# Coastal Wetlands Planning Protection & Restoration Act

## 29th Priority Project List

**Region 3**

**Regional Planning Team Meeting**

February 13, 2019
Morgan City, LA

CWPPRA

## 1. Welcome and Introductions

- RPT Region 3 Leader: Ron Boustany - NRCS

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## Announcements

- Copies of the PPL 29 Selection Process & Schedule available at the sign-in table.
- PPL 29 RPT meetings to accept project nominees:
  - Region IV, Port of Lake Charles, Feb. 12, 2019, 10:00 am
  - **Region III, Port of Morgan City - Office, Feb. 13, 2019, 9:30 am**
  - Region II, USFWS SE LA Refuges Complex (Big Branch), Feb. 14, 2019, 10:00 am
  - Region I, USFWS SE LA Refuges Complex, Feb. 14, 2019, immediately following Region II
- For parishes that do not have a voting registration form filled out already - Parish representatives must identify themselves during the RPT meetings and **fill out a voting registration form**, including contact information for the primary and secondary voting representatives that will cast votes during the Coastwide Electronic Vote.

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## Region 3 Parishes

- Eligible parishes for basins in Region 3 include:
- Terrebonne Basin
  - **St. Mary Parish**
  - **Terrebonne Parish**
  - **Assumption Parish**
  - **Lafourche Parish**
  - **Iberia Parish**
  - **St. Martin Parish**
- Atchafalaya Basin
  - **St. Mary Parish**
  - **Iberia Parish**
  - **Terrebonne Parish**
- Teche-Vermilion Basin
  - **St. Mary Parish**
  - **Iberia Parish**
  - **Vermilion Parish**

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## RPT Meetings

- Project proposals should be consistent with the 2017 State Master Plan.
- A project can only be nominated in one basin except for coastwide projects
- Proposals that cross multiple basins, excluding coastwide projects, shall be nominated in one basin only, based on the majority area of project influence.
- If similar projects are proposed within the same area:
  - RPT representatives (CWPPRA agencies and only the parishes located within the project's basin) will determine if those projects are sufficiently different
    - If sufficiently different:
      - Each project will move forward
    - If not sufficiently different:
      - Projects will be combined
      - Federal sponsor will be determined prior to coastwide vote (February 28th).
  - *This decision will be made at the meeting where the projects are proposed*

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## RPT Meetings

- Presenters without factsheets **MUST** complete a PPL 29 Nomination Sign-Up Sheet for <u>each</u> project nominee (demo projects too).
- Presenters with factsheets, please give a factsheet each to Kaitlyn, Michelle & Lonnie <u>before</u> your presentation.
- Limit project proposals to 5 minutes and Powerpoint presentations to 5 slides.
- Public comments on project proposals will be accepted orally during the RPT meetings and in writing by February 21, 2019.
- Limit comments/questions during meeting to PPL 29 subject proposals and processes.

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## Coastwide Projects

- Proposes a technique applicable across the coast (e.g. vegetative planting)
- Nominated at any RPT meeting
- All coastal parishes & agencies will vote on selection of coastwide nominee
- Only one coastwide nominee may be selected from the coastwide nominee pool during the Electronic Coastwide Vote on February 28, 2019.
- The Technical Committee may or may not select a coastwide project in April 2019.

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## Demonstration Projects

- Demonstrates a technology which can be transferred to other areas in coastal Louisiana
- Engineering/Environmental Workgroups will validate that demos fit CWPPRA Standard Operating Procedures criteria
- The RPTs select up to 6 demos during the February 28th Coastwide Electronic Vote.
- The Technical Committee selects up to 3 demos in April 2019.
- Workgroups may recommend that no demos move forward to candidate stage
- Previous demo candidates must be ***re-nominated*** for PPL 29.

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**Coastwide Electronic Vote (February. 28th) to select:**

**Projects per Basin**
**(Determined by loss rates, the highest loss rates have the most projects)**

4 Barataria
4 Terrebonne
3 Breton Sound
3 Pontchartrain
2 Mermentau
2 Calcasieu/Sabine
2 Teche/Vermilion
1 Atchafalaya
1 Coastwide
22 Total

& up to 6 demos

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## Coastwide Electronic Vote

- Each officially designated parish representative, each Federal agency, and the State (CPRA) will have one vote.
- No additional projects can be nominated after the RPTs.
- No significant changes to projects proposed at the first round of RPT meetings will be allowed (this includes combining projects).
- Public comments will be heard today and written comments must be submitted by February 21, 2019.

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## Coastwide Electronic Voting Process

- USACE will send out voting sheets as both Excel spreadsheet and PDF documents 1 week prior to the Coastwide Electronic Vote. Voters will only receive voting sheets for the basins that they are eligible to vote for & the column that they need to mark their vote will be highlighted. Voting instructions will be provided with the voting sheets.

- Voters must email their voting sheets to kaitlyn.m.carriere@usace.army.mil

**All votes must be received by 10:30 am on February 28, 2019.**

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## Nominee Project Evaluations

- Following the Coastwide Electronic Vote, an agency will be assigned to each project to prepare a Nominee Project factsheet (1 page + map).
- CWPPRA Engineering & Environmental Workgroups review draft features and assign preliminary cost and benefit ranges.
- Work groups will also review demo & coastwide projects and verify that they meet PPL 29 criteria.

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## PPL 29 Candidate Project Selection

Candidates evaluated between May and October

- Workgroups conduct site visits and meetings to identify needs and establish project baselines and boundaries.
- Workgroups determine benefits, project features, and cost estimates

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## PPL 29 Timeline

- **Coastwide Electronic Vote, Feb. 28, 2019**
  - 21 basin-project nominees, 1 coastwide nominee, and 6 demos selected
- **Technical Committee Mtg, Apr. 11, 2019, Baton Rouge**
  - Selection of 10 candidates and up to 3 demos
- **Technical Committee Mtg, Dec. 5, 2019, New Orleans**
  - Typically recommend up to 4 projects for Phase 1 funding
- **Task Force Mtg, Jan. 2020, New Orleans**
  - Final Selection of projects for Phase 1 funding

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## Written Comments

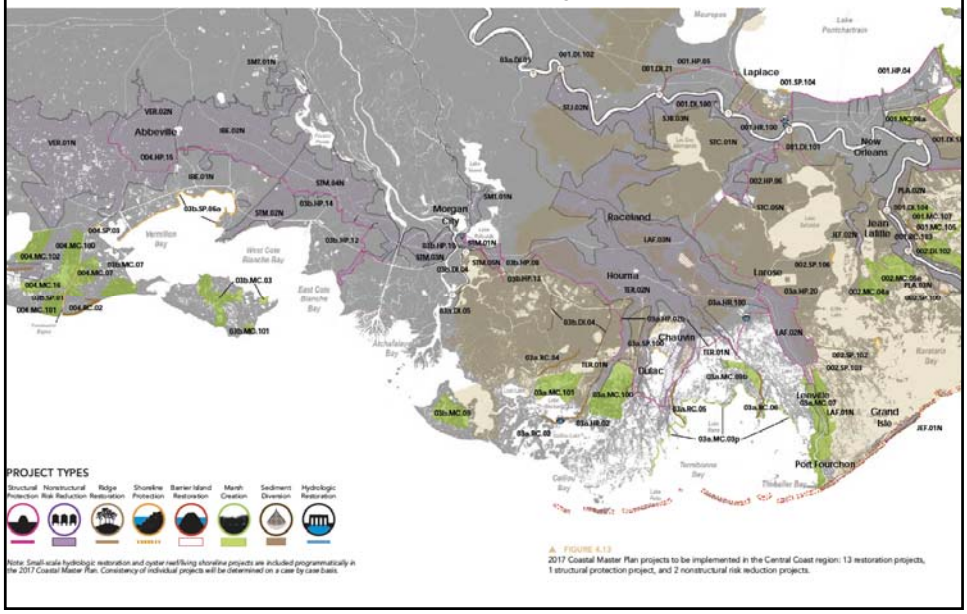
- Send written comments on projects & demos proposed today to the CWPPRA program manager
- **Deadline: February 21, 2019**

**Brad Inman**
**Projects and Restoration Branch Chief**
**U.S. Army Corps of Engineers**
**7400 Leake Avenue**
**New Orleans, Louisiana 70118**

**Email: Brad.L.Inman@usace.army.mil**

**(this information is on the back of the agenda)**

**2017 State Master Plan**
**Central Coast Projects**




2017 Coastal Master Plan projects to be implemented in the Central Coast region: 13 restoration projects, 1 structural protection project, and 2 nonstructural risk reduction projects.

## Central Coast Projects

| Project Type | Project No. | Project Description | Implementation Period | Project Costs |
|---|---|---|---|---|
| Hydrologic Restoration | 03a.HR.02 | Central Terrebonne Hydrologic Restoration: Construction of a rock plug in Grand Pass with a 150-foot by 15-foot navigable section to prevent saltwater intrusion from Caillou Lake into Lake Mechant. | Years 1-10 | $19,000,000 |
| Marsh Creation | 03a.MC.03p | Terrebone Bay Rim Marsh Creation Study: Planning, engineering, and design of marsh creation features to provide benefits to communities in Terrebonne Parish and the Morganza to the Gulf protection system. | Years 1-10 | $90,600,000 |
| Ridge Restoration | 03a.RC.04 | Mauvais Bois Ridge Restoration: Restoration of approximately 43,400 feet of historic ridge to an elevation of 5 feet NAVD88 at Mauvais Bois to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation. | Years 1-10 | $9,900,000 |
| | 03a.RC.06 | Bayou Pointe Aux Chenes Ridge Restoration: Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes. | Years 1-10 | $10,600,000 |
| Sediment Diversion | 03a.DI.01 | Bayou Lafourche Diversion: Diversion of the Mississippi River into Bayou Lafourche to increase freshwater flow down Bayou Lafourche with 1,000 cfs capacity (modeled with continuous operation at 1,000 cfs, independent of Mississippi River flow). | Years 1-10 | $196,100,000 |
| Nonstructural Risk Reduction | TER.01N | Terrebonne - Lower Nonstructural Risk Reduction: Project includes floodproofing non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet. | Years 1-30 | $87,700,000 |
| | TER.02N | Terrebonne - Houma Nonstructural Risk Reduction: Project includes floodproofing non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet. | Years 1-30 | $1,264,000,000 |
| Structural Protection | 03a.HP.02b | Morganza to the Gulf: Construction of a levee to an elevation between 15 and 26.5 feet NAVD88 around Houma and Terrebonne Ridge communities from Larose to Humphreys Canal. Project features 471,500 feet of earthen levee, 39,600 feet of T-wall, (22) 6-foot sluice gates, (1) 30-foot stop log, (2) 20-foot stop logs, (13) 56-foot sector gates, (1) 250-foot sector gate, (1) 175-foot sector gate, (1) 125-foot sector gate, (1) 110-foot sector gate, (1) 80-foot sector gate, (1) 110-foot lock gate, (1) 30-foot roller gate, (4) 40-foot roller gates, (1) 56-foot barge gate, (1) 30-foot barge gate, and (4) pump stations. | Years 1-30 | $8,281,900,000 |
| Hydrologic Restoration | 03a.HR.100 | Grand Bayou Hydrologic Restoration: Dredging of Margaret's Bayou and Grand Bayou in conjunction with the construction of a fixed crest structure at Grand Bayou and the installation of (5) 48-inch flap-gated culverts on the western bank of Grand Bayou. | Years 11-30 | $8,700,000 |
| Marsh Creation | 03a.MC.07 | Belle Pass-Golden Meadow Marsh Creation: Creation of approximately 23,200 acres of marsh from Belle Pass to Golden Meadow to create new wetland habitat and restore degraded marsh. | Years 11-30 | $1,625,800,000 |
| | 03a.MC.09b | North Terrebonne Bay Marsh Creation - Component B: Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh. | Years 11-20 | $299,200,000 |
| | 03a.MC.100 | South Terrebonne Marsh Creation: Creation of approximately 23,600 acres of marsh south of Dulac between Bayou Dularge and Houma Navigation Canal to create new wetland habitat and restore degraded marsh. | Years 11-30 | $1,813,300,000 |
| Marsh Creation (continued) | 03a.MC.101 | North Lake Mechant Marsh Creation: Creation of approximately 12,100 acres of marsh between Lake Decade and Lake Mechant to create new wetland habitat and restore degraded marsh. | Years 11-30 | $1,023,400,000 |
| Ridge Restoration | 03a.RC.02 | Bayou Dularge Ridge Restoration: Restoration of approximately 53,200 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along Bayou Dularge. | Years 11-30 | $9,600,000 |
| | 03a.RC.05 | Bayou Terrebonne Ridge Restoration: Restoration of approximately 40,700 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Terrebonne. | Years 11-30 | $8,800,000 |
| Shoreline Protection | 03a.SP.100 | North Lake Boudreaux Shoreline Protection: Shoreline protection through rock breakwaters designed to an elevation of 3.5 feet NAVD88 along approximately 15,400 feet of the northern shore of Lake Boudreaux east of Hog Point to preserve shoreline integrity and reduce wetland degradation from wave erosion. | Years 11-30 | $29,300,000 |

**Region 3 – Atchafalaya Basin**

**No projects were nominated in this basin**

# Region 3-

# Terrebonne Basin

**Region 3 – Terrebonne Basin**

| | |
|---|---|
| TE-01 | East Catfish Lake Marsh Creation and Shoreline Protection |
| TE-02 | Small Bayou LaPointe Marsh Creation |
| TE-03 | South Bayou Decade Marsh Creation |
| TE-04 | Point aux Chenes Ridge Restoration and Marsh Creation |
| TE-05 | Point au Fer Marsh Creation and Terracing |
| TE-06 | North Lake Boudreaux Shoreline Protection and Marsh Creation |
| TE-07 | Bay Raccourci Marsh Creation and Ridge Restoration |
| TE-08 | Bayou Barre Marsh Creation and Terracing |
| TE-09 | West Louisiana Highway 1 Marsh Creation |
| TE-10 | North Bayou Decade Marsh Creation |
| TE-11 | South Falgout Canal Marsh Creation and Terraces |
| TE-12 | Bayou Rambio Marsh Creation |

TE-01

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name**
East Catfish Lake Marsh Creation and Shoreline Protection

**Project Location**
Region 3, Terrebonne Basin, Lafourche Parish, east of Catfish Lake

**Problem**
Examination of historical aerial photography clearly indicates significant marsh loss around Catfish Lake. Subsidence, canal dredging, a lack of freshwater input, saltwater intrusion, and altered hydrology are all important factors contributing to this loss. Of particular note, is the area between Catfish Lake and Golden Meadow. Canal dredging, associated with oil and gas activities, has resulted in the rapid deterioration of this area. USGS calculated a 1984-2018 loss rate of -1.08% per year for the PPL28 candidate project. Shoreline erosion rates (1998-2017) range from 10 ft/yr along the eastern lake shoreline to 22 ft/yr along the southern lake shoreline.

**Goals**
The primary goals of this project are; 1) restore marsh habitat in the open water areas east and south of Catfish Lake, and 2) restore and protect the eastern and southern Catfish Lake shoreline.

The specific goals of this project are; 1) create 235 acres of marsh, 2) nourish 71 acres of marsh, 3) protect the marsh creation cells from shoreline erosion.

Service goals include restoration/protection of habitat for threatened and endangered species and other at-risk species. This project would restore habitat potentially utilized by the black rail which has been proposed for listing as a threatened species. The saltmarsh topminnow, petitioned for listing as threatened/endangered species would also benefit from the project.

**Proposed Solution**
Sediments from Catfish Lake will be hydraulically dredged and pumped via pipeline to create/nourish 306 acres of marsh (Figure 1). Dewatering and compaction of dredged sediments should produce elevations conducive to the establishment of emergent marsh and within the intertidal range. Containment dikes will be constructed around each marsh creation cell. Where practicable, material will be borrowed from perimeter oil/gas canals. Containment dikes will be gapped at the end of construction or by TY3. Approximately 2,566 linear feet of sheet pile wall will also be installed as a containment feature.

Approximately 12,479 linear feet of shoreline protection (gabion mattresses) will be installed along the lakeside boundary of the marsh creation cells on the constructed containment dikes.

**Preliminary Project Benefits**
1) *What is the total acreage benefited both directly and indirectly*? Approximately 306 acres would be benefited directly and indirectly. Direct benefits include 235 acres of marsh creation

and 71 acres of marsh nourishment. Indirect benefits could occur to surrounding marsh and open water areas.

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres protected/created over the project life is approximately 200-250 acres.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* The anticipated interior loss rate reduction throughout the area of direct benefit is estimated to be 50%. The shoreline protection feature would prevent shoreline erosion along the eastern and southern lake shorelines.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.* Yes. The project would protect and restore marsh along the eastern Catfish Lake shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project would afford protection to the Golden Meadow Hurricane Protection Levee and nearby oil/gas infrastructure.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? The project would complement other restoration projects in the area including the PPL22 North Catfish Lake Marsh Creation Project and CIAP/Parish marsh creation projects in the Catfish Lake area. Other projects in the area include marsh creation and terracing projects funded under the North American Wetlands Conservation Act (NAWCA).

**Considerations**
Considerations for this project include oyster leases, pipelines/utilities, and maintenance.

**Preliminary Cost**
The estimated construction cost plus 25% contingency is $25M - $30M.

**Preparer of Fact Sheet**
Kevin Roy, USFWS, (337) 291-3120, kevin_roy@fws.gov


# East Catfish Lake Marsh Creation and Shoreline Protection (PPL29 Nominee)

USGS
science for a changing world


N

Shoreline Protection *

Marsh Creation *

Project Boundary

* denotes proposed features

0.25 0 0.25 0.5 Kilometers

0.25 0 0.25 0.5 Miles

Scale: 1:35,000

Map ID:
Map Date: February 1, 2019

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

Image Source:
2017 NAIPQ

# REGION III

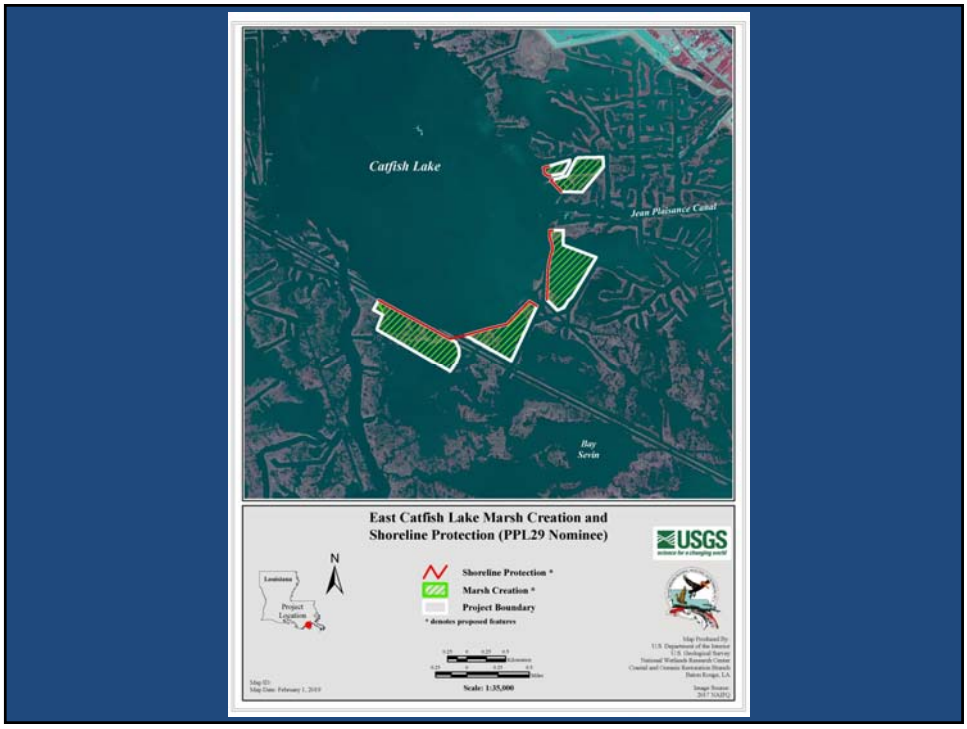
# REGIONAL PLANNING TEAM MEETING

# TERREBONNE BASIN

**Morgan City, LA**

**February 13, 2019**

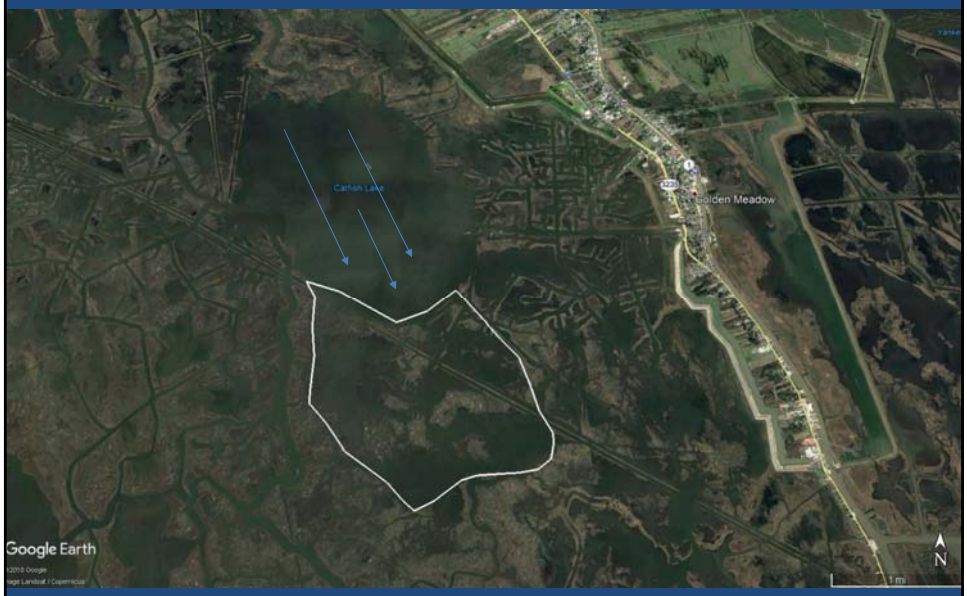
**Kevin Roy**
**Lafayette, LA**



## Catfish Lake – 1990


## Catfish Lake – 2015 – USGS Analysis

## Catfish Lake – Potential Area of Future Expansion





## East Catfish Lake Marsh Creation and Shoreline Protection

231 acres of marsh creation

75 acres of marsh nourishment

Catfish Lake borrow site

12,479 feet of shoreline protection

244 net acres

Construction plus contingency
$25M - $30M

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name**
Small Bayou LaPointe Marsh Creation

**Project Location**
Region 3, Terrebonne Basin, Terrebonne Parish, east of Raccourci Bay, adjacent to Small Bayou LaPointe

**Problem**
Examination of historical aerial photography clearly indicates significant marsh loss in the vicinity of the project area, particularly in the area between Small Bayou LaPointe and Bayou DeCade. Subsidence, canal dredging, saltwater intrusion, and altered hydrology are all important factors contributing to marsh loss in the area. For the PPL28 candidate project, USGS calculated a 1984-2018 loss rate of -0.4% per year for the project area.

**Goals**
The primary goals of this project are; 1) restore marsh habitat in areas of open water and deteriorated marsh along Small Bayou LaPointe and 2) continue with the concept of the North Lake Mechant Landbridge with an eastward extension of the TE-44 project.

Service goals include restoration/protection of habitat for threatened and endangered species and other at-risk species. This project would restore habitat potentially utilized by the black rail which is proposed for listing as a threatened species. The project could also benefit other at-risk species including the seaside sparrow. The mottled duck, a priority species for the Gulf Coast Joint Venture, would also be benefited by the restoration of intermediate/brackish marsh habitat.

**Proposed Solution**
1. Sediments will be hydraulically dredged in Lake Decade and pumped via pipeline to create 257 acres and nourish 54 acres of marsh.
2. Containment dikes will be constructed as necessary and gapped upon project completion.

**Preliminary Project Benefits**
1) *What is the total acreage benefited both directly and indirectly*? Approximately 311 acres of marsh would be benefited directly from marsh creation.

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres protected/created over the project life is approximately 200-250 acres.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* The anticipated loss rate reduction throughout the area of direct benefit is estimated to be 50%.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.*

Yes. The project would afford some protection to what remains of the Small Bayou LaPointe ridge.

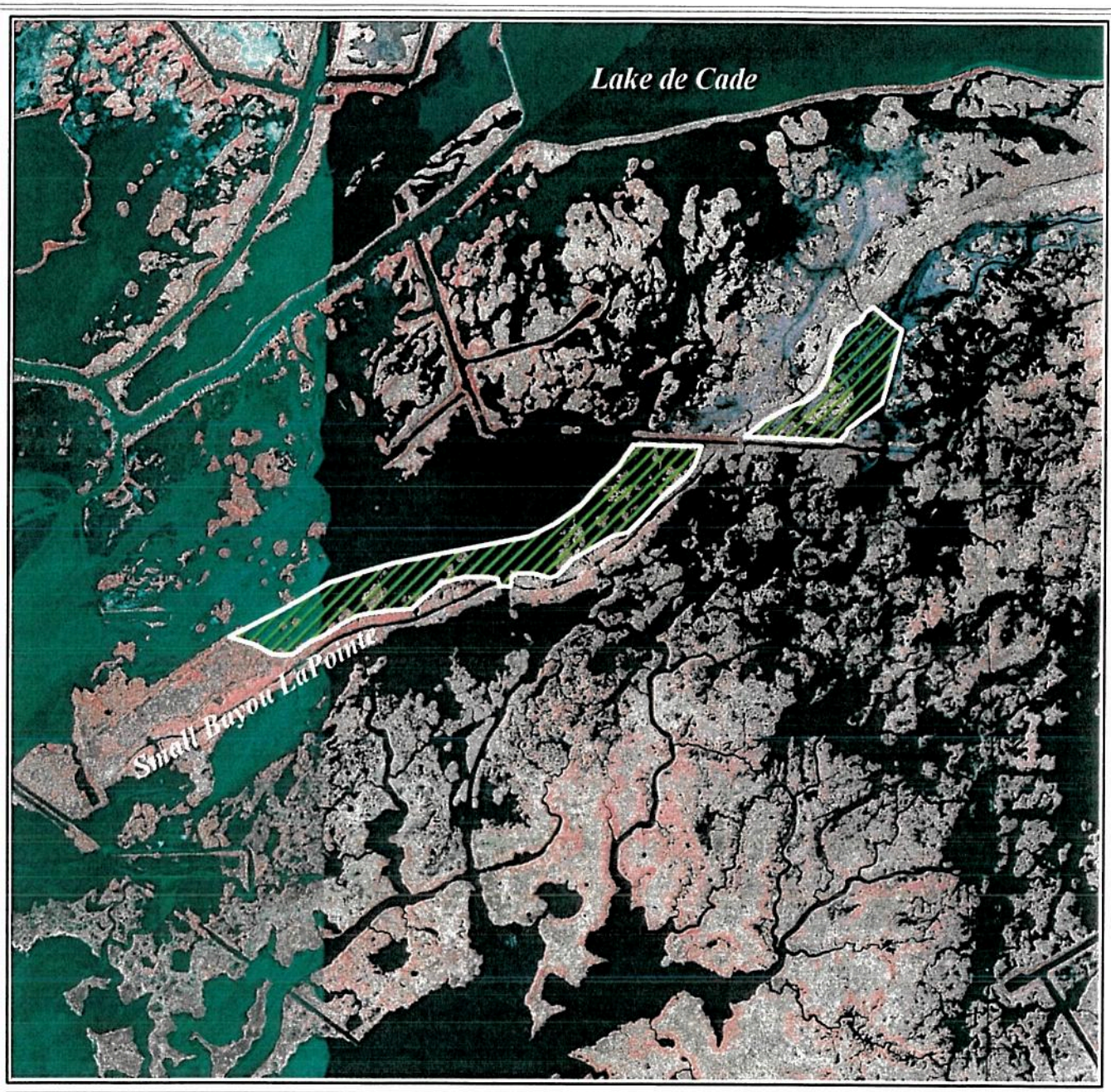
5) *What is the net impact of the project on critical and non-critical infrastructure*? None.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? The project would provide a synergistic effect with the North Lake Mechant Landbridge Restoration Project (TE-44) located to the west. Both projects would work together to maintain a ridge/marsh landbridge along the intermediate zone between Lake Mechant and Bayou Decade.

**Considerations**
None at this time.

**Preliminary Costs**
The estimated construction cost plus 25% contingency is $25M - $30M.

**Preparer of Fact Sheet**
Kevin Roy, USFWS, (337) 291-3120, kevin_roy@fws.gov




# Small Bayou LaPointe Marsh Creation (PPL29 Nominee)

USGS
science for a changing world


N

Marsh Creation *

Project Boundary

* denotes proposed features

0.25 0 0.25 0.5 Kilometers

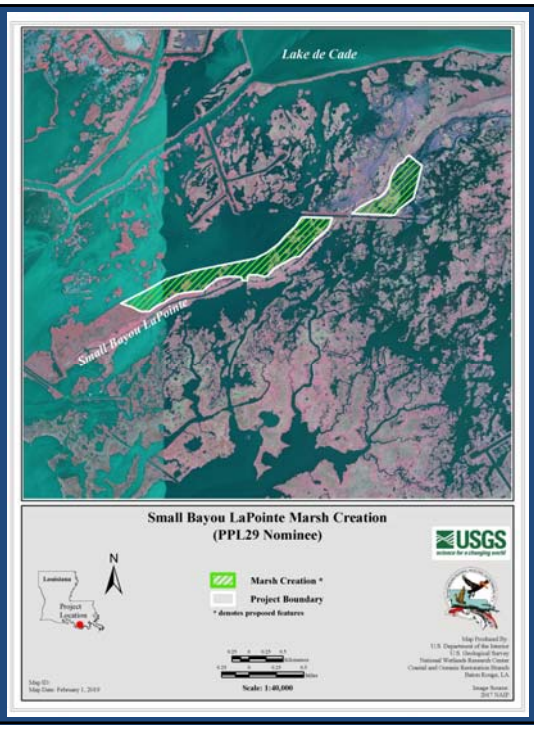
0.25 0 0.25 0.5 Miles

Scale: 1:40,000

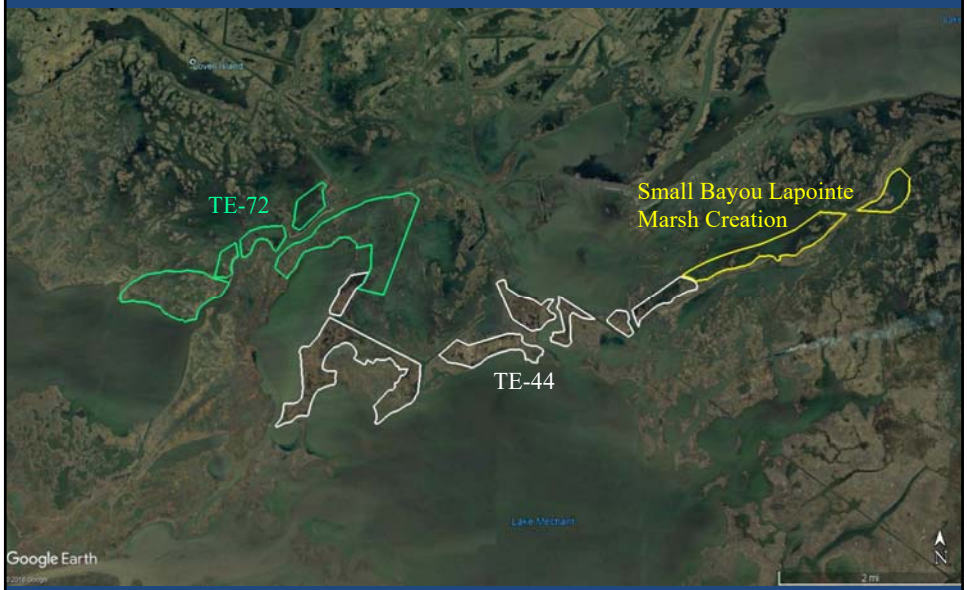
Map ID:
Map Date: February 1, 2019

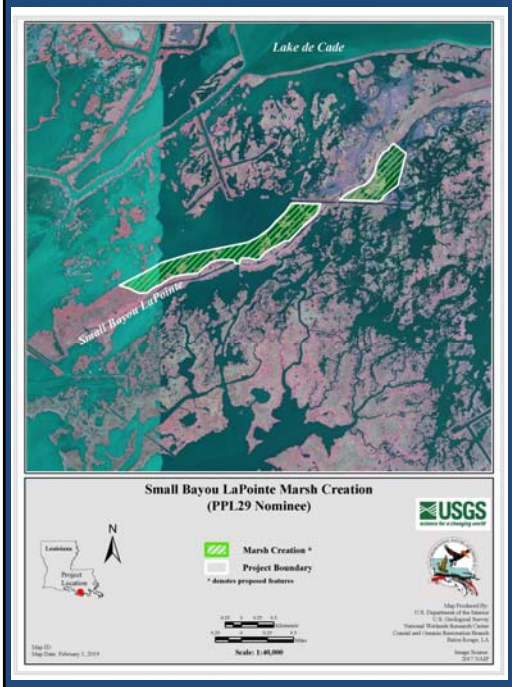
Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal and Oceanic Restoration Branch
Baton Rouge, LA

Image Source:
2017 NAIP




## North Lake Mechant Landbridge






## Small Bayou LaPointe Marsh Creation

257 acres of marsh creation

54 acres of marsh nourishment

Lake Decade borrow site

Net acres = 249

Construction plus contingency
$25M - $30M

Project synergy – North Lake Mechant Landbridge Restoration (TE-44)

# PPL29 PROJECT FACT SHEET
**February 13, 2019**

**Project Name**
South Bayou Decade Marsh Creation

**Master Plan Strategy**
North Lake Mechant Marsh Creation (2017 Master Plan 03a.MC.101): Creation of approximately 12,100 acres of marsh between Lake Decade and Lake Mechant to create new wetland habitat and restore degraded marsh.

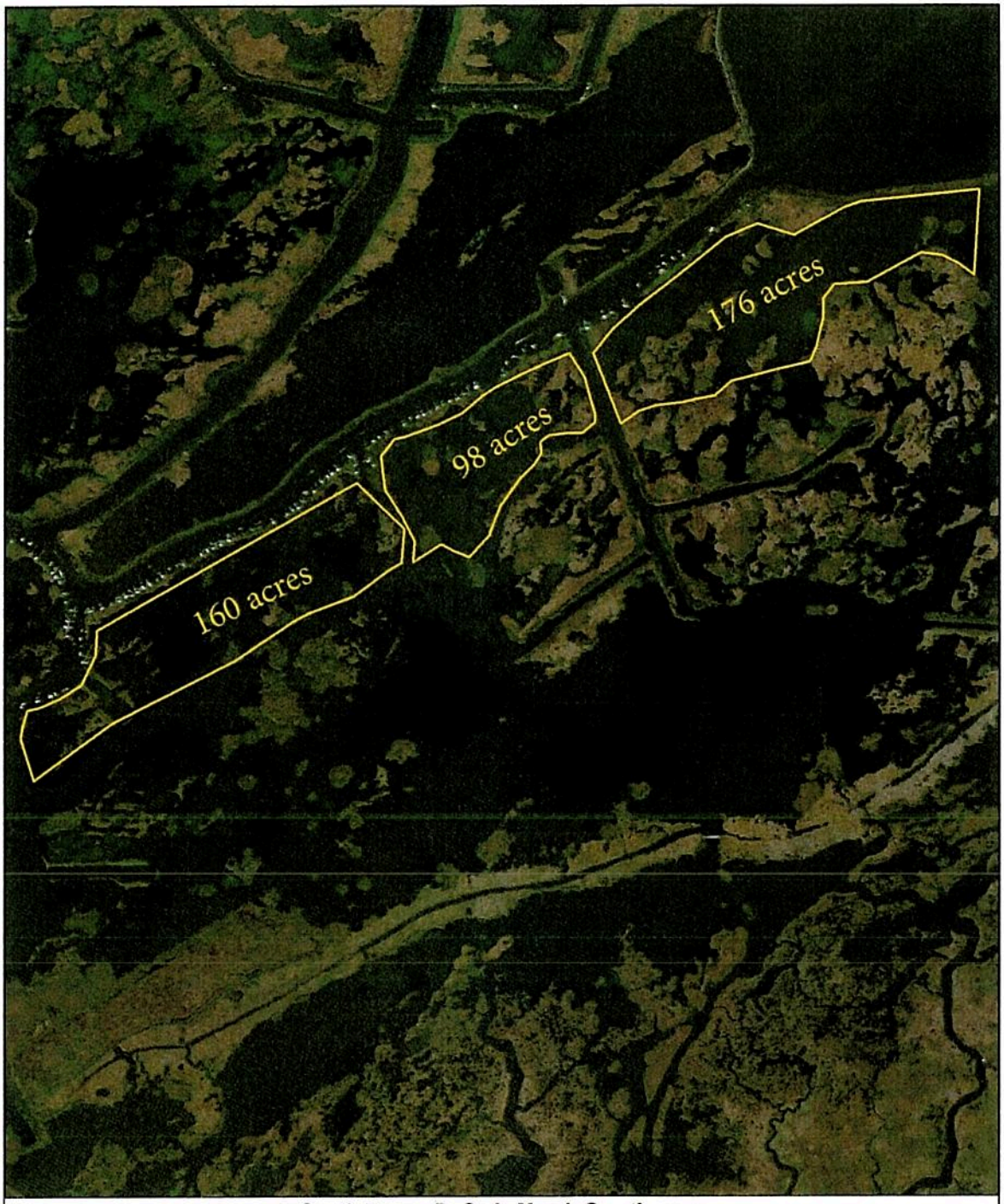
**Project Location**
Region 3, Terrebonne Basin, Terrebonne Parish, South of Bayou Decade

**Problem**
The marsh along Bayou Decade have seen a significant amount of deterioration over the past few decades. Wetland loss in the area has been primarily attributed to subsidence, saltwater intrusion and the numerous gas and oil pipelines and canals. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. Wetland loss in the area is estimated to -0.79%/yr.

**Proposed Solution**
The proposed project would create/nourish approximately 434 acres of marsh using sediment dredged from Lake Mechant.

**Project Costs**
The estimated construction cost including 25% contingency is $20M - $25M.

**Preparer(s) of Fact Sheet:**
Adrian Chavarria; EPA; (214) 665-3103; chavarria.adrian@epa.gov




**South Bayou DeCade Marsh Creation**

Basemap: Bing Aereal Imagery 2018

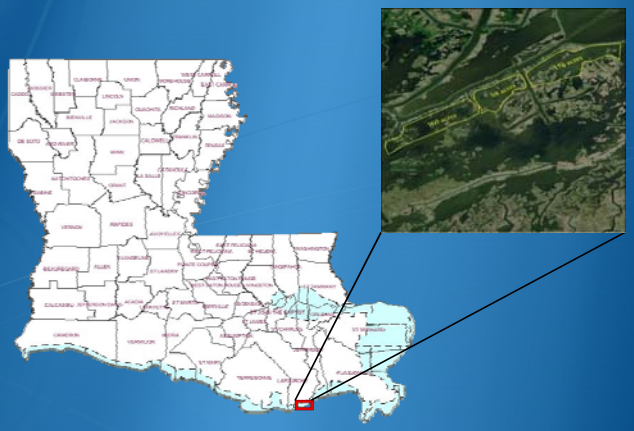
N
W E
S

0 0.125 0.25 0.5 0.75 Miles

Marsh Creation Cells

Dallas, Texas
February 5, 2019

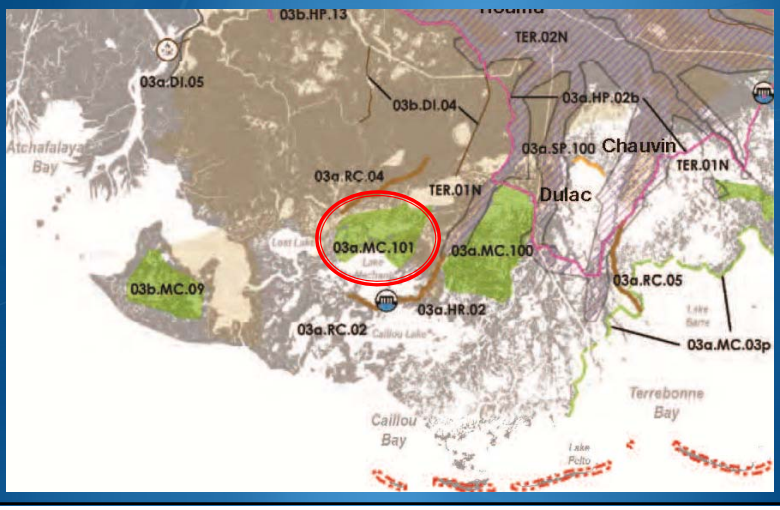
# South Bayou Decade Marsh Creation



Coastal Wetlands Planning, Protection and Restoration Act

# 2017 Master Plan Solution

**03a.MC.101 North Lake Mechant Marsh Creation :** Creation of approximately 12,100 acres of marsh between Lake Decade and Lake Mechant to create new wetland habitat and restore degraded marsh.



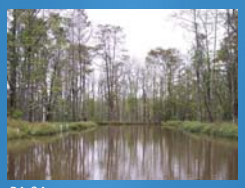
## 2017 Master Plan Consistency

03a.MC.101: Creation of approximately 12,100 acres of marsh between Lake Decade and Lake Mechant to create new wetland habitat and restore degraded marsh.



BA-39


PO-30


BA-34


TE-40

## EPA Region 6 CWPPRA Team Goals

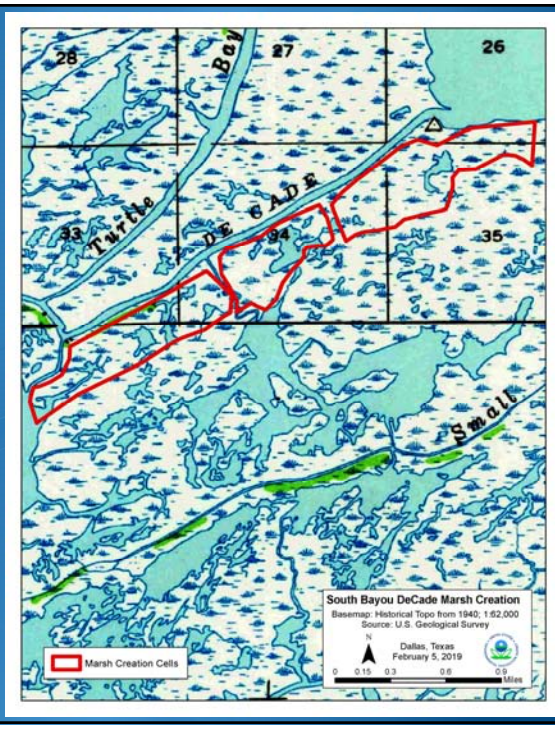
- Protect human health and the environment, including water quality, by restoring coastal wetlands
- Improve local community resilience
- Restore wetland habitats and protect critical infrastructure
- Support stakeholder priorities in synergy with EPA's mission

# Problems

- This area has experienced wetland loss due to:
  - Subsidence
  - Saltwater intrusion
  - Sediment deprivation
  - Erosion
  - Construction of pipeline canals
- Since 1932, Terrebonne Basin has lost approximately 20% of its wetlands.
- Terrebonne Parish could experience the second highest land loss of any parish (2017 MP)

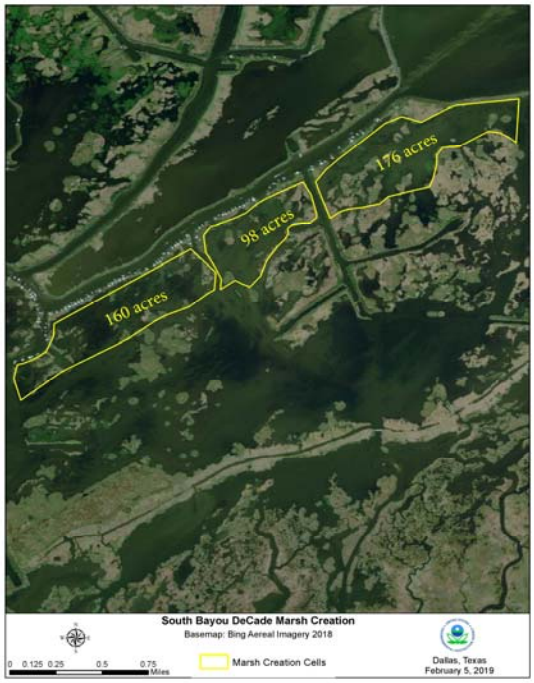
# Historical Reference

- Historical topo from 1940
- Project area mostly marsh



# Project Features

- Three marsh creation cells south of Bayou Decade
- 434 acres of MC/MN
- Containment




# Project Goals

- Create/nourish 434 acres emergent marsh with sediment from Lake Mechant
- Restore wetland habitat
- Increase the longevity of existing marsh habitat
- Construction plus 25% contingency is $20M-25M

# PPL29 PROJECT NOMINEE FACT SHEET
**February 13, 2019**

**Project Name**
Pointe aux Chenes Ridge Restoration and Marsh Creation

**Master Plan Strategy**
Bayou Pointe aux Chenes Ridge Restoration (2017 Master Plan 03a.RC.06). Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes.

North Terrebonne Bay Marsh Creation–Component B (2017 Master Plan 03a.MC.09b). Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh.

**Project Location**
Region 3, Terrebonne Basin, Lafourche Parish and Terrebonne Parish

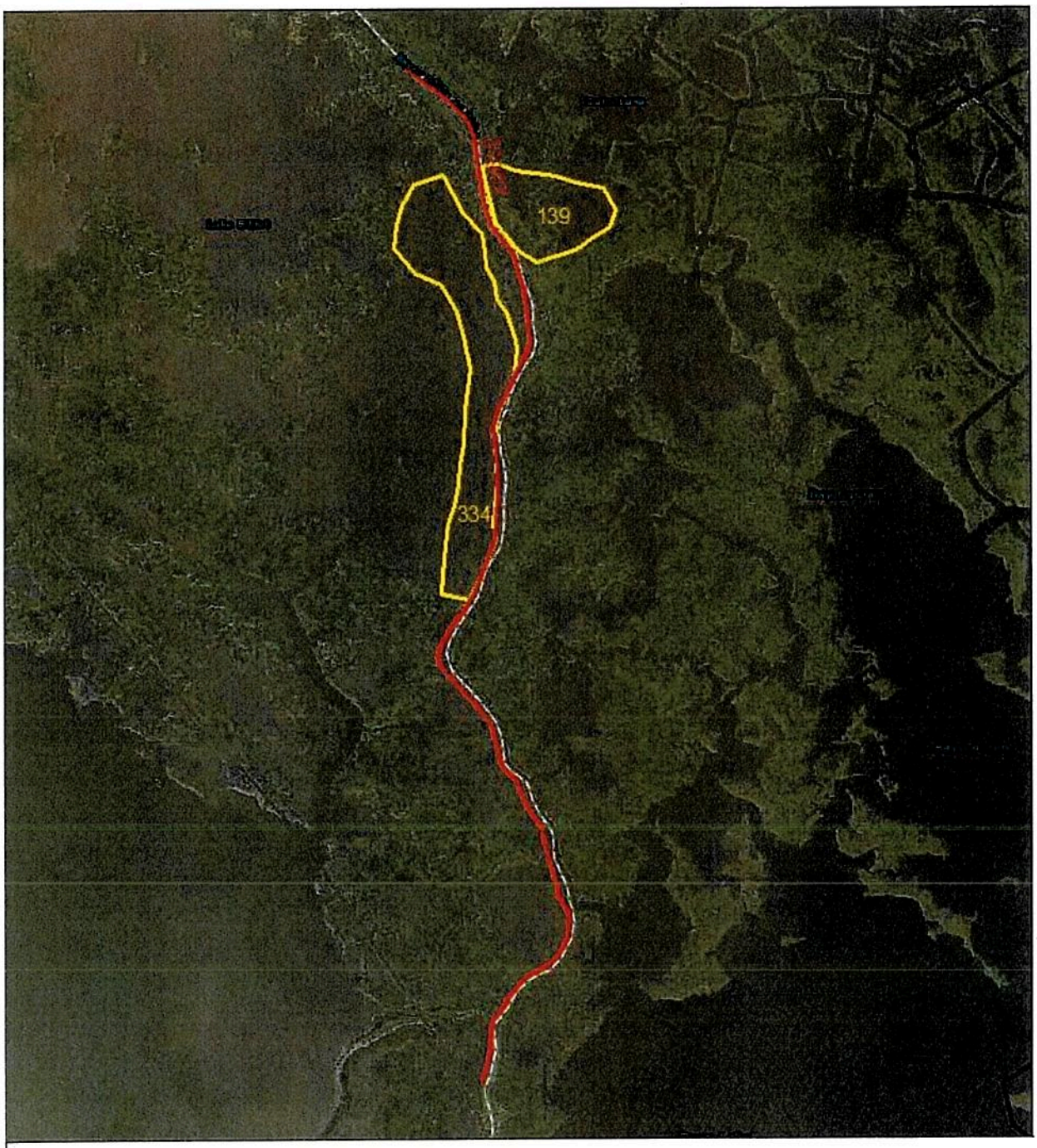
**Problem**
Ridges only build up when they are being formed along the banks of active distributaries or as active gulf beaches. Surface elevations of all relict natural levee ridges, chenier ridges, artificial ridges, embankments, levees, and uplands become lower through time in response to subsidence. As a result, both the Deltaic and Chenier Plain systems are badly degraded (Coast 2050: Toward a Sustainable Coastal Louisiana). The land loss rate for the area is -1.05% per year.

**Proposed Solution**
The proposed project would create and fortify 31,907 linear feet of ridge. The proposed project will create/nourish 473 acres of marsh by dredging sediment from designated borrow sources in Lake Raccourci or Lake Felicity. Containment features would be degraded or gapped as needed to promote tidal exchange after consolidation of the fill material. 50% of the newly created area will include vegetative plantings.

**Project Benefits**
This project would create 31,907 linear feet of ridge along southern portions of Bayou Terrebonne. It would also create/nourish 473 acres (create 378 acres and nourish 95 acres) of emergent marsh.

**Preliminary Cost**
The estimated construction cost including 25% contingency is $25M - $30M.

**Preparer(s) of Fact Sheet:**
Adrian Chavarria, EPA; (214) 665-3103, chavarria.adrian@epa.gov
Sharon L. Osowski, Ph.D., EPA; (214) 665-7506, osowski.sharon@epa.gov




**Point aux Chein Ridge Restoration & Marsh Creation**

Ridge Feature 31,907 ft
Marsh Creation Features

N

*Basemap: 2017 NAIP DOQQ - LaFourche Parish*
*Produced by: EPA Region 6, Dallas, TX*

0 0.35 0.7 1.4 2.1 Miles

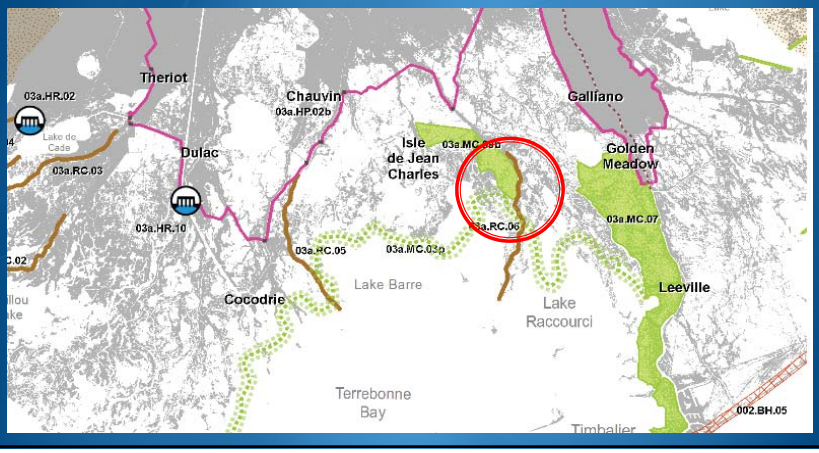
# Pointe aux Chenes Ridge Restoration & Marsh Creation

Coastal Wetlands Planning, Protection and Restoration Act

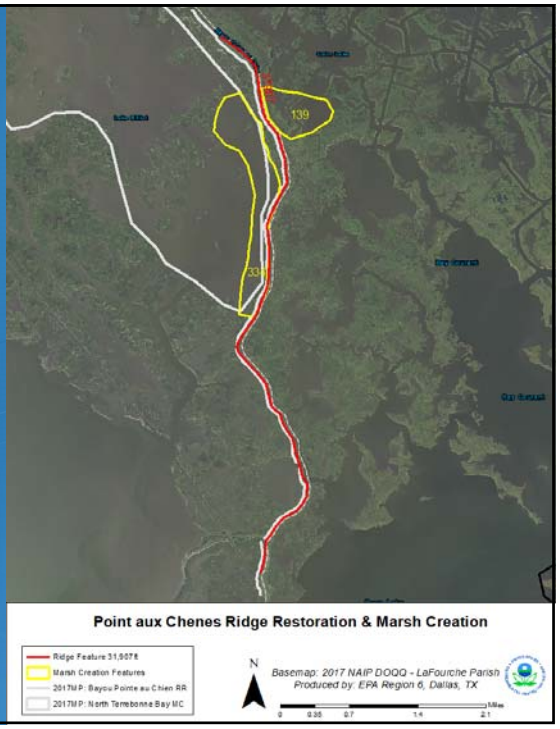
# 2017 Master Plan Solution

**03a.RC.06 Bayou Pointe aux Chenes Ridge Restoration:** Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes.

**03a.MC.09b North Terrebonne Bay Marsh Creation–Component B:** Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh.



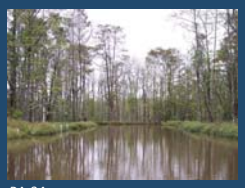
# 2017 Master Plan Consistency & Project Synergy





BA-39


PO-30


BA-34


TE-40

## EPA Region 6 CWPPRA Team Goals

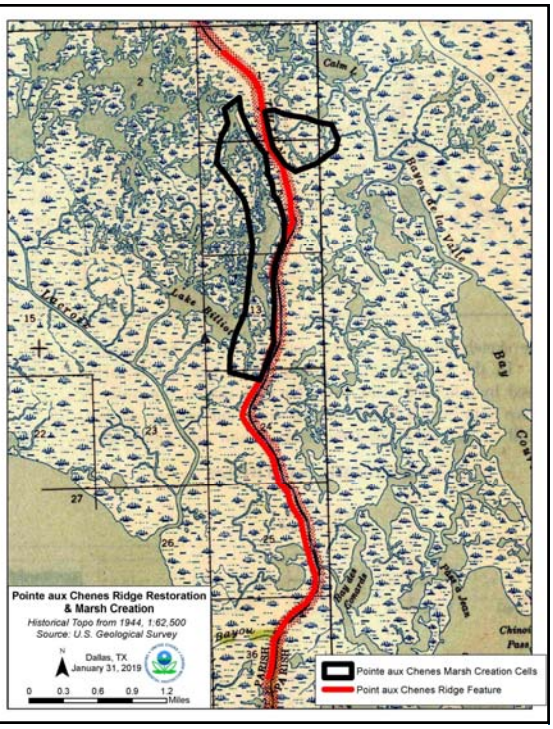
- Protect human health and the environment, including water quality, by restoring coastal wetlands
- Improve local community resilience
- Restore wetland habitats and protect critical infrastructure
- Support stakeholder priorities in synergy with EPA's mission

# Problems

- High subsidence of soils & sediment deficit
- Saltwater intrusion
- Construction of access/pipeline canals; historic oil and gas activity
- Historic ridges have been damaged or eliminated due to storm surge and erosion
- Natural hydrologic patterns have been affected by the lack of historic ridge features
- Terrebonne Parish could experience the second highest land loss of any parish (2017 MP)
- Lafourche Parish faces severely increased wetland loss in the next 50 years (2017 MP)

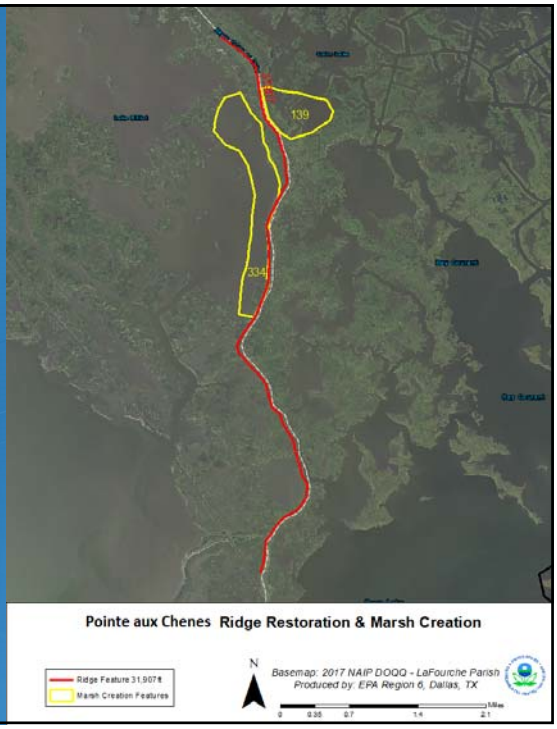
# Historical Reference

- 1944



# Project Features

- 31,907 LF Ridge
- Create/nourish 473 acres
- Full Containment




# Potential Species & Habitats Protected or Restored

## T & E Species

- Piping Plover
- Red Knot
- Sea Turtles
- Manatee

## Migratory Birds

- American Golden-plover
- Am Oystercatcher (Breeding)
- Black Skimmer (Breeding)
- Many shorebirds

# Project Goals

- Restore 31,907 linear feet of historical ridge
- Create/nourish 473 acres (create 378 acres and nourish 95 acres) of marsh with sediment from Lake Raccourci (or Lake Felicity) as additional support for the ridge feature
- Restore wetland habitat
- Attenuate storm surge impacting the area
- The estimated construction cost + 25% contingency is $25M - $30M

TE-05

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name:** Point au Fer Marsh Creation and Terracing

**Project Location:**
Region 3, Terrebonne Basin, Terrebonne Parish, Point au Fer Island, South of Locust Bayou

**Problem:**
Historic project area land loss includes subsidence, altered hydrology (from numerous canals), and wind and wave erosion. This area receives fresh to low salinity water from the Atchafalaya River via Four League Bay and higher saline water from the Gulf of Mexico via Locust Bayou. USGS calculated a 1985-2016 area loss rate of -1.80% per year.

**Goals:**
The goals of the project are to 1) create approximately 350 acres of marsh and nourish an additional 35 acres of marsh with dredged material from Four League Bay, 2) create 53,000 lf of Terraces (25 acres of marsh) and 3) close 4 openings into the interior marsh.

Service goals include the creation of habitat or improvement of habitat for rare species, species of concern, and threatened and endangered species. The creation of low salinity brackish and intermediate intertidal marsh habitat could potentially benefit several species that are currently on the lists of rare species and species of concern. These include, but are not limited to Least Bittern, Black Rail, Mottled Duck, Brown Pelican, and King Rail.

**Proposed Solutions:**
The current proposed project would include the creation of 350 acres of brackish marsh and nourish 35 additional acres of marsh. The marsh would be created with material dredged from Four League Bay and contained with earthen dikes and existing spoil banks. Containment dikes would be degraded and/or gapped as necessary to reestablish hydrologic connectivity with adjacent wetlands. The current proposal would also create 53,000 LF of terraces (25 acres of marsh) in the open water area north of the created marsh with long reach excavators. These terraces would capture sediment and reduce wind induced erosion.

**Preliminary Project Benefits:**
*1) What is the total acreage benefited both directly and indirectly?* Approximately 1,135 acres would be benefited.

*2) How many acres of wetlands will be protected/created over the project life?* The total net acres protected/created over the project life are approximately 318 acres.

*3) What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* Loss rate reduction should be 50>74%.

*4) Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.* No

*5) What is the net impact of the project on critical and non-critical infrastructure?* There several oil and gas facilities that would be protected.

*6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* This project would work synergistically with TE-26 Lake Chapau sediment Input and Hydrologic Restoration project and TE-22 Point au Fer Canal Plugs project.

**Identification of Potential Issues:**
There are oil and gas facilities and pipeline in the area.

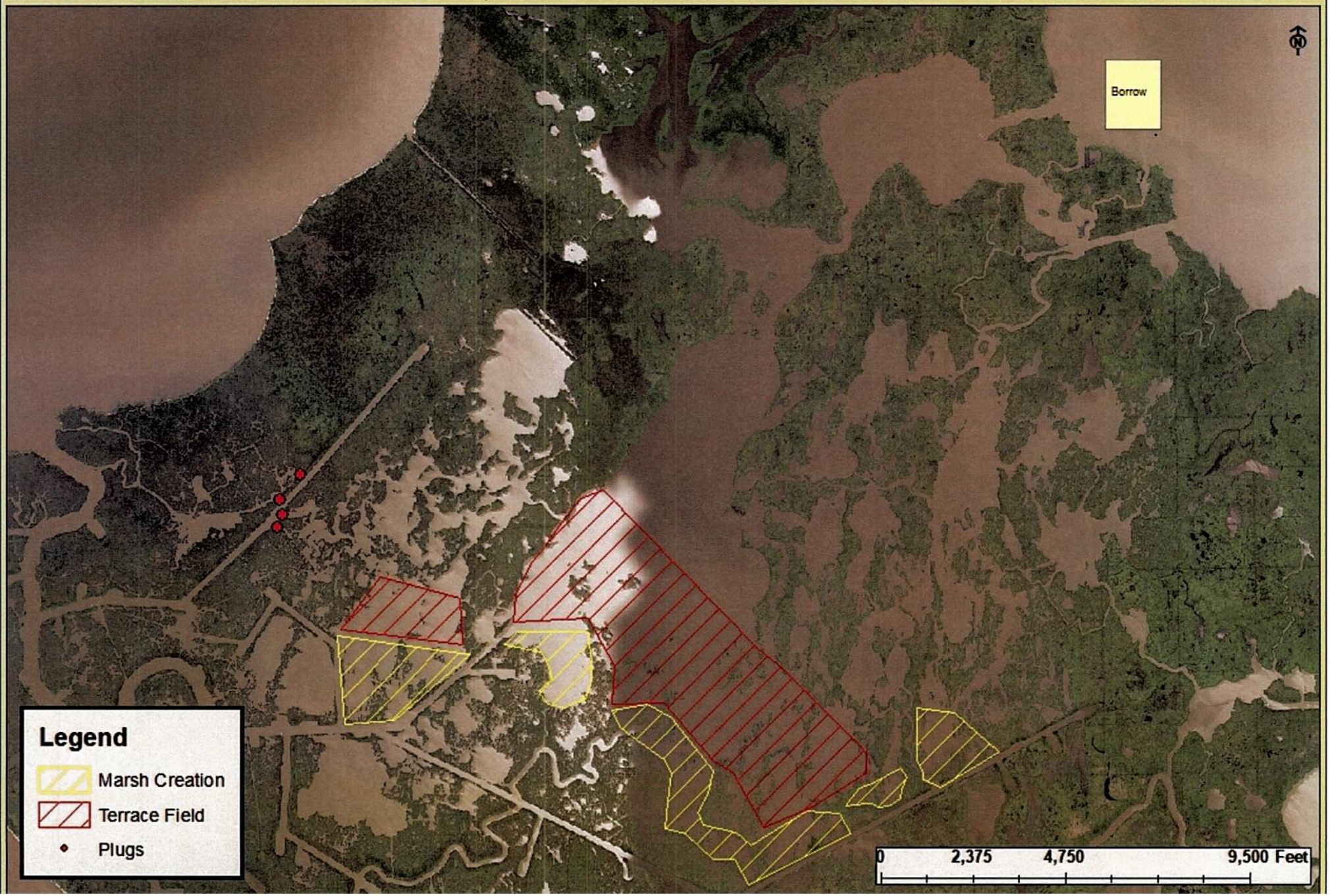
**Preliminary Construction Costs:**
The estimated construction cost plus 25% contingency $25-$30M.

**Preparer(s) of Fact Sheet:**
Robert Dubois (337) 291-3127 robert_dubois@fws.gov

# Fish & Wildlife Service

Louisiana Ecological Services

## *PPL 29 Point au Fer Marsh Creation and Terracing*

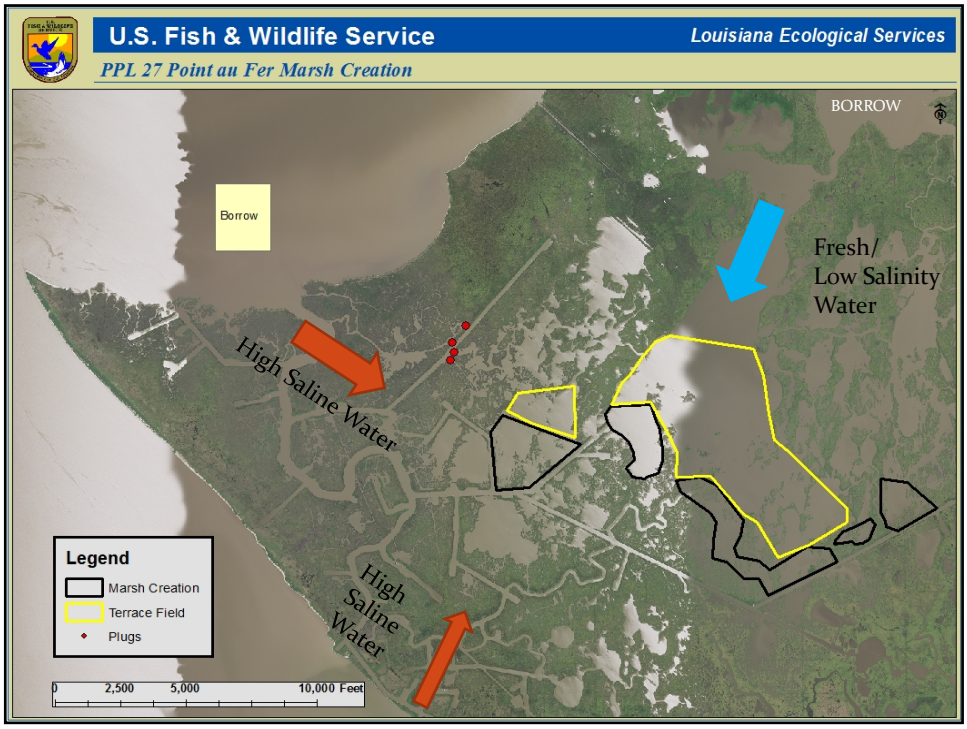


# POINT AU FER MARSH CREATION AND TERRACING

## POINT AU FER
## MARSH CREATION AND TERRACING

**Problem:**

- **Subsidence, canal dredging, saltwater intrusion, wind and wave induced shoreline erosion and altered hydrology**




# POINT AU FER
# MARSH CREATION AND TERRACING

**Solution:**

- **Create 350 acres of marsh and nourish an additional 35 acres of marsh**
- **Material hydraulically dredge from Four League Bay or Atchafalaya Bay.**
- **Create 53,000 lf of Terraces (25 acres)**
- **Close 4 openings into the interior marsh**

## POINT AU FER
## MARSH CREATION AND TERRACING

### Goals:
- Create 350 acres of marsh.
- Nourish 35 acres of marsh.
- Create 53,000 LF of terraces (25 acres of marsh).

### Net Acres:
- Total net acres = 318 acres

### Potential Issues:
- There are two existing borrow site that could be utilized if needed.

### Preliminary Construction Costs
- The estimated construction cost range plus 25% contingency $30-$35M.

## SPECIES OF CONCERN AND RARE SPECIES

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name:** North Lake Boudreaux Shoreline Protection and Marsh Creation

**Project Location:**
Region 3, Terrebonne Basin, Terrebonne Parish, South of Houma, Northern Shoreline of Lake Boudreaux

**Problem:**
Historic aerial photography indicates significant marsh loss in the project area north of Lake Boudreaux. Subsidence, canal dredging, saltwater intrusion, and altered hydrology (levees) are all important factors contributing to the loss of marsh habitat within and surrounding the project area. High saline waters enter Lake Boudreaux via Robinson and Boudreaux Canals impacting low salinity marshes north of Lake Boudreaux. USGS calculated a 1985-2016 area loss rate of -1.52% per year. Shoreline erosion rates in the areas without rock or a maintained earthen shoreline ranged from 60 ft./yr. to 9 ft./yr. Much of the lake shoreline has shoreline protection through the Corps and Parish Mitigation projects and CWPPRA West Lake Boudreaux TE-46 project. There are approximately 8,300 feet of shoreline between and adjacent to these existing projects that are in need of protection.

**Goals:**
The goals of the project are to: 1) protect approximately 8,300 feet of critical shoreline, 2) protect approximately 55 acres of marsh habitat, 3) create approximately 300 acres of marsh and nourish an additional 115 acres of marsh with material dredged from Lake Boudreaux, and 4) create 56,000 LF of terraces (30 acres of marsh).

Service goals include the creation of habitat or improvement of habitat for rare species, species of concern, and threatened and endangered species. The creation of brackish intertidal marsh habitat would benefit several species that are currently on the lists of rare species and species of concern. These include, but are not limited to Least Bittern, Black Rail, Mottled Duck, Brown Pelican, King Rail, nd Saltwater topminnow.

**Proposed Solutions:**
The current proposed project would include 8,300 ft. of rock foreshore dike built to a settled height of +3.0 NAVD 88 along Lake Boudreaux shoreline at the -2 ft. contour. The proposed project would also create 300 acres of marsh and nourish an additional 115 acres of marsh using sediment hydraulically dredged from Lake Boudreaux. Existing canal spoil banks, emergent marsh, and segments of containment dikes will be used to contain the dredge material. Containment dikes will be degraded and/or gapped as necessary to reestablish hydrologic connectivity with adjacent wetlands. The current proposal would also create 56,000 LF of terraces (30 acres of marsh) in the open water area north and east of the lake which would protect the Ward 7 levee.

**Preliminary Project Benefits:**
*1) What is the total acreage benefited both directly and indirectly?* Approximately 1,215 acres would be benefited.

*2) How many acres of wetlands will be protected/created over the project life?* The total net acres protected/created over the project life are approximately 308 acres.

*3) What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* Loss rate reduction should be 50>74%.

*4) Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.* This project would contribute to protection of the Lake Boudreaux shoreline and the Ward 7 Levee.

*5) What is the net impact of the project on critical and non-critical infrastructure?* Oil and gas facilities would be protected along with the newly constructed Terrebonne Non-Federal Levee, and Ward 7 Levee. The project would also help protect the city of Houma, Chauvin, and Boudreaux.

*6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* This project would work synergistically with TE-46 and the Terrebonne Parish Ward 7 mitigation.

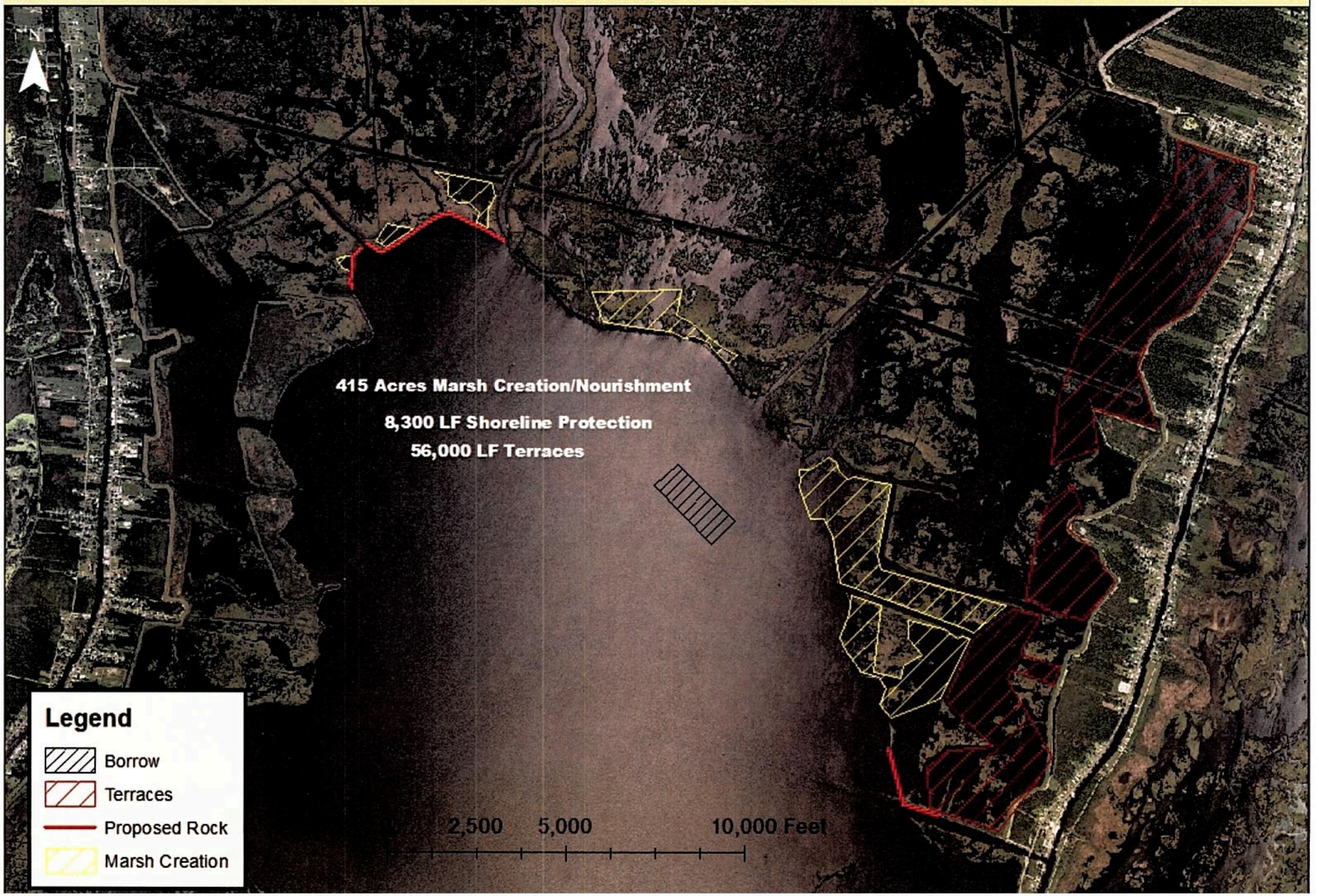
**Identification of Potential Issues:**
There could be pipelines in the marsh creation and terracing areas.

**Preliminary Construction Costs:**
The estimated construction cost range including 25% contingency is $25-$30M.

**Preparer(s) of Fact Sheet:**
Robert Dubois (337) 291-3127 robert_dubois@fws.gov

# U.S Fish and Wildlife Service - Louisiana Ecological Sevices Field Office

## PPL29 - North Lake Boudreaux Marsh Creation and Shoreline Protection

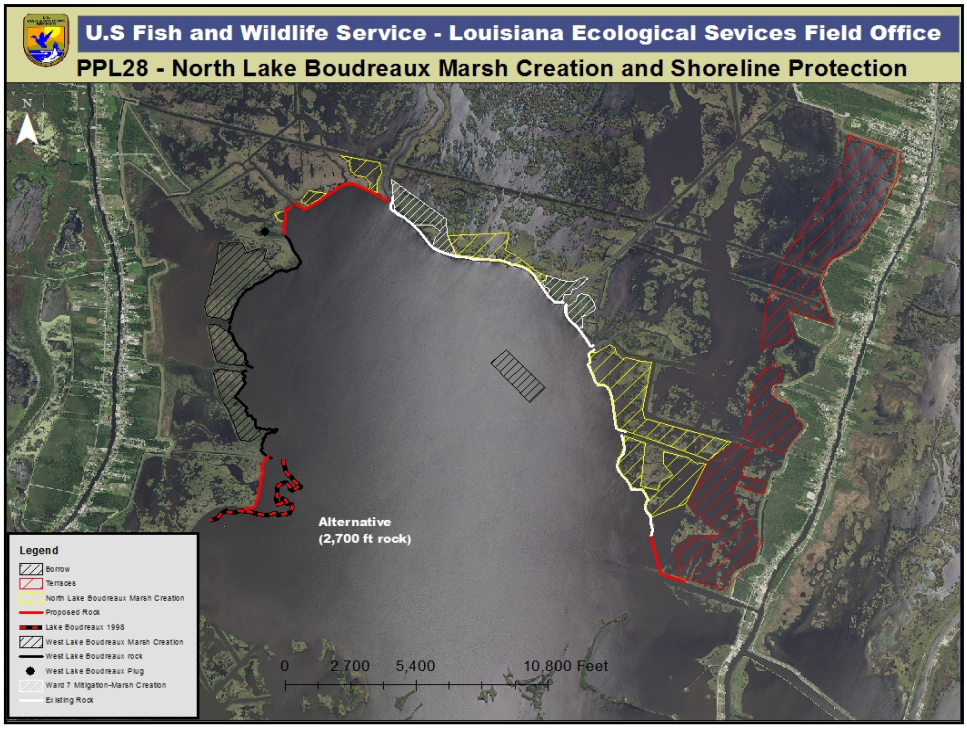


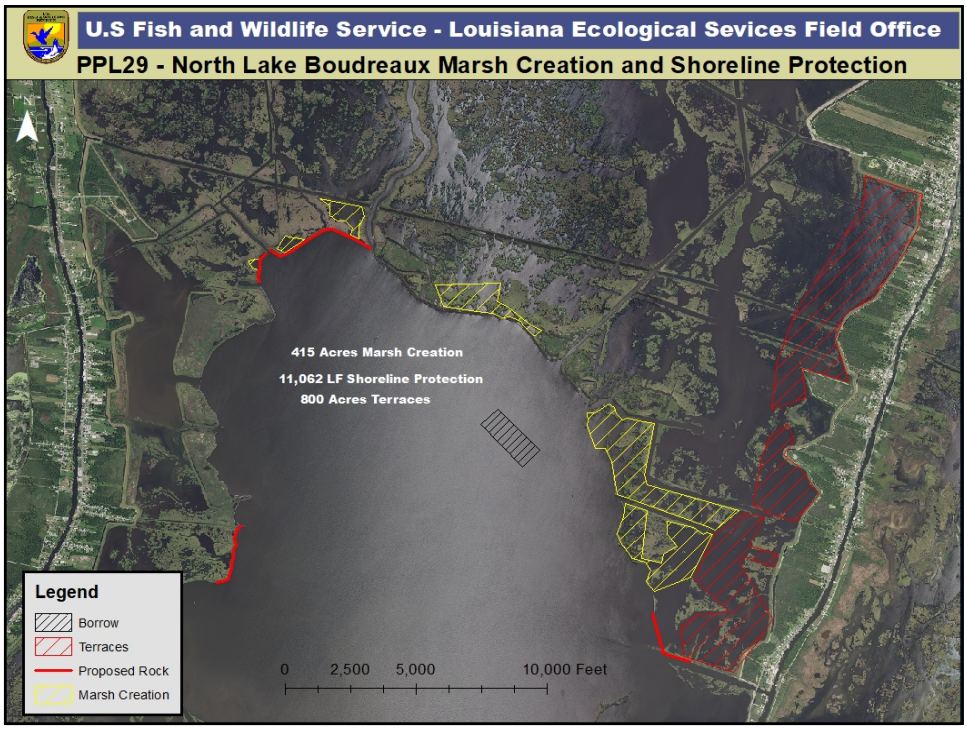
# PPL29 NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

## NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

**Problem:**

- **Subsidence, canal dredging, saltwater intrusion, and altered hydrology**
- **Shoreline Erosion**
- **Erosion rates between 9-60 ft./yr.**


U.S Fish and Wildlife Service - Louisiana Ecological Sevices Field Office
PPL28 - North Lake Boudreaux Marsh Creation and Shoreline Protection
N
Alternative
(2,700 ft rock)
Legend
Borrow
Terraces
North Lake Boudreaux Marsh Creation
Proposed Rock
Lake Boudreaux 1998
West Lake Boudreaux Marsh Creation
West Lake Boudreaux rock
West Lake Boudreaux Plug
Ward 7 Mitigation-Marsh Creation
Existing Rock
0 2,700 5,400 10,800 Feet


U.S Fish and Wildlife Service - Louisiana Ecological Sevices Field Office
PPL29 - North Lake Boudreaux Marsh Creation and Shoreline Protection
N
415 Acres Marsh Creation
11,062 LF Shoreline Protection
800 Acres Terraces
Legend
Borrow
Terraces
Proposed Rock
Marsh Creation
0 2,500 5,000 10,000 Feet

## NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

**Solution:**

- **Build 8,300 ft. of foreshore rock dike along the -2 ft. contour and built to a height of +3.0 ft.**
- **Hydraulically dredge material from Lake Boudreaux water bottom to create 300 acres and nourish 115 acres of marsh.**
- **Construct 56,000 lf of Terraces (30 acres of Marsh).**

## NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

### Goals:

- Protect +11,000 feet of critical shoreline and 75-100 acres of marsh.
- Create 300 acres of marsh.
- Nourish 115 acres of marsh.
- Create 56,000 lf of terraces (30 acres of marsh).

### Net Acres:

- Total net acres = 308 acres marsh (not including shoreline protection)

### Potential Issues:

- There are two existing borrow site that could be utilized if needed.

### Preliminary Construction Costs

- The estimated construction cost range plus 25% contingency $25-30M.

# Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- Louisiana Eyed Silkmoth
- King Rail

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name**
Bay Raccourci Marsh Creation and Ridge Restoration

**Project Location**
Region 3, Mechant/de Cade Basin, Terrebonne Parish. This project is located north of Lake Mechant and south of Bayou Decade.

**Problem**
High saline waters from Lake Mechant have directly contributed to the loss and/or conversion of much of the historically intermediate marshes to low salinity brackish marshes north of Lake Mechant. Subsidence, canal dredging and storm damage have also contributed significantly to the loss of marsh in the area. The zone of intermediate marsh (transition zone between fresh and brackish marshes) is located just north of Lake Mechant. High salinity water entering Bay Raccourci via Bayou Raccourci/Lake Mechant effectively short circuits the TE-44 project and flows unimpeded into lower salinity marshes surrounding Bay Raccourci. USGS calculated a 19984-2011 loss rate of -0.995% per year for the TE-72 Lost Lake Marsh Creation.

**Goals**
The goal of this project is to slow the movement of saline water north from Lake Mechant through Bay Raccourci to Bayou Decade by creating marsh along Bay Raccourci and a ridge along portions of Bayou Decade.

*Specific goals*: 1) Create approximately 325 acres and nourish approximately 145 acres of low salinity brackish/intermediate marsh around the perimeter of Bay Raccourci. 2) Create 25,000 linear feet of ridge along Bayou Decade. 3) Plant newly constructed ridge with woody vegetation.

**Proposed Features**

1. Hydraulically dredge material from Lake Mechant to create/nourish 470 acres of marsh.
2. Earthen containment dikes would be constructed and gapped within 3 years of construction.
3. Create approximately 25,000 linear feet of ridge habitat along portions of Bayou Decade.
4. Plant approximately newly constructed ridge with woody vegetation to help. reduce shoreline erosion.

**Preliminary Project Benefits**

1) *What is the total acreage benefited both directly and indirectly?*
This total project area is 500 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 337 net acres (308 acres marsh and 30 acres ridge) would result after the 20-year project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74%, and >75%)?*
The anticipated land loss rate reduction throughout the area of direct benefits is approximately 50% to 74% over the project life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
This project would help maintain portions of the Bay Raccourci shoreline and restore a portion of Bayou Decade shoreline and ridge habitat.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
This project would protect many small camps along Bayou Decade and also help protect some oil and gas infrastructure in the area.

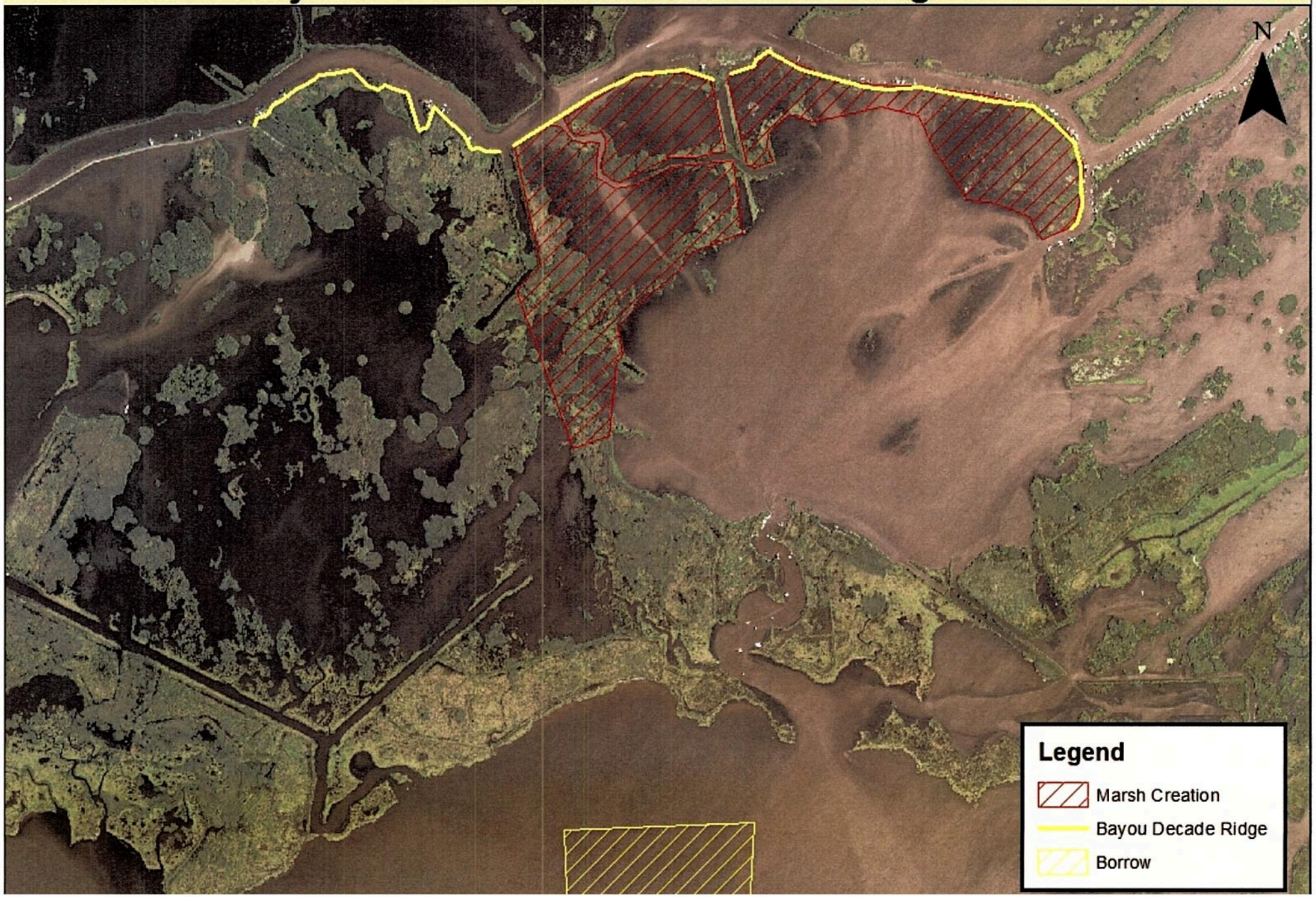
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would work synergistically with the constructed TE-44, TE-39, TE-72, and TE-34 projects.

**Preliminary Cost**
The construction cost range plus 25% contingency is estimated to be $25-$30M.

**Preparer(s) of Fact Sheet:**
Robert Dubois, Fish and Wildlife Service, 337-291-3127 Robert_Dubois@fws.gov

Fish and Wildlife Service - Louisiana Ecological Sevices Field Office

# PPL29 - Bay Raccourci Marsh Creation and Ridge Restoration



# BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

## BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

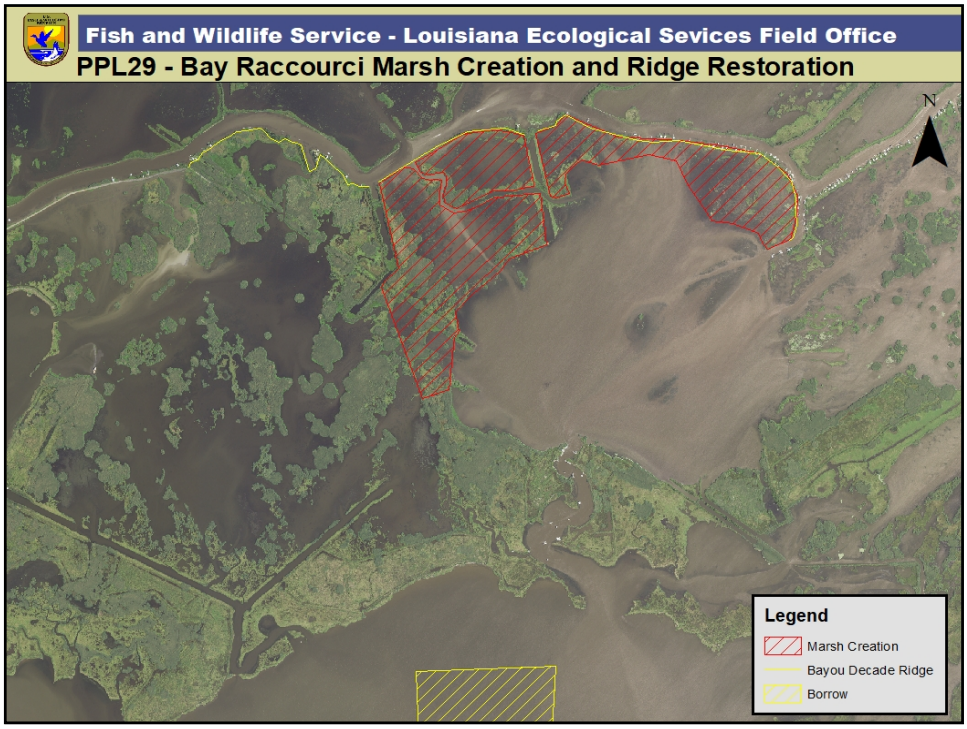
**Problem:**

- **Subsidence, canal dredging, saltwater intrusion, wind and wave induced shoreline erosion and altered hydrology**
- **Saline water short circuits the TE-44 project from Lake Mechant through Bayou Raccourci to Bay Raccourci and Bayou Decade**


## BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

**Solution:**

- **Hydraulically dredge material from Lake Mechant to create intertidal marsh north and west of Bay Raccourci.**
- **Utilize material dredged from Bayou Decade (bucket dredge) to create a ridge along Bayou Decade.**
- **Plant the ridge habitat with appropriate vegetation.**




# BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

## Goals:

- Create 325 acres of marsh.
- Nourish 145 acres of marsh.
- Restore 25,000 LF (29 acres) of ridge habitat along Bayou Decade's southern shoreline.

## Net Acres:

- Total net acres = 337 acres marsh and 30 acres ridge

## Potential Issues:

- There is one pipeline in the project area.

## Preliminary Construction Costs

- The estimated construction cost range plus 25% contingency $25-$30M.

# Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

**PPL 28 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name:**
Bayou Barre Marsh Creation and Terracing

**Project Location:**
Region 3, Terrebonne Basin, Terrebonne Parish. Southeast Montegut between Wonder Lake and Madison Bay.

**Problem:**
The marshes near the Madison Bay area have experienced tremendous wetland loss due to a variety of factors, including subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities. The loss of the marshes have exposed significant infrastructure to open water conditions and has made the area less suitable for various wildlife and fisheries. The 1985 to 2016 loss rate for the Wonder Lake area is 1.67%/yr. With high wetland loss in the vicinity, the Morganza Hurricane Protection Levee to the north of the project area has become extremely susceptible to high wave energies with the increase in fetch.

**Goals :**
This project would strategically tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chene Ridge) and two other unconstructed CWPPRA projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project).

*Specific goals*: 1) Create 400 acres of brackish intertidal marsh, 2) nourish 20 acres of brackish intertidal marsh, and 3) construct 21,000 LF of terraces (5 acres).

Service goals include the creation of habitat or improvement of habitat for rare species, species of concern, and threatened and endangered species. The creation of brackish intertidal marsh habitat would be beneficial to several species that are currently on the lists of rare species and species of concern. These include, but are not limited to Least Bittern, Black Rail, Mottled Duck, Brown Pelican, King Rail, Louisiana Eyed Silkmoth and Saltwater topminnow. Keeping these species off the threatened and endangered list is a goal of FWS because at that point ALL Federal agencies must then address those species.

**Proposed Solution:**
This project would propose to create/nourish approximately 420 acres of emergent marsh by utilizing a small hydraulic dredge to pump material from Maddison Bay borrow area. The distance required to pump that material could be kept under 15,000 feet. That material would be placed in shallow open water areas between Wonder Lake and Maddison Bay. Utilizing a small dredge would reduce the height of the containment dikes needed to create marsh in open water areas. At this time there are remnant dikes that are still in tack surrounding most of the marsh creation cells. Dredge material would be placed to a height conducive for the creation of healthy intertidal marsh. All constructed containment dikes would be sufficiently gapped or degraded no later than 3 years post construction to allow for fisheries access.

**Preliminary Project Benefits:**
*1) What is the total acreage benefited both directly and indirectly?*
This total project area is 710 acres.

*2) How many acres of wetlands will be protected/created over the project life?*
Approximately 345 ac of brackish marsh will be protected/created over the 20 year project life.

*3) What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74%, and >75%)?*
The anticipated land loss rate reduction throughout the area of direct benefits would be 50-74% over the 20 year project life.

*4) Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
The project would help restore portions of the Wonder Lake shoreline and portions of the Bayou Barre bankline.

*5) What is the net impact of the project on critical and non-critical infrastructure?*
This project would help protect the Morganza Hurricane Protection Levee, Point Barre road, several camps, and some oil and gas infrastructure.

*6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would work synergistically with two other projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project) which would tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Pointe aux Chene Ridge).

**Identification of Potential Issues:**
There would most likely be some pipeline issues, numerous oyster leases, and poor soils within the project area.

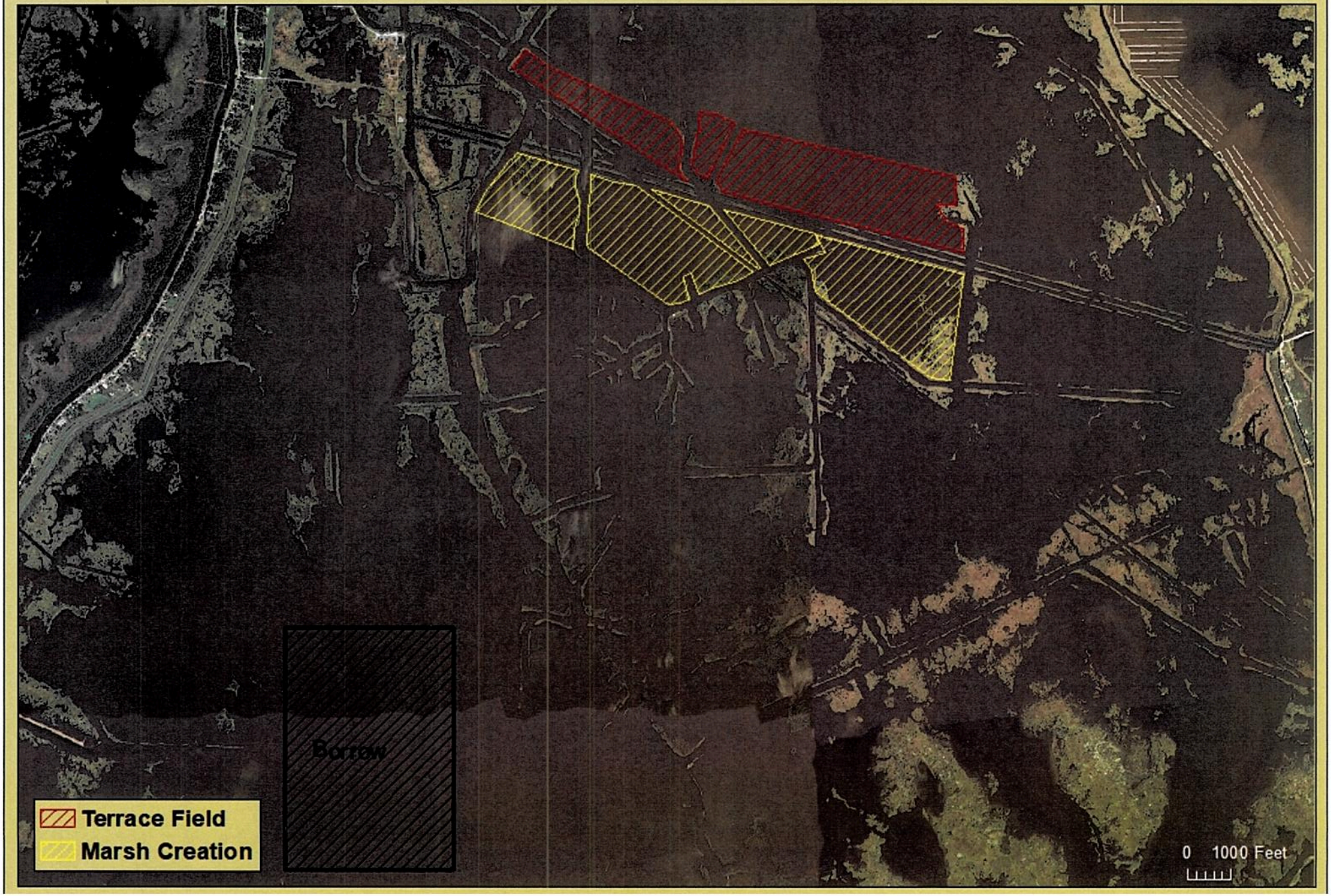
**Preliminary Construction Costs:**
The estimated construction cost range including 25% contingency is $20 to 25M.

**Preparer(s) of Fact Sheet:**
Robert Dubois, FWS, (337) 291-3127, Robert_Dubois@fws.gov

Fish & Wildlife Service

Louisiana Ecological Services Field Office

# PPL 29 Bayou Barre Marsh Creation and Terracing

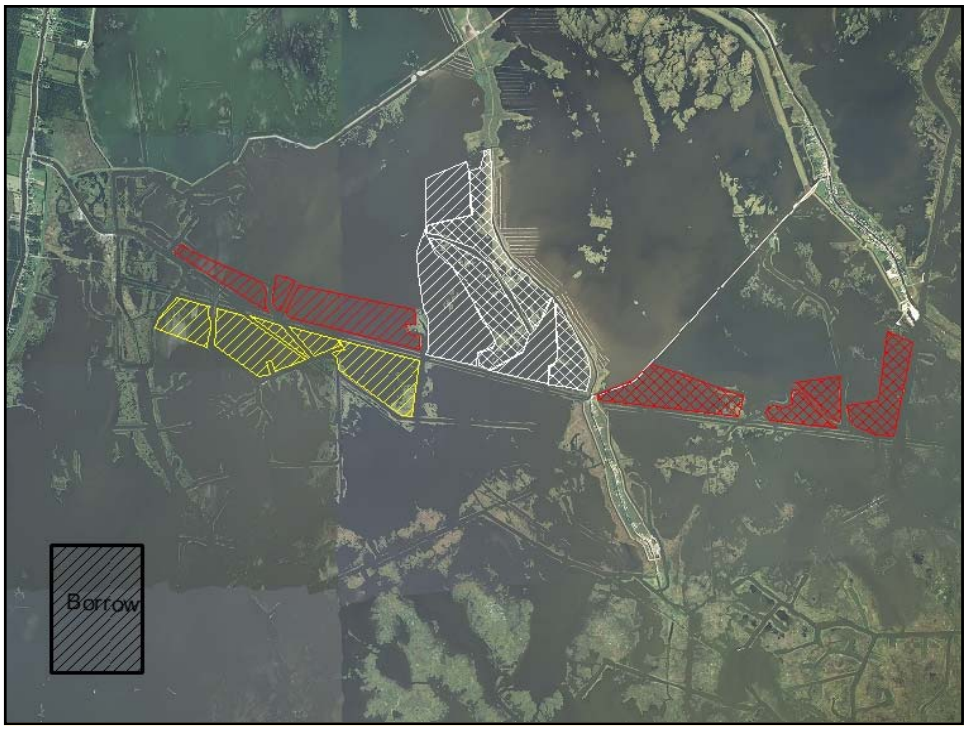


# BAYOU BARRE MARSH CREATION AND TERRACING

## BAYOU BARRE MARSH CREATION AND TERRACING

### Problem:

- **Project area wetlands loss is due to subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities.**
- **The 1985 to 2016 loss rate 1.67%/yr. (Wonder Lake)**
- **Losses have exposed infrastructure to open water conditions and has made habitats in the area less suitable for various fish and wildlife species.**



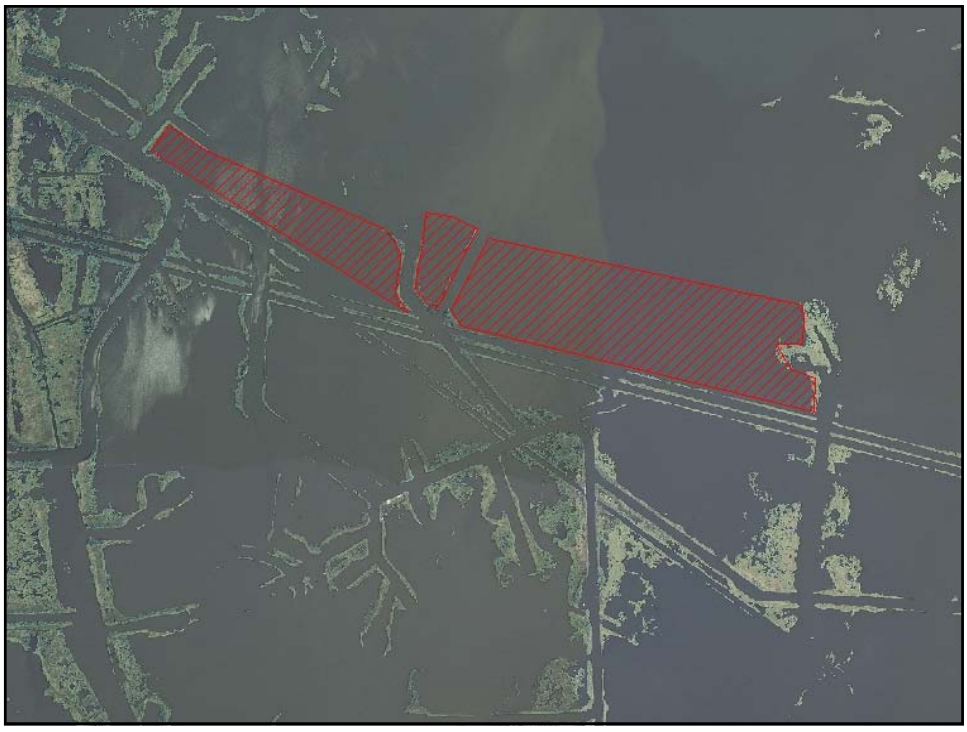
# BAYOU BARRE MARSH CREATION AND TERRACING

**Concerns:**
**Maddison Bay CWPPRA project was placed on the Inactive list**

1) Maddison Bay project was placed on the Inactive list.

2) Issues with crossing pipeline (CPRA)
- We have recently crossed pipeline with very little cover (Bayou Bonfouca)
- Private pipeline companies have said this would not be a problem in this area with the depth of water above the pipeline to float the disposal pipeline

3) Issues with poor soils and constructing containment dikes
- With the small dredge (16-18 inch dredge) overbuilt containment dikes are not needed. Low velocity pumping allows water/material being pumped to remain at lower levels.
- The area we are looking at building marsh are almost completely surrounded by some type of levee or containment dike. We have a base for the containment dikes.



## BAYOU BARRE MARSH CREATION AND TERRACING

- This area is an incredible area of need. No CWPPRA project has been constructed in the entire Eastern Terrebonne area.
- This project would show that we can tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chene Ridge) which would be very strategic in this area.
- Tie synergistically with two other CWPPRA projects (Maddison Bay Marsh Creation and Terracing project-Inactive and Island Road Marsh Creation project-Phase *I*)

## BAYOU BARRE MARSH CREATION AND TERRACING

### Goals:

- Create 400 acres of marsh.
- Nourish 20 acres of marsh.
- Restore 21,000 LF of terraces

### Net Acres:

- Total net acres = 345 acres marsh including 8 acres of terraces

### Potential Issues:

- Multiple pipelines, poor soils, and mindset of "we can not build anything in that area because….."

### Preliminary Construction Costs

- The estimated construction cost range plus 25% contingency is $20-$25M.

# Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name**
West Louisiana Highway 1 Marsh Creation

**Project Location**
Region 3, Terrebonne Basin, Lafourche Parish

**Problem**
The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed significantly to wetland losses. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the project area is -1.05%/year based on USGS hyper temporal data from 1984 to 2016.

**Goals**
The project goals are to create and/or nourish up to 346 acres of emergent brackish marsh

**Proposed Solution**
The proposed project's primary feature is to create and/or nourish approximately 346 acres of emergent brackish marsh (292 marsh creation and 54 marsh nourishment). In order to achieve this, sediment will be hydraulically pumped from a borrow source in Catfish Lake. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. The containment dikes will be degraded and/or gapped no later than three years post construction. The project will include planting smooth cordgrass plugs installed in strategic locations based on 10% of the acreage. A robust engineering and design cost is included to investigate additive or alternate marsh creation features to the west and possibly north of the proposed project.

**Preliminary Project Benefits**

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is approximately 346 acres (292 acres of marsh creation and 54 acres of marsh nourishment).

2) *How many acres of wetlands will be protected/created over the project life?*
   The net acre benefit range is 250-300 acres after 20 years.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
   A 50% loss rate reduction is assumed for the marsh creation and nourishment.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.?*

The project will help restore the backside of the natural Bayou Lafourche bank.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project will provide additional protection to LA 1 south of Golden Meadow. The project would also provide positive impacts to non-critical (i.e., minor oil and gas facilities) infrastructure. Minor oil and gas facilities and pipelines in the area would benefit from an increase in marsh acreage.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This is an area of need due to the lack of previous restoration efforts.

**Considerations**
The proposed project has potential utility/pipeline issues along with oyster leases along the dredge pipeline path.

**Preliminary Construction Costs**
The estimated construction cost plus contingency is $20M - $25M.

**Preparer(s) of Fact Sheet:**
Dawn Davis, NOAA Fisheries, 225-380-0041, dawn.davis@noaa.gov
Patrick Williams, NOAA Fisheries, 225-380-0058, patrick.williams@noaa.gov


# West Louisiana Highway 1 Marsh Creation

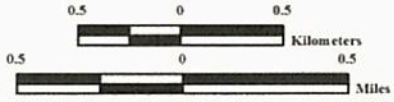
## PPL 29 Nominee

USGS
science for a changing world


Marsh Creation *

Project Boundary

* denotes proposed features




Scale 1:35,000

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

Image Source:
2012 DOQQ

Map ID: USGS-NWRC 2016-11-0032
Map Date: July 01, 2016

# West Louisiana Highway 1 Marsh Creation

NOAA FISHERIES

Habitat Conservation Division

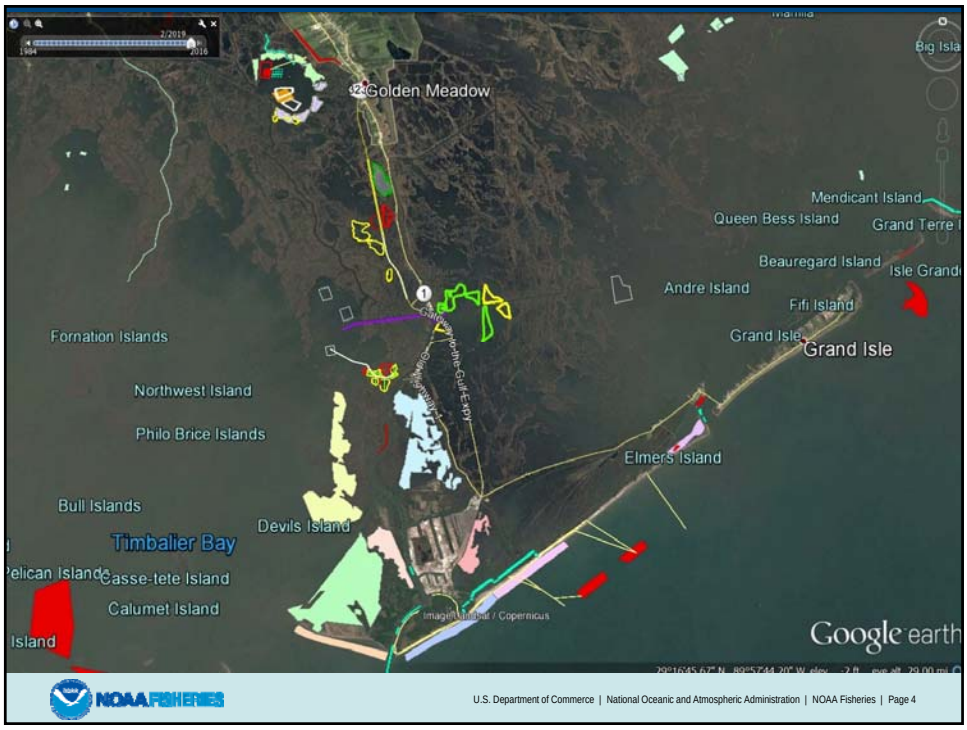
Region 3 -Terrebonne Basin
Presenter: Brandon Howard

PPL29 CWPPRA Regional Planning Team Meeting
Morgan City, LA
February 13, 2019


## Problems Along Western side of Bayou Lafourche

- High land loss rates in Terrebonne Basin, 20% since 1932 and currently 4,500-6,500 acres lost per year
- High subsidence in the area, 0.5 ft/20 yr, 2017 Coastal Master Plan (mod 8.8 mm/yr rate)
- Limited protection to either side of LA Hwy 1
- Wetland loss rate for the project area is -1.05%/year based on USGS hyper temporal data from 1984 to 2016


200 feet
Google earth
900 ft
N

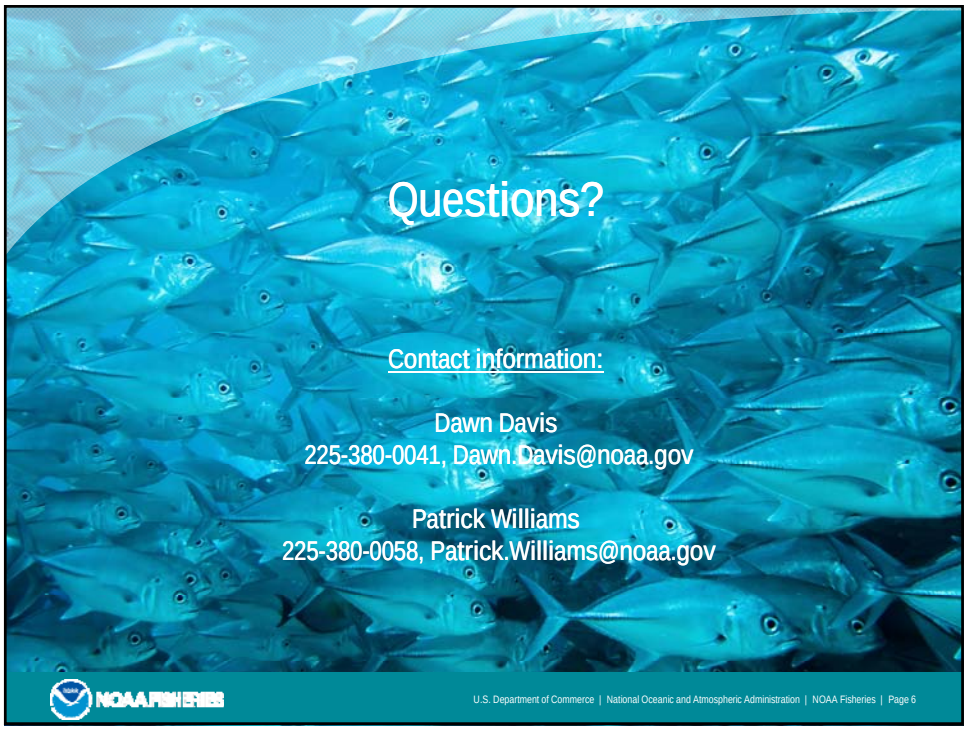

Golden Meadow
Mendicant Island
Queen Bess Island
Grand Terre
Beauregard Island
Isle Grand
Andre Island
Fifi Island
Grand Isle
Grand Isle
Formation Islands
Northwest Island
Philo Brice Islands
Elmers Island
Bull Islands
Devils Island
Timbalier Bay
Casse-tete Island
Calumet Island
Google earth
NOAA FISHERIES
U.S. Department of Commerce | National Oceanic and Atmospheric Administration | NOAA Fisheries | Page 4


## Project Features and Benefits

- Project area: 346 acres (292 acres of marsh creation and 54 acres of marsh nourishment)
- Construction cost plus contingency: $20-25 M
- Net benefits: 250-300 acres
- Borrow from outside immediate project area in Catfish Lake

- Consistent with 2017 Coastal Master Plan, Marsh Creation Subunit – 03a.MC.07, Belle Pass-Golden Meadow Marsh Creation
- Supports "T9" Concept (Twin Pipelines) for Lafourche Parish, 5th Annual Coastal Restoration Workshop
- Promotes protection to HWY LA 1





TE-10

**PPL29 PROJECT FACT SHEET**
**February 13, 2019**

**Project Name**
North Bayou Decade Marsh Restoration

**Project Location**
Region 3, Terrebonne Basin, Terrebonne Parish, North of Bayou Decade

**Problem**
The marshes along Bayou Decade have deteriorated dramatically over the past few decades. Coastal restoration actions have focused on improving hydrologic conditions in the area to reduce salinities and improved freshwater flows from the Atchafalaya River. Significant improvements have been made yet there are some areas of large open water that are slow to improve. Land loss in the project area is estimated to be -0.92%/y. Marsh creation would rapidly recover marshes where land has converted to vast open water on the north bank of the bayou.

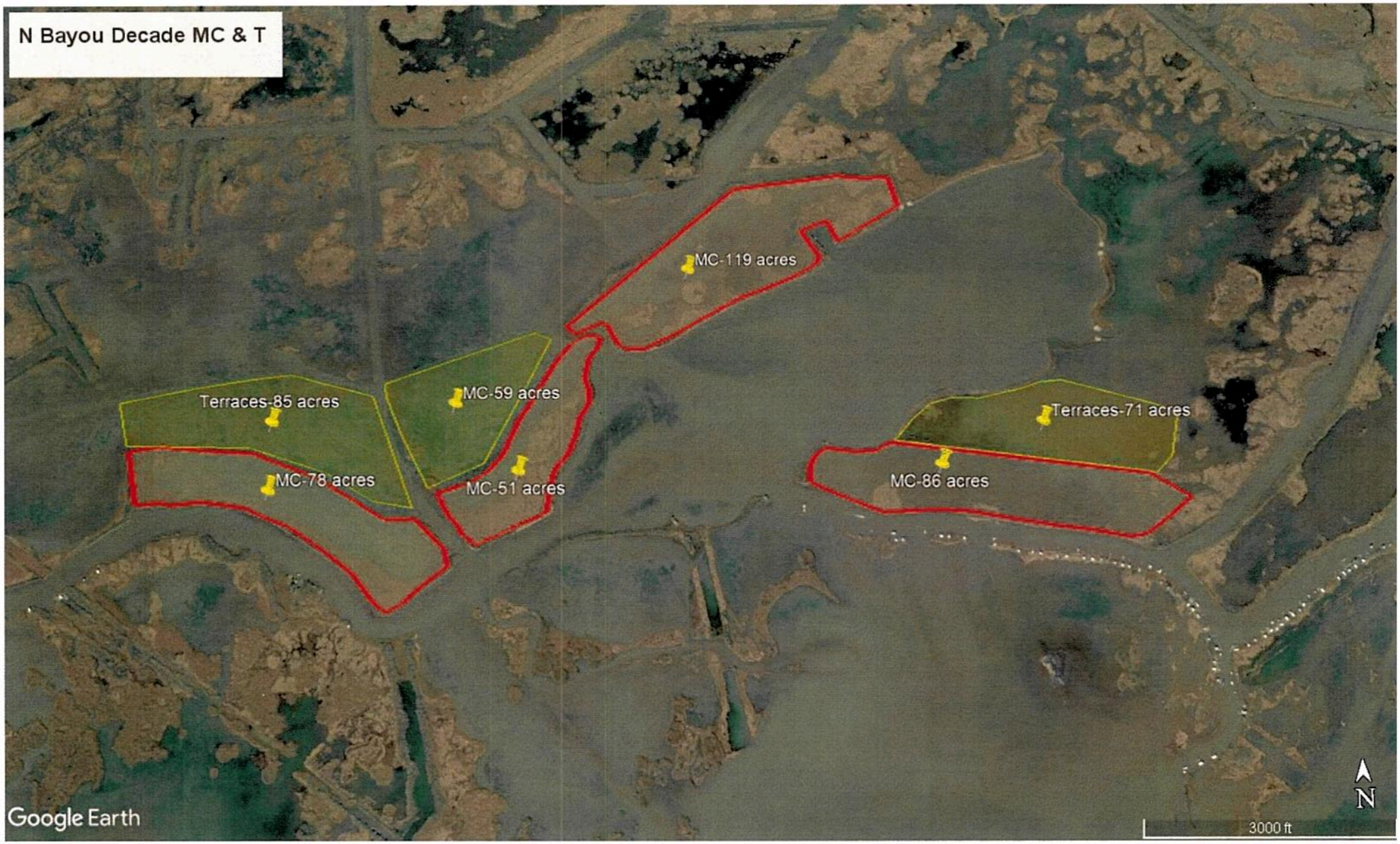
**Goals**
The goal of the project is to create marsh and terraces on the north bank of Bayou Decade in a vast expanse of open water where the marsh has severely degraded.

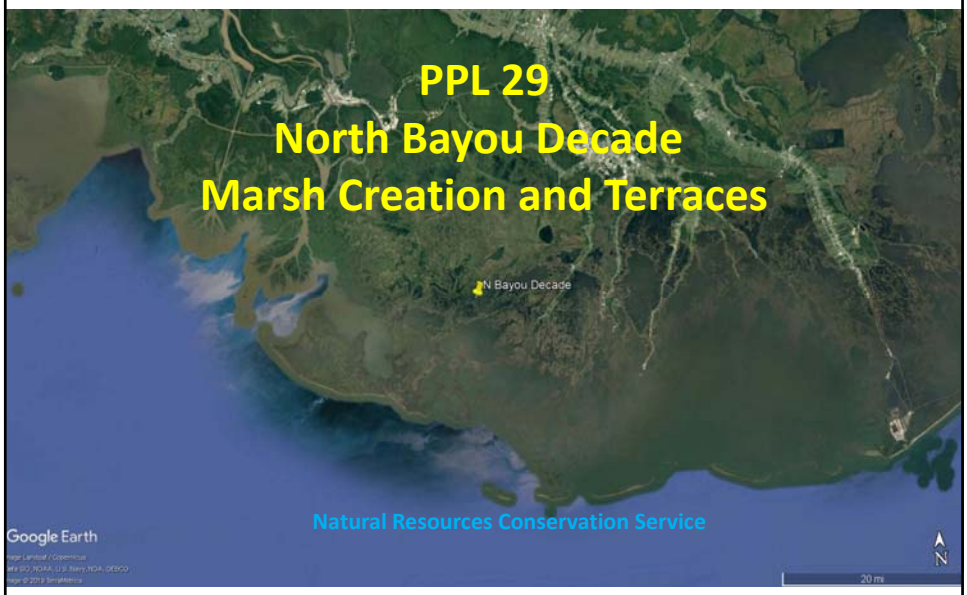
**Proposed Solution**
Sediments will be hydraulically dredged from Lake Mechant and pumped via pipeline to create and nourish approximately 334 acres of marsh habitat and in situ material will be excavated to create 15,050 linear feet of terraces north bank of Bayou Decade.

**Preliminary Project Benefits**
The project will create approximately 308 acres of marsh through hydraulically dredging and an additional 10 acres of terraces marsh through mechanical dredging.

**Preliminary Cost**
The estimated construction cost including 25% contingency is $20M - $25M.

**Preparer of Fact Sheet**
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov


N Bayou Decade MC & T
MC-119 acres
Terraces-85 acres
MC-59 acres
Terraces-71 acres
MC-78 acres
MC-51 acres
MC-86 acres
Google Earth
N
3000 ft




NRCS

***PPL 29 North Bayou Decade Marsh Creation and Terraces***


Project Objectives:

- Create marsh in large open water area where marsh has deteriorated
- Capture material and reduce internal erosion

Features and Benefits:
334 acres of marsh creation
15,500 linear ft of ridge (10 acres)

Project Cost: $20-25 million

NRCS

TE-11

**PPL29 PROJECT FACT SHEET**
**February 13, 2019**

**Project Name**
South Falgout Canal Marsh Creation and Terraces

**Project Location**
Region 3, Terrebonne Basin, Terrebonne Parish, south of Falgout Canal and East of Bayou Dularge

**Problem**
The marshes south of Falgout Canal have been severely degraded for quite some time now. Most of the area has completely converted to open water with exception to a few oil and gas canals. The area continues to lose marsh at a rate of -0.61 %/y and the state estimates the area is subsiding at 8.8 mm/y. Recently, Terrebonne Parish has completed a segment of the Morganza to the Gulf levee protection system and in this area they have installed two freshwater diversion structures to move water from Falgout Canal to the south. This action presents an excellent opportunity for restoration by allowing significant freshwater, nutrient and sediment movement into the area.

**Goals**
The primary goals of this project are to 1) create/restore marsh habitat in the open water areas via marsh creation, marsh nourishment and terracing, 2) reduce fetch and wave energy in open water areas via the construction of terraces and 3) utilize terracing to enhance the capture of sediments and nutrients introduced through the diversion structures.

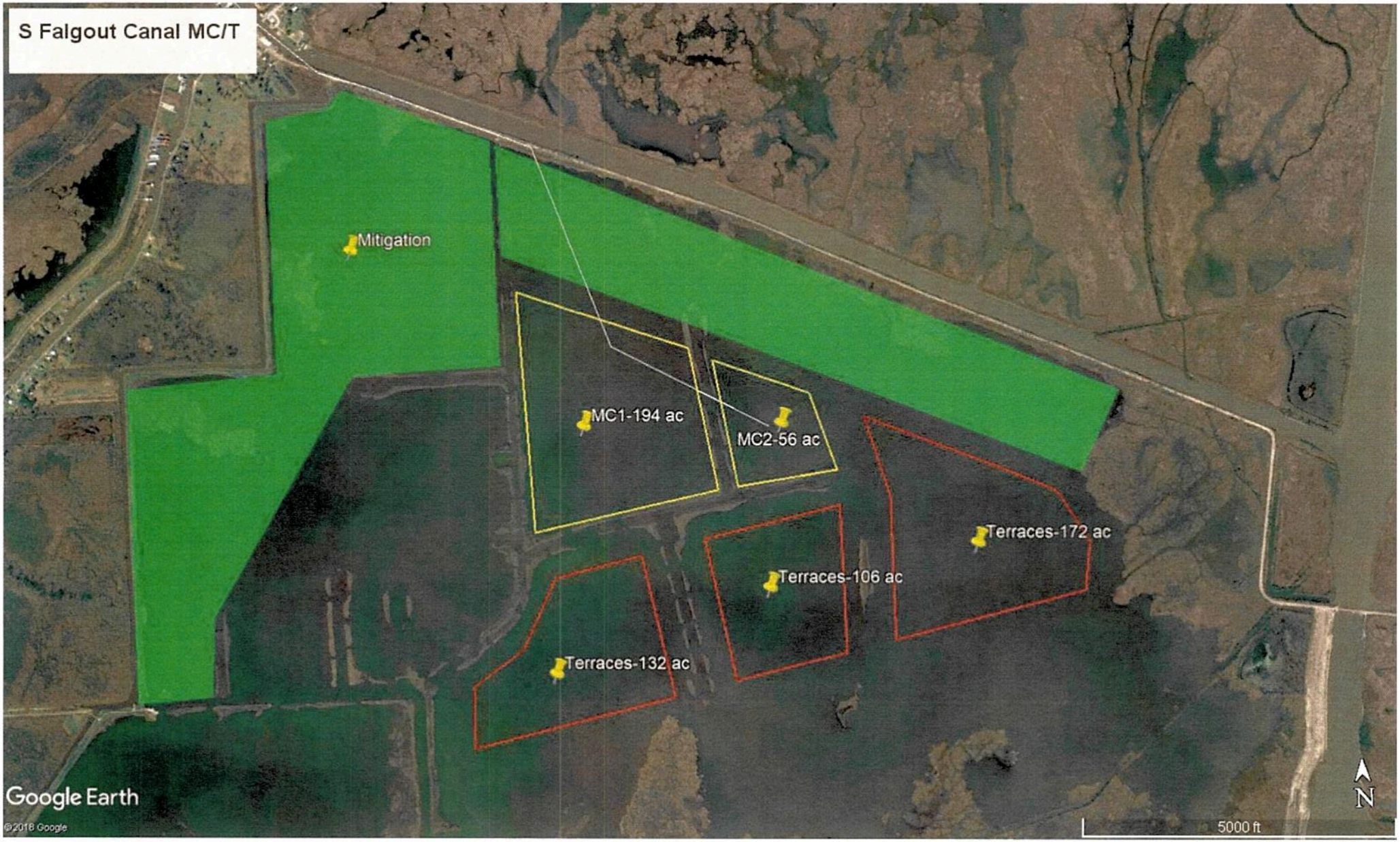
**Proposed Solution**
1. Sediments will be hydraulically dredged and pumped via pipeline from a borrow site located in the outfall of Miners Canal to create/nourish approximately 250 acres of marsh
2. Approximately 28,000 linear feet (18 acres) of terraces will be constructed. These terraces will be strategically placed to both create marsh where needed, reduce fetch in the open water areas and capture nutrients and sediment moving through the diversion structures.
3. Containment dikes will be gapped and the terraces will be planted.

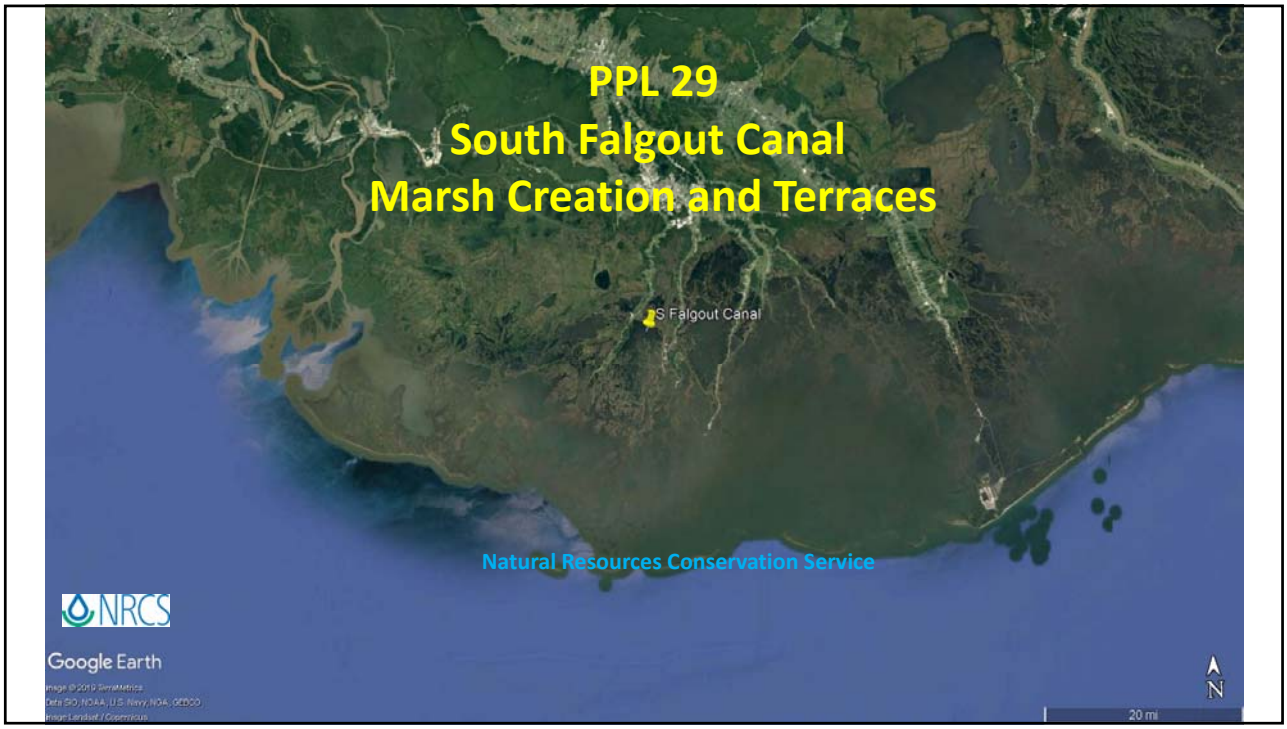
**Preliminary Project Benefits**
Preliminary benefits will include about 260 acres of marsh.

**Considerations**
Oil and gas infrastructure.

**Preliminary Cost**
The estimated cost for construction plus contingency (25%) is $15-20 million.

**Preparer of Fact Sheet**
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov


S Falgout Canal MC/T
Mitigation
MC1-194 ac
MC2-56 ac
Terraces-172 ac
Terraces-106 ac
Terraces-132 ac
Google Earth
©2018 Google
N
5000 ft


PPL 29
South Falgout Canal
Marsh Creation and Terraces
S Falgout Canal
Natural Resources Conservation Service
NRCS
Google Earth
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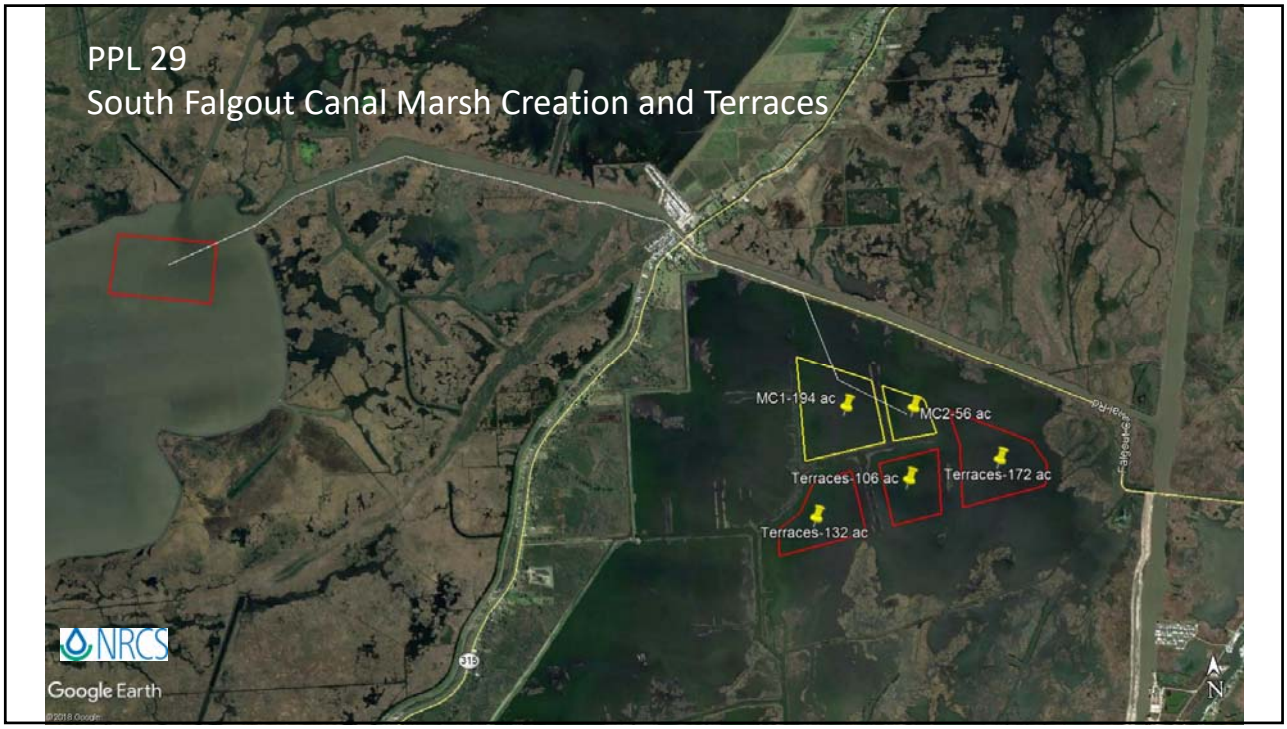
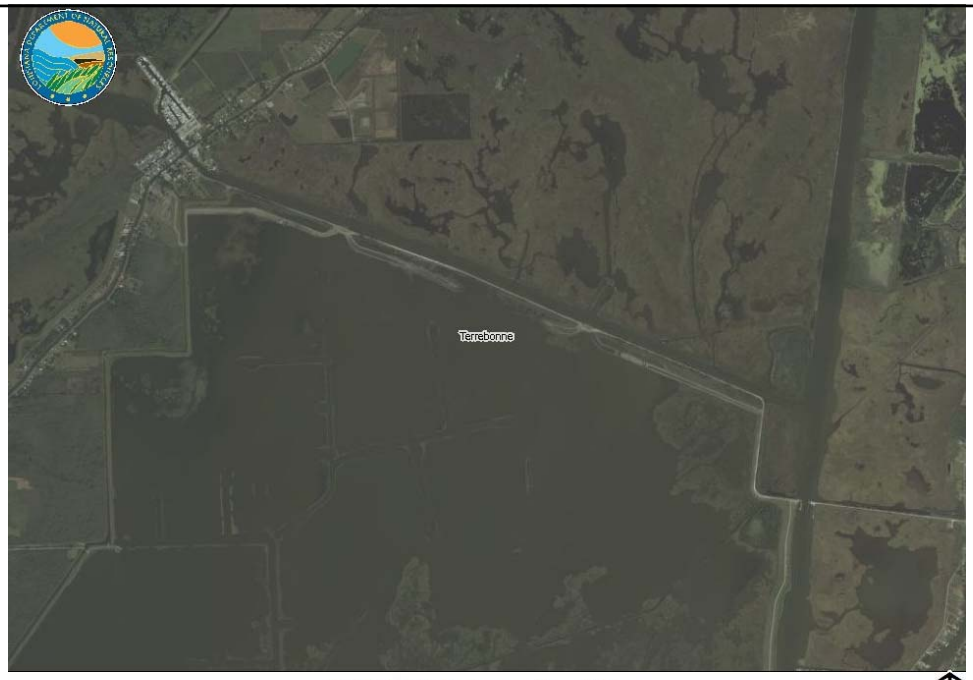
20 mi


PPL 29
South Falgout Canal Marsh Creation and Terraces
MC1-194 ac
MC2-56 ac
Terraces-106 ac
Terraces-172 ac
Terraces-132 ac
NRCS
Google Earth
N




NRCS


**PPL-29**

**South Falgout Canal Marsh Creation and Terraces**

**Project Objectives:**

- Create marsh habitat via marsh creation nourishment and terracing
- Reduce interior erosion via the construction of terraces
- Use terraces to enhance the capture of sediments and nutrients from diversion structures
- Dredge the outfall of Miners Canal to maintain freshwater flow to the lower basin

**Project Features and Benefits:**

- Create 250 acres of marsh
- Install approximately 28,700 lf of terraces (25 acres)

**Project Cost:**

- $15-20 million

NRCS

TE-12

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 2019**

# Bayou Rambio MC Project

**Louisiana's 2017 Coastal Master Plan**
Marsh Creation – 03a.MC.100

**Project Location**
Region 3, Terrebonne Basin – Terrebonne Parish

**Problem**
Interior marshes between Bayou Grand Caillou and Bayou DuLarge have experienced recent rapid degradation and loss. Numerous north-south and east-west trenasses bisect this area causing through-marsh water exchange between Bayous Grand Caillou and DuLarge. As the interior marshes degrade and convert to open water, the increased tidal prism has caused these trenasses to enlarge as they carry increasing volumes of water. As a result, the fragile interior marshes experience increased tidal exchange. This in turn causes more salinity flux which stresses the remaining marsh and the increased tidal exchange causes export of eroded soils.

**Goals**
The project goal is strategically create marsh in a manner that decreases fetch and dampens channel-related through-marsh water exchange.

**Proposed Solution**
A small dredge would pump material from Bayou Grand Caillou to fill a string of cells extending northwest to southeast across the broken interior marshes in a manner that would reduce north-south and east-west water exchange.

**Preliminary Project Benefits:**

1) *What is the total acreage benefited both directly and indirectly?* Approximately 109 acres of marsh would be benefitted directly (98 ac from marsh creation, 11acres from marsh nourishment). Indirect benefits to adjacent marshes are expected due to fetch reduction, partial hydrologic restoration, sediment trapping, and increased SAV growth.

2) *How many acres of wetlands will be protected/created over the project life?* The total net acres protected/created over the project life is approximately 95.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?* The anticipated loss rate reduction throughout the area of direct benefit is estimated to be 50%.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?* No.

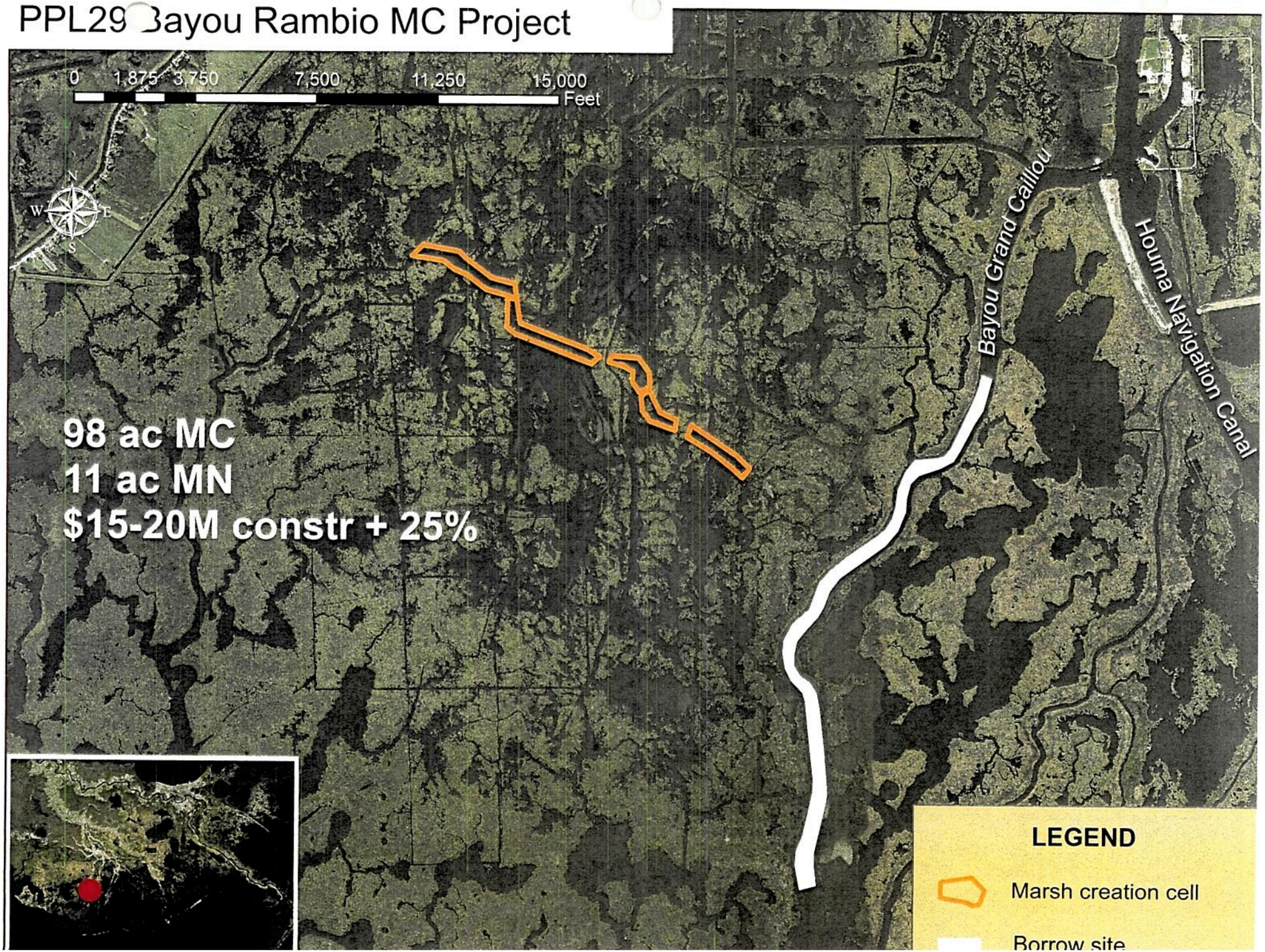
5) *What is the net impact of the project on critical and non-critical infrastructure?* None.

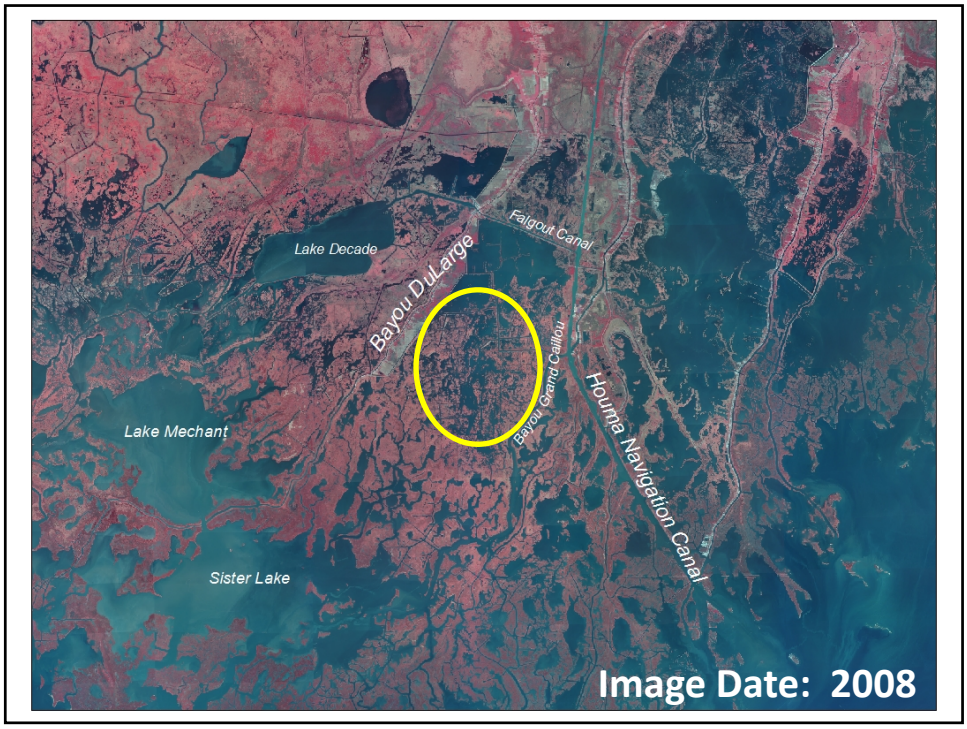
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* The project would help to conserve freshwater introduced through the two water control structures in the Falgout Canal Flood Protection Levee (part of the Morganza to the Gulf system).

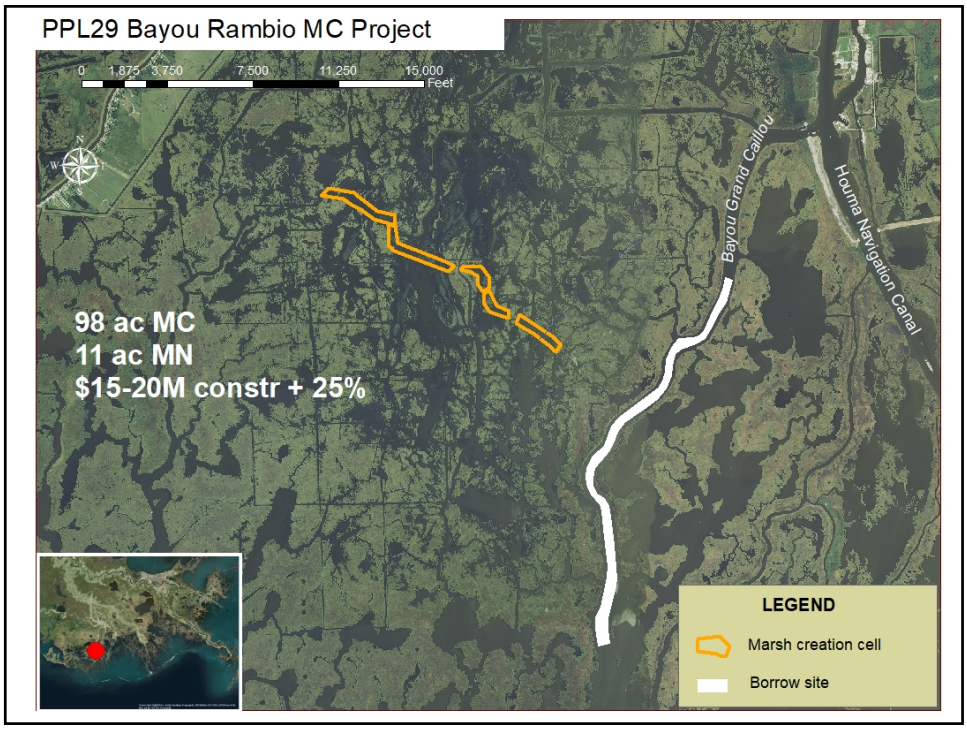
**Preliminary Construction Costs:**
The estimated construction cost including 25% contingency is $15 to 20M.

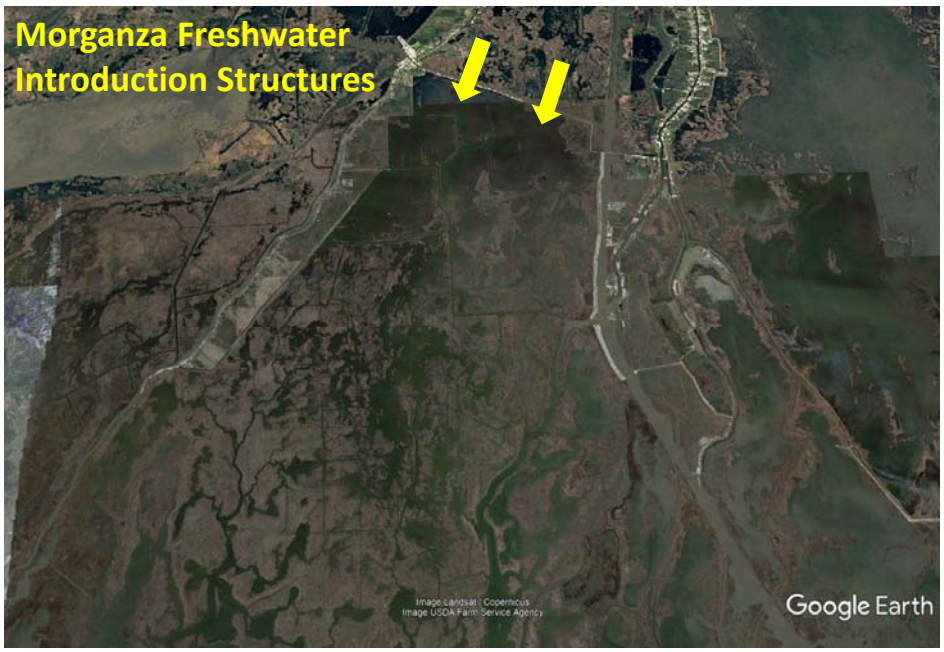
**Preparer(s) of Fact Sheet:**
Ronald Paille: U.S. Fish and Wildlife Service; 337-291-3117

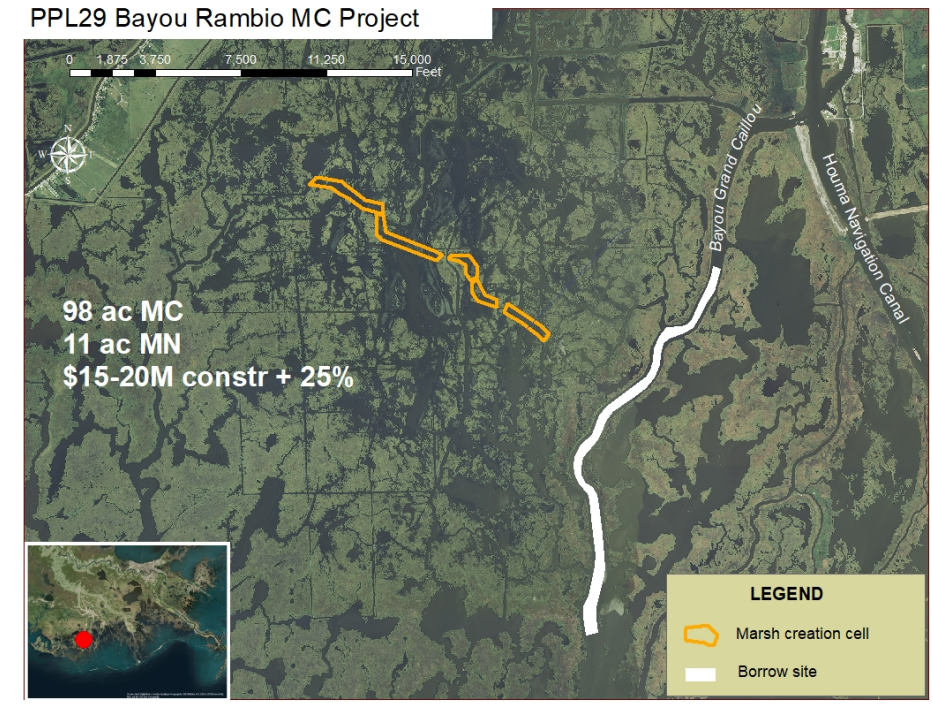
# PPL29 Bayou Rambio MC Project




Lake Decade
Falgout Canal
Bayou DuLarge
Bayou Grand Caillou
Houma Navigation Canal
Lake Mechant
Sister Lake
Image Date: 2008


PPL29 Bayou Rambio MC Project
0 1,875 3,750 7,500 11,250 15,000
Feet
98 ac MC
11 ac MN
$15-20M constr + 25%
Bayou Grand Caillou
Houma Navigation Canal
LEGEND
Marsh creation cell
Borrow site


Morganza Freshwater
Introduction Structures
Image Landsat / Copernicus
Image USDA Farm Service Agency
Google Earth


PPL29 Bayou Rambio MC Project
0 1,875 3,750 7,500 11,250 15,000
Feet
98 ac MC
11 ac MN
$15-20M constr + 25%
Bayou Grand Caillou
Houma Navigation Canal
LEGEND
Marsh creation cell
Borrow site

# Region 3-

# Teche-Vermilion Basin

**Region 3 – Teche-Vermilion Basin**

| | |
|---|---|
| TV-01 | Boston and Oaks Canals-Marsh Area Protection |
| TV-02 | South Humble Canal Shoreline Protection and Marsh Creation |
| TV-03 | North Marsh Restoration (North Increment) |
| TV-04 | Southeast Marsh Island Marsh Creation and Nourishment |
| ~~TV-05~~ | ~~Southeast Freshwater Bayou Marsh Creation, Terraces and Shoreline Protection~~ **Withdrawn** |

TV-01

**PPL 29 PROJECT NOMINEE FACT SHEET**
**February 13, 2018**

# Boston & Oaks Canals – Marsh Area Protection Project

**Louisiana's 2017 Coastal Master Plan**
Shoreline Protection – 03b.SP.06a

**Project Location**
Region 3, Teche/Vermillion Basin, Vermilion Parish

The project encompasses approximately 5,766 acres of saline and brackish marsh, and open water adjacent to Vermilion Bay, approximately 9 miles south of Delcambre, Louisiana in Vermillion Parish.

**Problem**
Aerial photography has been reviewed and land loss in this area can be seen as early as the 1970's. Utilizing the Landsat 1-8 satellite data, we estimate land loss at an alarming rate of 30 acres/yr (-0.52%/yr). Marshes in this area are subject to losses from subsidence, a net sediment deficit, seasonal saltwater intrusion, shoreline erosion, altered hydrology from levees and increased connectivity with the Gulf Intracoastal Waterway (GIWW). The area is immediately adjacent to the GIWW where it is subjected to some of the heaviest boat traffic in the contiguous US. Boat traffic in the GIWW causes erosion within the identified area which results in a net export of material; i.e. "sucking chest wound". Areas to the east and south are subjected to shoreline erosion from daily winds/waves coming from Vermillion Bay as well as erosion during severe weather events.

**Goals**
The project goal is to slow erosion of the interior of the area. We will accomplish this protecting the most vulnerable portion of the perimeter adjacent to Vermilion Bay. In addition, we will construct a fixed crest weir with a boat bay to reduce natural and artificial tidal prisms within the project area.

**Proposed Solution**
We are recommending three structural features to control erosion rates of the area. The first structure is a rock dike is approximately 4,600 LF along the southern perimeter of the area adjacent to Vermilion Bay. The second structure is a rock dike approximately 4,900 LF along the eastern perimeter of the project area adjacent to Vermilion Bay. Both of these structures will help to armor the shoreline that are experiencing the eminent threat of breaching into the interior wetlands. Additionally, gaps in the rock are included to maintain tidal exchange and fish access. The gaps will be protected by an offset section of rock. The third feature is a fixed crest weir with a boat bay within a coalesced natural bayou and man-made canal along the. This will slow the volume coming into and out of the project area as a result of barge traffic within the GIWW. The exact size of this proposed feature will be determined through a hydrologic model.

**Project Benefits:**
The project would result in approximately 473 net acres over the 20-year project life.

**Preliminary Construction Costs:**
The estimated construction cost including 25% contingency is $10-$15M.

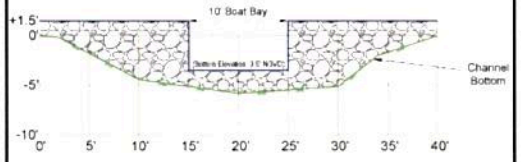
**Preparer(s) of Fact Sheet:**
C.H. Fenstermaker & Associates, LLC 337-237-2200


| Work or Material | Amount |
|---|---|
| Mobilization/Demobilization | $ 1,750,000 |
| Rock Dike Along Vermilion Bay (Sections 1 and 2) | $ 6,966,300 |
| Fixed Crest Weir w/Boat Bay | $ 679,680 |
| Access Dredging | $ 708,334 |
| Settlement Plates | $ 31,500 |
| Construction Surveys | $ 228,466 |
| **Estimated Construction Costs** | **$ 10,364,280** |
| **Estimated Construction +25% Contingency** | **$ 12,955,350** |

## Legend

- Fixed Crest Weir w/Boat Bay (1,300')
- Rock Dike Along Vermilion Bay (Section 1) (4,900')
- Rock Dike Along Vermilion Bay (Section 2) (4,600')
- Boston & Oaks Canals Marsh Area

**TYPICAL**
Fixed Crest Weir With A 10' Boat Bay




**CROSS SECTION VIEW**
Scale 1"=10'

# Boston & Oaks Canals Marsh Area Protection Project Vermilion Parish, LA

12/10/2018

FENSTERMAKER
Client Focused. Technology Driven

0 0.25 0.5 1 1.5 2 Miles

# CWPRRA
# REGIONAL PLANNING TEAM 3
# TECHE-VERMILION BASIN

# BOSTON AND OAKS CANALS MARSH AREA PROTECTION PROJECT

JOHN FORET, PH.D.

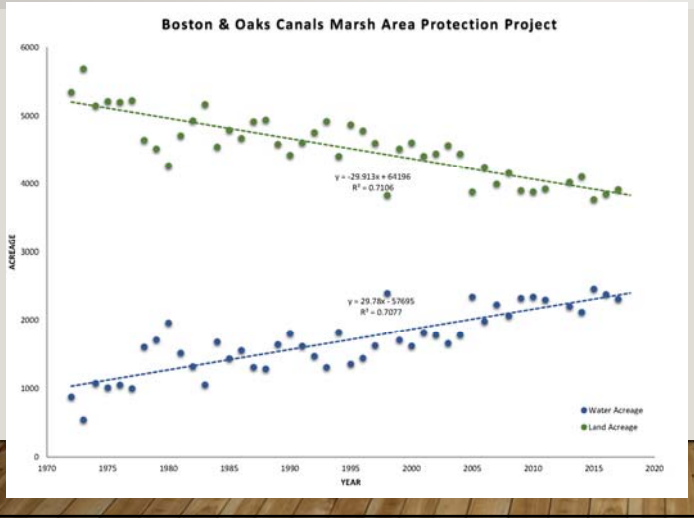
C.H. FENSTERMAKER & ASSOCIATES, L.L.C.

FEBRUARY 13, 2019

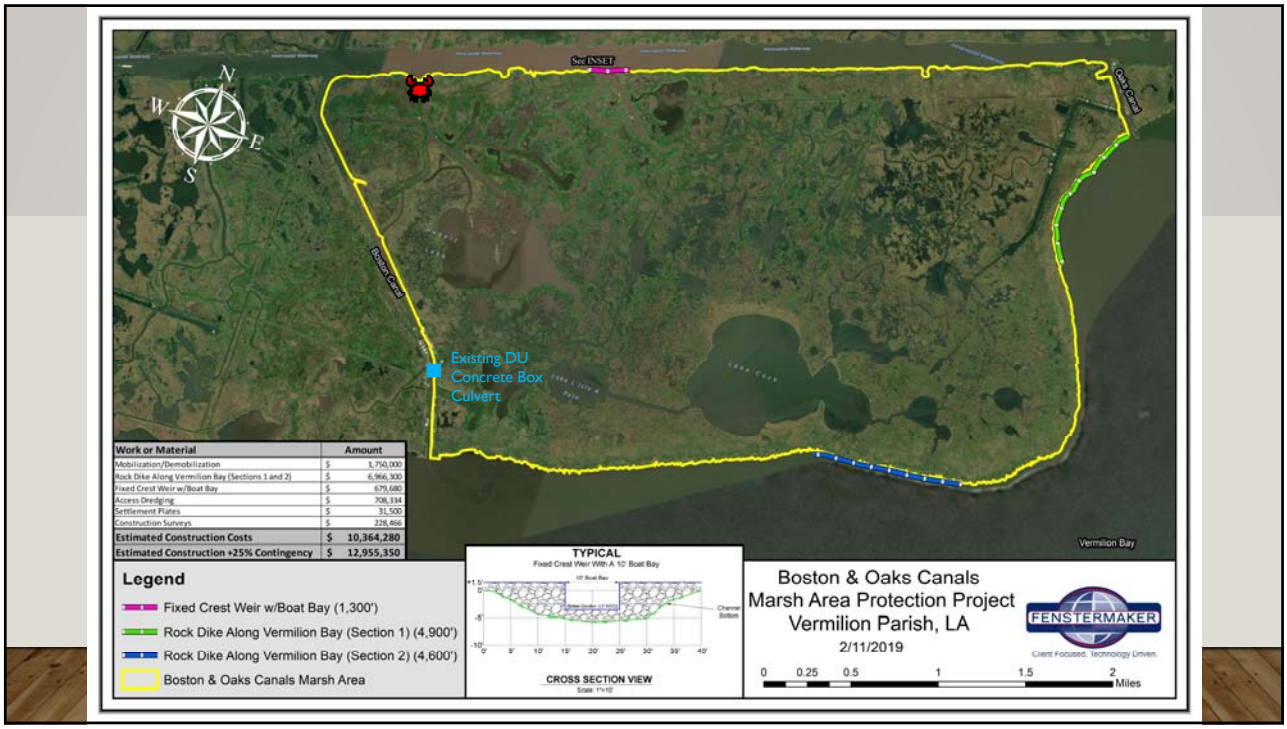
## PROBLEMS?

- Altered hydrology = GIWW construction created tidal connectivity from the north.
- Land loss coupled with connectivity to GIWW has increased connectivity to the south with Vermilion Bay which brings seasonal saltwater intrusion into brackish/intermediate marsh.
- Heavy boat traffic from GIWW causing with net export of material i.e. "sucking chest wound".
- Subsidence > accretion

# LAND VS. WATER




- Derived from Landsat 1-8 Aerial Imagery
  - <20% cloud cover
- Yearly from 1972-2017
  - 1972
    - 14% Water/86% Land
  - 2017
    - 37% Water/64% Land
- Losing approximately 30 acres/year



# COSTS

| Item | Amount | |
|---|---|---|
| Mobilization/Demobilization | $ | 1,750,000 |
| Rock Dike Along Vermilion Bay (Sections 1 and 2) | $ | 6,966,300 |
| Fixed Crest Weir w/Boat Bay | $ | 679,680 |
| Access Dredging | $ | 708,334 |
| Settlement Plates | $ | 31,500 |
| Construction Surveys | $ | 228,466 |
| **Estimated Construction Costs** | **$** | **10,364,280** |
| **Estimated Construction +25% Contingency** | **$** | **12,955,350** |

TV-02

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 2019**

# South Humble Canal SP and MC Project

**Louisiana's 2017 Coastal Master Plan**
Marsh Creation – 004.MC.07

**Project Location**
Region 4, Teche-Vermilion Basin – Vermilion Parish

**Problem**
Like other marshes along the Freshwater Bayou Channel, the project area marshes are impacted by altered hydrology and vessel-induced water exchange and shoreline erosion. As the former spoil banks and marshes along the banks of Freshwater Bayou Channel continue to disintegrate, those problems are increasing. Additionally, storm surge has converted interior marshes to open lakes. As the hydrologic connections between these lakes and the channel become better established, the interior marshes experience increased fetch and wave erosion, increased turbidity, loss of submerged aquatic vegetation, and export of organic soil material.

**Goals**
The project goal is to dampen channel-related hydrologic impacts to interior marshes and lakes by strategically located marsh creation, construction of earthen terraces, and installation of revetment along the east bank of Freshwater Bayou Channel.

**Proposed Solution**
Revetment would be placed along 5,910 feet of the Freshwater Bayou Channel shoreline. Where channel bank openings allow water exchange, 500 feet of foreshore rock dike with two water exchange openings would be constructed to reduce water exchange. Using a small dredge, material from Freshwater Bayou Canal would be dredged to create approximately 35 acres of marsh in 12 semi-confined cells at sites that would block water exchange routes or prevent future hydrologic connections between the channel and interior lakes. To further dampen channel-related water exchange and trap sediment, 6,980 feet of earthen terraces would be installed in interior ponds adjacent to the channel.

**Preliminary Project Benefits:**

1) *What is the total acreage benefited both directly and indirectly?* Approximately 72 acres of marsh would be benefitted directly (35 ac from marsh creation, 6 acres from marsh nourishment, 4 acres created via terracing, and 27 acres protected by rock armoring). Indirect benefits may occur in adjoining open water areas due to sediment trapped, reduced interior marsh shoreline erosion, and restoration of SAV beds.

2) *How many acres of wetlands will be protected/created over the project life?* The total net acres protected/created over the project life is approximately 64 acres (27 ac from rock armor, 33 ac from marsh creation/nourishment, and 4 ac from terracing).

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?* The anticipated loss rate reduction throughout the area of direct benefit is estimated to be 100% for rock armor and 50% for marsh creation and terracing.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?* Yes, the project would help to repair and protect the artificial Freshwater Bayou Channel shoreline.

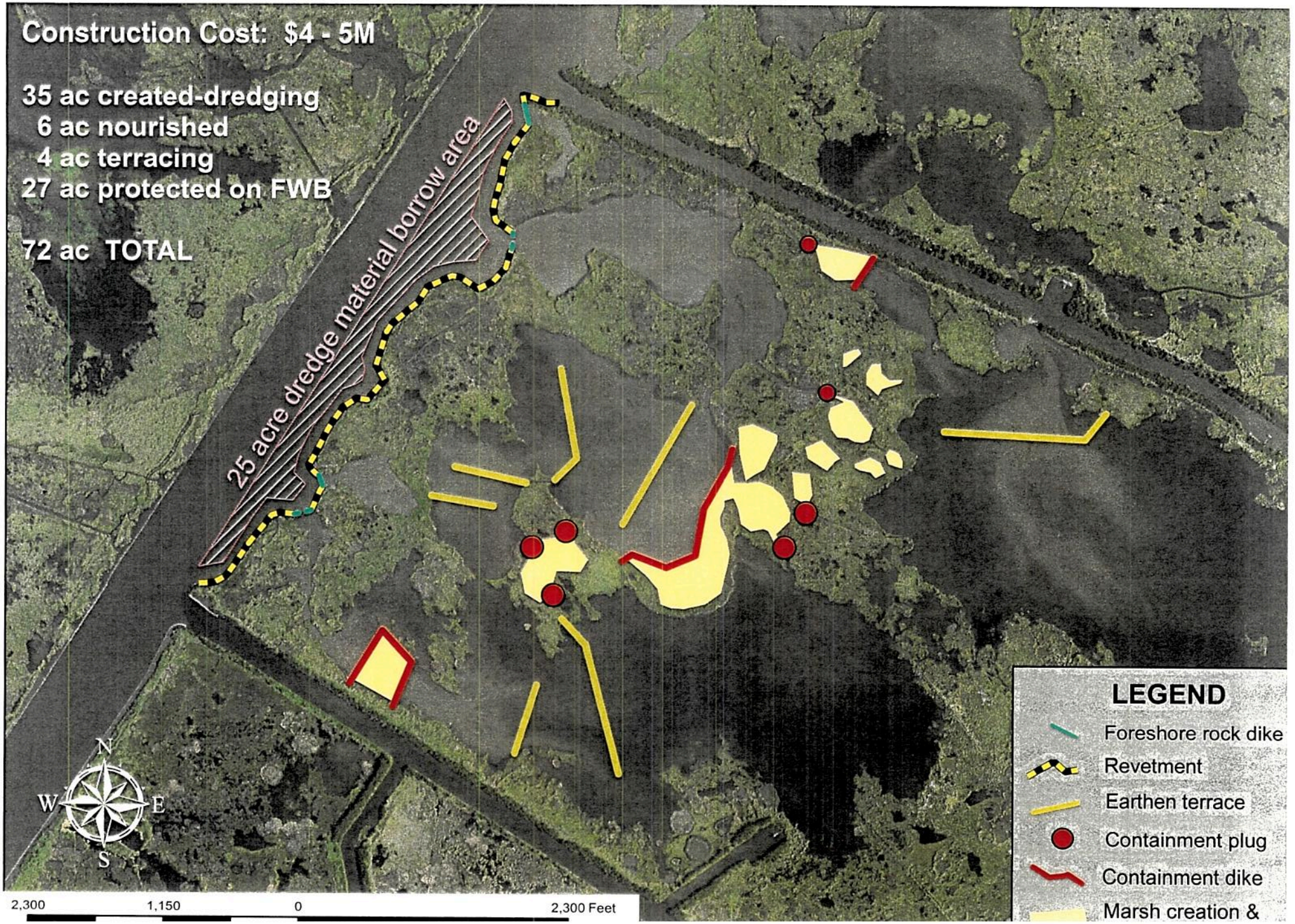
5) *What is the net impact of the project on critical and non-critical infrastructure?* None.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* None.

**Preliminary Construction Costs:**
The estimated construction cost including 25% contingency is $4 to 5M.

**Preparer(s) of Fact Sheet:**
Ronald Paille: U.S. Fish and Wildlife Service; 337-291-3117

# PPL 2 Nominee: South Humble Canal M & SP Project



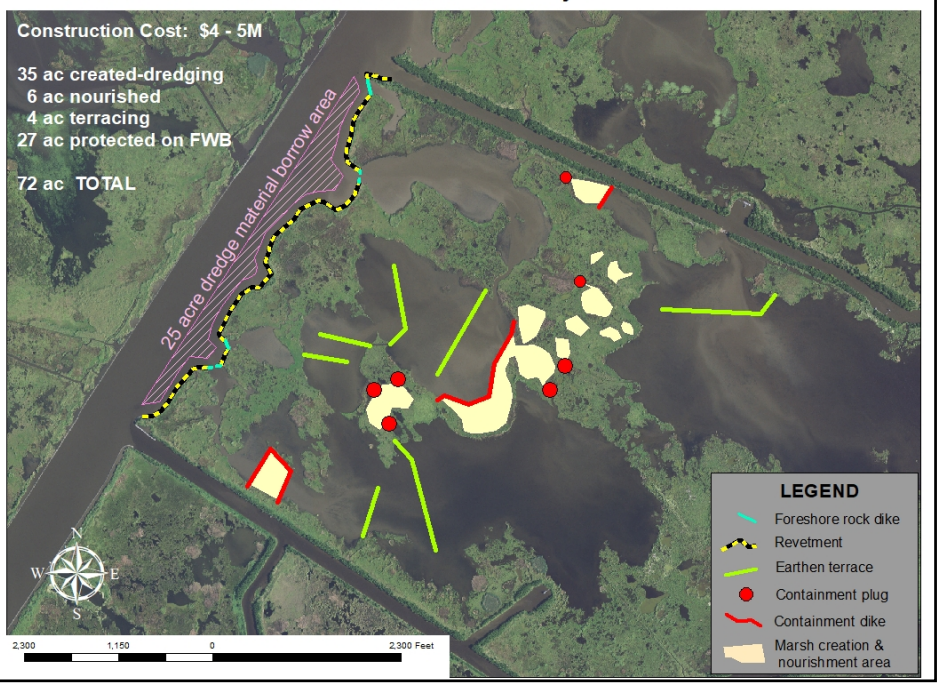
## Vicinity Map
## South Humble Canal Project


2004 (pre-Rita)

2010


2018

**PPL 29 Nominee: South Humble Canal MC & SP Project**



TV-03

**PPL29 PROJECT NOMINEE FACT SHEET**
**February 13, 2019**

**Project Name**
North Marsh Restoration (North Increment)

**Project Location**
Region 3, Teche-Vermilion,Vermilion Parish

**Problem**
Project area wetlands are undergoing losses at -0.86%/year based on 1985 to 2018 USGS data. Marshes in this area are subject to losses from subsidence/sediment deficit, seasonal saltwater intrusion, shoreline erosion, and altered hydrology from levees and increased connectivity with Freshwater Bayou Canal. Interior marshes are fragmenting with erosion and submergence. The result is plant stress reducing marsh productivity. Disturbances to the landscape from hurricanes and herbivory have resulted in the breakup and export of interior marsh. Erosion is leading to higher water turbidity within the interior ponds, increased pond width and depth, and decreasing coverage of submerged aquatic vegetation. It is unlikely these areas will recover unaided. If left to deteriorate, the project vicinity could coalesce with Freshwater Bayou risking conversion of larger interior marsh areas to open water.

**Goals**
The project goal is to create and nourish approximately 239 acres of marsh, protect 5,952 feet of shoreline, and construct approximately 16,100 linear feet of terraces (~16 emergent acres).

**Proposed Solution**
There will be 189 and 50 acres of marsh creation and nourishment, respectively, using dedicated dredging of sediment mined from the Gulf of Mexico and confined disposal. The borrow area would be designed to avoid adverse impacts to the Gulf shoreline and sited to not mine the same area as ME-31. In addition to marsh creation, approximately 5,952 linear feet of foreshore rock dike would be constructed in three segments along Freshwater Bayou Canal to protect the channel bank lines from erosion. The dike segments tie into existing spoil banks to maintain access to existing oil and gas canals and slips. Additionally, three gaps in the rock are included to maintain tidal exchange and fish access. The gaps are protected by an offset section of rock. The rock dike would be constructed similarly to the recent CIAP project on the west side of the channel. Also, 16,100 linear feet of terraces would be constructed. The terrace slopes and crown would be planted with appropriate marsh vegetation. Containment dikes would be gapped.

The project is the first increment of three within a conceptual comprehensive plan to address critical wetland loss on the east side of Freshwater Bayou Canal. The plan uses three restoration techniques that are scaled to be cost competitive given practicalities of options for borrow areas.

**Preliminary Project Benefits**
1) *What is the total acreage benefited both directly and indirectly?*
This total project area is 532 ac (239 MC/MN + 248 Terraces + 45 SP).

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 217 ac of marsh will be protected/created over the project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
The anticipated land loss rate reduction throughout the area of direct benefits will be 50% over the projects life for the marsh creation and terracing features and 100% reduction in shoreline erosion for the foreshore rock dike.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
No.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would have moderate net positive impact to both critical (i.e., Freshwater Bayou Canal) and non-critical (i.e., minor oil and gas facilities) infrastructure. If marshes are left to deteriorate, the project area would eventually coalesce with Freshwater Bayou Canal. Oil and gas companies have facilities and pipelines in this area, which would benefit from an increase in marsh acreage.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would provide a synergistic effect with the Cole's Bayou Marsh Restoration Project (TV-63), the Little Vermilion Bay Sediment Trapping Project (TV-12), Freshwater Bayou Bank Stabilization Project (TV-11), Freshwater Bayou Canal (ME-31), and Surplus Marsh Creation near Freshwater Bayou (ME-0025-SF).

**Considerations**
The proposed project has potential utility/pipeline considerations.

**Preliminary Construction Costs**
The estimated construction cost +25% contingency is $25M-$30M.

**Preparer(s) of Fact Sheet:**
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# North Marsh Restoration (North Increment)

## PPL29 Nominee

USGS
science for a changing world


N

Shoreline Protection *

Marsh Creation/Nourishment *

Terrace Field *

Project Boundary

* denotes proposed features

0.25 0 0.25 0.5 Kilometers

0.25 0 0.25 0.5 Miles

Scale: 1:25,000

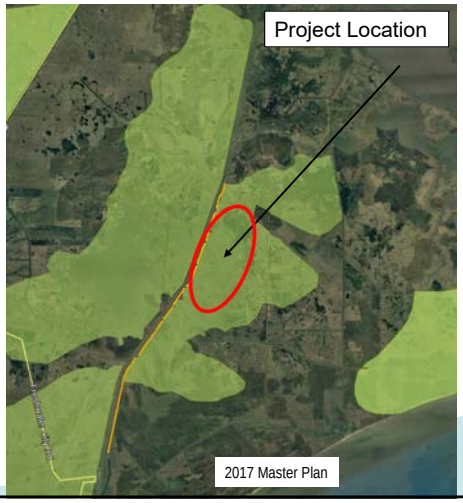
Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal and Oceanic Restoration Branch
Baton Rouge, LA

Image Source:
2017 NAIP

Map ID: 2018-11-0029
Map Date: July 11, 2018

# PPL29 North Marsh Restoration
## (North Increment)

NOAA FISHERIES



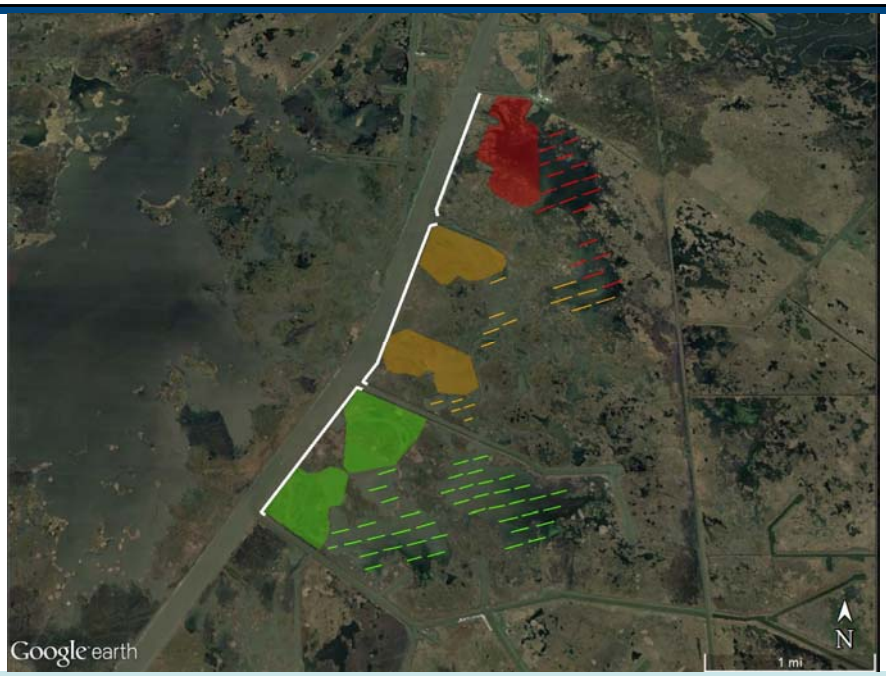

February 13, 2019

US Army Corps of Engineers


NOAA FISHERIES
US Army Corps of Engineers
| Page 2

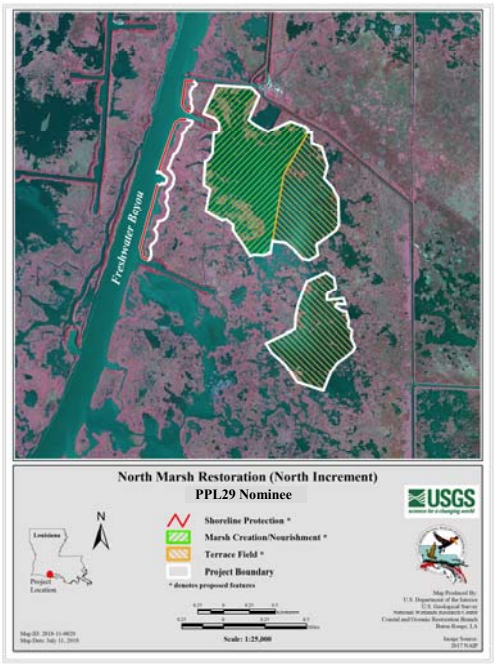

9.2 miles
11.4 miles
Freshwater City Rd
Google earth
6 mi
N


Borrow for 200 ac
Borrow for 100 ac
Freshwater City Rd
5 mi
N




NOAA FISHERIES






NOAA FISHERIES

US Army Corps of Engineers

## Summary

- Marsh Creation = 189 ac
- Marsh Nourishment = 50 ac
- Shoreline Protection = 5,952 ft
- Terracing = 16,100 LF/16 ac
- Net acres = 217 ac
- Gulf of Mexico Borrow
- Construction + 25% Contingency Cost Range: $25 - $30M



TV-04

# PPL29 PROJECT FACT SHEET
**February 13, 2019**

**Project Name**
Southeast Marsh Island Marsh Creation and Nourishment

**Master Plan Strategy**
Southeast Marsh Island (2017 Master Plan 03b.MC.101): Creation of approximately 1,200 acres of marsh on the eastern tip of Marsh Island to create new wetland habitat and restore degraded marsh.

**Project Location**
Region 3, Teche-Vermilion Basin, Iberia Parish, Southeast end of Marsh Island Wildlife Refuge.

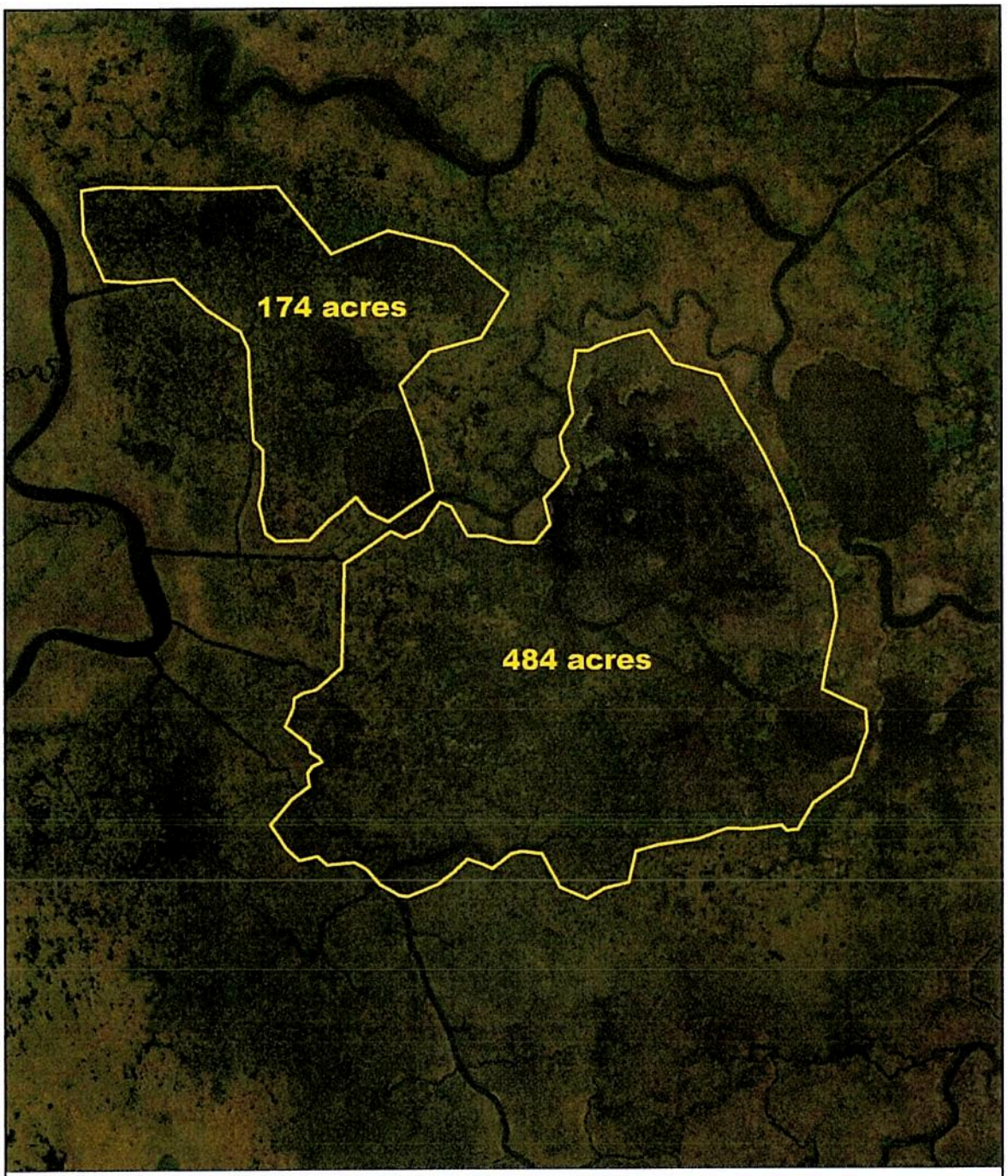
**Problem**
Areas of emergent marsh in Marsh Island interior have been converted to open water, primarily due to hurricane activity and subsidence. Marsh Island has been projected to lose 12.9% of its marsh habitat through 2050. Areas targeted by this project are those with the greatest historic land loss and are proximal to East Cote Blanche Bay.

**Proposed Solution**
The project would utilize hydraulic dredging from an offshore borrow site (potentially the same one used for TV-21) to create/nourish approximately 658 acres of emergent marsh by completely filling in open water and deteriorated areas and use unconfined or limited confinement techniques allowing finer material to flow through the interior marsh areas and provide nourishment. Borrow material will be targeted from the state offshore area to limit water quality impacts and minimize impacts to potential oyster bed areas. This project would complement the constructed Marsh Island Hydrologic Restoration (TV-14) and the East Marsh Island Marsh Creation (TV-21) projects on the east-end of Marsh Island.

**Project Benefits**
Create/nourish approximately 658 acres of emergent marsh using sediment dredged from offshore.

**Project Costs**
The estimated construction cost including 25% contingency is $20M - $25M.

**Preparer(s) of Fact Sheet:**
Adrian Chavarria, EPA; (214) 665-3103; chavarria.adrian@epa.gov
Sharon L. Osowski, Ph.D.; EPA; (214) 665-7506; osowski.sharon@epa.gov




**Southeast Marsh Island Marsh Creation**

*Basemap:Bing Aerial Imagery 2019*

N
W E
S

0 0.1 0.2 0.3 0.4 Miles

Marsh Creation Cells

Dallas, TX
February 5, 2019

# SE Marsh Island Marsh Creation


Coastal Wetlands Planning, Protection and Restoration Act

# 2017 Master Plan Solution

**03b.MC.101 Southeast Marsh Island Marsh Creation :** Creation of approximately 1,200 acres of marsh on the eastern tip of Marsh Island to create new wetland habitat and restore degraded marsh.

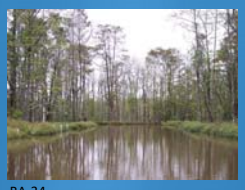
## 2017 Master Plan Consistency & Project Synergy

- 03b.MC.101 Southeast Marsh Island Marsh Creation
- Synergistic with TV-21 & TV-14
- Borrow source for TV-21 can likely be used for this proposal



BA-39


PO-30


BA-34


TE-40

## EPA Region 6 CWPPRA Team Goals

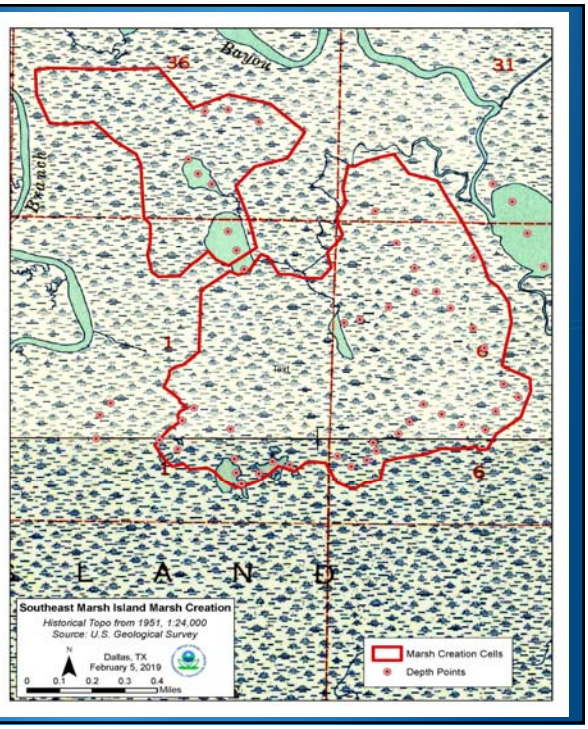
- Protect human health and the environment, including water quality, by restoring coastal wetlands
- Improve local community resilience
- Restore wetland habitats and protect critical infrastructure
- Support stakeholder priorities in synergy with EPA's mission

# Problems

- Subsidence, storm and hurricane activity have increased wetland loss
- Iberia Parish could lose an additional 12% of its land area over the next 50 years and face severe storm surge flood risk (2017 MP).
- 90% or more of Marsh Island would experience 15ft + storm surge and would be lost in 50 years under the medium scenario (2017MP)

# Historical Reference

- 1951 Topo
- Mostly solid marsh



# Project Features

- 2 marsh creation cells
- 658 acres MC/MN
- Containment


# Potential Species & Habitats Protected or Restored

## T & E Species

- Red Knot
- Sea Turtles
- Sturgeon
- Manatee

## Migratory Birds

- American Golden-plover
- Am Oystercatcher (Breeding)
- Black Skimmer (Breeding)
- Many shorebirds

# Project Goals

- Create/nourish 658 acres emergent marsh with sediment from offshore
- Restore degraded wetland habitat
- Provide increased protection from storm surge and flooding
- Marsh Island serves to protect more inland areas in Iberia Parish
- Construction plus 25% contingency = $20-25M

**withdrawn

TV-05

# PPL29 PROJECT FACT SHEET
**February 13, 2019**

**Project Name**
Southeast Freshwater Bayou Marsh Creation, Terraces and Shoreline Protect

**Project Location**
Region 3, Teche/Vermilion Basin, Vermilion Parish, East bank of Freshwater Bayou about 4 miles north of the Freshwater Bayou lock system

**Problem**
The marshes adjacent to Freshwater Bayou have degraded significantly by a combination of natural and man-induced conditions. Hurricanes has scoured out large areas very quickly, but numerous anthropogenic activities and alterations have allowed the area to be much more vulnerable. Various restoration measures have been employed in this area with high degree of success including protection of the bankline of the navigation channel and adjacent marsh creation and hydrologic restoration. The proposed location for this project is one that has not been addressed and continues losses. USGS estimates that the area has a loss rate of about -0.33 %/y and the state estimates subsidence at about 3.8 mm/y. Additionally, that location being adjacent to the navigation channel experiences significant bankline erosion (10-12 ft/y).

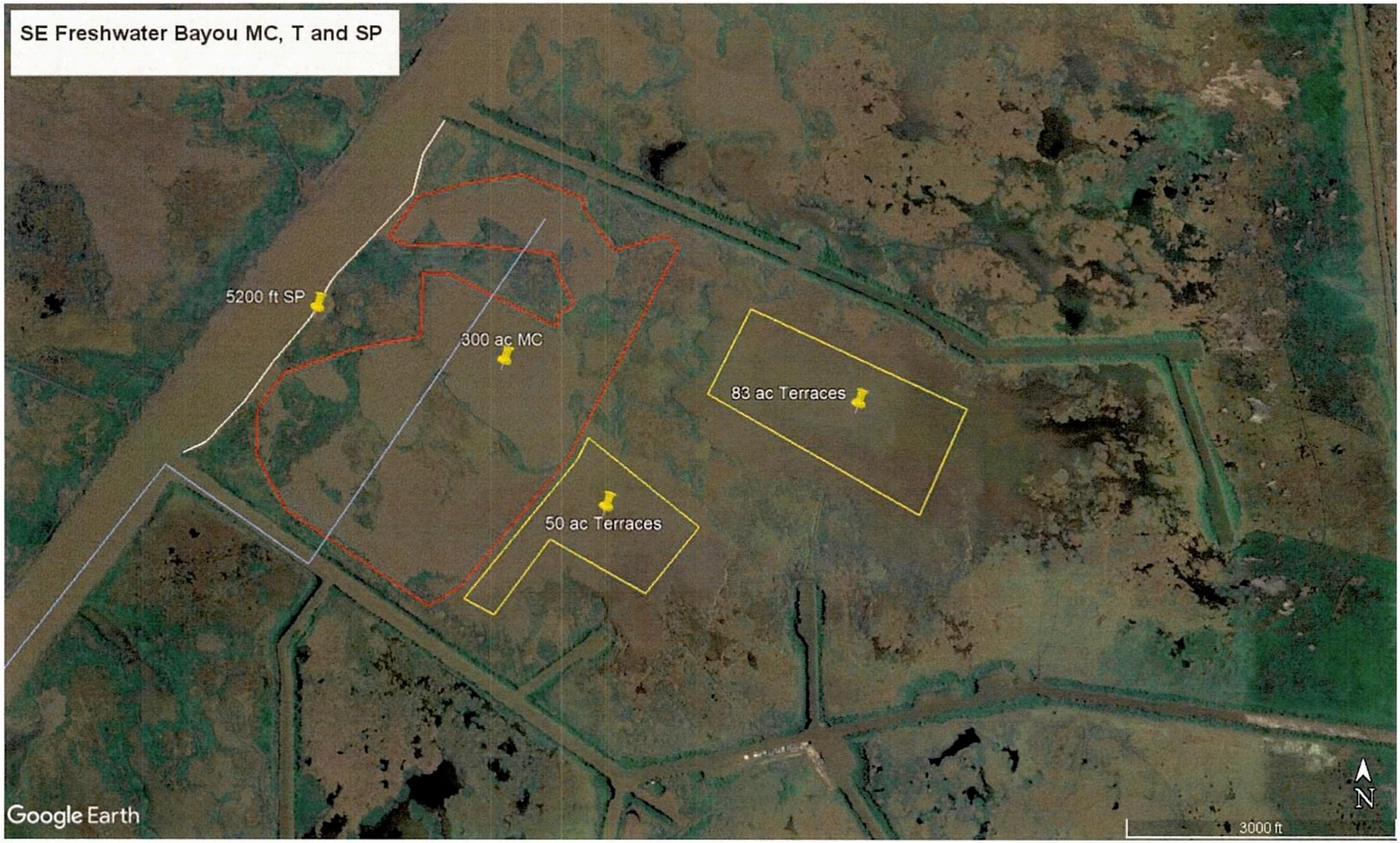
**Goals**
The primary goals of this project are to 1) create/restore approximately 300 acres of marsh habitat in the open water areas via marsh creation/nourishment, 2) reduce fetch and wave energy in open water areas via the construction of terraces and 3) preserve approximately 24 acres of marsh along the bank of the channel through shoreline protection.

**Proposed Solution**
1. Sediments will be hydraulically dredged and pumped via pipeline from a borrow site located in the Gulf of Mexico to create/nourish approximately 300 acres of marsh
2. Approximately 10,000 linear feet (8 acres) of terraces will be constructed.
3. 5200 linear feet of shoreline projection along the Freshwater Bayou Canal.

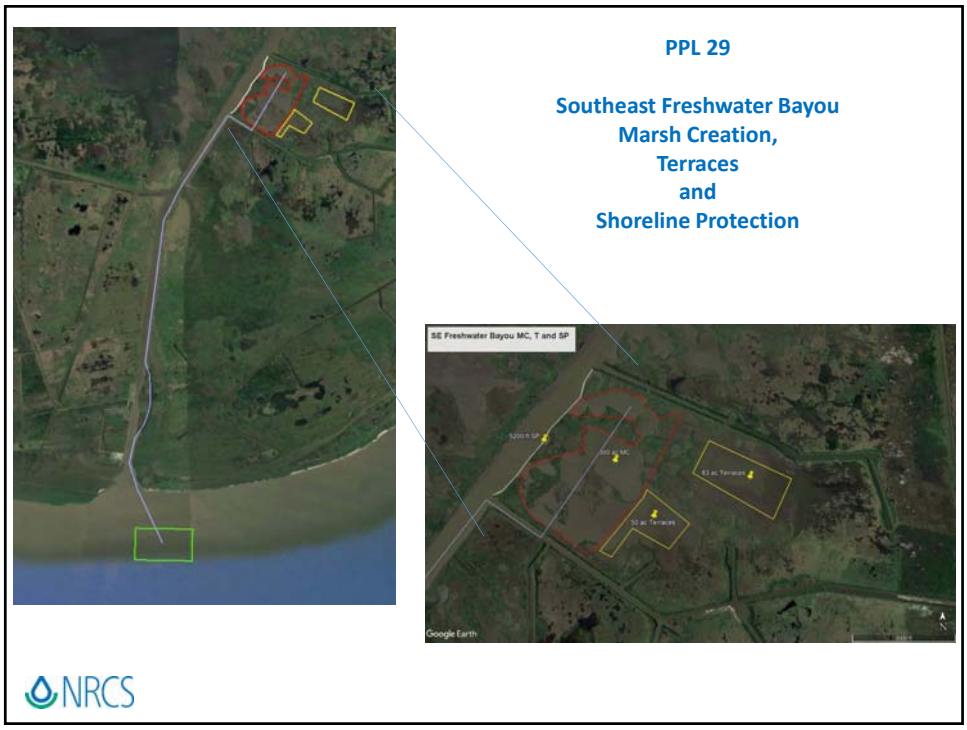
**Preliminary Project Benefits**
Preliminary benefits will be to create/nourish/protect approximately 336 acres of marsh.

**Preliminary Cost**
The estimated cost for construction plus contingency (25%) is $20-25 million.

**Preparer of Fact Sheet**
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov


SE Freshwater Bayou MC, T and SP
5200 ft SP
300 ac MC
83 ac Terraces
50 ac Terraces
Google Earth
N
3000 ft


PPL 29
Southeast Freshwater Bayou Marsh Creation,
Terraces and Shoreline Protection
SE Freshwater Bayou
Natural Resources Conservation Service
Google Earth
20 mi
N
NRCS


PPL 29
Southeast Freshwater Bayou
Marsh Creation,
Terraces
and
Shoreline Protection
SE Freshwater Bayou MC, T and SP
Google Earth
NRCS


**PPL 29**

**Southeast Freshwater Bayou Marsh Creation, Terraces and Shoreline Protection**

Project Objectives:
Create marsh
Shoreline protection
Reduce expansion/erosion w/ terracing
Improve habitat/edge

Features/Benefits:
300 acres of marsh creation
10,000 linear ft of terraces (8 acres)
5,200 ln ft shoreline protection
(12 ft per year = 28 acres)

Cost:
Construction + 25% = $20-25M

NRCS