduce shoreline loss by reconstructing the marsh along the lake rim of Catfish Lake, one of the most prominent interior lakes in the eastern Terrebonne Basin.

### **Proposed Solutions:**

The project will create marsh along the lake rim of the northern half of Catfish Lake and plant smooth cordgrass along the lake shore-face to reestablish a healthy and stable lake rim marsh community. Sediments will be hydraulically dredged from Catfish Lake and pumped via pipeline to create approximately 415 acres of marsh habitat and nourish an additional 251 acres of marsh habitat.

### **Project Benefits:**

The project would result in approximately 401 net acres over the 20 year project life.

### **Project Costs:**

The total fully-funded cost is \$ 30,385,887.

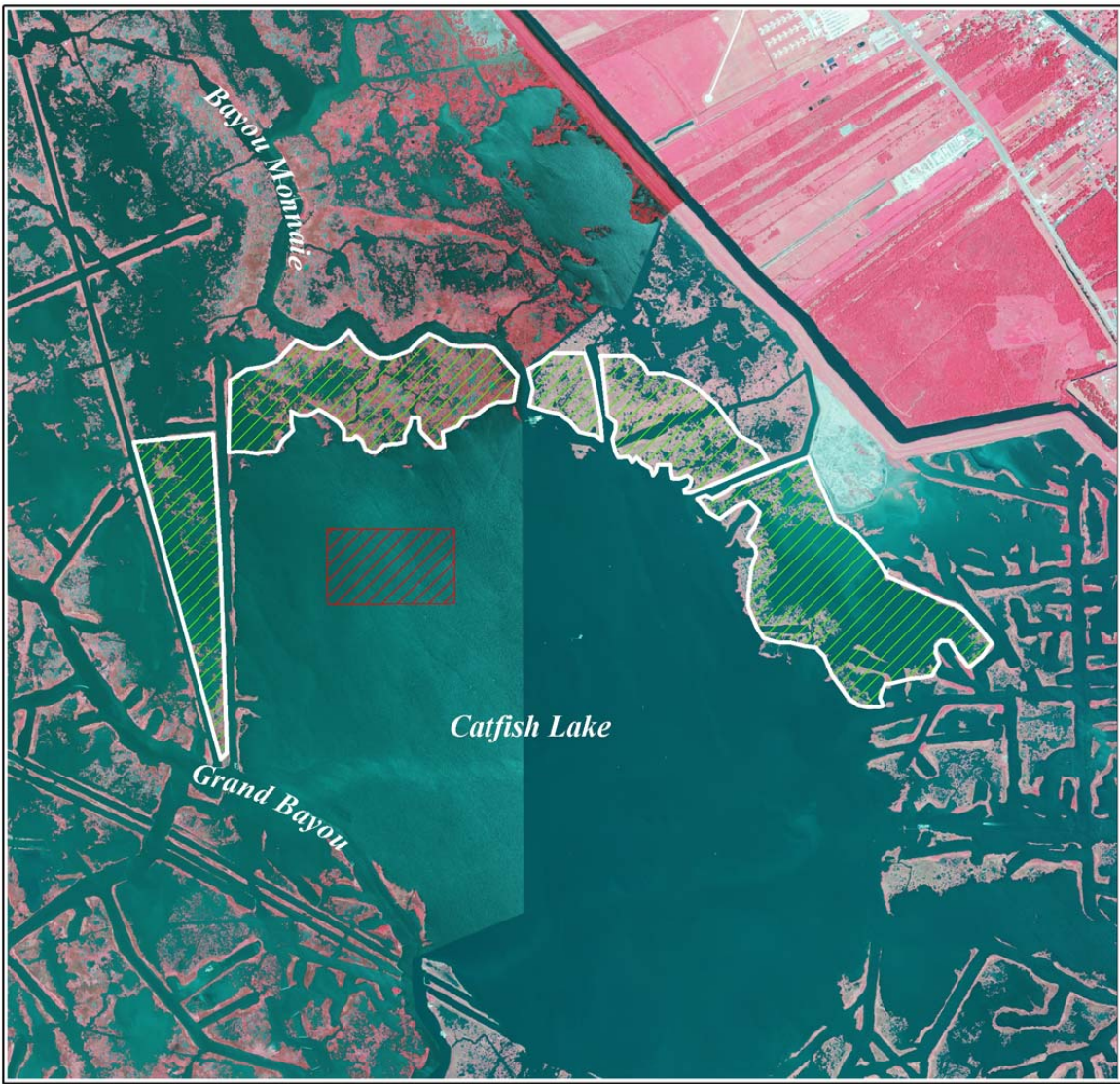
### **Preparer(s) of Fact Sheet:**

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**North Catfish Lake Marsh Creation  
(PPL22 Candidate)**



-  Marsh Creation \*
-  Borrow \*
-  Project Boundary

\* denotes proposed features



Scale: 1:35,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0018  
Map Date: June 28, 2012

## **PPL22 Grand Bayou Freshwater Enhancement and Terracing**

### **Coast 2050 Strategy:**

Coastwide Strategy: Maintain estuarine gradient to achieve diversity; Diversions and riverine discharge; Management of diversion outfall for wetland benefits.

Region 3 Strategy: Enhance Atchafalaya River water influence to Central Terrebonne Marshes; Restore and Sustain Marshes.

### **Project Location:**

Region 3, Terrebonne Basin, Lafourche Parish, Marshes east and west of Grand Bayou Canal (GBC) from the Gulf Intracoastal Waterway (GIWW) to just south of Margaret's Bayou.

### **Problem:**

Project area salinities are increasing due to the loss of marshes south of the project area. Freshwater inflows into this area originate from the GIWW along the northern project boundary. The freshwater inflow from the GIWW is restricted by small channel cross-sections along the northern section of GBC. Margaret's Bayou is also plugged keeping fresh water from moving east into the broken marshes. The project area encompasses 26,533 acres of which 10,018 acres were marsh and the remaining 16,515 acres were open water as of 2010. Land loss rates west of GBC are estimated at -0.328 percent/year and -0.583 percent/year east of GBC.

### **Goals:**

The primary goals of this project are to increase the flow of fresh water down GBC from the GIWW and create/nourish marsh using material dredged from the enlargement of GBC and from the creation of terraces. Specific project goals include: (1) increase the flow of fresh water from the GIWW from approximately 600 cfs to 1,600 cfs; (2) redirect much of the fresh water from GBC into the marshes east and west; (3) create 135 acres and nourish 41 acres of intermediate marsh; and (4) create 183,000 linear feet of terraces (97 acres of marsh) near the southern Point aux Chenes boundary and near the Lafourche Parish flood protection levee.

### **Proposed Solution:**

Enlarge the cross-sectional area of GBC by hydraulically dredging and placing approximately 612,674 cubic yards of sediments into an open water area to create/nourish 176 acres of intermediate marsh. Construct a fixed crest weir (with barge bay) in GBC south of Margaret's Bayou. Reconnect Margaret's Bayou with GBC and enlarge Margaret's Bayou. Replace a rock plug along GBC with a water control structure. Create 183,000 linear feet of earthen terraces south of Margaret's Bayou.

### **Project Benefits:**

The project would result in approximately 655 net acres over the 20-year project life.

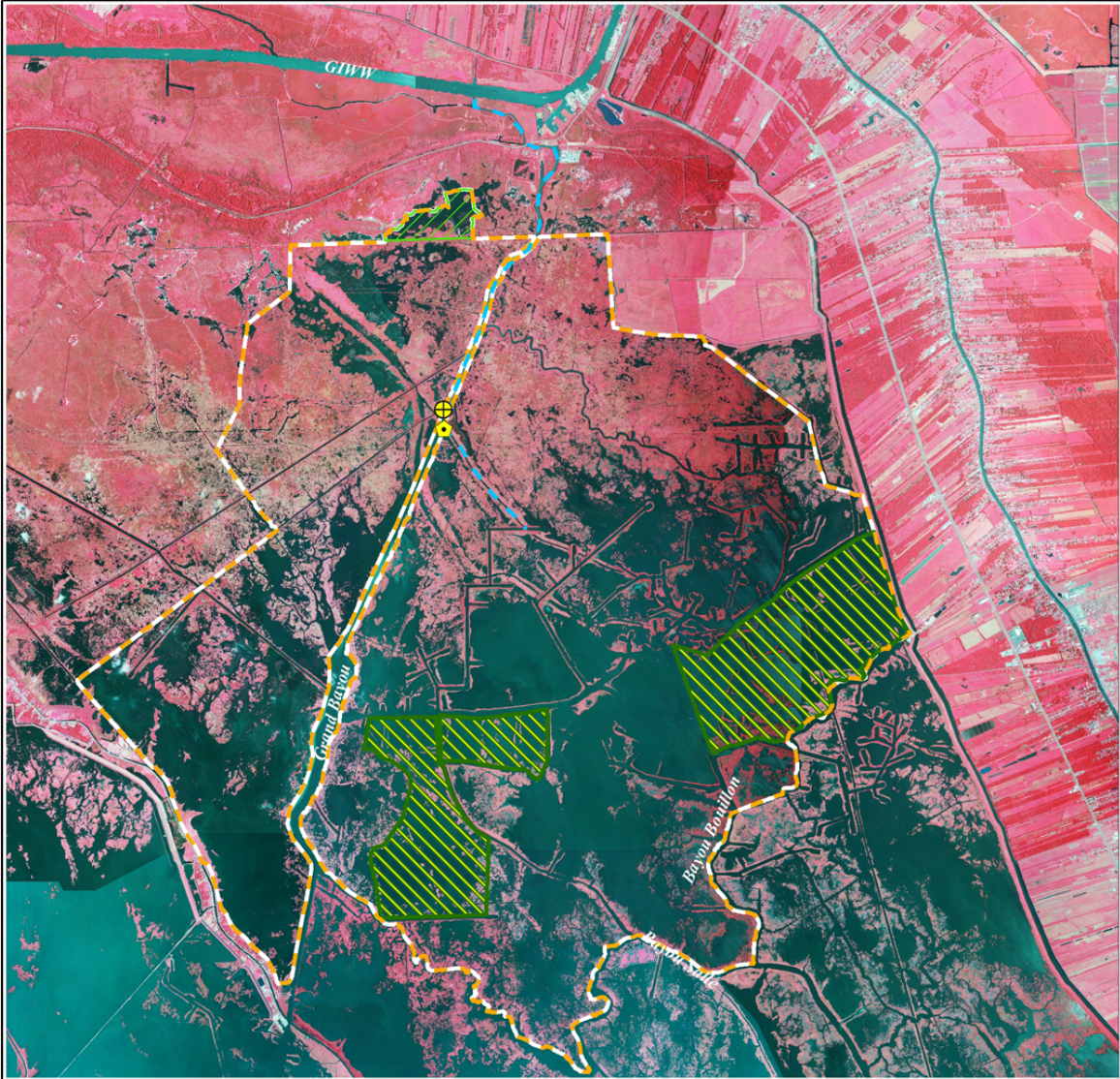
### **Project Costs:**

The total fully-funded cost is \$ 30,344,992.

### **Preparer of Fact Sheet:**

Robert Dubois, FWS, (337) 291-3127; robert\_dubois@fws.gov

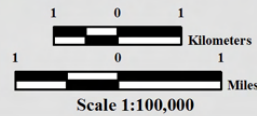




### Grand Bayou Freshwater Enhancement and Terracing (PPL22 Candidate)



- Water Control Structure \*
  - Weir w/ Barge Bay \*
  - Channel Enlargement \*
  - Marsh Creation \*
  - Terrace Field \*
  - Freshwater Influence \*
  - Project Boundary \*
- \* denotes proposed features



Map ID: USGS-NWRC 2012-11-0026  
Map Date: October 24, 2012



Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, La

Image Source:  
2010 NAIP Photography



## **PPL22 South Little Vermilion Bay Plantings and Terracing**

### **Coast 2050 Strategy:**

Maintain shoreline integrity and stabilize critical areas (*Regional Ecosystem Strategy*); Terracing and Vegetative Plantings (*Coastwide Common Strategy*)

### **Project Location:**

Region 3, Teche/Vermilion Basin, Vermilion Parish, Northeastern shore of Vermilion Bay extending from Mud Point, around Little Vermilion Bay to State Wildlife Refuge.

### **Problem:**

Continuous wind-wave energy is preventing sediments from the Gulf Intracoastal Waterway through Freshwater Bayou and Schooner Bayou from becoming sub-aerial features, and is also responsible for shoreline erosion. Continued shoreline retreat in Vermilion Bay is threatening the integrity of Bay rim, which if compromised would expose surrounding marsh to open bay energies.

### **Goals:**

The primary goals of the project are to: 1) Create approximately 26,000 LF of distributary channels in Little Vermilion Bay, 2) Create approximately 22,000 LF of earthen terraces (17 acres), 3) Increase sediment deposition to create emergent marsh base, 4) Stabilize approximately 46,695 linear feet of bay shoreline through five years of intensive vegetative plantings (63 acres), 5) Create an additional 14 acres of emergent marsh through the expansion of vegetative plantings. Abate wind-driven wave erosion along Vermilion Bay.

### **Proposed Solution:**

The project features includes terracing and intensive shoreline vegetation plantings. Terraces would be constructed to diminish waves in Little Vermilion Bay, helping to increase sediment deposition and reduce the rate of shoreline erosion. A pattern of channels would be dredged 100-foot wide and 6-foot deep to beneficially distribute sediment from the GIWW through the Freshwater and Schooner bayous. Dredged sediments would be used to construct 22,000 LF of earthen terraces. Terraces would be constructed to +2.8 feet NAVD88 with a crown 20 feet wide. The slopes of the terraces would be planted with smooth cordgrass plugs. The project design follows that of the Little Vermilion Bay Sediment Trapping Project (TV-12).

### **Project Benefits:**

The project would result in approximately 93 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 6,506,921.


### **Preparers of Fact Sheet:**

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Kimberly Clements, NOAA's National Marine Fisheries Service, (225) 389-0508, ext 204  
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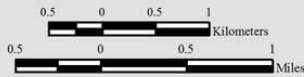


### South Vermilion Bay Terraces and Planting (PPL22 Candidate)



-  Terraces \*
-  Vegetative Plantings \*
-  Possible Project Location

\* denotes proposed features



Scale: 1:60,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0015  
Map Date: September 04, 2012

## **PPL22 Front Ridge Freshwater Introduction and Terracing**

### **Coast 2050 Strategy:**

Coastwide Common Strategies: Maintain, Protect, or Restore Ridge Functions; Terracing accompanied by vegetative planting, is an effective means of marsh habitat creation.

Regional Strategy 4: Move water from Lakes Subbasin across Highway 82 including outfall management and flood protection where needed. Restore historic hydrologic and salinity conditions throughout Region 4 to protect wetlands from hydrologic modification.

### **Project Location:**

Region 4, Mermentau Basin, Vermilion Parish, east of Pecan Island and south of Highway 82.

### **Problem:**

Virtually all of the project area marshes have experienced increased tidal exchange, saltwater intrusion, and reduced freshwater retention associated with Freshwater Bayou and Humble Canals. Highway 82 traverses cheniers wherever possible; however, low spots between cheniers historically allowed drainage from the Lakes Subbasin south into the Chenier Subbasin. Currently, Highway 82 forms a hydrologic barrier that isolates those subbasins.

### **Goals:**

The project goals are two-fold: 1) to evacuate excess water from the Lakes Subbasin; and 2) to provide freshwater to the Chenier Subbasin. The project would restore/improve hydrologic conditions and promote the expansion of emergent marsh vegetation throughout the project area. The terracing will be designed to reduce wave energies and promote growth of submerged aquatic vegetation.

### **Proposed Solution:**

The project proposes approximately 181,500 linear feet of terracing and freshwater introduction.

The proposed freshwater introduction would restore/improve hydrologic conditions by allowing water from the Lakes Subbasin to drain south across Highway 82 into the Chenier Subbasin. The majority of the necessary infrastructure exists and would require minimal improvement/cleanout and the construction of an outlet structure at Front Ridge.

### **Project Benefits:**

The project would result in approximately 134 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 13,622,423.

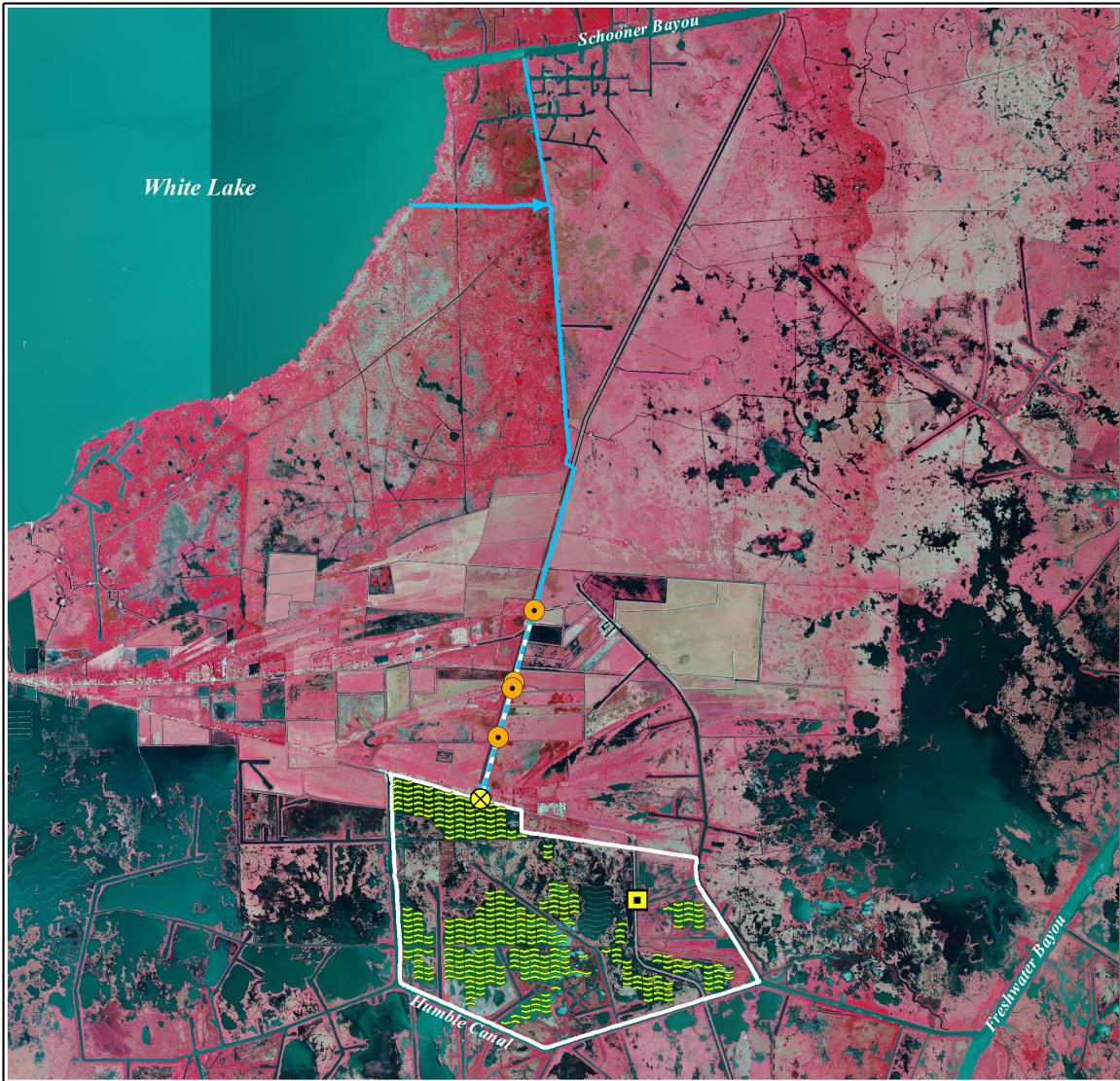
### **Preparers of Fact Sheet**

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Wayne Henderson, (225) 922- 4600, [whenderson@pncca.com](mailto:whenderson@pncca.com)








Judge Edwards, Vermilion Corps, (337) 893-0268, [vermilioncorporation@connections-lct.com](mailto:vermilioncorporation@connections-lct.com)



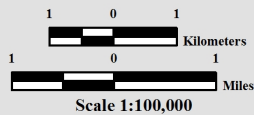


**Front Ridge Freshwater Introduction and Terracing  
(PPL22 Candidate)**



-  Culvert \*
-  Replacement Structure \*
-  Culvert with Flapgate \*
-  Freshwater Introduction \*
-  Channel Cleanout \*
-  Freshwater Introduction \*
-  Influence Area/Project Boundary \*

\* denotes proposed features



Map ID: USGS-NWRC 2012-11-0027  
Map Date: August 28, 2012



Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, La

Image Source:  
2010 NAIP Photography

## **PPL22 Cameron Meadows Marsh Creation and Terracing**

### **Coast 2050 Strategy:**

Restore and Sustain Wetlands (*Regional Ecosystem Strategy*); Dedicated Dredging for Wetlands Creation, Terracing, and Vegetative Plantings (*Coastwide Common Strategy*); Restore Hydrology in the Burton-Sutton Canal (*Mapping Unit Strategy*)

### **Project Location:**

Region 4, Calcasieu/Sabine Basin, Cameron Parish, approximately 18 miles west of Cameron, 5 miles north of the Gulf of Mexico, northeast of Johnsons Bayou, south of Cameron Meadows Gas Field.

### **Problem:**

Significant marsh loss is attributed to rapid fluid and gas extraction beginning in 1931, Hurricanes Rita, Gustav and Ike. Rapid fluid and gas extraction resulted in a surface down warping along distinguished geologic fault lines. In the decades that followed, organic matter filled the low area and an emergent marsh community became established. During the hurricanes of 2005 and 2008, the physical removal of the marsh coupled with low rainfall has resulted in the conversion of intermediate to brackish marsh to approximately 7,000 acres of open water. In addition to these direct losses, significant marsh loss has resulted from saltwater intrusion and hydrologic changes associated with storm damage and blocked drainages.

### **Goals:**

Restore coastal marsh habitat by creating approximately 352 acres of marsh with dredge material and constructing terraces. Reverse the conversion of wetlands to shallow open water in the project area through reestablishment of hydrologic connectivity.

### **Proposed Solution:**

Construct 334 acres of marsh, reestablishing Old North Bayou, utilizing dredged material from the Gulf of Mexico. Construct 35,000 linear feet of terraces (18 acres) to reduce wind generated wave fetch. Terraces would be constructed to +2.5 feet NAVD 88, 15 feet crown width, and planted. Project features would include cleaning out over 30,000 linear feet of canals (South Line and/or B1) to re-establish drainage patterns filled in as a result of the hurricanes. The marsh creation areas would be planted with appropriate species of wetland vegetation.

### **Project Benefits:**

The project would result in approximately 265 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 27,685,820.

### **Preparers of Fact Sheet:**

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Kimberly Clements, NOAA's National Marine Fisheries Service, (225) 389-0508, ext 204  
[Kimberly.Clements@noaa.gov](mailto:Kimberly.Clements@noaa.gov)





**Cameron Meadows Marsh Creation and Terracing  
(PPL22 Candidate)**



-  Marsh Creation \*
-  Terrace Field \*
-  Project Boundary

\* denotes proposed features



Scale: 1:35,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0025  
Map Date: July 18, 2012



#### **IV. DESCRIPTION OF CANDIDATE DEMONSTRATION PROJECTS**

This section provides a concise narrative of each demonstration project. The project details provided include the Coast 2050 strategy, project location, problem, goals, proposed solution, benefits, costs, sponsoring agency, and contact persons.



## **PPL22 Hay Bale Restoration Demonstration Project**

### **Coast 2050 Strategies:**

Coastwide strategies: Maintenance of bay and lake shoreline integrity; Vegetative Planting; Terracing. Regional Ecosystem strategies: Restore Swamps; Restore/Sustain Marshes; Protect Bay and Lake Shorelines; Restore and Maintain Barrier Islands; Maintain Critical Landforms.

### **Potential Demonstration Project Location:**

Coastwide

### **Problem:**

With the construction of the levee system, the integrity of the natural flow of the Mississippi River has been compromised. The use of hay bales in restoration efforts needs to be investigated as an all “natural” solution to help put back what the construction of the levees has taken away (i.e. return of sediment input from waterways back to the land to help counter land subsidence/add nutrients).

### **Goals:**

Deploy and test various approaches for restoring the eroding marsh/banks/shorelines. Demonstrate the versatility of hay bales in restoration, as an alternative to traditional methods.

### **Proposed Solutions:**

“Barriers” of 800-lb round bales of hay, wheat, and/or rice straw will be constructed to suppress the erosive effects of wave action on shorelines and trap sediment, forming a more “natural” barrier or buffer compared to traditional methods used for erosion control. Approximately 1500 ft of double row hay bales would be placed in a linear “barricade alignment” near shore, with 3 replicate 500-foot sections and 20-foot gaps in between each section (Figure 1). In addition, the utilization of hay bales as containment for dredged material will also be evaluated. This treatment is intended to investigate a different method of containment in areas unsuitable for earthen dike construction. Three 0.9-acre cells consisting of a double wall of hay bales will be constructed (Figure 2).

### **Project Benefits:**

Benefits include: 1) cost effective when compared to other traditional means of erosion control (e.g., rock); 2) all-natural and expected to be non-toxic to the environment (biodegradable); 3) reduces wave energy to help with soil stabilization/soil creation; 4) would serve to protect new vegetative plantings as well as existing vegetation; 5) excellent source of shelter for nesting/colonization by birds and other animals; 6) attract fish and other aquatic species; and 7) creates a market for wheat and rice straw that currently does not exist.

### **Project Costs:**

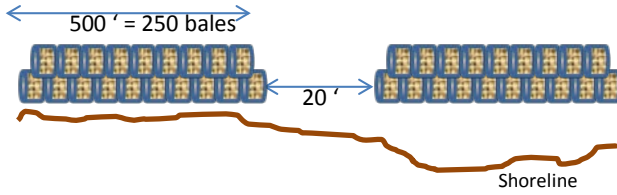
The total fully-funded cost is \$ 2,126,843.

### **Preparer(s) of Fact Sheet:**

Susan Hennington, USACE, 504-862-2504, [Susan.M.Hennington@usace.army.mil](mailto:Susan.M.Hennington@usace.army.mil)  
Scott F. Wandell, USACE, 504-862-1878, [Scott.F.Wandell@usace.army.mil](mailto:Scott.F.Wandell@usace.army.mil)

## Placements Near Shore:

Figure 1: Nearshore Barricade- Double Row (3 reps = 750 bales total)



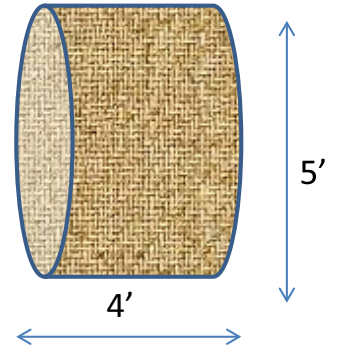
## Placements in Open Water Areas:

Figure 2: Double Row for Containment (3 reps = 1200 bales)



200' x 200' = 400 bales  
(0.9 acres)

## Round Hay Bales



## **PPL22 Reconnection of Hydrologically Isolated Wetlands to Improve Ecological Function Demonstration Project**

### **Coast 2050 Strategy:**

Regional: Improve hydrology, restore hydrology

### **Potential Demonstration Project Location:**

Coastwide swamps, intermediate, brackish, and salt marshes

### **Problem:**

The juxtaposition of canal spoils banks often results in the impoundment or partial impoundment of coastal wetlands thus reducing the exchange between these wetlands and the surrounding areas. This reduced exchange results in fewer but longer flooding and drying events. The increased flooding may be enough to increase the soil waterlogging to a point where plants may become stressed due to soil chemistry changes ultimately leading to plant death and wetland loss. Excessive inundation of swamps has been shown to lead to increased stress, resulting in mortality to less flood tolerant species and eventually to loss of tree density.

### **Goals:**

(1) Assess the size or number of connections necessary to re-establish the hydrology within an isolated wetland and improve the connectivity to the surrounding wetland in order to restore ecological function. (2) Improve the soil chemistry by decreasing soil waterlogging. (3) Reduce stress on the vegetation. (4) Improve fisheries access.

### **Proposed Solution:**

Re-establish the connectivity to the surrounding wetlands by opening hydrologic pathways. It is anticipated that 1-3 impounded locations will be used, each with a reconnected and non-reconnected control. Approximately 500 linear feet (ft) of gaps (or spoil bank degradation) would be constructed at each of the locations for a total of 3,000 ft. The gap lengths tested would include the present minimum standard of 25 ft being used on CWPPRA projects. Additional size and/or number of gaps or degrading would be tested.

### **Project Benefits:**

1. Re-establishment of a natural hydrologic regime.
2. Lower (or eliminate) plant stress due to waterlogging.
3. Increase connectivity (water, material and organisms) to surrounding wetlands.
4. Provide data on transient fish and invertebrate species access to the marsh.
5. Determine optimal sizes of gaps that may be useful for marsh creation projects.

### **Project Costs**

The total fully funded cost is \$1,724,012.

### **Preparer of Fact Sheet:**

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Erick Swenson, Louisiana State University, (225)578-2730, [eswenson@lsu.edu](mailto:eswenson@lsu.edu)

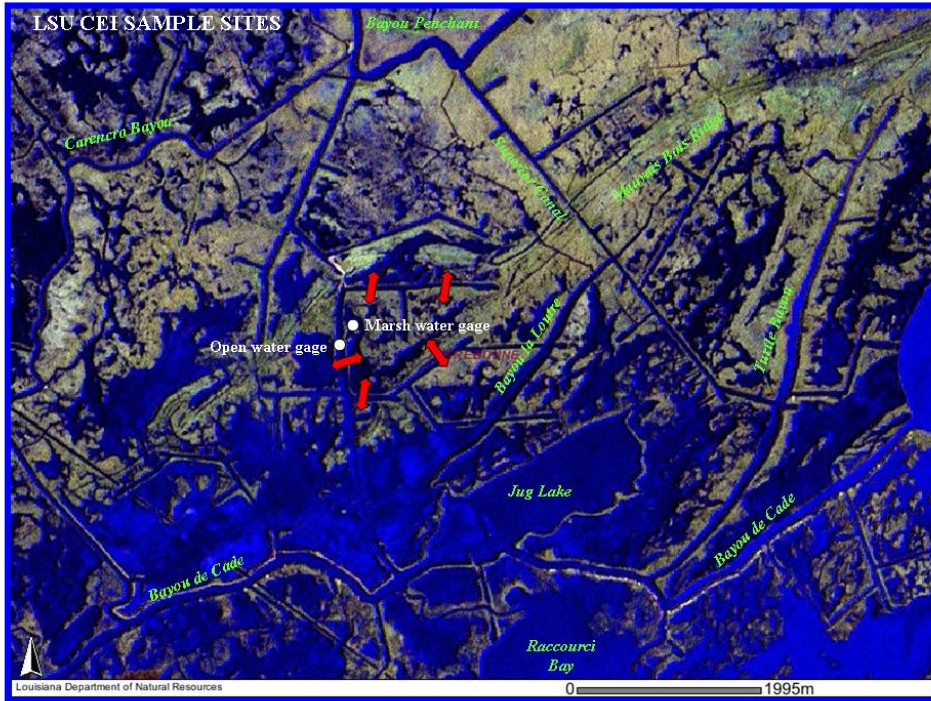
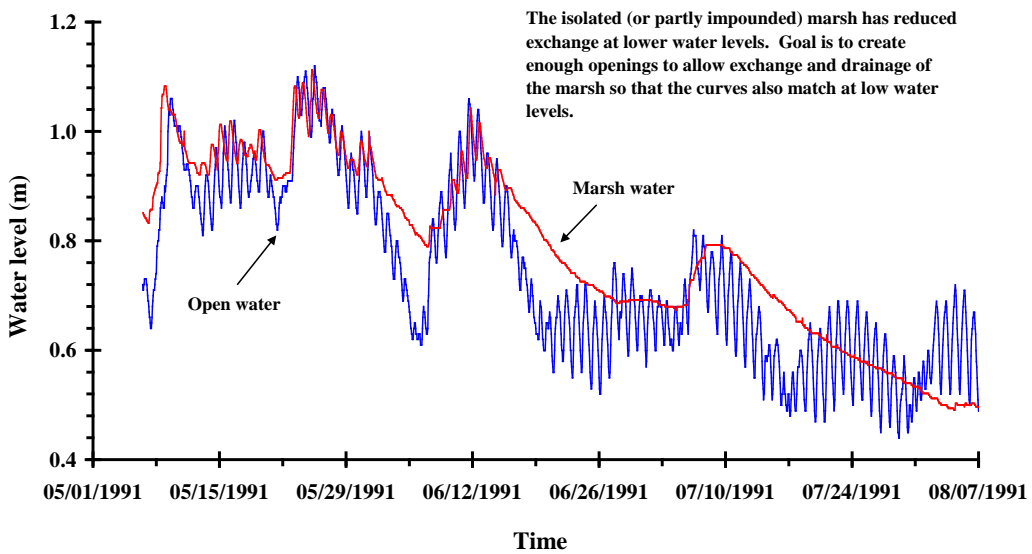


Figure 1. Example of an impounded site (surrounded by spoil banks) in an intermediate marsh in Terrebonne Parish. The red arrows indicate possible locations to gap (or degrade spoil banks) to re-establish hydrologic connectivity.



Data source: E. M. Swenson, LSU

Figure 2. Example of marsh water levels (red) in an impounded marsh and in the adjacent open water (blue) at an intermediate marsh site in Terrebonne Parish (Figure 1). The site floods and drains during high water level events but drainage is limited (by spoil banks) at lower water levels leading to increased waterlogging.

## **PPL22 Coastal Restoration and Energy Production System (CREPS) Demonstration Project**

### **Coast 2050 Strategy:**

Coastwide: Management of Pump and Gravity-flow Outfall for Wetland Benefits; Diversions and Riverine Discharge

### **Potential Demonstration Project Location:**

Plaquemines Parish, St. Bernard Parish, Orleans Parish, Jefferson Parish, St. Charles Parish, St. John the Baptist Parish, or St. James Parish.

### **Problem:**

Over a century of leveeing and river management has isolated the Mississippi River from the wetlands that have historically depended on its periodic inputs of nutrients, sediment, and freshwater.

### **Goals:**

The goal of this project is to demonstrate the potential use of the CREPS diversion technology for supplying degraded wetlands with fresh water and sediment. Specifically, the project will compare the efficiency and cost effectiveness of CREPS technology with existing diversions. Another goal of the project is investigate the potential capture and utilization of hydroelectric power from the diversion.

### **Proposed Solution:**

CREPS consists of a 30inch pipe horizontally directional drilled under a levee system (>80ft below the levee), with the input under water on the river side and the output outside of the levee (Figure 1). Because the average level of the river is higher in elevation than the wetlands, hydrostatic forces will force river water through the pipe. A hydrokinetic turbine will be fixed to the output and generate power. This electricity can then be used to power pumps to further direct the diverted river water or uploaded to the transmission grid to generate revenue.

### **Proposed Benefits:**

CREPS technology would introduce nutrient and sediment-rich freshwater into coastal wetlands. It is similar in cost to install as a major diversion on a cfs basis, but can be constructed in a fraction of the time. It also minimizes the induced shoaling threat to the maritime industry, and does not hinder existing residential, commercial, or industrial operations during construction or operation.

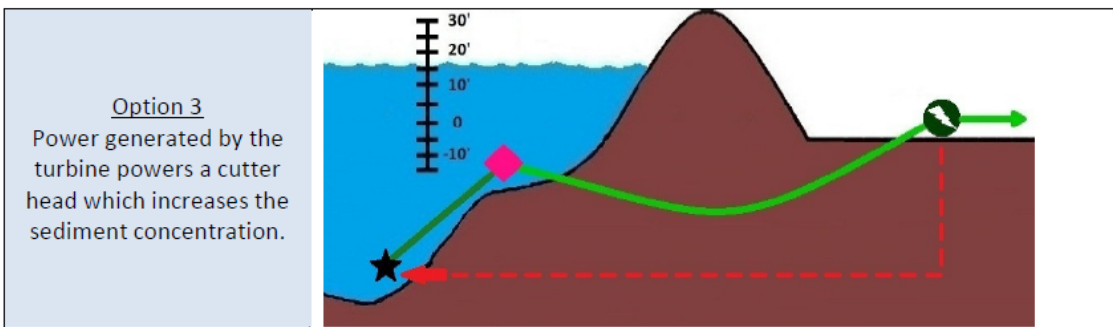
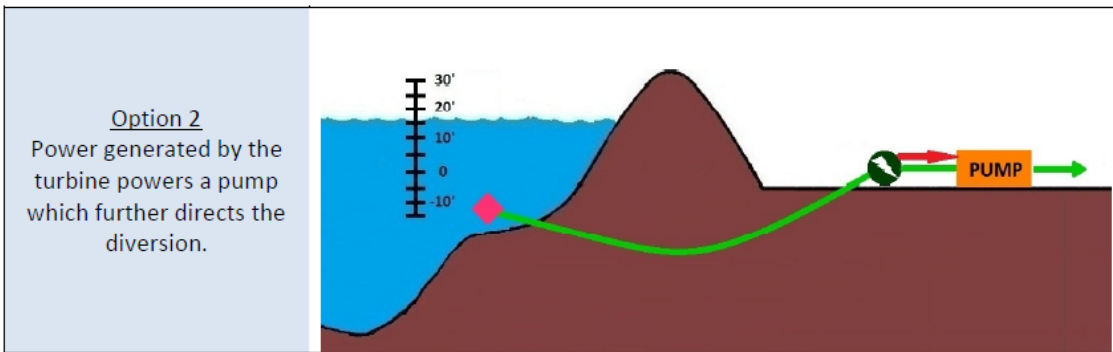
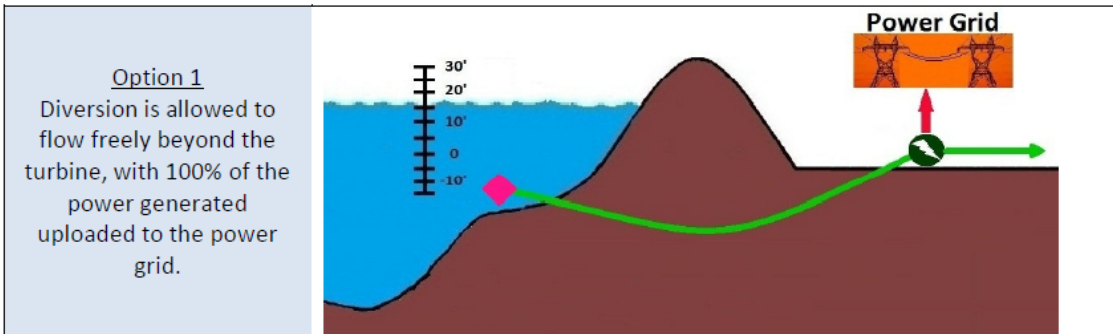
### **Project Costs:**

The total fully-funded cost is \$ 3,357,745.

### **Preparer of Fact Sheet:**

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Kodi Collins, CPRA, 225-342-4106, kodi.collins@la.gov

Legend





## **PPL22 Bioengineering of Shorelines and Canal Banks using Live Stakes Demonstration Project**

### **Coast 2050 Strategy:**

Maintain bay and lake shorelines. Terracing and plantings.

### **Potential Demonstration Project Location:**

Coastwide

### **Problem:**

Louisiana's coastal shorelines have experienced high levels of retreat. The typical approach to reducing shoreline erosion has been to use rock dikes or sheetpile structures. These structures require the use of materials that are not native to the Louisiana coast and when procured elsewhere, cause damage to other environments (quarry). In addition, rock is often not physically compatible with native coastal soils - rocks often sink into the fine-grained and highly organic coastal wetland soils.

### **Goals:**

The proposed project would demonstrate an alternative to traditional shoreline protection techniques. In particular, this project would demonstrate an ecological engineering approach to stabilization of existing shoreline features and attenuation of shoreline retreat.

### **Proposed Solution:**

The stabilization materials have a variety of application possibilities that can be adjusted to best suit many different types of coastal environments. A staggered terrace-like orientation can break up wave action, reduce turbidity, and allow sediment to settle, potentially accreting and creating emergent marsh. The use of native woody materials ensures the use of native plants and provides a relatively inexpensive source of plant materials. In combination with the erosion control materials, a variety of configurations in planting the shallows, shoreline and near shore areas will begin the reestablishment of a native plant community. The demonstration would include the selection of 3 diverse application sites for treatment. Each treatment would include 3 replicate 500-foot sections for a total project installation of 4,500 linear feet.

### **Project Benefits:**

Benefits include: 1) absorb and deflect wave energy; 2) protect and enhance existing or planted shoreline vegetation; 3) allow ingress and egress of aquatic species; 4) collect sediment by reducing wave energy; 5) reduce interior marsh loss; and 6) use of native materials.

### **Project Costs**

The fully-funded cost is \$2,562,494.

### **Preparer of Fact Sheet:**

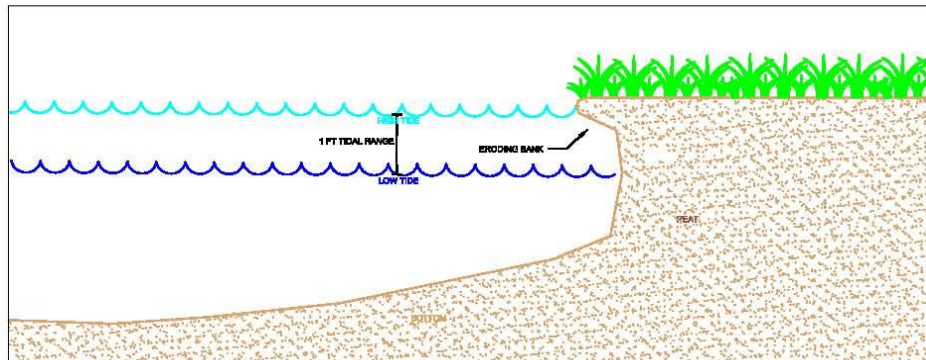
Paul Kaspar, EPA, 214-665-7459, [kaspar.paul@epa.gov](mailto:kaspar.paul@epa.gov)

Ken Teague, EPA, 214-665-6687, [Teague.kenneth@epa.gov](mailto:Teague.kenneth@epa.gov)

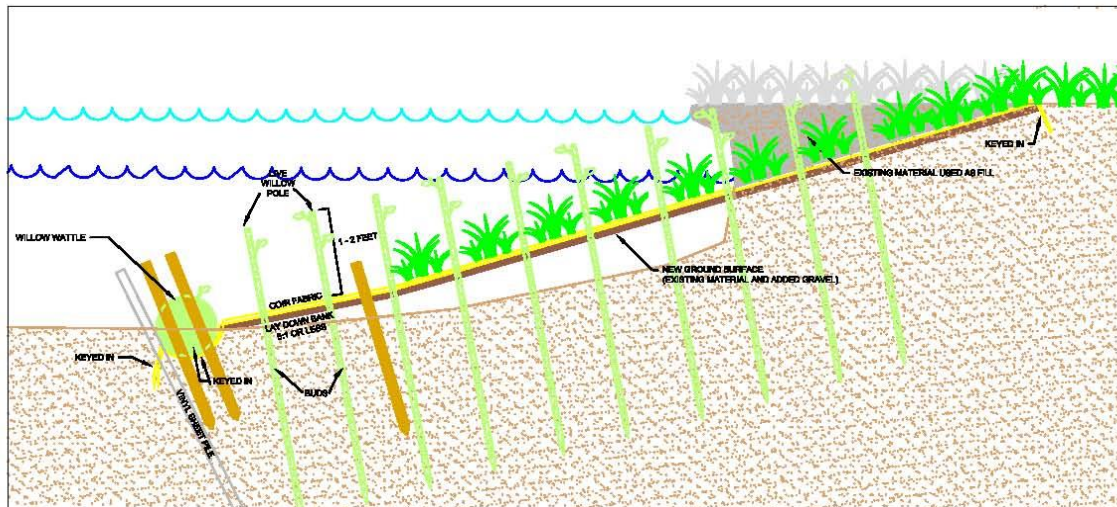
Adrian Chavarria, EPA, 214-665-7255, [chavarria.adrian@epa.gov](mailto:chavarria.adrian@epa.gov)

Chris Llewellyn, EPA, 214-665-7239, [Llewellyn.chris@epa.gov](mailto:Llewellyn.chris@epa.gov)

## PRE-CONSTRUCTION (EXISTING CONDITIONS)



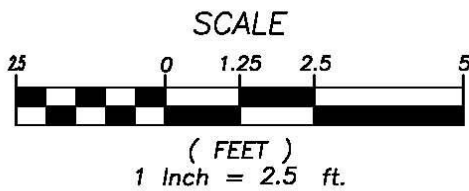
## POST-CONSTRUCTION (DESIGN)



- DORMANT WILLOW WATTLE**
- 1 FOOT DIAMETER
  - 5 FOOT LENGTH WILLOW WHIPS
  - STAKED EVERY FOOT WITH 3 FOOT STAKES
  - TIED WITH HEAVY COIR TWINE
  - BURIED 6 INCHES (HALF OF DIAMETER)

- DORMANT WILLOW POLE**
- 1 FOOT ON CENTER
  - 1 INCH DIAMETER
  - 5 FEET LONG - POINTED ON ONE END

- EROSION CONTROL FABRIC**
- EXTRA HEAVY DUTY COIR FABRIC



### SCHEMATIC OF BIOENGINEERED SLOPE (FRESHWATER/INTERMEDIATE)

DESIGNED BY: JANE ROWAN

DRAWN BY: JANELLE LAVALLÉE







## V. PROJECT SELECTION

On January 24<sup>th</sup>, 2013 the CWPPRA Task Force made its selection for the 22nd PPL. The CWPPRA Task Force selection for the 22nd PPL is shown in Table 6.

**Table 6: The 22nd Priority Project List**

Project Number	Project Name	Physical Type	Sponsoring Agency	Total Fully Funded Cost	Fully-Funded Phase I Cost	Fully-Funded Phase II Cost	Average Annual Habitat Units (AAHU)
BS-24	TR & MC South of Big Mar	MC/TR	USFWS	\$23,692,705	\$2,308,599	\$21,384,106	86
TE-122	North Catfish Lake Marsh Creation	MC	NRCS	\$30,385,887	\$3,216,194	\$27,169,693	256
CS-66	Cameron Meadows MC & TR	MC/TR	NMFS	\$27,685,820	\$3,108,025	\$24,577,795	106
BA-164	Bayou Dupont Sedi. Delivery #3	MC	EPA	\$38,279,163	\$3,415,930	\$34,863,233	166
<b>TOTALS</b>				\$120,043,575	\$12,048,748	\$107,963,949	614

**Project Physical Type:**

**MC**=Marsh Creation

**TR**=Terracing

**Sponsoring Agencies:**

**EPA**=Environmental Protection Agency

**NMFS**=National Marine Fisheries Service

**NRCS**=Natural Resources Conservation Service

**USFWS**=US Fish and Wildlife Service



## **VI. DESCRIPTION OF PROJECTS SELECTED FOR PHASE I FUNDING**

This section provides a concise narrative of each selected project that was funded for Phase I. The project details provided include the Coast 2050 strategy, project location, problem, goals, solution, benefits, costs, sponsoring agency and contact persons, and a map identifying the project area and features if applicable.

## **PPL22 North Catfish Lake Marsh Creation**

### **Coast 2050 Strategy:**

Coastwide Strategy: Dedicated dredging to create, restore, or protect wetlands.  
Region 3, Strategy 11: Maintain Shoreline Integrity/Stabilize Critical Areas.

### **Project Location:**

Region 3, Terrebonne Basin, Lafourche Parish, Northern Shoreline of Catfish Lake

### **Problem:**

Eastern Terrebonne Basin is significantly isolated from the riverine influences of the Mississippi and Atchafalaya Rivers. Consequently, both subsidence and erosion of shorelines have occurred at some of the highest rates in Louisiana. The northern half of the Catfish Lake shoreline has experienced an average erosion rate of approximately 9.8 ft with some areas losing as much as 40 ft per year. Interior marsh loss along the lake rim has also formed a large pond on the east side of the lake shoreline that has breached and threatens to greatly accelerate wetland loss in the area.

### **Goals:**

The goal of the project is to strategically create marsh and reduce shoreline loss by reconstructing the marsh along the lake rim of Catfish Lake, one of the most prominent interior lakes in the eastern Terrebonne Basin.

### **Proposed Solutions:**

The project will create marsh along the lake rim of the northern half of Catfish Lake and plant smooth cordgrass along the lake shore-face to reestablish a healthy and stable lake rim marsh community. Sediments will be hydraulically dredged from Catfish Lake and pumped via pipeline to create approximately 415 acres of marsh habitat and nourish an additional 251 acres of marsh habitat.

### **Project Benefits:**

The project would result in approximately 401 net acres over the 20 year project life.

### **Project Costs:**

The total fully-funded cost is \$ 30,385,887.

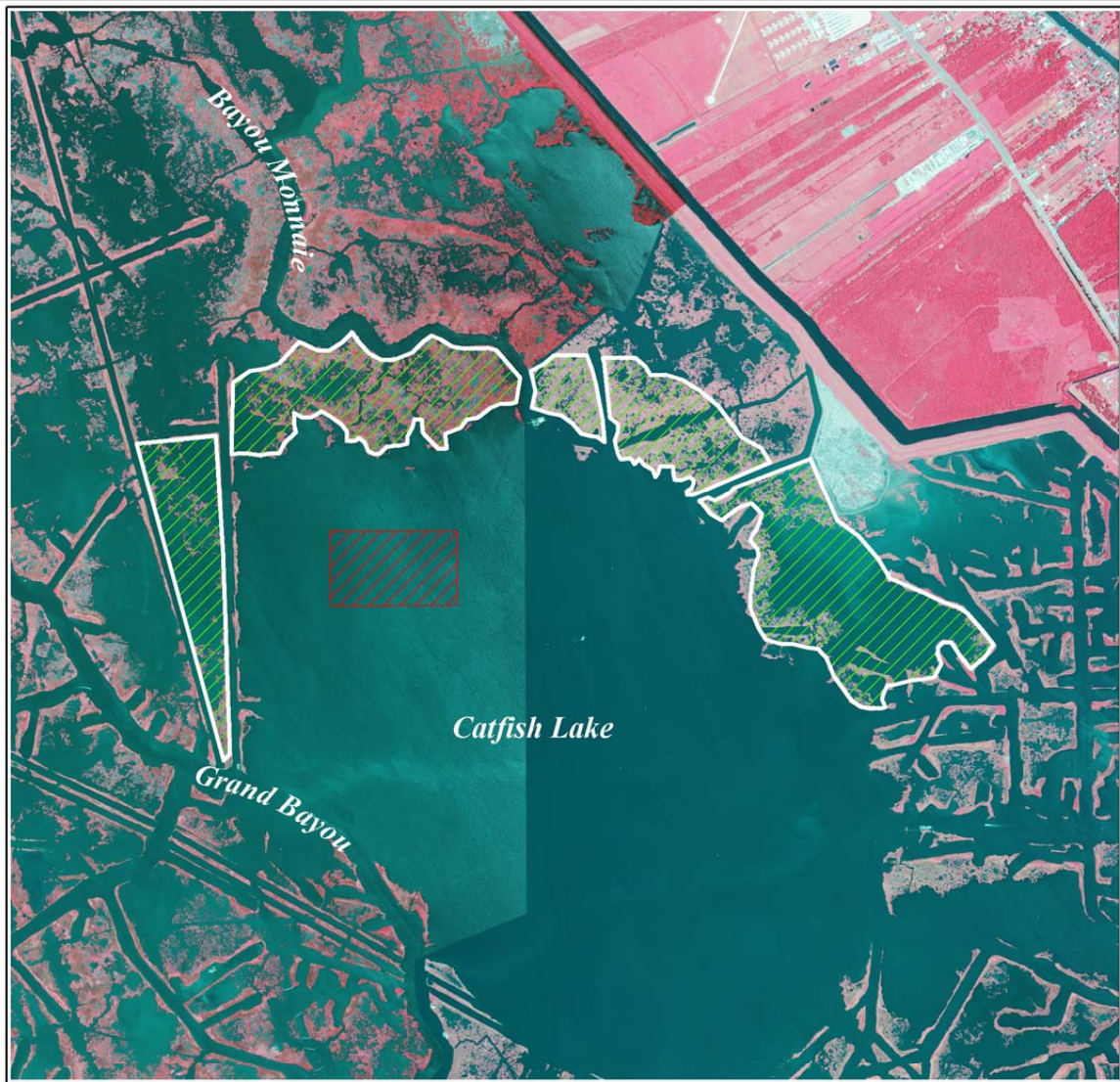
### **Preparer(s) of Fact Sheet:**

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**North Catfish Lake Marsh Creation  
(PPL22 Candidate)**



-  Marsh Creation \*
-  Borrow \*
-  Project Boundary

\* denotes proposed features



Scale: 1:35,000



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography

Map ID: 2012-11-0018  
Map Date: June 28, 2012

## **PPL22 Terracing and Marsh Creation South of Big Mar**

### **Coast 2050 Strategy:**

Coastwide Common Strategies: Dedicated dredging to create, restore, or protect wetlands; Terracing.

Region 2 Regional Ecosystem Strategies: Restore and Sustain Marshes; Manage outfall of existing diversions.

### **Project Location:**

Region 2, Breton Sound Basin, Plaquemines Parish, south of Big Mar and west of Lake Lery

### **Problem:**

From 1932 to 1990, the Caernarvon Mapping Unit lost 14,240 acres of its marsh. Prior to Hurricane Katrina, the greatest lost documented occurred between 1956 and 1974 and coincided with Hurricane Betsy and extensive canal building. Hurricane Katrina devastated the area resulting in substantial marsh loss. According to USGS Open File Report (2006-1274), approximately 39 square miles of marsh around the upper and central portions of Breton Sound were converted to open water by ripping of the marsh or by marsh submergence. Because the framework of the marsh has been devastated, suspended sediments provided by the diversion move through the system and fall out where velocities are reduced such as in Big Mar and Lake Lery.

### **Goals:**

The primary goal is to create terraces in the shallow open water areas south of Big Mar within the Caernarvon Diversion outfall area. Terraces will reduce wave fetch in the large open water areas and promote conditions conducive to growth of marsh vegetation and submerged aquatic vegetation. Additional benefits may be achieved through capturing suspended sediments. Marsh creation is also proposed to reestablish the western shoreline of Lake Lery in association with the Lake Lery Shoreline Restoration Project (BS-16).

### **Proposed Solutions:**

Approximately 65,000 linear feet of terraces (37 acres) will be constructed with in-situ material to reduce fetch and turbidity and capture suspended sediment. Sediments will be hydraulically dredged from Lake Lery and pumped via pipeline to create and restore approximately 334 acres of marsh in the project area.

### **Project Benefits:**

The project would result in approximately 302 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 23,692,705.

### **Preparer(s) of Fact Sheet:**




Angela Trahan, USFWS, 337/291-3137, [angela\\_trahan@fws.gov](mailto:angela_trahan@fws.gov)

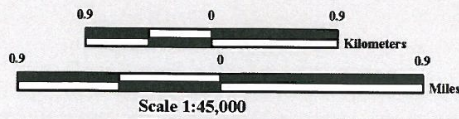




**Terracing and Marsh Creation South of Big Mar  
(PPL22 Candidate)**



-  Terrace Field \*
  -  Marsh Creation/Nourishment \*
  -  Project Boundary \*
- \* denotes proposed features



Map ID: USGS-NWRC 2012-11-0014  
Map Date: June 22, 2012



Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, La  
Image Source:  
2010 NAIP Photography

## **PPL22 Bayou Dupont Sediment Delivery – Marsh Creation #3**

### **Coast 2050 Strategy:**

Coastwide Common Strategies: Dedicated dredging to create, restore, or protect wetlands; Offshore and riverine sand and sediment resources.

Region 2 Regional Ecosystem Strategies: Restore and Sustain Marshes.

### **Project Location:**

Region 2, Barataria Basin, Jefferson and Plaquemines Parishes. The borrow location will be in the Mississippi River. The project is immediately adjacent to the Mississippi River Sediment Delivery System project (BA-39).

### **Problem:**

Wetlands in the Barataria Basin were historically nourished by the fresh water, sediment and nutrients delivered by the Mississippi River and its many distributary channels. Following the creation of levees along the lower river for flood control and navigation, these inputs ceased. In addition, numerous oil and gas canals in the area contributed significantly to wetland loss. Recent information suggests that actual subsurface oil and gas withdrawal was a major cause of wetland loss. From 1932 to 1990, the Barataria Basin lost over 245,000 acres of marsh, and from 1978 to 1990, it experienced the highest rate of wetland loss in coastal Louisiana.

### **Goals:**

The primary goal of this project is to create/nourish approximately 415 acres of emergent intermediate marsh using sediment from the Mississippi River. Specific goals include: 1) Create approximately 402 acres of intermediate marsh; 2) Nourish approximately 13 acres of existing intermediate marsh; and 3) Create approximately 2500 linear feet of tidal creeks.

### **Proposed Solution:**

The proposed project consists of features to create/nourish 415 acres of marsh adjacent to the Mississippi River Sediment Delivery System – Bayou Dupont (BA-39) project, again *using sediment from the Mississippi River*. The target elevation of +1.3 feet is estimated to be met at year 10. Approximately 50% of created marsh will be planted using intermediate marsh plant species. Approximately 2500 linear feet of tidal creeks will be created throughout the project area.

### **Project Benefits:**

The project would result in approximately 383 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 38,279,163.

### **Preparers of Fact Sheet:**

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Paul Kaspar, EPA, (214) 665-7459; [kaspar.paul@epa.gov](mailto:kaspar.paul@epa.gov)

Adrian Chavarria, EPA, (214) 665-3103; [Chavarria.adrian@epa.gov](mailto:Chavarria.adrian@epa.gov)

Chris Llewellyn, EPA, (214) 665-7239; [Llewellyn.chris@epa.gov](mailto:Llewellyn.chris@epa.gov)



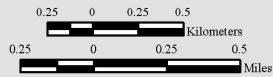


### Bayou Dupont Marsh Creation 3 (PPL22 Candidate)



- Marsh Creation \*
- Project Boundary

\* denotes proposed features



Scale: 1:35,000

Map ID: 2012-11-0017  
Map Date: July 25, 2012

Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography



## **PPL22 Cameron Meadows Marsh Creation and Terracing**

### **Coast 2050 Strategy:**

Restore and Sustain Wetlands (*Regional Ecosystem Strategy*); Dedicated Dredging for Wetlands Creation, Terracing, and Vegetative Plantings (*Coastwide Common Strategy*); Restore Hydrology in the Burton-Sutton Canal (*Mapping Unit Strategy*)

### **Project Location:**

Region 4, Calcasieu/Sabine Basin, Cameron Parish, approximately 18 miles west of Cameron, 5 miles north of the Gulf of Mexico, northeast of Johnsons Bayou, south of Cameron Meadows Gas Field.

### **Problem:**

Significant marsh loss is attributed to rapid fluid and gas extraction beginning in 1931, Hurricanes Rita, Gustav and Ike. Rapid fluid and gas extraction resulted in a surface down warping along distinguished geologic fault lines. In the decades that followed, organic matter filled the low area and an emergent marsh community became established. During the hurricanes of 2005 and 2008, the physical removal of the marsh coupled with low rainfall has resulted in the conversion of intermediate to brackish marsh to approximately 7,000 acres of open water. In addition to these direct losses, significant marsh loss has resulted from saltwater intrusion and hydrologic changes associated with storm damage and blocked drainages.

### **Goals:**

Restore coastal marsh habitat by creating approximately 352 acres of marsh with dredge material and constructing terraces. Reverse the conversion of wetlands to shallow open water in the project area through reestablishment of hydrologic connectivity.

### **Proposed Solution:**

Construct 334 acres of marsh, reestablishing Old North Bayou, utilizing dredged material from the Gulf of Mexico. Construct 35,000 linear feet of terraces (18 acres) to reduce wind generated wave fetch. Terraces would be constructed to +2.5 feet NAVD 88, 15 feet crown width, and planted. Project features would include cleaning out over 30,000 linear feet of canals (South Line and/or B1) to re-establish drainage patterns filled in as a result of the hurricanes. The marsh creation areas would be planted with appropriate species of wetland vegetation.

### **Project Benefits:**

The project would result in approximately 265 net acres over the 20-year project life.

### **Project Costs:**

The total fully-funded cost is \$ 27,685,820.




### **Preparers of Fact Sheet:**

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[Kimberly.Clements@noaa.gov](mailto:Kimberly.Clements@noaa.gov)



### Cameron Meadows Marsh Creation and Terracing (PPL22 Candidate)



-  Marsh Creation \*
-  Terrace Field \*
-  Project Boundary

\* denotes proposed features



Scale: 1:35,000

Map ID: 2012-11-0025  
Map Date: July 18, 2012



Map Produced By:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, LA

Image Source:  
2010 NAIP Photography



## VII. SUMMARY AND CONCLUSIONS

The 22<sup>nd</sup> PPL consists of 4 projects, for a Phase I cost of \$12,048,748 and a Phase II cost of \$107,963,949, which will be funded as these projects mature. The total benefits of the projects are estimate to be 614 AAHUs, based on a comparison of future with and without-project conditions over the 20-year project life. The Task Force did not select any demonstration projects for the 22<sup>nd</sup> PPL.

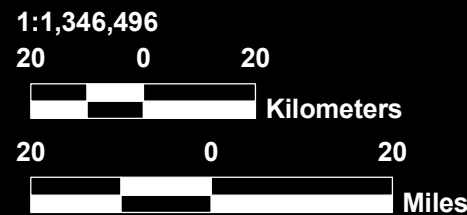
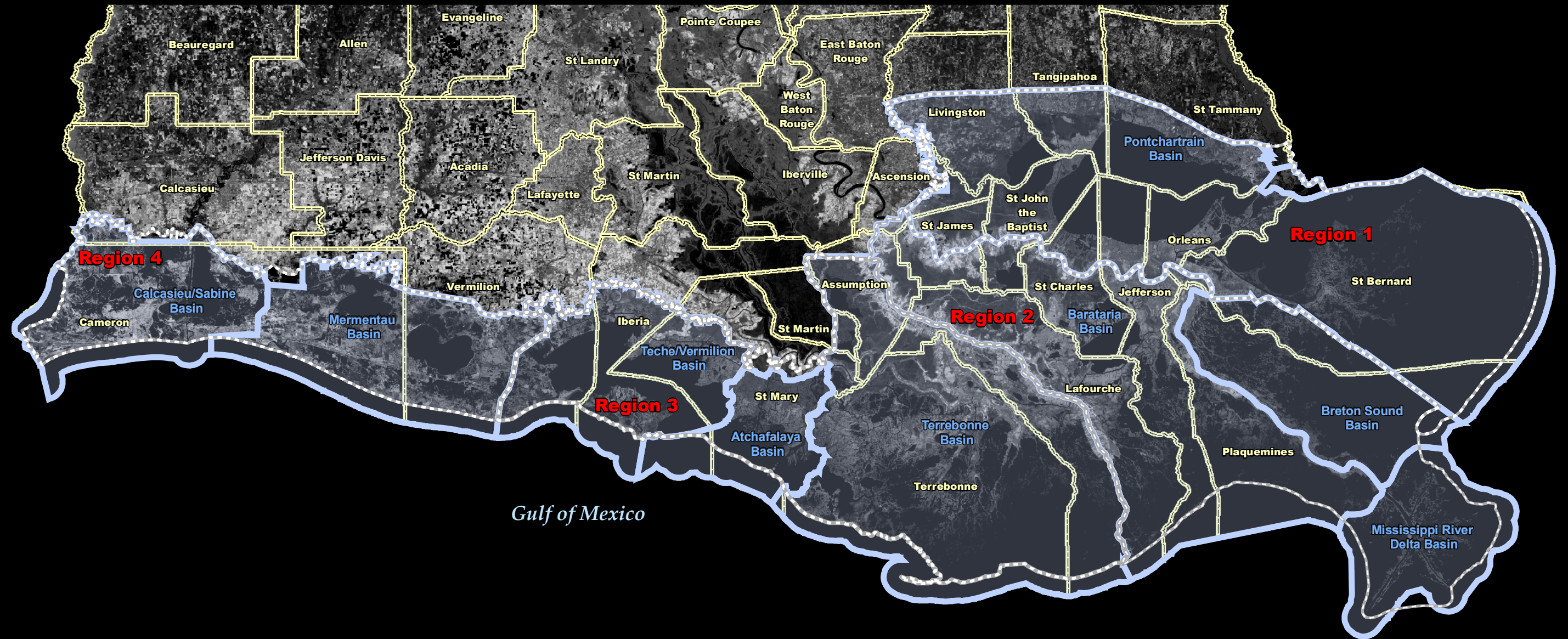
The CWPPRA Task Force believes the recommended projects represent the best strategy for addressing the immediate needs of Louisiana's coastal wetlands. The CWPPRA Task Force will conduct a final review of the plans and specifications for each project prior to the award of construction contracts by the lead Task Force agency and the allocation of construction funds by the Task Force.







# Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Hydrologic Basins and Coast 2050 Regions



- Region Boundary
- Hydrologic Basin
- Parish Boundary

Image Source:  
2009 Thematic Mapper Imagery

Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Field Station  
Baton Rouge, LA

Map ID: USGS-NWRC 2005-11-0319  
Map Date: July 14, 2010

## PLATE 2. SUMMARY OF PROJECTS 1-21 PRIORITY PROJECT LISTS

Deauthorized = underlined; Coastal Impact Assistance Program (CIAP) = *italics*

### 1st Priority Project List

#### U.S. Environmental Protection Agency

TE-20 Isles Dernieres Restoration East Island

#### U.S. Department of the Army

MR-03 West Bay Sediment Diversion

PO-17 Bayou LaBranche Wetland Creation

BA-19 Barataria Bay Waterwa Wetland Creation

TV-03 Vermilion River Cutoff Bank Protection

#### U.S. Department of Commerce

BA-18 Fourchon Hydrologic Restoration

TE-19 Lower Bayou laCache Hydrologic Restoration

#### U.S. Department of Agriculture

BA-02 GIWW to Clovelly Hydrologic Restoration

TE-18 Vegetative Plantings - Timbalier Island Planting Demonstration

TE-17 Vegetative Plantings - Falgout Canal Planting Demonstration

CS-19 Vegetative Plantings - West Hackberry Planting Demonstration

ME-08 Vegetative Plantings - Dewitt-Rollover Planting Demonstration

#### U.S. Department of the Interior

PO-16 Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 1

ME-09 Cameron Prairie Refuge National Wildlife Refuge Shoreline Protection

CS-18 Sabine National Wildlife Refuge Erosion Protection

CS-17 Cameron Creole Plugs

### 2nd Priority Project List

#### U.S. Environmental Protection Agency

TE-24 Isles Dernieres Restoration Trinity Island

#### U.S. Department of the Army

TE-23 West Belle Pass Headland Restoration

CS-22 Clear Marais Bank Protection

#### U.S. Department of Commerce

AT-02 Atchafalaya Sediment Delivery

TE-22 Point Au Fer Canal Plugs

AT-03 Big Island Mining

#### U.S. Department of Agriculture

ME-04 Freshwater Bayou Wetland Protection

CS-09 Brown Lake Hydrologic Restoration

BA-20 Jonathan Davis Wetland Restoration

CS-20 East Mud Lake Marsh Management

CS-21 Hwy. 384 Hydrologic Restoration

PO-06 Fritchie Marsh Creation

TV-09 Vermilion Bay/Boston Canal Shoreline Stabilization

BS-03a Caernarvon Diversion Outfall Management

#### U.S. Department of the Interior

PO-18 Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 2

### 3rd Priority Project List

#### U.S. Environmental Protection Agency

TE-27 Whiskey Island Restoration

PO-20 Red Mud Demonstration

#### U.S. Department of the Army

PO-19 MRGO Disposal Area Marsh Protection

MR-06 Channel Armor Gap Crevasse

MR-07 Pass-a-Loutre Crevasse

#### U.S. Department of Commerce

BA-21 Bayou Perot/Bayou Rigolettes Marsh Restoration

TE-26 Lake Chapeau Sediment Input and Hydrologic Restoration

TE-25 East Timbalier Island Sediment Restoration, Phase 1

BA-15 *Lake Salvador Shore Protection Demonstration*

#### U.S. Department of Agriculture

BA-04c West Pointe-a-la Hache Outfall Management

TV-04 Cote Blanche Hydrologic Restoration

CS-04a Cameron - Creole Maintenance

BS-04a White's Ditch Outfall Management

TE-28 Brady Canal Hydrologic Restoration

PO-09a Violet Freshwater Distribution

ME-12 Southwest Shore White Lake Demonstration

#### U.S. Department of the Interior

CS-23 Sabine Refuge Structure Replacement (Hog Island)

### 4th Priority Project List

#### U.S. Environmental Protection Agency

CS-26 Compost Demonstration

#### U.S. Department of the Army

BS-07 Grand Bay Crevasse

MR-08 Beneficial Use of Hopper Dredge Material Demonstration

#### U.S. Department of Commerce

PO-21 Eden Isles East Marsh Restoration

TE-30 East Timbalier Island Sediment Restoration, Phase 2

#### U.S. Department of Agriculture

CS-24 Perry Ridge Shore Protection

BA-22 Bayou L'Ours Ridge Hydrologic Restoration

BA-23 Baratavia Bay Waterway West Side Shoreline Protection

CS-25 Plowed Terraces Demonstration

TE-31 Flotant Marsh Fencing Demonstration

### 5th Priority Project List

#### U.S. Environmental Protection Agency

BA-25a Bayou Lafourche Siphon

BA-25b Mississippi River Reintroduction into Bayou Lafourche

#### U.S. Department of the Army

PO-22 Bayou Chevee Shoreline Protection

#### U.S. Department of Commerce

TV-12 Little Vermilion Bay Sediment Trapping

BA-24 Myrtle Grove Siphon

#### U.S. Department of Agriculture

BA-03c Naomi Outfall Management

CS-11b Sweet Lake/Willow Lake Hydrologic Restoration

TE-29 Raccoon Island Breakwaters Demonstration

ME-13 Freshwater Bayou Bank Stabilization

#### U.S. Department of the Interior

TE-10 Grand Bayou Hydrologic Restoration



### 6th Priority Project List

#### U.S. Environmental Protection Agency

TE-33                    Bayou Boeuf Pump Station

#### U.S. Department of the Army

TV-14                    Marsh Island Hydrologic Restoration

TE-35                    Marsh Creation East of the Atchafalaya River - Avoca Island

MR-10                   Flexible Dustpan Demo at Head of Passes (Demo)

#### U.S. Department of Commerce

CS-27                    Black Bayou Hydrologic Restoration

MR-09                   Delta-Wide Crevasses

TV-15                    Sediment Trapping at "The Jaws"

#### U.S. Department of Agriculture

TE-34                    Penchant Basin Natural Resources Plan, Increment 1

TV-13a                   Oaks/Avery Canal Hydrologic Restoration, Increment 1

BA-26                    Barataria Bay Waterway East Side Shoreline Protection

TV-16                    Cheniere au Tigre Sediment Trapping Demonstration

#### U.S. Department of the Interior

TE-32a                   Lake Boudreaux Freshwater Introduction

LA-03a                   Nutria Harvest for Wetland Restoration Demonstration

### 7th Priority Project List

#### U.S. Department of Commerce

BA-28                    Grand Terre Vegetative Plantings

ME-14                    Pecan Island Terracing

#### U.S. Department of Agriculture

BA-27                    Barataria Basin Landbridge Shoreline Protection, Phase 1 and 2

TE-36                    Thin Mat Floating Marsh Enhancement Demonstration

### 8th Priority Project List

#### U.S. Environmental Protection Agency

CS-28-1                   Sabine Refuge Marsh Creation, Cycle 1

CS-28-2                   Sabine Refuge Marsh Creation, Cycle 2

CS-28-3                   Sabine Refuge Marsh Creation, Cycle 3

CS-28-4                   Sabine Refuge Marsh Creation, Cycle 4

CS-28-5                   Sabine Refuge Marsh Creation, Cycle 5

#### U.S. Department of Commerce

PO-25                    Bayou Bienvenue Pump Station Diversion and Terracing

PO-24                    Hopedale Hydrologic Restoration

#### U.S. Department of Agriculture

BA-27                    Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment A

BA-27                    Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment B

BA-27                    Barataria Basin Landbridge, Shoreline Protection, Phase 2 Increment C

(These projects were merged BA-27 after PPL 8 approval and are subsequently numbered as BA-27)

ME-11                    Humble Canal Hydrologic Restoration

BS-09                    Upper Oak River Freshwater Siphon

TV-17                    Lake Portage Landbridge

### 9th Priority Project List

#### U.S. Environmental Protection Agency

BA-29 LA Highway 1 Marsh Creation  
TE-40 Timbalier Island Dune and Marsh Restoration  
TE-37 New Cut Dune and Marsh Restoration

#### U.S. Department of the Army

PO-26 Opportunistic Use of the Bonnet Carre Spillway  
TV-11b Freshwater Bayou Bank Stabilization - Belle Isle Canal to Lock  
MR-11 Periodic Introduction of Sediment and Nutrients at Selected Diversion Sites Demonstration  
TV-19 Weeks Bay MC and SP/Commercial Canal/Freshwater Redirection

#### U.S. Department of Commerce

PO-27 Chandeleur Islands Marsh Restoration  
AT-04 Castille Pass Channel Sediment Delivery  
TV-18 Four Mile Canal Terracing and Sediment Trapping  
PO-28 LaBranche Wetlands Terracing, Planting, and Shoreline Protection  
BA-30 East Grand Terre Islands Restoration

#### U.S. Department of Agriculture

TE-39 South Lake Decade Freshwater Introduction  
CS-29 Black Bayou Bypass Culverts Hydrologic Restoration  
CS-30 Perry Ridge West Bank Stabilization  
ME-17 Little Pecan Bayou Hydrologic Restoration  
BA-27c Barataria Basin Landbridge Shoreline Protection, Phase 3

#### U.S. Department of the Interior

ME-16 Freshwater Introduction South of Hwy. 82  
TE-41 Mandalay Bank Protection Demonstration

### 10th Priority Project List

#### U.S. Environmental Protection Agency

PO-30 Lake Borgne Shoreline Protection  
BA-34 Small Freshwater Diversion to the Northwestern Barataria Basin

#### U.S. Department of the Army

MR-13 Benneys Bay Diversion  
BA-33 Delta Building Diversion at Myrtle Grove  
BS-10 Delta Building Diversion North of Fort. St. Phillip

#### U.S. Department of Commerce

*ME-18 Rockefeller Refuge Gulf Shoreline Stabilization*

#### U.S. Department of Agriculture

*TE-43 GIWW Bank Restoration of Critical Areas in Terrebonne*

#### U.S. Department of the Interior

ME-19 Grand-White Lake Landbridge Restoration  
TE-44 North Lake Mechant Landbridge Restoration  
BS-11 Delta Management at Fort St. Phillip  
CS-32 East Sabine Lake Hydrologic Restoration  
TE-45 Terrebonne Bay Shore Protection Demonstration



### 11th Priority Project List

#### U.S. Environmental Protection Agency

- PO-29 River Reintroduction into Maurepas Swamp  
PO-31 Lake Borgne Shoreline Protection at Bayou Dupre  
(This project merged with PO-30 after PPL 11 approval and is subsequently numbered as PO-30)  
TE-47 Ship Shoal: Whiskey West Flank Restoration

#### U.S. Department of the Army

- ME-21a Grand Lake Shoreline Protection, Tebo Point  
ME-21b Grand Lake Shoreline Protection, O&M Only (Transferred)

#### U.S. Department of Commerce

- BA-35 Pass Chaland to Grand Bayou Pass Barrier Shoreline Restoration  
BA-37 Little Lake Shoreline Protection/Dedicated Dredging near Round Lake  
BA-38 Barataria Barrier Island: Pelican Island and Pass La Mer to Chaland Pass

#### U.S. Department of Agriculture

- BA-27d Barataria Basin Landbridge Shoreline Protection, Phase 4  
LA-03b Coastwide Nutria Control Program  
CS-31 Holly Beach Sand Management  
TE-48 Raccoon Island Shoreline Protection/Marsh Creation, Phase 2

#### U.S. Department of the Interior

- BA-36 Dedicated Dredging on the Barataria Basin Landbridge  
ME-20 South Grand Chenier Hydrologic Restoration  
TE-46 West Lake Boudreaux Shoreline Protection and Marsh Creation

### 12th Priority Project List

#### U.S. Environmental Protection Agency

- BA-39 Bayou Dupont Sediment Delivery System

#### U.S. Department of the Army

- TE-49 Avoca Island Diversion and Land Building  
PO-32 Lake Borgne and MRGO Shoreline Protection  
ME-22 South White Lake Shoreline Protection  
MR-12 Mississippi River Sediment Trap

#### U.S. Department of Agriculture

- LA-05 Freshwater Floating Marsh Creation Demonstration

### 13th Priority Project List

#### U.S. Environmental Protection Agency

- TE-50 Whiskey Island Back Barrier Marsh Creation

#### U.S. Department of the Army

- MR-14 Spanish Pass Diversion

- LA-06 Shoreline Protection Foundation Improvements Demonstration

#### U.S. Department of Agriculture

- TV-20 Bayou Sale Ridge Protection

#### U.S. Department of the Interior

- PO-33 Goose Point/Point Platte Marsh Creation

### 14th Priority Project List

#### U.S. Department of Commerce

- BA-40 Riverine Sand Mining/Scotfield Island Restoration

#### U.S. Department of Agriculture

- BS-12 White Ditch Resurrection

- BA-41 South Shore of the Pen Shoreline Protection and Marsh Creation

- TV-21 East Marsh Island Marsh Creation

### 15th Priority Project List

**U.S. Environmental Protection Agency**

MR-15 Venice Ponds Marsh Creation and Crevasses

**U.S. Department of the Army**

BS-13 Bayou Lamoque Freshwater Diversion

**U.S. Department of Commerce**

ME-23 South Pecan Island Freshwater Introduction

**U.S. Department of Interior**

BA-42 Lake Hermitage Marsh Creation

### 16th Priority Project List

**U.S. Environmental Protection Agency**

TE-53 Enhancement of Barrier Island Vegetation Demonstration

**U.S. Department of the Army**

ME-24 Southwest Louisiana Gulf Shoreline Nourishment and Protection

**U.S. Department of Commerce**

TE-51 Madison Bay Marsh Creation and Terracing

TE-52 West Belle Pass Barrier Headland Restoration Project

**U.S. Department of Agriculture**

PO-34 Alligator Bend Marsh Restoration and Shoreline Protection

### 17th Priority Project List

**U.S. Environmental Protection Agency**

BS-15 Bohemia Mississippi River Reintroduction

**U.S. Department of Commerce**

BA-48 Bayou Dupont Ridge Creation and Marsh Restoration

LA-08 Bioengineered Oyster Reef Demonstration

**U.S. Department of Agriculture**

LA-09 Sediment Containment System for Marsh Creation Demonstration

BA-47 West Pointe-a-la Hache Marsh Creation

**U.S. Department of the Interior**

BS-16 Caernarvon Outfall Management/Lake Lery Shoreline Restoration

### 18th Priority Project List

**U.S. Environmental Protection Agency**

BS-18 Bertrandville Siphon

**U.S. Department of Commerce**

BA-68 Grand Liard Marsh and Ridge Restoration

**U.S. Department of Agriculture**

TE-66 Central Terrebonne Freshwater Enhancement

CS-49 Cameron-Creole Freshwater Introduction

LA-16 Non-Rock Alternatives to Shoreline Protection Demonstration

### 19th Priority Project List

**U.S. Department of Commerce**

BA-76 Cheniere Ronquille Barrier Island Restoration

**U.S. Department of Agriculture**

ME-31 Freshwater Bayou Marsh Creation

PO-75 LaBranche East Marsh Creation

**U.S. Department of the Interior**

TE-72 Lost Lake Marsh Creation and Hydrologic Restoration

### 20th Priority Project List

#### U.S. Department of Agriculture

LA-39 Coastwide Planting  
CS-53 Kelso Bayou Marsh Creation

#### U.S. Department of the Interior

PO-104 Bayou Bonfouca Marsh Creation  
CS-54 Cameron-Creole Watershed Grand Bayou Marsh Creation  
TE-83 Terrebonne Bay Marsh Creation - Nourishment

### 21st Priority Project List

#### U.S. Department of Commerce

CS-59 Oyster Bayou Marsh Restoration  
TV-63 Cole's Bayou Marsh Restoration

#### U.S. Department of Agriculture

PO-133 LaBranche Central Marsh Creation

#### U.S. Department of the Interior

BA-125 Northwest Turtle Bay Marsh Creation

### 22nd Priority Project List

#### U.S. Environmental Protection Agency

BA-164 Bayou Dupont Sediment Delivery- Marsh Creation #3

#### U.S. Department of Commerce

CS-66 Cameron Meadows Marsh Creation and Terracing

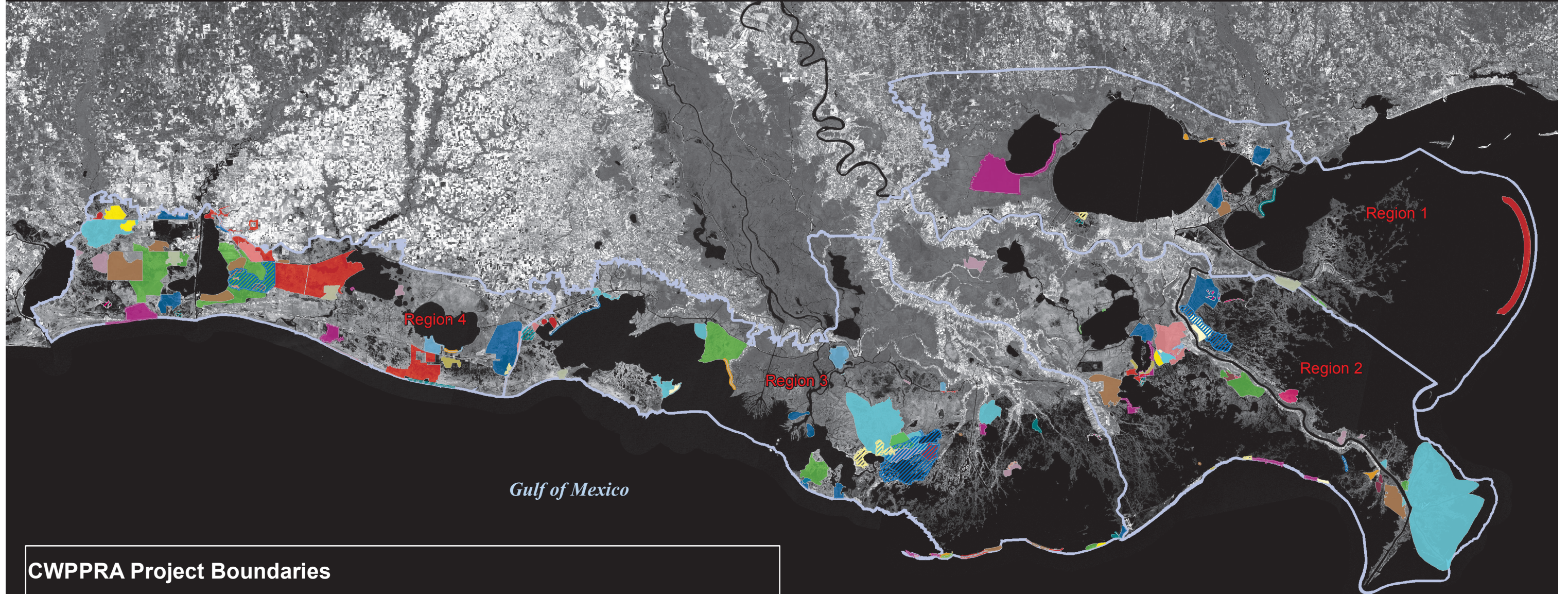
#### U.S. Department of Agriculture

TE-112 North Catfish Lake Marsh Creation

#### U.S. Department of the Interior

BS-24 Terracing and Marsh Creation South of Big Mar





**CWPPRA Project Boundaries**

	PPL 1		PPL 6		PPL 11		PPL 16		PPL 21
	PPL 2		PPL 7		PPL 12		PPL 17		PPL 22
	PPL 3		PPL 8		PPL 13		PPL 18		
	PPL 4		PPL 9		PPL 14		PPL 19		
	PPL 5		PPL 10		PPL 15		PPL 20		

 Region Boundary

1:1,275,000

10 0 10 20  
 Kilometers


10 0 10 20  
 Miles

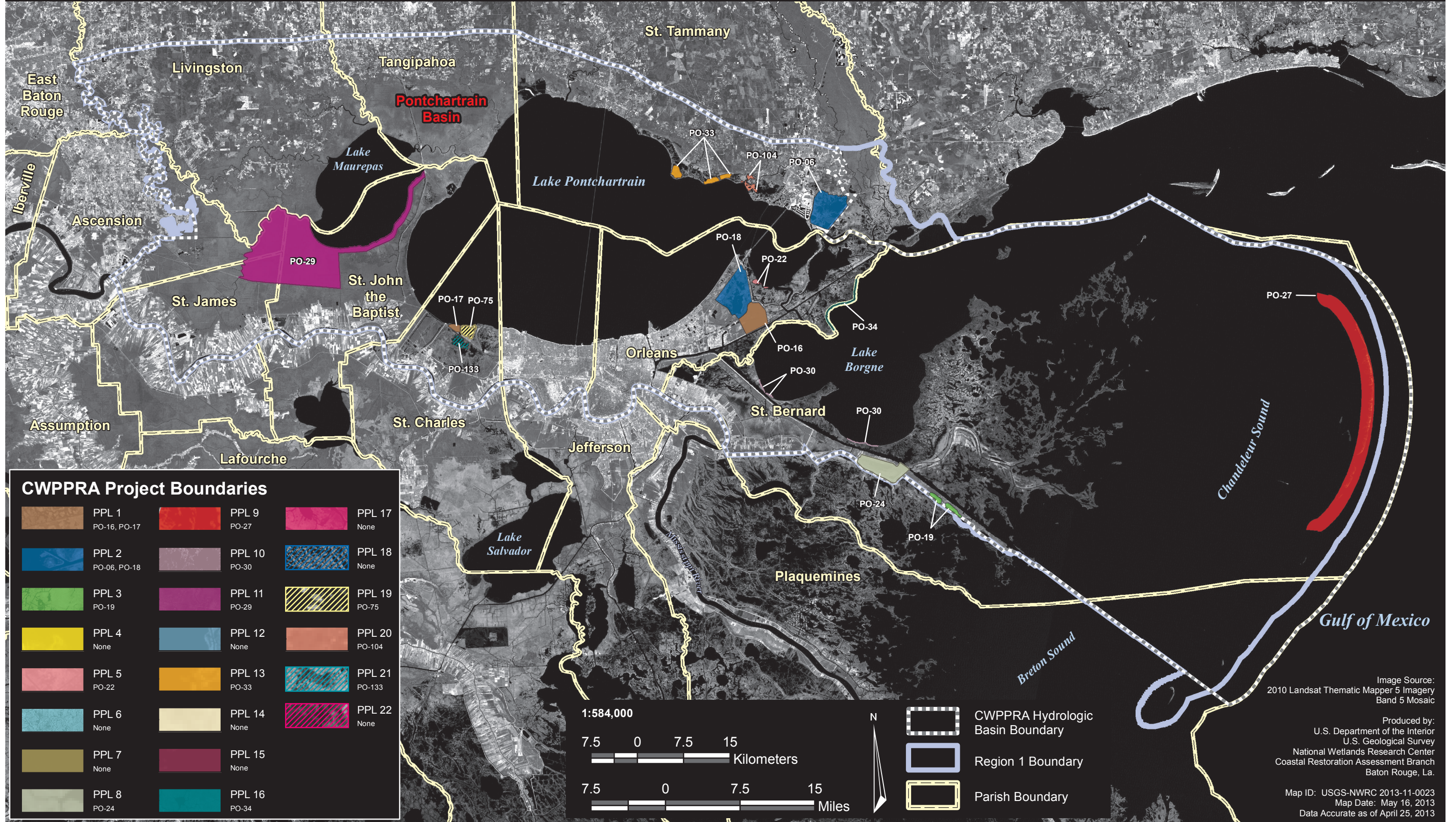


Image Source:  
2010 Landsat Thematic Mapper 5 Imagery  
Band 5 Mosaic

Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, La.

Map ID: USGS-NWRC 2013-11-0022  
Map Date: May 13, 2013  
Data accurate as of April 25, 2013





**CWPPRA Project Boundaries**

	PPL 1 PO-16, PO-17		PPL 9 PO-27		PPL 17 None
	PPL 2 PO-06, PO-18		PPL 10 PO-30		PPL 18 None
	PPL 3 PO-19		PPL 11 PO-29		PPL 19 PO-75
	PPL 4 None		PPL 12 None		PPL 20 PO-104
	PPL 5 PO-22		PPL 13 PO-33		PPL 21 PO-133
	PPL 6 None		PPL 14 None		PPL 22 None
	PPL 7 None		PPL 15 None		
	PPL 8 PO-24		PPL 16 PO-34		

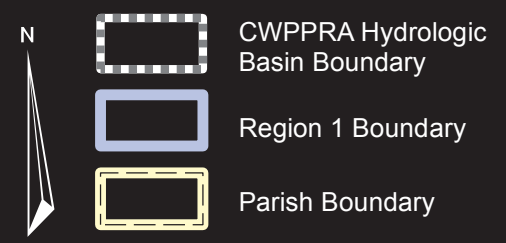
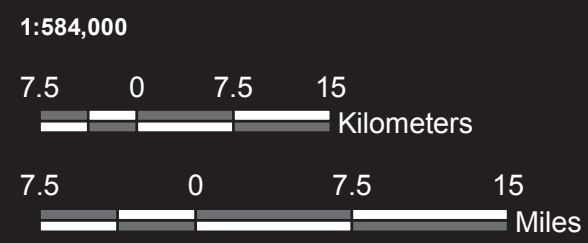


Image Source:  
2010 Landsat Thematic Mapper 5 Imagery  
Band 5 Mosaic

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National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, La.

Map ID: USGS-NWRC 2013-11-0023  
Map Date: May 16, 2013  
Data Accurate as of April 25, 2013



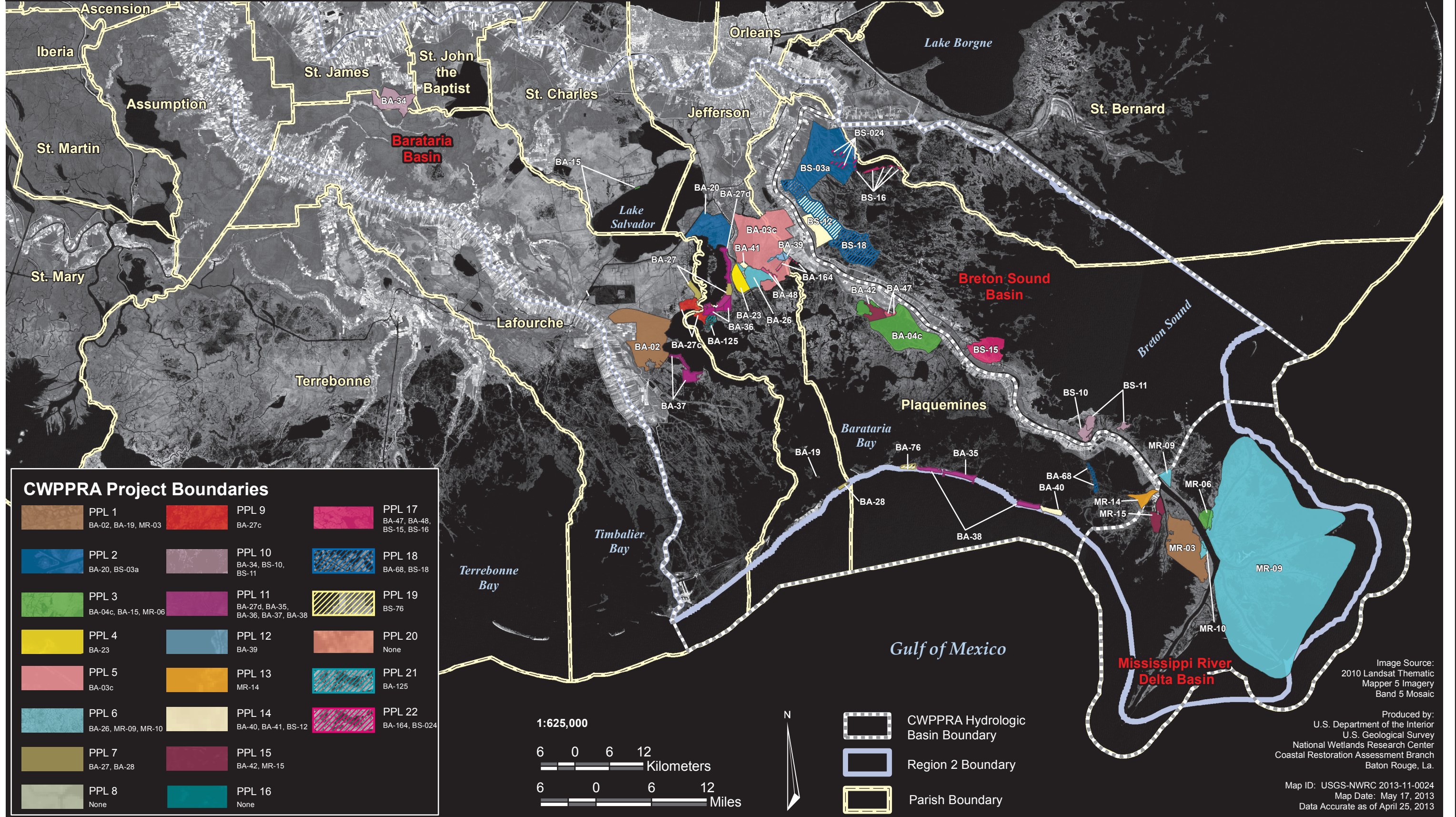
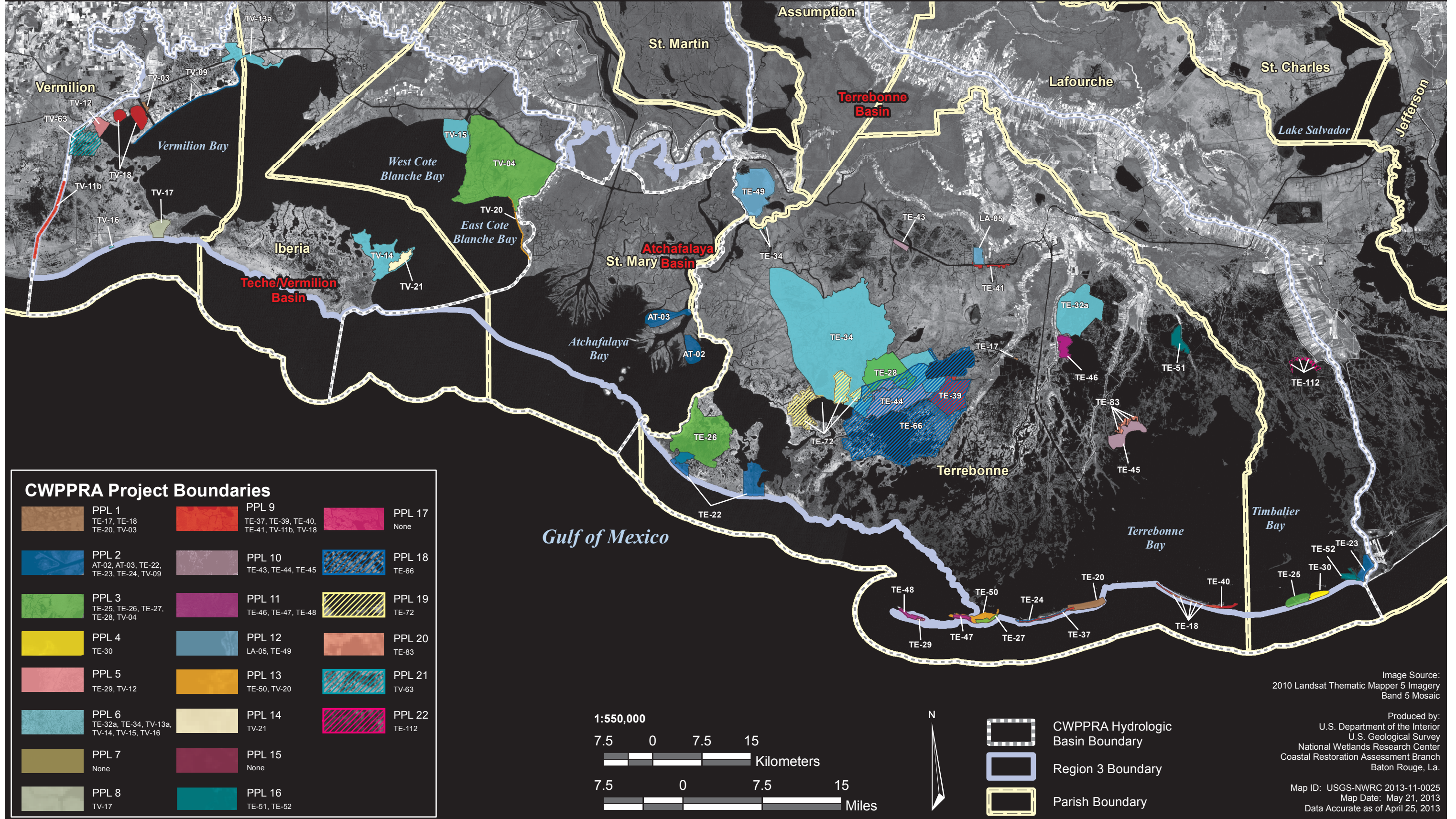


Image Source:  
2010 Landsat Thematic Mapper 5 Imagery  
Band 5 Mosaic

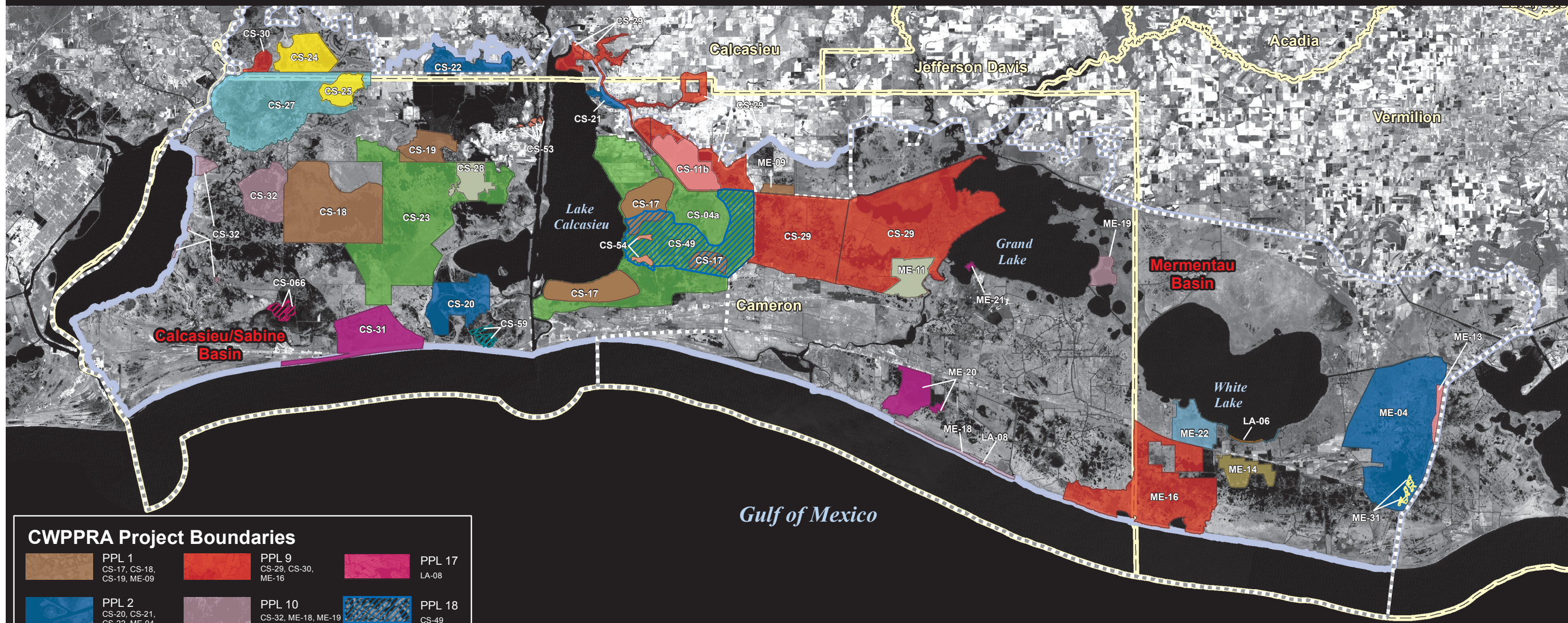
Produced by:  
U.S. Department of the Interior  
U.S. Geological Survey  
National Wetlands Research Center  
Coastal Restoration Assessment Branch  
Baton Rouge, La.

Map ID: USGS-NWRC 2013-11-0024  
Map Date: May 17, 2013  
Data Accurate as of April 25, 2013









### CWPPRA Project Boundaries

	PPL 1 CS-17, CS-18, CS-19, ME-09		PPL 9 CS-29, CS-30, ME-16		PPL 17 LA-08
	PPL 2 CS-20, CS-21, CS-22, ME-04		PPL 10 CS-32, ME-18, ME-19		PPL 18 CS-49
	PPL 3 CS-04a, CS-23		PPL 11 CS-31, ME-20, ME-21		PPL 19 ME-31
	PPL 4 CS-24, CS-25		PPL 12 ME-22		PPL 20 CS-53, CS-54
	PPL 5 CS-11b, ME-13		PPL 13 LA-06		PPL 21 CS-59
	PPL 6 CS-27		PPL 14 None		PPL 22 CS-066
	PPL 7 ME-14		PPL 15 None		
	PPL 8 CS-28, ME-11		PPL 16 None		

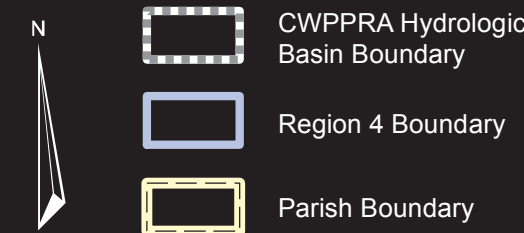
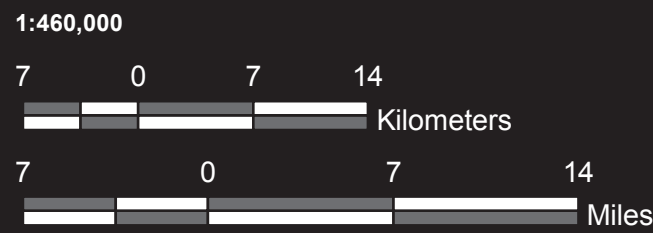


Image Source:  
2010 Landsat Thematic  
Mapper 5 Imagery  
Band 5 Mosaic

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Map ID: USGS-NWRC 2013-11-0026  
Map Date: May 21, 2013  
Data Accurate as of April 25, 2013