CWPPRA

PPL 33 Regional Planning Team (RPT) Meetings

Region 3 - Final Proposal Package

Coastal Wetlands Planning Protection & Restoration Act

33rd Priority Project List

Region 3

Regional Planning Team Meeting

Lead:
Ron Boustany, NRCS

February 8, 2023

Program Updates

- **Great News! -** 2022 budget reconciliation, return of funds, and annual Sport Fish Trust Fund accruals resulted in approximately **$212M** available for Phase 1 and 2 authorizations in December/January
  - CWPPRA Agencies worked collaboratively to identify the **most impactful projects** and reduce project backlog
- In January, the CWPPRA Task Force approved:
  - 4 projects for Phase 2
    - Bayou Cane Marsh Creation (PO-181)
    - East Delacroix Marsh Creation and Terracing (BS-37)
    - Grand Bayou Ridge and Marsh Restoration (BA-217)
    - Island Road Marsh Creation and Nourishment (TE-117)
  - 2 projects for Phase 1
    - Yscloskey Marsh Creation
    - Northwest Little Lake Marsh Creation
  - A portion of the total available funds were retained for future priority projects and consideration of potential bid overruns to construct Phase 2-approved projects

Program Updates

- Criteria Considered for Selecting Impactful Projects:
  - **Cost Effectiveness** - benefit/cost
  - **Synergy** - interaction with other restoration projects
  - **Critical Area of Need** - land loss (current, synoptic, historic)
  - **Landbridge Function or Structural Framework**
  - **Critical Infrastructure**
  - Geography - Basin, Political Boundary, Distribution
  - Borrow Area
  - Threatened or Endangered Species
  - Willing Landowners and Stakeholder Support
  - Partnerships
  - Other considerations - e.g., Oysters, Pipelines/Utilities, O&M, etc.

Announcements

- PPL 33 RPT meetings to accept project nominees:
  - Region IV - Feb. 7, 2023, 9:30 am
  - Region III - Feb. 8, 2023, 9:30 am
  - Regions II and I - Feb. 9, 2023, 9:30 am

Region 3 Parishes

- Eligible parishes for basins in Region 3 include:

- Terrebonne Basin
  - **St. Mary**
  - **Terrebonne**
  - **Assumption**
  - **Lafourche**
  - **Iberia**
  - **St. Martin**
- Atchafalaya Basin
  - **St. Mary**
  - **Iberia**
  - **Terrebonne**
- Teche-Vermilion Basin
  - **St. Mary**
  - **Iberia**
  - **Vermilion**

RPT Meetings

- Project proposals should be consistent with the state's **2017 and/or 2023 (draft) Coastal Master Plan**.
- A project can only be nominated in one basin (except for coastwide projects)
  - Proposals that cross multiple basins shall be nominated in the basin with majority area of project influence.
- If similar projects are proposed within the same area, the RPT Lead will call for a break for RPT representatives to discuss and determine the best path forward.

RPT Meetings

- All proposals submitted in advance will go in the order indicated on the agenda.
- A request for other proposals will occur after presentations for proposals submitted in advance.
- Limit project proposal presentations to 5 minutes.
- Public comments on project proposals will be accepted verbally during the RPT meetings and in writing by **February 16, 2023**.
- Limit comments and questions today to PPL 33 proposals and process.

Coastwide Projects

- Proposes a proven technique applicable across the coast (e.g., vegetative planting)
- Can be nominated at any RPT meeting
- Engineering/Environmental Workgroups will validate that projects fit CWPPRA SOP criteria
- All coastal parishes & agencies will vote on selection of up to one coastwide nominee

Demonstration Projects

- Demonstrate a restoration technique or material that can be transferred to other areas of the coastal zone
- Engineering/Environmental Workgroups will validate that demos fit CWPPRA SOP criteria
- All coastal parishes & agencies will vote on selection of up to 6 demonstration projects
- Previous candidates must be ***re-nominated*** for PPL 33

Coastwide Vote

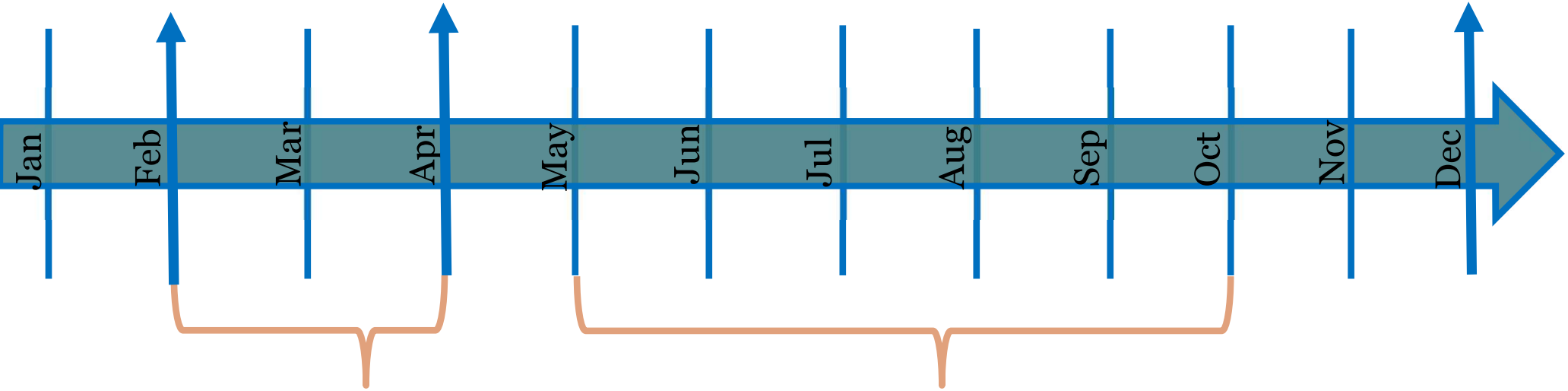
- An electronic vote will be held **23 February** to select projects, with the number of projects per basin determined by loss rate (i.e., basins with the highest loss have the most projects):
  - Barataria: 4
  - Terrebonne: 4
  - Breton Sound: 3
  - Pontchartrain: 3
  - Mermentau: 2
  - Calcasieu/Sabine: 2
  - Teche/Vermilion: 2
  - Atchafalaya: 1
  - Coastwide: 1
  - **22 total nominees** (plus up to 6 demo projects)

PPL Timeline

Coastwide Vote (Feb)
- 22 nominees, up to 6 demos

TC Mtg (April)
- 10 candidates
- up to 3 demos

TC Mtg (December)
- Recommend up to 4 projects for Phase 1 funding



March - April
- Agencies assigned to projects
- Fact sheets developed
- Workgroup review
- Workgroups may recommend no demos move forward

May - October
- Site visits
- Workgroup evaluations

Written Comments

Send written comments on proposals presented today to the CWPPRA program manager by **16 February 2023**

Kaitlyn Richard
U.S. Army Corps of Engineers
CEMVN-PM-R, RM 331
7400 Leake Avenue
New Orleans, LA 70118

Email: Kaitlyn.M.Carriere@usace.army.mil

(this information has been provided via CWPPRA Newsflash and posted on the USACE CWPPRA webpage)

For more info, please visit lacoast.gov or contact Elizabeth Jarrell at Elizabeth.Jarrell@usace.army.mil

Region 3

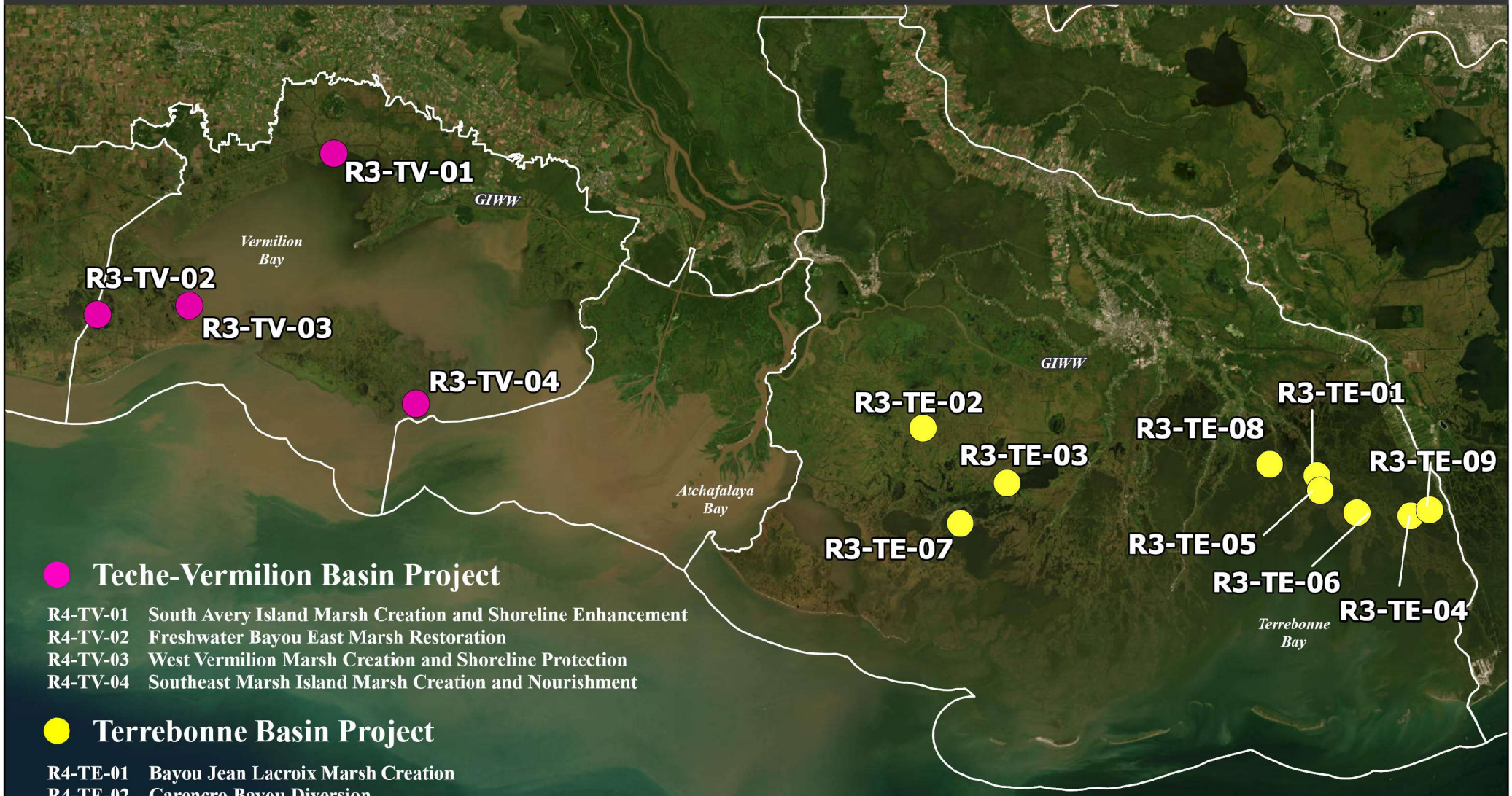
Teche-Vermilion Basin

Project ID	Agency	Project Name
R3, TV-01	NRCS	South Avery Island Marsh Creation and Shoreline Enhancement
R3, TV-02	NRCS	Freshwater Bayou East Marsh Restoration
R3, TV-03	EPA	West Vermilion Marsh Creation and Shoreline Protection
R3, TV-04	EPA	Southeast Marsh Island Marsh Creation and Nourishment

Terrebonne Basin

Project ID	Agency	Project Name
R3, TE-01	NRCS	Bayou Jean Lacroix Marsh Creation
R3, TE-02	NRCS	Carencro Bayou Diversion
R3, TE-03	NMFS	West Lake De Cade Marsh Creation
R3, TE-04	NMFS	Sevin West Landbridge Creation
R3, TE-05	NMFS	West Bayou Jean Lacroix Landridge Creation
R3, TE-06	EPA	Lake Billiot and Eastern Terrebonne Landbridge Restoration
R3, TE-07	NRCS	Lake Pagie Small Scale Marsh Restoration
R3, TE-08	FWS	Bayou Barre MC (Eastern Terrebonne Landbridge Increment 1)
R3, TE-09	FWS	Eastern Terrebonne Landbrige Marsh Creation Increment 1

PPL33 Region 3 Nominated Projects



Teche-Vermilion Basin Project

R4-TV-01 South Avery Island Marsh Creation and Shoreline Enhancement
R4-TV-02 Freshwater Bayou East Marsh Restoration
R4-TV-03 West Vermilion Marsh Creation and Shoreline Protection
R4-TV-04 Southeast Marsh Island Marsh Creation and Nourishment

Terrebonne Basin Project

R4-TE-01 Bayou Jean Lacroix Marsh Creation
R4-TE-02 Carencro Bayou Diversion
R4-TE-03 West Lake De Cade Marsh Creation
R4-TE-04 Sevin West Landbridge Creation
R4-TE-05 West Bayou Jean Lacroix Landbridge Creation
R4-TE-06 Lake Billiot and Eastern Terrebonne Landbridge Restoration
R4-TE-07 Lake Pagie Small Scale Marsh Restoration
R4-TE-08 Bayou Barre Marsh Creation
R4-TE-09 Eastern Terrebonne Landbridge Marsh Creation Increment 1

Coastwide Project

CW-01 Marsh Creation Containment
CW-02 Coastwide Small/Micro Dredge Project

Demonstration Project

DEMO-01 Louisiana Coastal Restoration 2023 Reefbud Project
DEMO-02 AquaRockBags

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Miles

Region 3 PPL 33
Regional Planning Team Meeting
Morgan City, LA
February 08, 2023
Background Image:
ESRI Basemap layer: Earthstar Geographics Imagery

PPL 33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
South Avery Island Marsh Creation and Shoreline Enhancement

Project Location
Region 3, Teche-Vermilion Basin, located on the south side of the Intracoastal Canal between the Avery Canal and Weeks Bay, immediately south of Avery Island.

Problem
The project would restore Vermilion Bay shoreline and adjacent marsh to offset levels of historic and ongoing wetland loss. USGS estimates land loss in this region to be -0.01%/y but recent aerial photography analysis of 2016-2020 indicates a substantial loss of land in the project area from recent hurricanes. Hydrologic isolation (inundation) coupled with 2020 hurricane induced losses have resulted in substantial interior marsh breakup and removal. Shoreline retreat since 1998 has generally been relatively mild and steady from both the GIWW side from the interior and the bay side, but, more recently, threatens to coalesce Vermilion Bay into the interior lakes and the GIWW. Recent hurricanes have exposed a vulnerability in this area that could result in accelerated shoreline loss and interior marsh loss.

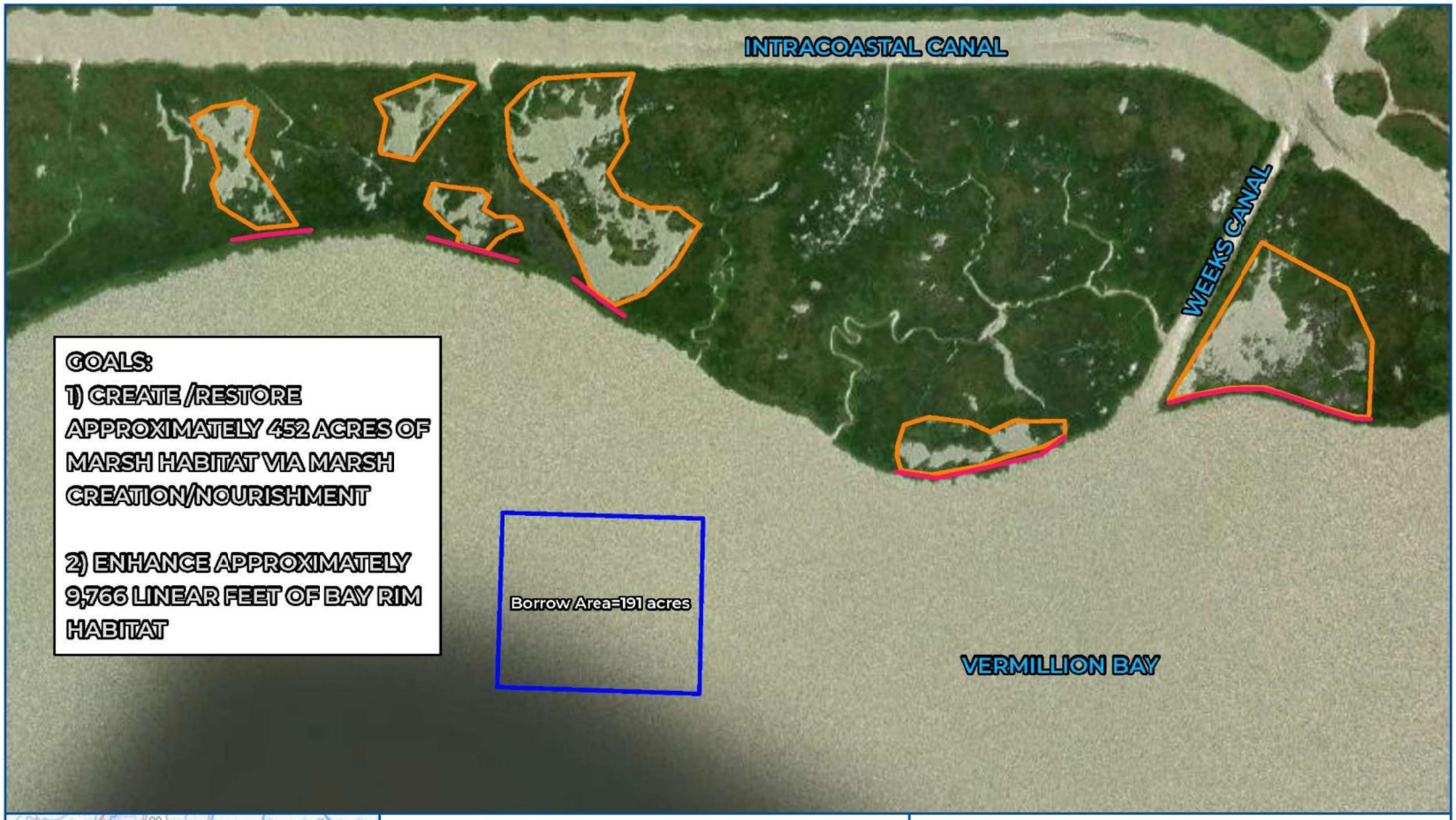
Goals
Restore approximately 376 acres of coastal marsh habitat and enhance approximately 7,400 linear feet of bay rim habitat.

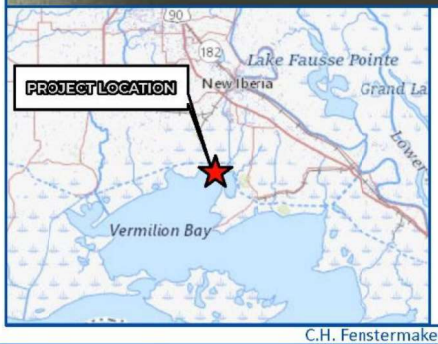
Proposed Solution
Approximately 255 acres of marsh will be created, and 197 acres of marsh will be nourished (452 acres total) using sediment dredged from Vermilion Bay. The marsh creation cells will be mostly unconfined; all outflow channels will be temporarily plugged to minimize outflow of dredge material. Portions of the shoreline where the marsh creation cells run parallel to the bay, the bankline will be enhanced mainly by construction of 15 ft top-width earthen berm sections. Upon completion, the earthen plugs will be degraded as necessary to re-establish hydrologic connectivity with adjacent wetlands, but the bay-side shoreline enhancement sections will be left intact to strengthen the bay rim. The earthen enhancement areas will be planted.

Project Benefits
Approximately 452 acres would be benefited include 255 acres of marsh creation and 197 acres of marsh nourishment.

Preliminary Construction Costs: The construction cost range is $15-20M.

Preparer of Fact Sheet:
John D. Foret, Ph.D., Rainey Conservation Alliance, (337) 322-1701; jdforet@fenstermaker.com
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@usda.gov
Jackie Jones, NRCS, Engineer, (337) 291-3055, Jacqueline.jones@usda.gov





0 0.5 1 Miles

Borrow Area

Marsh Creation Area

Shoreline Enhancement

N W E S

SOUTH AVERY ISLAND MARSH CREATION & SHORLINE ENHANCEMENT

IBERIA PARISH, LOUISIANA

REVISED BY: ETB
DATE: 1/19/2022
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C.H. Fenstermaker & Associates, L.L.C. 135 Regency Sq. Lafayette, LA 70508, Ph. 337-237-2200 Fax. 337-232-3299 www.fenstermaker.com

South Avery Island Marsh Creation and Shoreline Enhancement

CWPPRA Project Priority List 33, Region 3 Nomination

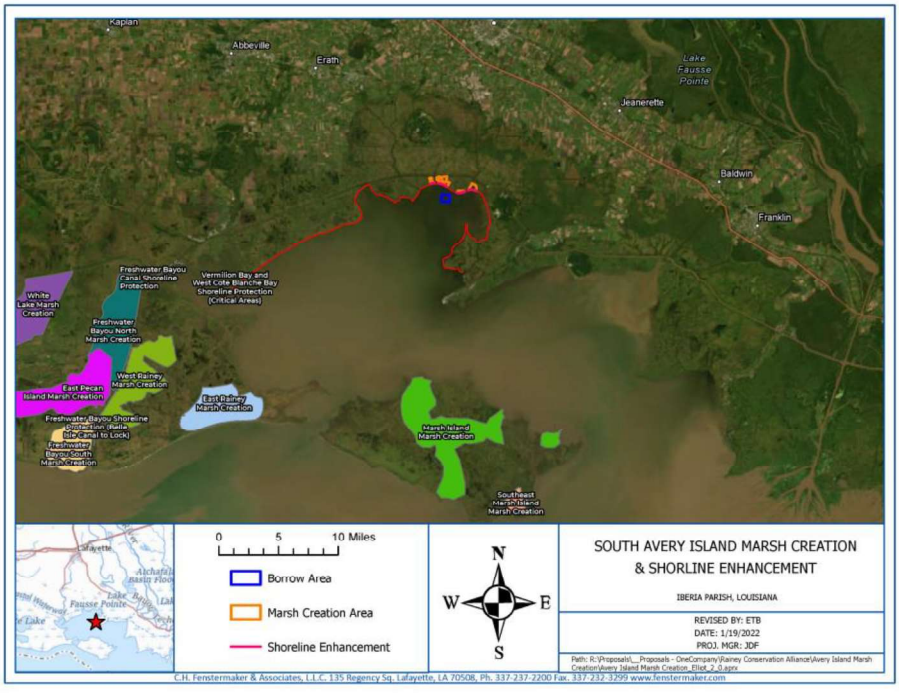
February 8, 2023

1

South Avery Island Shoreline Protection and Marsh Restoration Project

Louisiana's 2017 Coastal Mater Plan
Shoreline Protection: 03b.SP.06a

Project Location:
Region 3, Teche-Vermilion Basin, located on the south side of the Intracoastal Canal between the Avery Canal and Weeks Bay, immediately south of Avery Island.



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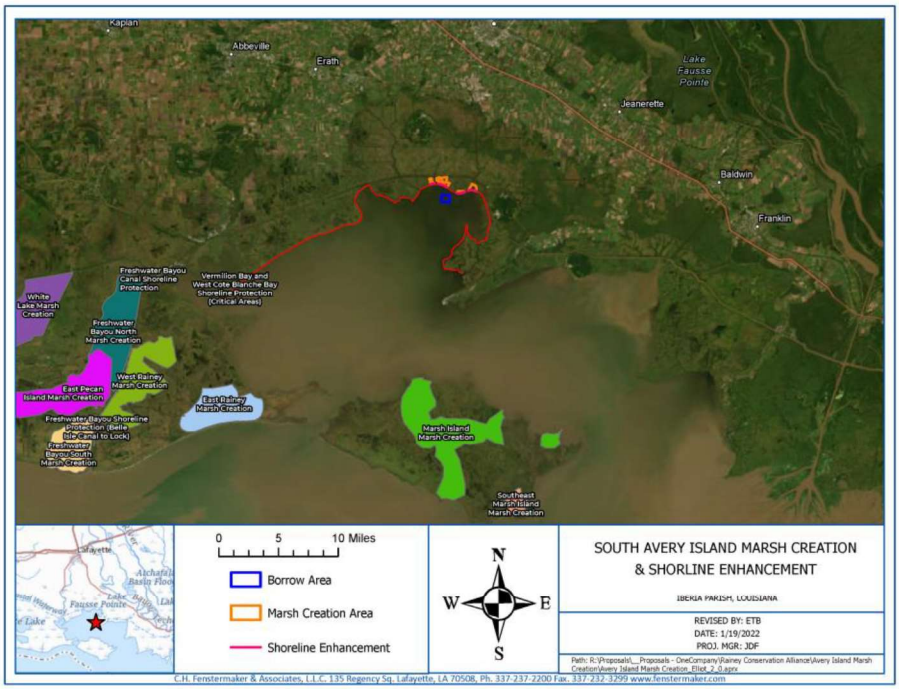
Problem:
The project would restore Vermilion Bay shoreline and adjacent marsh to offset levels of historic and ongoing wetland loss. USGS estimates land loss in this region to be -0.01%/y but recent aerial photography analysis of 2016-2020 indicates a substantial loss of land in the project area from recent hurricanes. Hydrologic isolation (inundation) coupled with 2020 hurricane induced losses have resulted in interior marsh breakup and removal. Shoreline retreat since 1998 has generally been relatively mild and steady from both the GIWW side from the interior and the bay side, but, more recently, threatens to coalesce Vermilion Bay into the interior lakes and the GIWW.



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Goals:
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approximately
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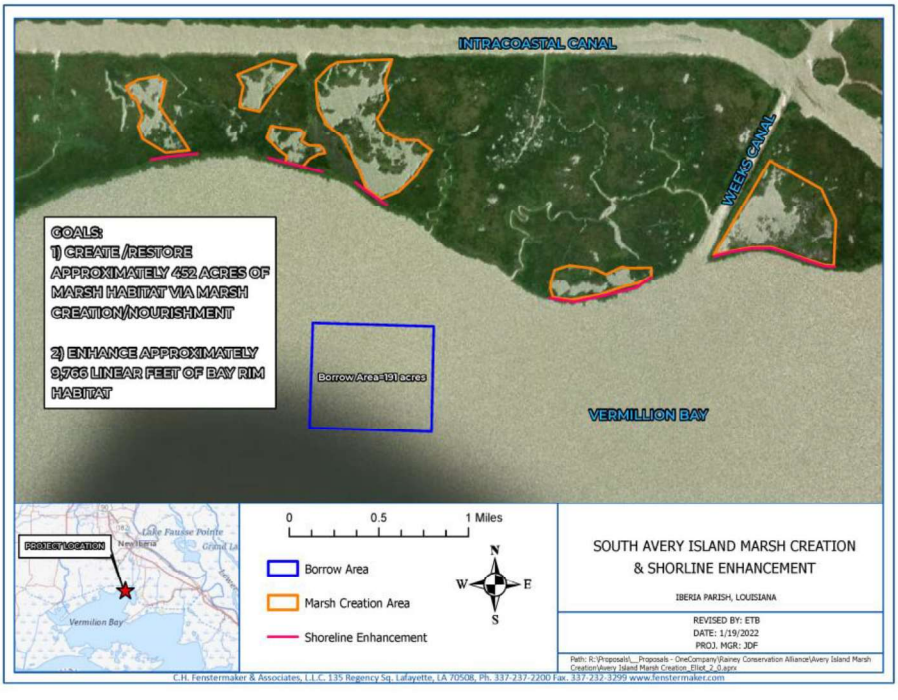

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Preliminary Construction Costs:
The cost plus 20% contingency range is $15-$20 million (452 acres).

Preparers of the Fact Sheet:
John D. Foret, Ph.D., Rainey Conservation Alliance, (337) 322.1701; jdforet@fenstermaker.com

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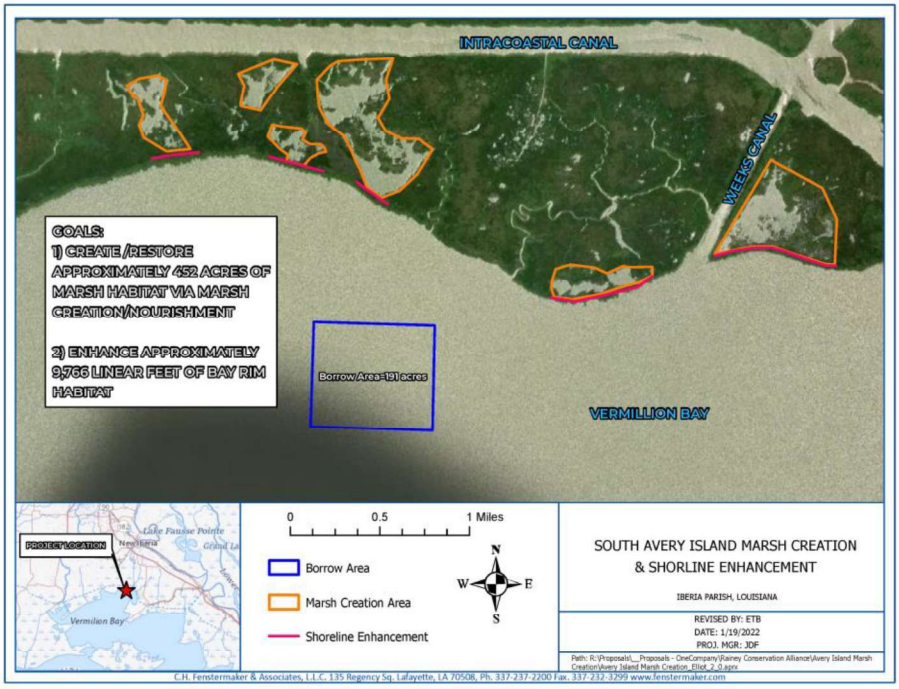

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PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
Freshwater Bayou East Marsh Restoration

Project Location
Region 3, Teche/Vermilion Basin, Vermilion Parish, East bank of Freshwater Bayou about 4-6 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 terracing. 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 -0.62 %/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 (12-15 ft/y).

Goals
The primary goals of this project are to 1) create/restore approximately 166 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 106 acres of marsh along the bank of the channel through shoreline protection and help stabilize interior marsh.

Proposed Solution
1. Sediments will be hydraulically dredged and pumped via pipeline from a borrow site located in the Freshwater Bayou Canal to create/nourish approximately 166 acres of marsh.
2. Approximately 19,810 linear feet of terraces will be constructed.
3. 18,314 linear feet of shoreline projection along the Freshwater Bayou Canal.

Project Benefits
The project is expected to restore approximately 284 acres of marsh.

Preliminary Cost
The construction cost range is $25-30 million.

Preparer(s) of Fact Sheet
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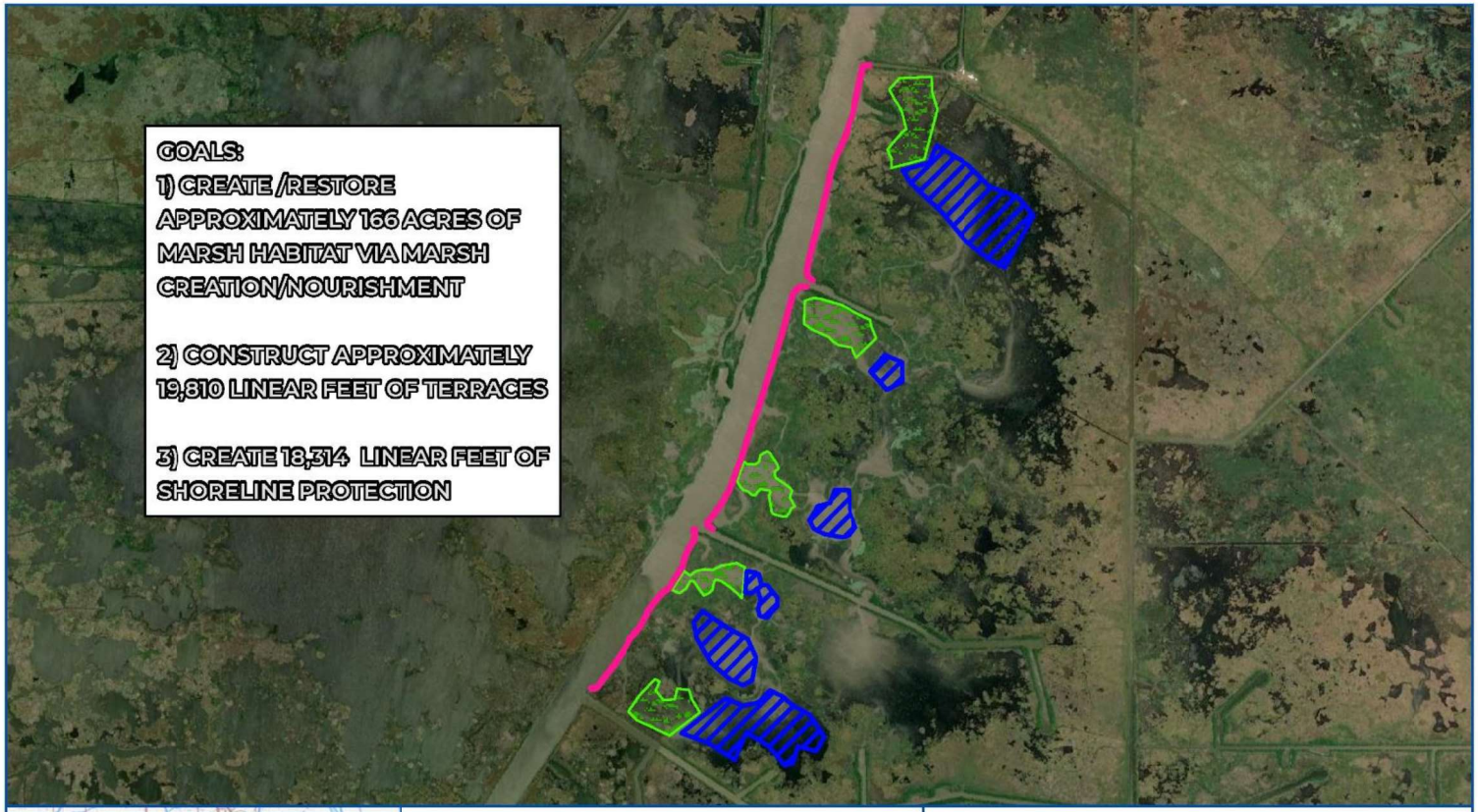
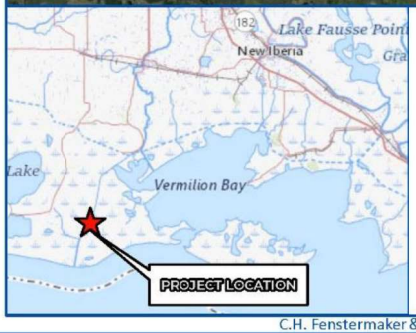
Ron Boustany, NRCS, Biologist; (337) 291-3067, ron.boustany@usda.gov
Eric Whitney, NRCS, Engineer; (337) 291-3069, eric.whitney@usda.gov





0 0.5 1 Miles

Marsh Creation Area

Terraces

Shoreline Protection

N W E S

FRESHWATER BAYOU EAST MARSH RESTORATION

IBERIA PARISH, LOUISIANA

REVISED BY: ETB
DATE: 1/31/2023
PROJ. MGR: JDF

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Freshwater Bayou East Marsh Restoration Project

CWPPRA Project Priority List 33, Region 3 Nomination

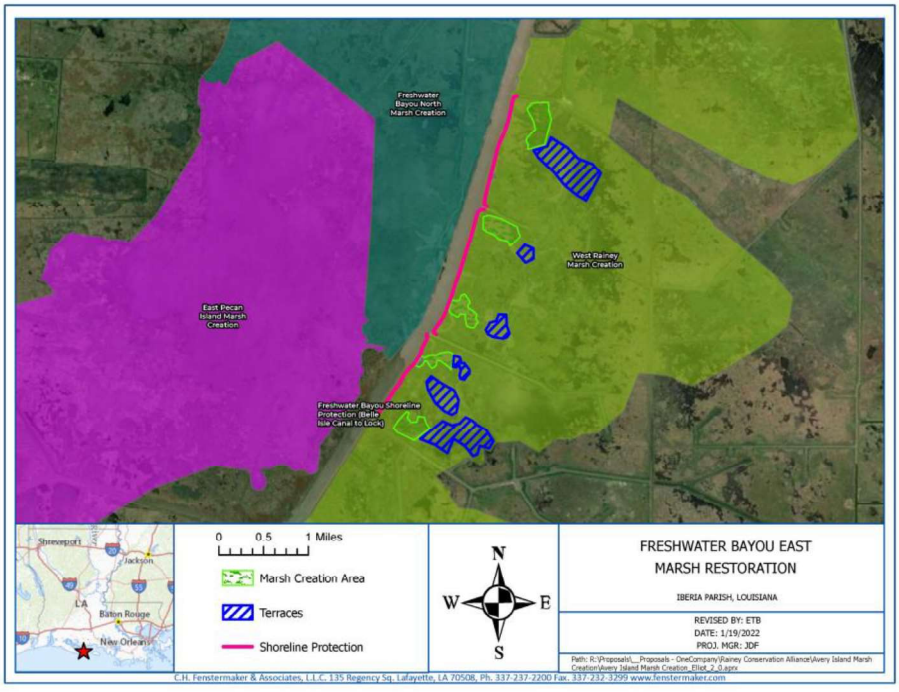
February 8, 2023

1

Freshwater Bayou East Marsh Restoration Project

Louisiana's 2017 Coastal Mater Plan

Project Location:
Region 3, Teche-Vermilion Basin, located on East bank of Freshwater Bayou about 4-6 miles north of the Freshwater Bayou lock system



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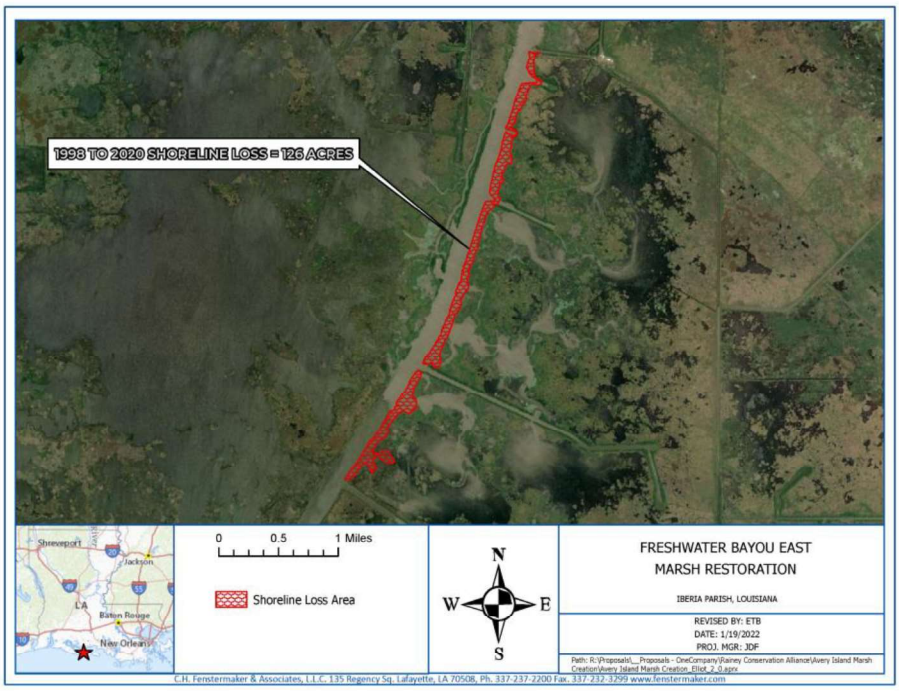
Problem:
The marshes adjacent to FWB have degraded significantly by a combination of natural and man-induced conditions. Hurricanes has scoured out large areas very quickly, but numerous anthropogenic activities and alterations have allowed the area to be much more vulnerable. The proposed location for this project is one that has not been addressed by previous restoration measures and continues losses. USGS estimates that the area has a loss rate of about -0.62 %/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 (12-15 ft/y).



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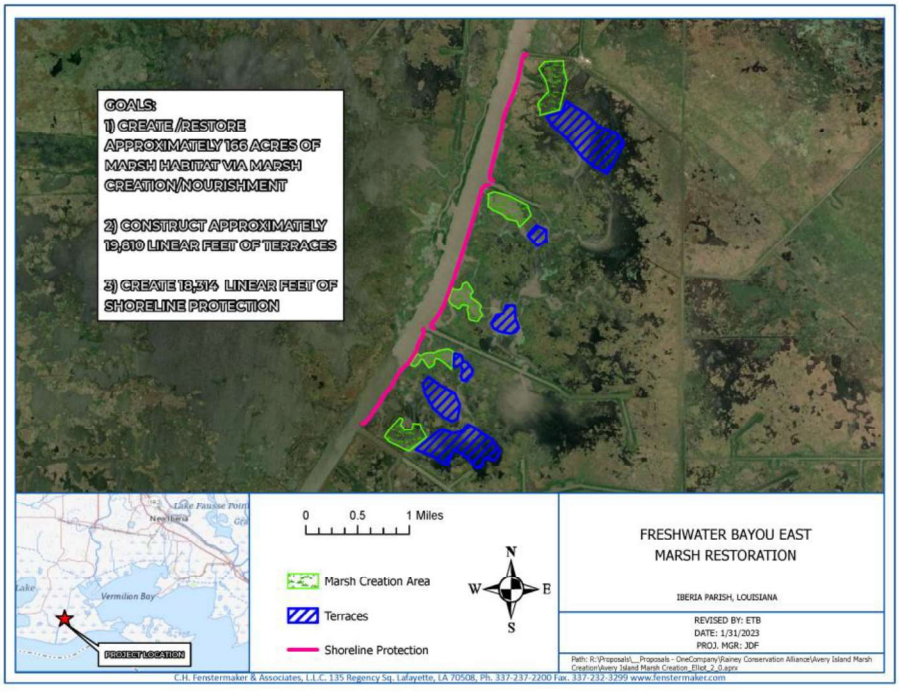
Goals: Create/restore approximately 166 acres of marsh habitat in the open water areas via marsh creation/nourishment, reduce fetch and wave energy in open water areas via the construction of terraces, and preserve approximately 106 acres of marsh along the bank of the channel through shoreline protection and help stabilize interior marsh.
Proposed Solution: Sediments will be hydraulically dredged and pumped via pipeline from a borrow site located in the Freshwater Bayou Canal to create/nourish approximately 166 acres of marsh. Construct approximately 19,810 linear feet of terraces. Construct 18,314 linear feet of shoreline projection along the Freshwater Bayou Canal.



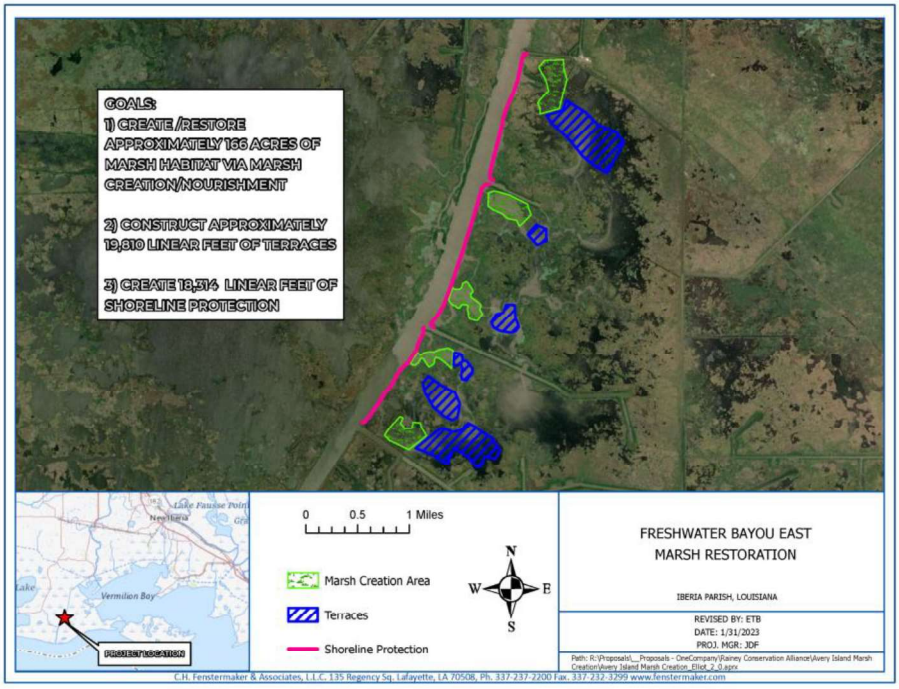
4

Preliminary Construction Costs:
The cost plus 20% contingency range is $25-$30 million (284 acres).

Preparers of the Fact Sheet:
John D. Foret, Ph.D., Rainey Conservation Alliance, (337) 322.1701; jdforet@fenstermaker.com

Ron Boustany, NRCS, (337) 291.3067; ron.boustany@usda.gov

Eric Whitney, NRCS Engineer;(337) 291-3069; eric.whitney@usda.gov



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PPL33 PROJECT FACT SHEET
February 9, 2023

Project Name
West Vermilion Marsh Creation and Shoreline Protection

Master Plan Strategy
#157c East Rainey Marsh Creation (2023 Master Plan, year 7): Creation of marsh in the northern portion of Rainey Marsh to create new wetland habitat, restore degraded marsh, and reduce wave erosion

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

Problem
Over the past decades, the project area has experienced altered geomorphologic and hydrologic conditions, shoreline erosion and wetland loss due to damage from storms; dredging of navigation and petroleum access canals, construction of spoil banks and levees, and natural wave energy. Wave energy in the Bay has gradually increased over the centuries because the bay is naturally getting deeper due to a slight yet constant subsidence and global sea-level rise. The land loss rate for the Rainey Marsh Subunit it -0.05%. Shoreline erosion rate was calculated at 5.5 ft/yr.

Proposed Solution
The project proposes to create/nourish 707 acres of marsh in an area east of Hog Lake between Bayou Prien and Hog Bayou. The project would restore marsh along the remnant shoreline between North Lake and Vermilion Bay (29 acres) and stabilize the shoreline in three areas: between North Lake and Vermilion Bay, between the small lake near Redfish Point and Vermilion Bay, and along the western shoreline of Vermilion Bay between Bayou Prien and Hog Bayou (92 acres, 18,352 ft).

Project Benefits
The goals of this project are to: 1) Create and/or nourish 707 acres of marsh, by pumping sediment from Vermilion Bay; 2) Protect/armor approximately 18,352 ft (92 acres) of the western shoreline of Vermilion Bay between Bayou Prien and Hog Bayou and the Vermilion Bay shoreline adjacent to the proposed marsh creation cell (29 acres) near North Lake. Assuming some natural vegetative recruitment, vegetative plantings are planned at a 50% density at project year one. Containment dikes will be degraded or gapped by year three to allow access for estuarine organisms.

Project Costs
The estimated construction cost including 25% contingency is $15M - $20M.

Preparers of Fact Sheet
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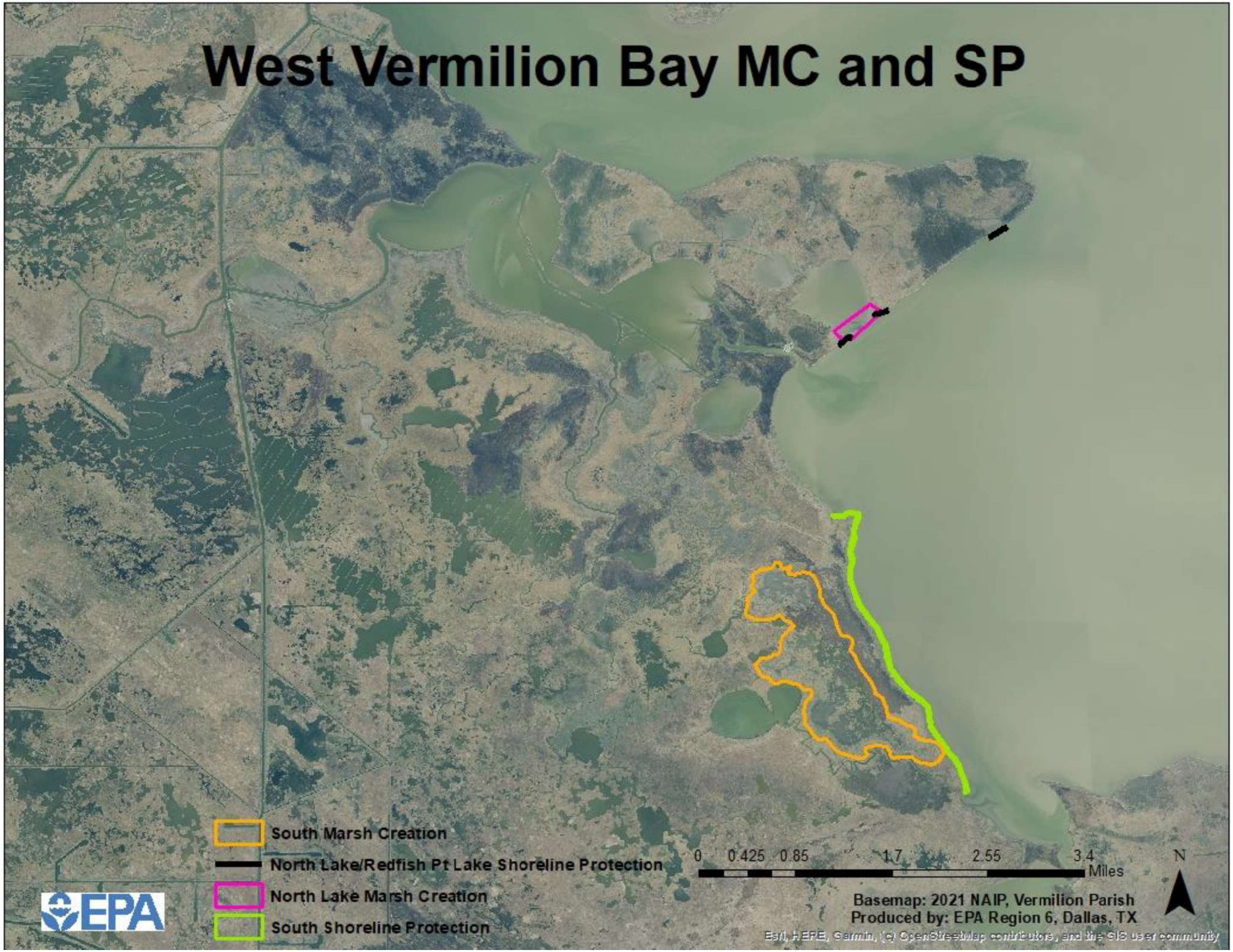
Sharon L. Osowski, Ph.D.; EPA; (214) 665-7506; osowski.sharon@epa.gov
Patty Taylor, Ph.D., P.E.; EPA; (214) 665-6403; taylor.patricia-a@epa.gov


West Vermilion Bay MC and SP
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North Lake Marsh Creation
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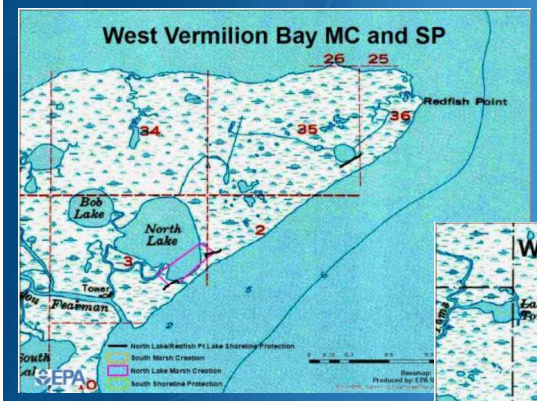
Basemap: 2021 NAIP, Vermilion Parish
Produced by: EPA Region 6, Dallas, TX
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

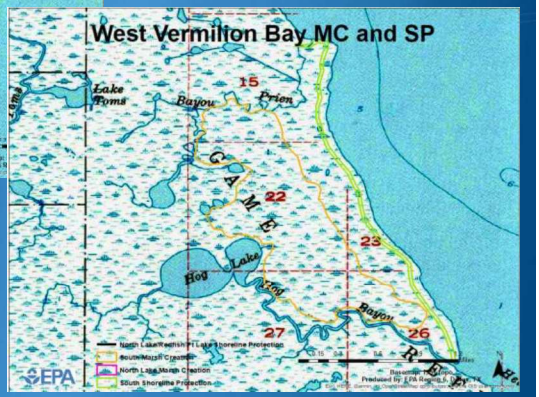
West Vermilion MC and SP

Coastal Wetlands Planning, Protection and Restoration Act

1

Historical Reference





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Master Plan Solution - 2023

#157c East Rainey Marsh Creation (year 7): Creation of marsh in the northern portion of Rainey Marsh to create new wetland habitat, restore degraded marsh, and reduce wave erosion

3

Project Features

4

Project Features

- Create/nourish 707 acres marsh with sediment from Vermilion Bay
- Nourish 203 acres in a 300 ft buffer around the S MC Cell
- Armor 18,352 ft of shore along Vermilion Bay
  - 1) between Bayou Prien & Hog Bayou; and,
  - 2) along the shores of N Lake and Redfish Pt Lake
- Restore wetland habitat, provide increased protection for nearby infrastructure
- Construction cost + 25% contingency is $15M - $20M

5

PPL33 PROJECT FACT SHEET
February 8, 2023

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. Also present in Draft 2023 State Master Plan. Marsh Island Barrier Marsh Creation (2023 Master Plan #346): Creation of marsh within a footprint of approximately 16,000 acres on Marsh Island to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

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

Problem
Areas of emergent marsh in the interior of Marsh Island have been converted to open water, primarily due to hurricane activity and subsidence. Marsh Island provides protection to tens of thousands of wetland acres and over 75 miles of shorelines on the mainland to the north, west and east of the island (Iberia, Vermilion and St. Mary parishes). It provides crucial protection to over 10,000 acres of susceptible/fragile marsh to the west and northwest of the project. 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. The marsh creation cell is located near the West Branch MC Candidate (WVA) which shows a land loss rate of -0.58%/yr.

Proposed Solution
The project would use hydraulic dredging from Cote Blanche Bay to create/nourish approximately 485 acres of emergent marsh by filling in open water and deteriorated areas. Beneficial use of dredged material from the port of Morgan City is also being investigated as a potential sediment source. Unconfined or limited confinement techniques will be used allowing finer material to flow through the interior marsh areas and provide nourishment. Efforts will be made 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 485 acres of emergent marsh (437 acres created, 48 acres nourished) using dredged sediment.

Project Costs
The estimated construction cost including 25% contingency is $25-$30M.

Preparer(s) of Fact Sheet:
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Patty Taylor, Ph.D., P.E.; EPA; (214) 665-6403; taylor.patricia-a@epa.gov

SE Marsh Island MC

Basemap: NAIP 2021

2023

Produced by: EPA, Region 6, Dallas TX

N

0 0.15 0.3 Mi

0 0.3 0.6 Km

SE Marsh Island Marsh Creation

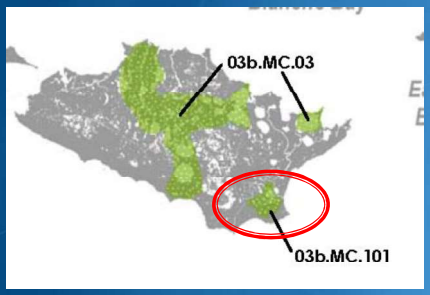
Coastal Wetlands Planning, Protection and Restoration Act

1

Master Plan Consistency

2017

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.



2023

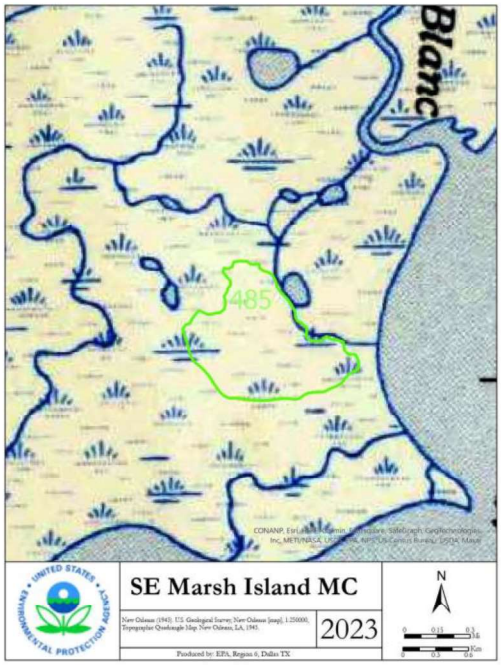
Marsh Island Barrier Marsh Creation (2023 Master Plan #346): Creation of marsh within a footprint of approximately 16,000 acres on Marsh Island to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

2

3

Historical Reference

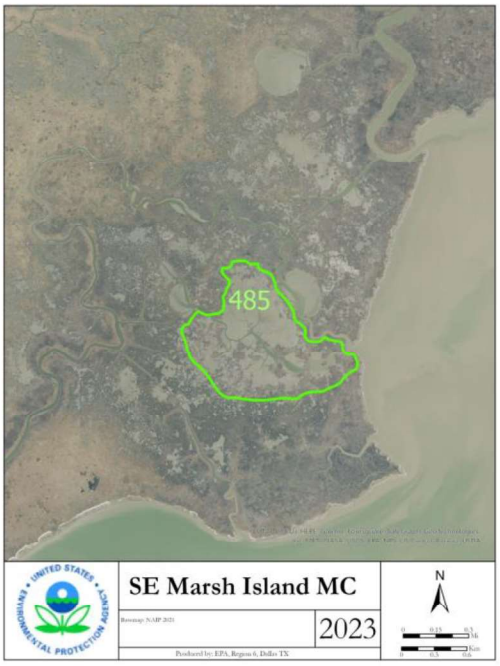
- 1945 Topo
- Mostly solid marsh



4

Project Synergy & Benefits

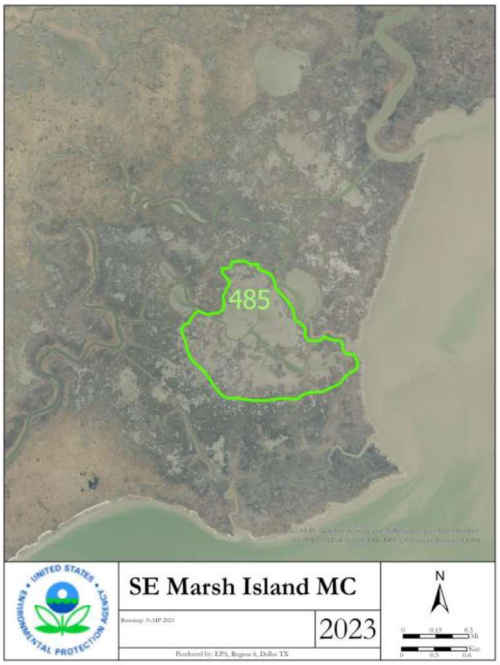
- Synergistic with TV-21 & TV-14
- TV 21 borrow source or other options may be used for this proposal



5

Project Features

- Create/nourish 485 acres emergent marsh
- Restore degraded wetland habitat
- Provide increased protection from storm surge and flooding
- Marsh Island serves to protect more inland areas in Iberia, Vermilion and St. Mary parishes
- Construction + 25% = $25 to $30M



6

PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
Bayou Jean Lacroix Marsh Creation

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Bayou Jean Lacroix just south of the twin pipelines.

Problem
The marshes of Eastern Terrebonne Parish have suffered extensive damage from subsidence, erosion, salinity intrusion and sea level rise. These areas are particularly vulnerable because the area set in a position where waters from the Mississippi and Atchafalaya Rivers have the least amount of influence. Terrebonne Parish has consistently expressed most concern for these marshes because so many of their cultural heritage communities are increasingly threatened. The regional loss in the area is -1.71% per year with a subsidence rate of 8.8 mm/y (moderate scenario). Therefore, projects in the Eastern Terrebonne Basin are a high priority. Much like the other basins of the Deltaic Plain, building synergy in the form of a landbridge may be feasible in the Eastern Terrebonne Basin.

Goals
The primary goals of this project are to 1) create/nourish marsh habitat in the degraded marsh and open water via marsh creation and nourishment, 2) reduce fetch and wave energy in open water areas with the construction of terraces and 3) bank restoration to reconstitute the flow channel. The project will also be synergistic with the TE-117 Island Road MC project providing additional protection to the communities of Isle de Jean Charles and Pointe aux Chenes. The two projects are located in the alignment of the conceptual plans for a future Eastern Terrebonne landbridge.

Proposed Solution
Sediments will be hydraulically dredged and pumped via pipeline from a borrow site located in near Lake Felicity to create/nourish approximately 374 acres of marsh. 8,400 linear feet of terraces will be constructed adjacent to the marsh creation area along the bayou. 9,959 linear feet of bank restoration will be constructed adjacent to the project area along Bayou Jean Lacroix.

Project Benefits
The project is expected to initially create/nourish approximately 374 acres of marsh and an additional 8 acres of marsh with terraces.

Preliminary Cost
The construction cost range is $25M - $30M (+25% Contingency).

Preparer of Fact Sheet
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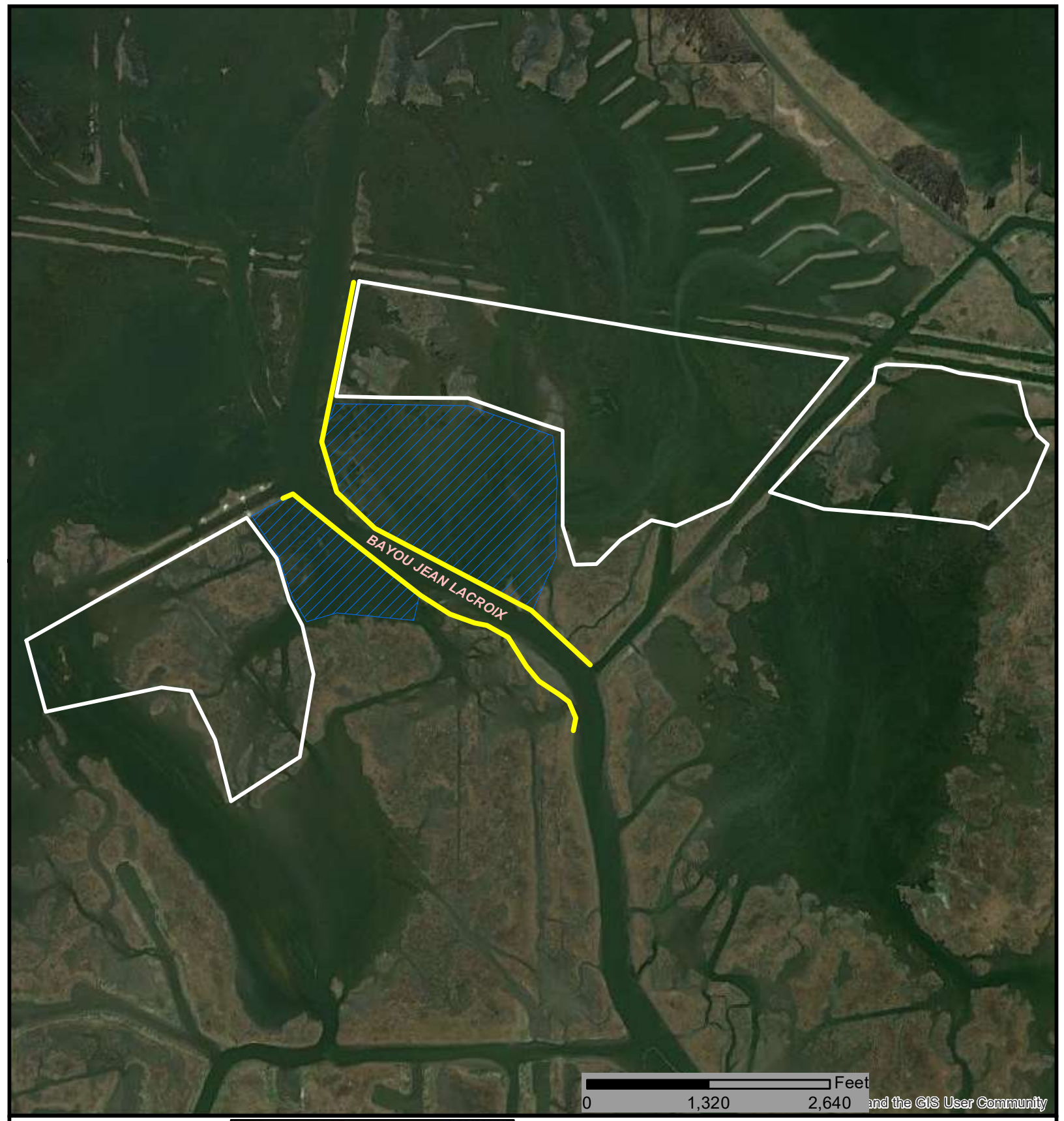
Eric Whitney, NRCS, Engineer, (337) 291-3069, eric.whitney@usda.gov

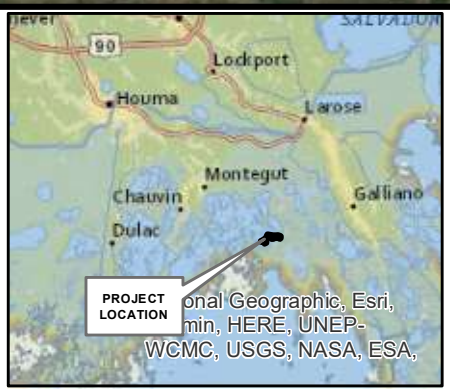


USDA

Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA

Data Source: ESRI - 2022 IMAGERY

Map Date: JANUARY 31, 2023



PPL 33
BAYOU JEAN LACROIX
MARSH CREATION
TERREBONNE PARISH, LA

N
W E
S

Legend

- MARSH_CREATION
- EARTHEN_BANK_RESTORATION
- TERRACE_FIELD

PPL33

Bayou Jean LaCroix Marsh Creation

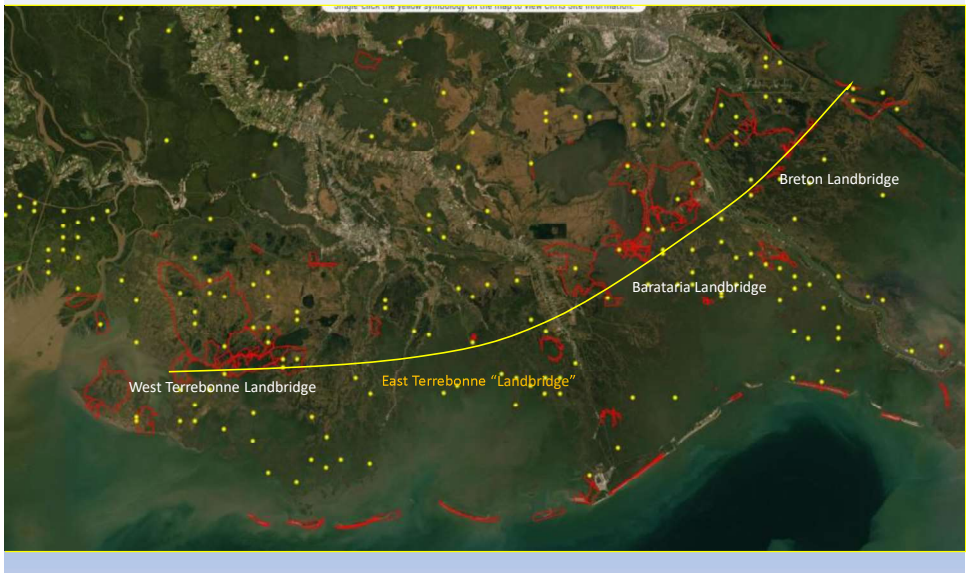
Ron Boustany, Biologist, NRCS
Eric Whitney, Engineer, NRCS

USDA/Natural Resources Conservation Service

Regional Planning Team Meeting
Region 3
February 8, 2023

1

Coastal Landbridge Efforts



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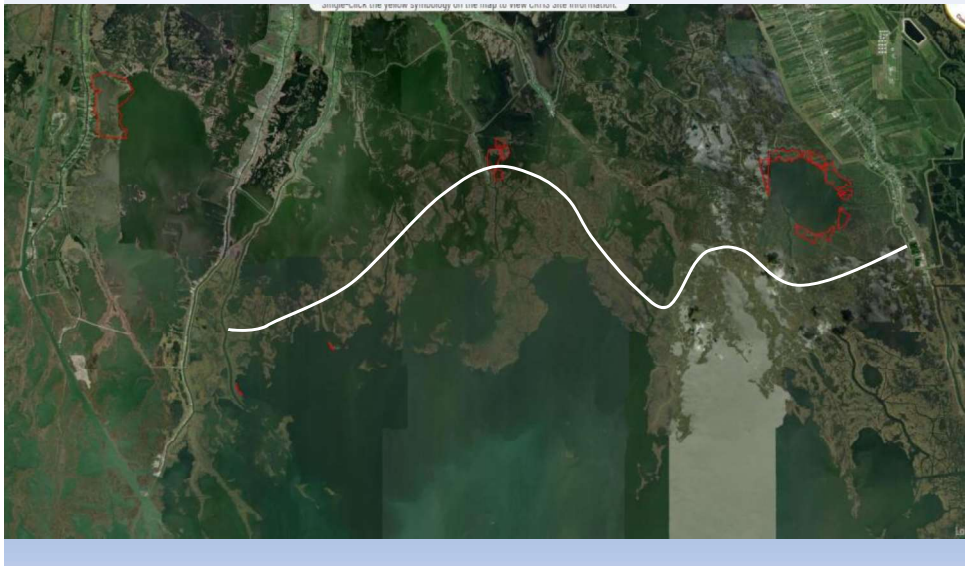
State Master Plan East Terrebonne “Landbridge” Alignment



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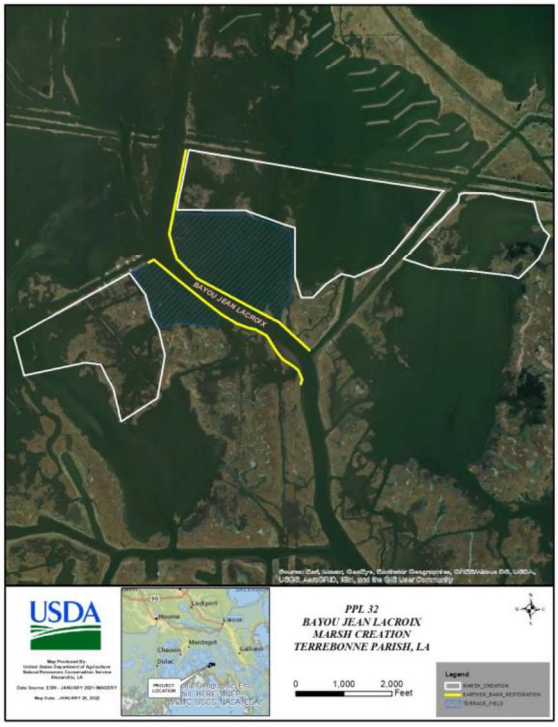
Project location in relation to CWPPRA projects and State Master Plan

4



PPL33
Bayou Jean Lacroix Marsh Creation

Problem: The eastern Terrebonne basin has suffered much loss due to subsidence, erosion, salinity intrusion and sea level rise.

Project Goals: To create marsh and terraces and stabilize the banks of Bayou Jean Lacroix. Build synergy with potential "landbridge" projects across Eastern Terrebonne Basin.

Project Benefits: The project will create/nourish 374 acres of marsh, 8,400 lf of terraces and 9,959 lf of bankline restoration.

Preliminary Cost: $25-30M (const+25%)

5

PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
Carencro Bayou Diversion

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Carencro Bayou

Problem
Bayou Penchant is the largest bayou flowing across upper Terrebonne, however, where it connects to Carencro Bayou most of the water flow is diverted southwest to the Superior Canal and flows down Palmetto Bayou and back to Atchafalaya Bay. This short-circuits water movement to the east where marshes are deprived of the freshwater, nutrients and sediments of the Atchafalaya River. The State Master Plan calls for diverting Atchafalaya River water to the east through the Gulf Intercoastal Waterway and various other distributaries throughout the Central Terrebonne marsh complex. The reactivation of Carencro Bayou would bring water directly to areas where there have been heavy losses of wetlands caused by saltwater intrusion and sediment deprivation.

Goals
The objective of this project is to introduce freshwater, nutrients and sediments from Bayou Penchant into southern Terrebonne marshes to a general area east of Lost Lake to reduce saltwater intrusion and marsh loss in this area.

Proposed Solution
The project would: (1) Reduce flow in the Superior Canal near the junction with Carencro Bayou by necking down this canal from 200 feet wide and 20 feet deep to 80 feet wide and 10 feet deep. This would be accomplished by the construction of a rock weir (barge bay); (2) opening historic Carencro Bayou, by dredging, from the point where it is narrower than 100 feet wide and 8 feet deep following the old bayou channel for approx. 21,400 feet southeast to where it intersects a north/south location; and (3) enlarging the north/south location canal and existing DU/ConocoPhillips water control structure to accommodate this increased flow.

Project Benefits
These components would re-direct much of the water flowing down Bayou Penchant to the re-opened Carencro Bayou instead of to Superior Canal and Palmetto Bayou then lost back to Atchafalaya Bay. This re-directed water would flow south into southern Terrebonne connecting with Bayou Decade east of Lost Lake.

Preliminary Cost
The construction cost range is $5M - $10M (+25% Contingency).

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Bayou Carencro Diversion
Legend
Carencro Bayou Cleanout
Outfall Replacement Structure
Superior Canal Structure
Avoca Island Cutoff
Avoca Island Cutoff
Apache LA Minerals, LLC - LaTer
Google Earth
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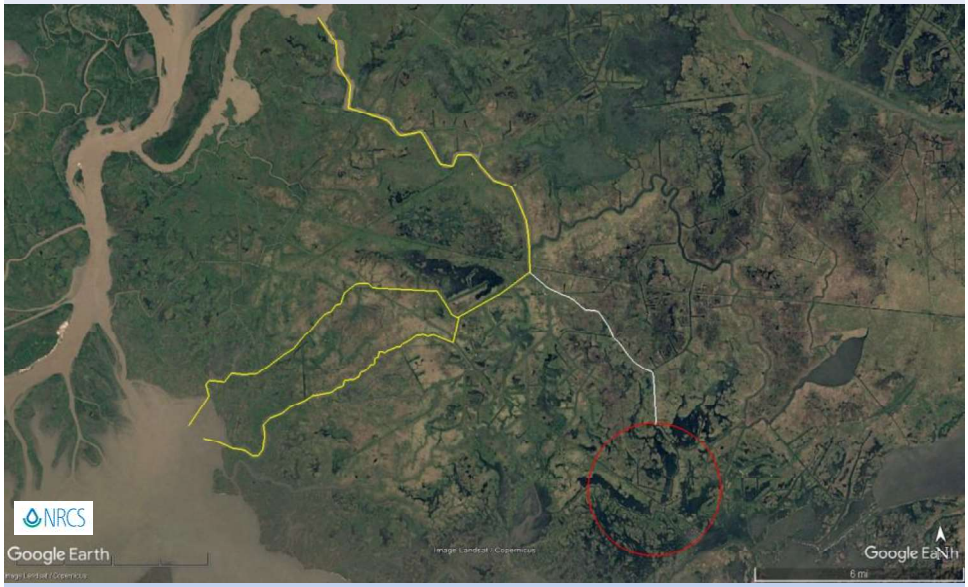
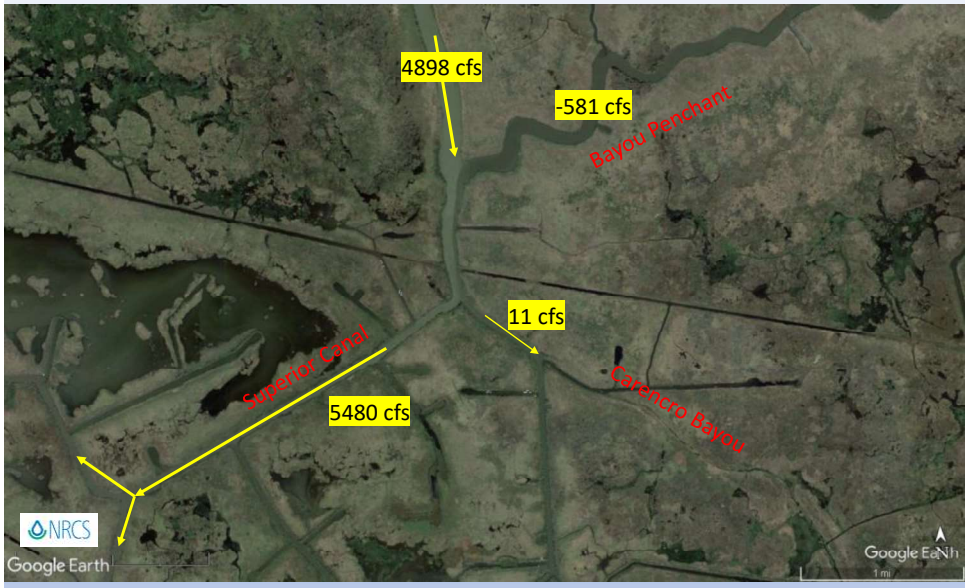
PPL33 - Carencro Bayou Diversion

Region 3-Terrebonne Basin



1

TE-34 Penchant Basin Natural Resources Plan Model-Existing Conditions



2

Objectives

- Reduce flow in Superior Canal by necking down the canal to allow for some flow to divert down the Carencro Bayou
- Dredge out the old Carencro Bayou along its historic canal to reactivate flow through the bayou down into the Central Terrebonne marshes
- Enlarge the north/south location canal and existing DU/ConocoPhillips water control structure to accommodate the increase flow.

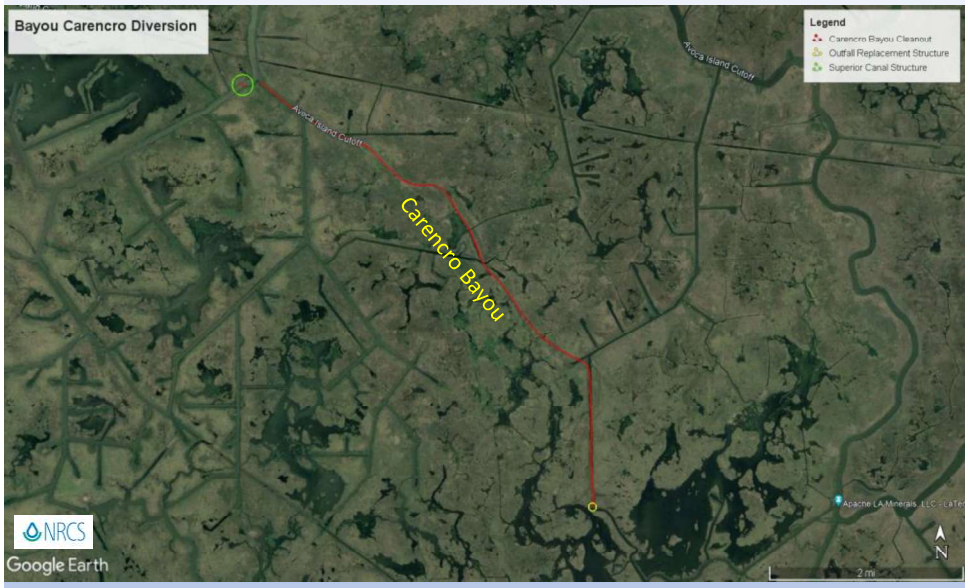
Project Features

- Superior Canal rock weir structure with barge bay.
- Dredging of Carencro Bayou for 21,400 linear ft to reactivate flow down the channel into the north/south canal.
- Replace the water control structure with a larger structure that can accommodate more flow through the channel into the target marshes to the south.

NRCS

3

Bayou Carencro Diversion Project



4

Cost and Benefits

NRCS did a preliminary itemized cost estimate in 2019 for CLF for a rock weir w/barge bay, channel clean out, and remove and replace the outflow structure for a total of approximately $6.06 million (w/ 25% contingency). Therefore, we would expect the construction cost to be in the $5-10 million range.

Benefits will largely depend upon the flow delivery of freshwater, nutrients, and sediments to the receiving area. We are expecting to increase flow to the area by an average of 300-500 cfs which would result in considerable benefits to the receiving area.

NRCS

5

PPL33 PROJECT NOMINEE FACT SHEET
February 8th, 2023

Project Name
West Lake De Cade Marsh Creation Project

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, West of Lake De Cade

Problem
The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering compaction, contributing to high subsidence. Historically, subsidence, saltwater intrusion, hurricanes, and numerous oil and gas 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 approximately 130,000 acres over 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 in the area is -0.32%/year estimated by USGS with a subsidence of at least 3.6mm/y.

Goals
The project goals are to create and/or nourish 405 acres of intermediate marsh and armor 8,116 LF of shoreline.

Proposed Solution
Sediments from Lake De Cade will be hydraulically dredged and pumped via pipeline to create/nourish 405 acres of marsh. 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 lakes and bayous. Containment dikes will be gapped at the end of construction or by TY3.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 405 acres would be benefited directly and indirectly. Direct benefits include 288 acres of marsh creation and 117 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 250-300 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%.

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 to maintain portions of the Lake De Cade shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project would help protect 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*? The project would work synergistically with the North Lake Mechant Landbridge Restoration Project (TE-44), the Lost Lake Project Marsh Creation Hydrologic Restoration (TE-72), and the Bayou De Cade Marsh Creation Project (TE-138).

Considerations

Considerations for this project include pipelines/utilities. Only one landowner.

Preliminary Cost

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

Preparer of Fact Sheet

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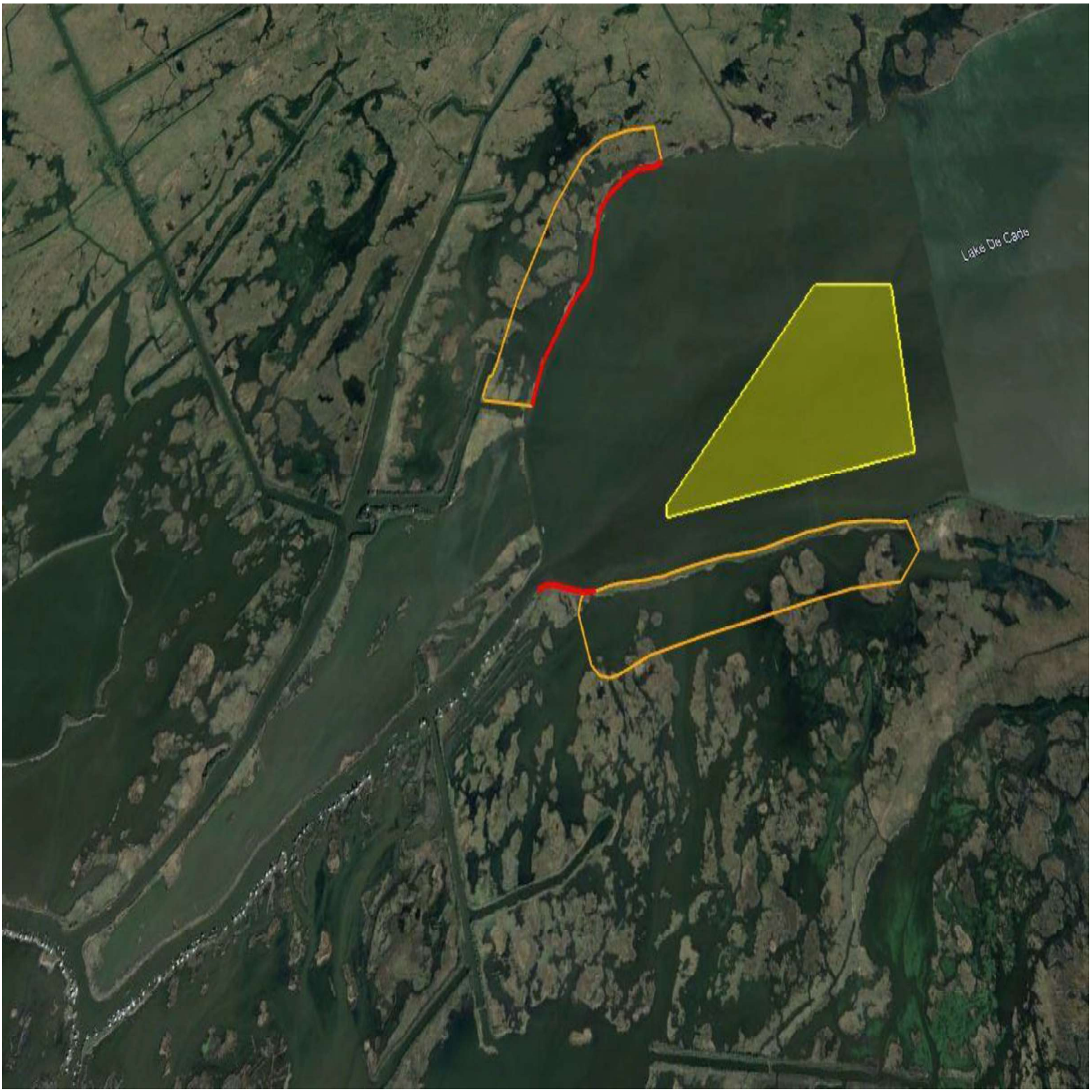
Jason Kroll, NOAA, (225) 335-9659, jason.kroll@noaa.gov



PPL33 West Lake De Cade Marsh Creation Project

2022 Aerial Imagery Federal Sponsor: NOAA Fisheries

288 Acres Marsh Creation

117 Acres Marsh Nourishment

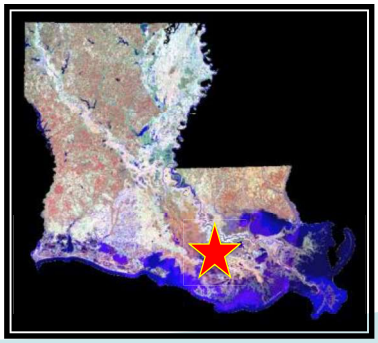
Map Date 01-18-2023

Legend

- Marsh Creation
- Borrow
- Shoreline Armor

West Lake De Cade Marsh Creation Project

NOAA FISHERIES



REGION 3 – Terrebonne Basin

Presenter: Jennifer Smith, Project Manager, NOAA

Special Thanks:
Apache Louisiana Minerals, LLC
Terrebonne Parish

PPL33 CWPPRA Regional Planning Team Meeting
Morgan City
February 8, 2023

1

Priority Project Planning

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability Within the CWPPRA Program
- Develop Solutions with Preferred Project Features

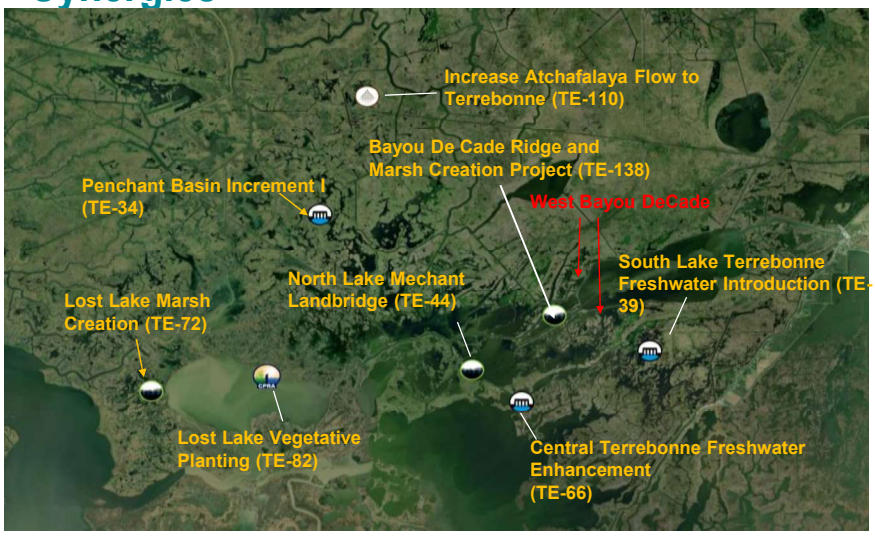
2

Area of Need

- Northwest rim is breached.
- Southwest rim has rock but needs marsh behind.

3

Synergies

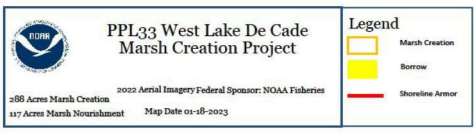


4

Preferred Project Features

5

Solution



- 2017 State Master Plan Polygon 03a.MC.101
- Lake De Cade Borrow
- 405 Acres of Marsh (288 Created/117 Nourished)
- Approximately 8,116 LF of Shoreline Armor
- $25M - $30M Construction + Contingency
- 250 – 300 Net Acres

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6

PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
Sevin West Landbridge Creation Project

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

Problem
The project is located southwest of Golden Meadow, LA, south of Catfish Lake, and east of Grand Bayou Blue. The project vicinity contains a combination of low elevation marsh and open water with organic substrates which are highly vulnerable to excessive inundation and erosion. Subsidence, sea level rise, storms, and canal and pipeline construction all have contributed to widespread historic and continued rapid land loss within the project vicinity. The USGS 1985 to 2020 loss rate is -1.33%/yr for the Terrebonne Bay mapping unit. As interior marsh has converted to open water, there is more exposure risk from increased inundation, wave fetch, and tidal and storm surge flooding.

Goals
The project goal is to create and nourish approximately 437 acres of marsh (219 marsh creation and 218 marsh nourishment) along the banks of Grand Bayou Blue and Bayou Sevin. The goal of the bayou bank enhancement is to contribute to the overall performance of the landbridge project by providing long term resilience of the adjacent restoration features as well as restoring hydrology to the natural bayous.

Proposed Solution
The proposed solution is to create and nourish 437 acres of salt marsh through hydraulic and mechanical dredging. Sediment would be mined from Bayou Laurier for the marsh creation and nourishment and adjacent in situ soils for the bayou bank enhancement. Hydraulically dredged sediment would be pumped approximately 2.5 miles and placed into a confined marsh creation area. Approximately 14,255 linear feet of bayou bank enhancement would be constructed along the seaward side of the landbridge alignment. Typical containment dikes would be gapped to the constructed marsh fill elevation at the end of construction for dewatering and gapped or degraded no later than year three after construction to establish tidal function.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? The total acres benefited is 437 acres (219 marsh creation, 218 acres marsh nourishment).

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres of marsh 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 benefits is 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 strategic location of the marsh creation and bank enhancement along the bayous will aid in re-establishing the structural framework of marshes across the Eastern Terrebonne basin and more locally along the tributaries of Grand Bayou Blue and Bayou Sevin.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project will contribute to a larger scale effort of building a landbridge across the eastern Terrebonne basin. As a whole that landbridge will have a positive impact on infrastructure. However, this project location individually isn't immediately adjacent to critical and non-critical infrastructure.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? When considering the scale of the overall restoration feature (landbridge), this project would work synergistically with TE-117 (Island Road Marsh Creation and Nourishment).

Considerations

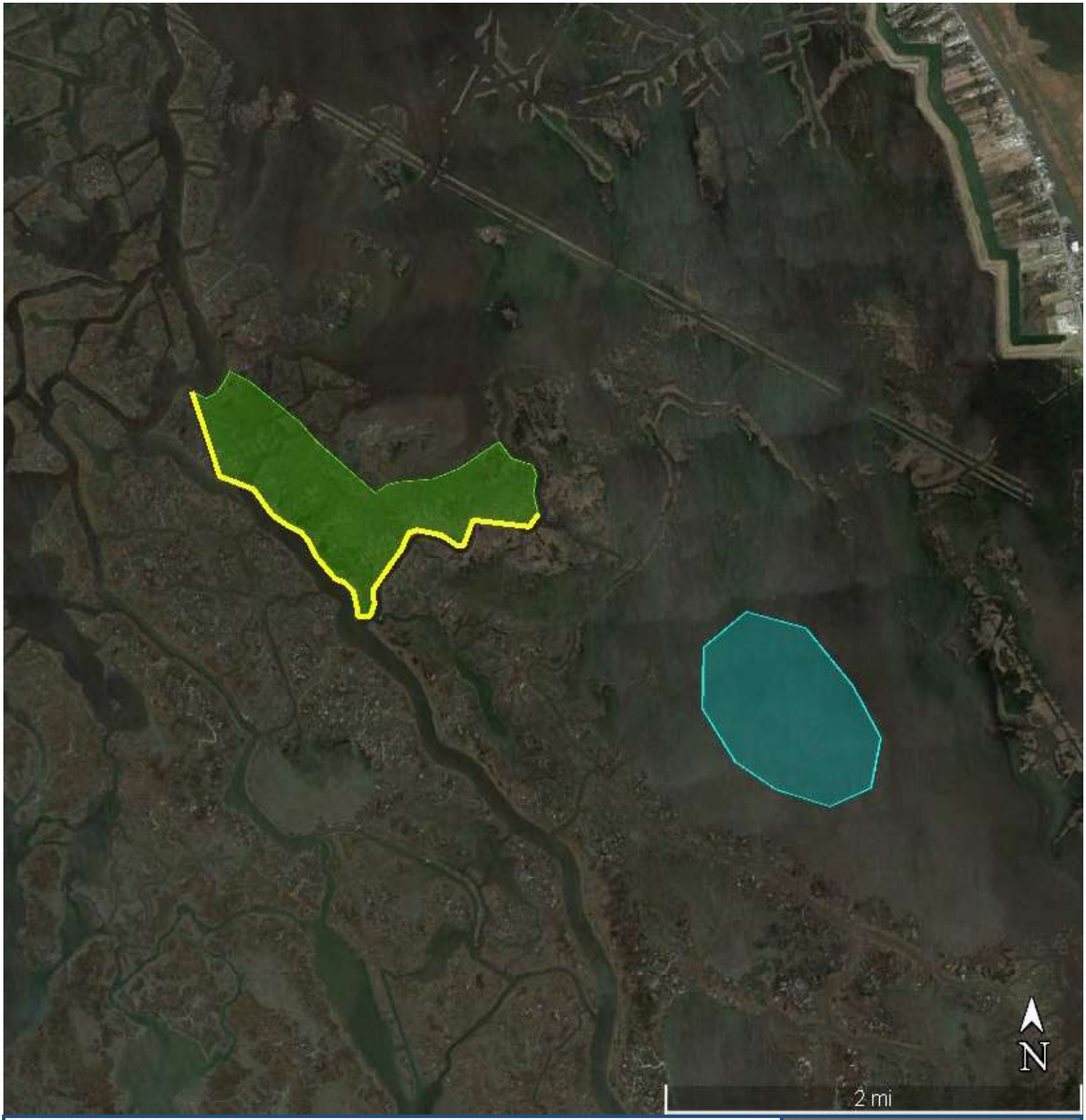
Considerations for this project include pipelines/utilities, oysters, West Indian Manatee, and Eastern Black Rail.

Preliminary Cost

The estimated constructed cost + 25% contingency range is $20M - $25M.

Preparer of Fact Sheet

Jason Kroll (225) 335-9659 jason.kroll@noaa.gov



PPL33 Sevin West Landbridge Project

219 Acres Marsh Creation
218 Acres Marsh Nourishment
14,255 LF Bayou Bank Enhancement
Acreages and lengths are approximate

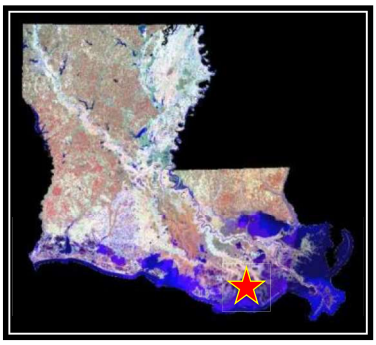
Federal Sponsor: NOAA Fisheries
2022 Aerial Imagery
Map Date 01-27-2023

Legend

- Marsh Creation
- Borrow Area
- Bayou Bank Enhancement

PPL33 Sevin West Landbridge Creation Project

NOAA FISHERIES



REGION 3 – Terrebonne Basin

Presenter: Jason Kroll, NOAA

PPL33 CWPPRA Regional Planning Team Meeting
February 8, 2023

1

Priority Project Planning

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability Within the CWPPRA Program
- Develop Solutions with Preferred Project Features

2

Areas of Need Within Basin

Tough decisions… Many areas across the coast need restoration.

Focus… on critical landscape features to restore and maintain.

Eastern Terrebonne is rapidly succumbing to sea level rise, subsidence, and storm impacts. Approximate land loss -1.33%/yr

Need to intervene…Where should engineers and scientists step in to try and find solutions? Eastern Terrebonne.

3

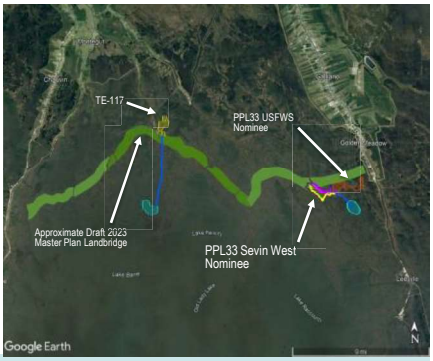
Synergy With Other Restoration Efforts

Synergy at scale!

Multiple program and multiple agency support for landbridge investments.

Applicability within the CWPPRA Program

- Plan a project that fits within the program.
- Formulate features that are consistent with what the program has funded.
- Provide project solutions that marry well with adjacent restoration efforts.
- Cost conscious



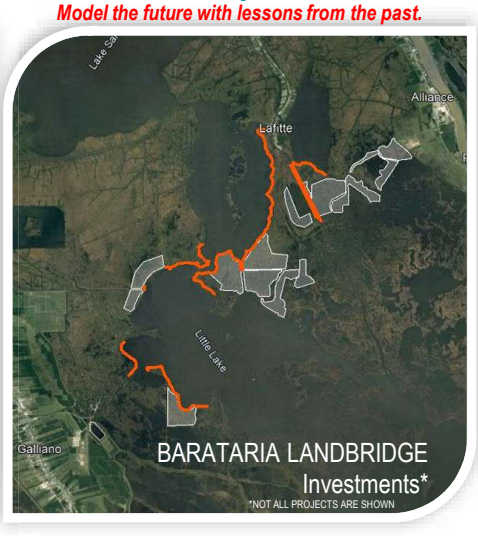
4

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability within the CWPPRA Program

Sevin West Landbridge Creation Project

Develop Solutions with Preferred Project Features

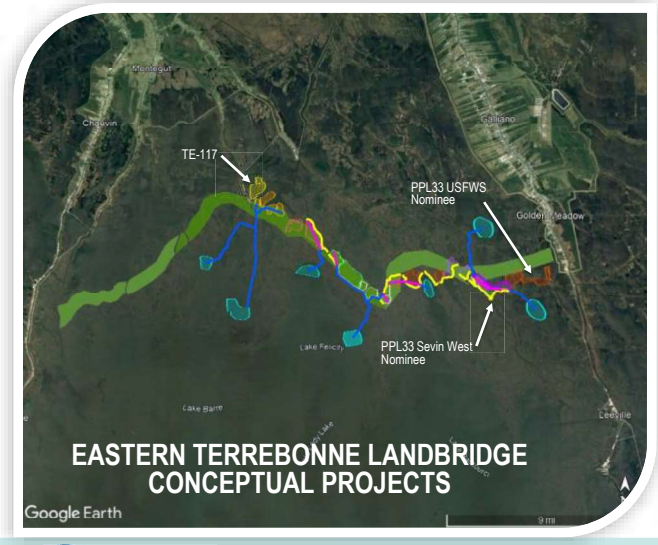
Model the future with lessons from the past.



5

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability within the CWPPRA Program

Sevin West Landbridge Creation Project



Develop Solutions with Preferred Project Features

Model the future with lessons from the past.

- 8 - 10 CWPPRA sized project increments
- Collaborate with multiple agencies and stakeholders for support and successful implementation.
- Leverage resources and other programs for faster and coordinated implementation

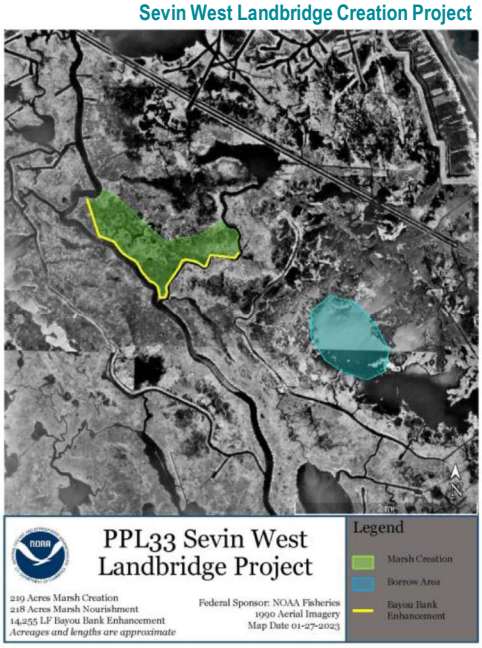
6

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability within the CWPPRA Program

Develop Solutions with Preferred Project Features

- Marsh Creation to restore lost wetlands and to combat sea level rise and subsidence.
- Add elevation to existing marsh through Marsh Nourishment to combat sea level rise and subsidence.
- Close borrow source for cost effective construction.
- Bayou Bank Enhancement to ensure resilience of the newly created marsh, and long term resilience of the landbridge.

Sevin West Landbridge Creation Project



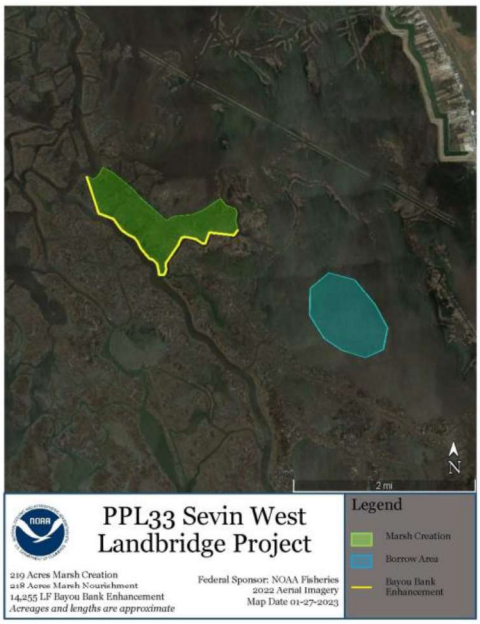
7

Priority Project Planning Summary

Sevin West Landbridge Creation Project

- **Areas of Need Within Basin**
  Part of a prioritized larger scale restoration of a critical landscape feature, Eastern Terrebonne Landbridge
- **Synergy With Other Restoration Efforts**
  Location vicinity, project approach, and restoration techniques are broadly supported and being implemented
- **Applicability within the CWPPRA Program**
  Project type, scale, location, cost, etc. are a good fit for the CWPPRA program
- **Develop Solutions with Preferred Project Features**
  437 acres Marsh Creation and Nourishment
  14,255 LF Bayou Bank Enhancement
  Borrow from Bayou Laurier
  $20M - $25M Construction + Contingency
  Estimated 200-250 Net Acres

Sevin West Landbridge Creation Project



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NOAA FISHERIES

Open Dialogue

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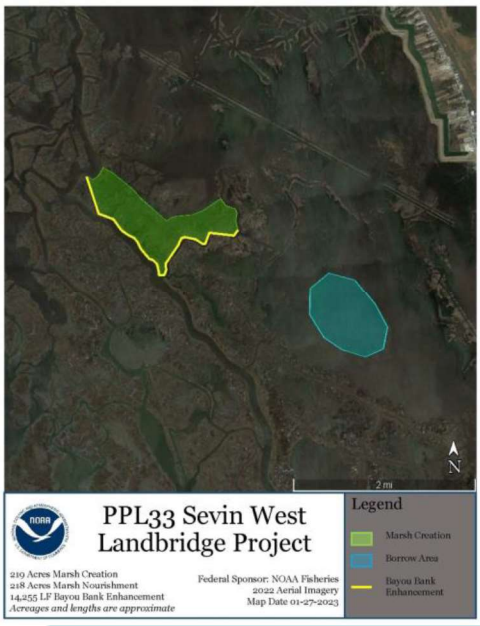

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PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
West Bayou Jean Lacroix Landbridge Creation Project

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Louisiana

Problem
The project is located southeast of Isle de Jean Charles, north of Lake Chien, and west of Bayou Jean Lacroix. The project vicinity contains a combination of low elevation marsh and open water with organic substrates which are highly vulnerable to excessive inundation and erosion. Subsidence, sea level rise, storms, and canal and pipeline construction all have contributed to widespread historic and continued rapid land loss within the project vicinity. The USGS 1985 to 2020 loss rate is -1.33%/yr for the Terrebonne Bay mapping unit. As interior marsh has converted to open water, there is more exposure risk from increased inundation, wave fetch, and tidal and storm surge flooding.

Goals
The project goal is to create and nourish approximately 497 acres of marsh (199 marsh creation and 298 marsh nourishment) along the banks of Bayou Jean Lacroix. Because of the low and vulnerable elevation of the marsh in this area of the basin, nourishment of marsh with sediment is an important goal of the project which leads to the long term sustainability of the overall landbridge. The goal of the enhanced containment features is to contribute to the overall performance of the landbridge project by providing long term resilience of the adjacent restoration features as well as restoring hydrology to the natural bayous.

Proposed Solution
The proposed solution is to create and nourish 497 acres of salt marsh through hydraulic and mechanical dredging. Sediment would be mined from Lake Chien for the marsh creation and nourishment and adjacent in situ soils for the enhanced dike features. Hydraulically dredged sediment would be pumped approximately 2.5 miles and placed into a confined marsh creation area. Approximately 10,970 linear feet of enhanced containment dikes would be constructed along the seaward side of the landbridge alignment. Typical containment dikes would be gapped to the constructed marsh fill elevation at the end of construction for dewatering and gapped or degraded no later than year three after construction to establish tidal function.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? The total acres benefited is 497 acres (199 marsh creation, 298 acres marsh nourishment).

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres of marsh 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 benefits is 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 strategic location of the marsh creation and bank enhancement along the bayous will aid in re-establishing the structural framework of marshes across the Eastern Terrebonne basin and more locally along Bayou Jean Lacroix.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project will contribute to a larger scale effort of building a landbridge across the eastern Terrebonne basin. As a whole that landbridge will have a positive impact on infrastructure. The project location is located only two to three miles from Isle de Jean Charles and Point Aux Chenes Marina.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? When considering the scale of the overall restoration feature (landbridge), this project would work synergistically with TE-117 (Island Road Marsh Creation and Nourishment).

Considerations

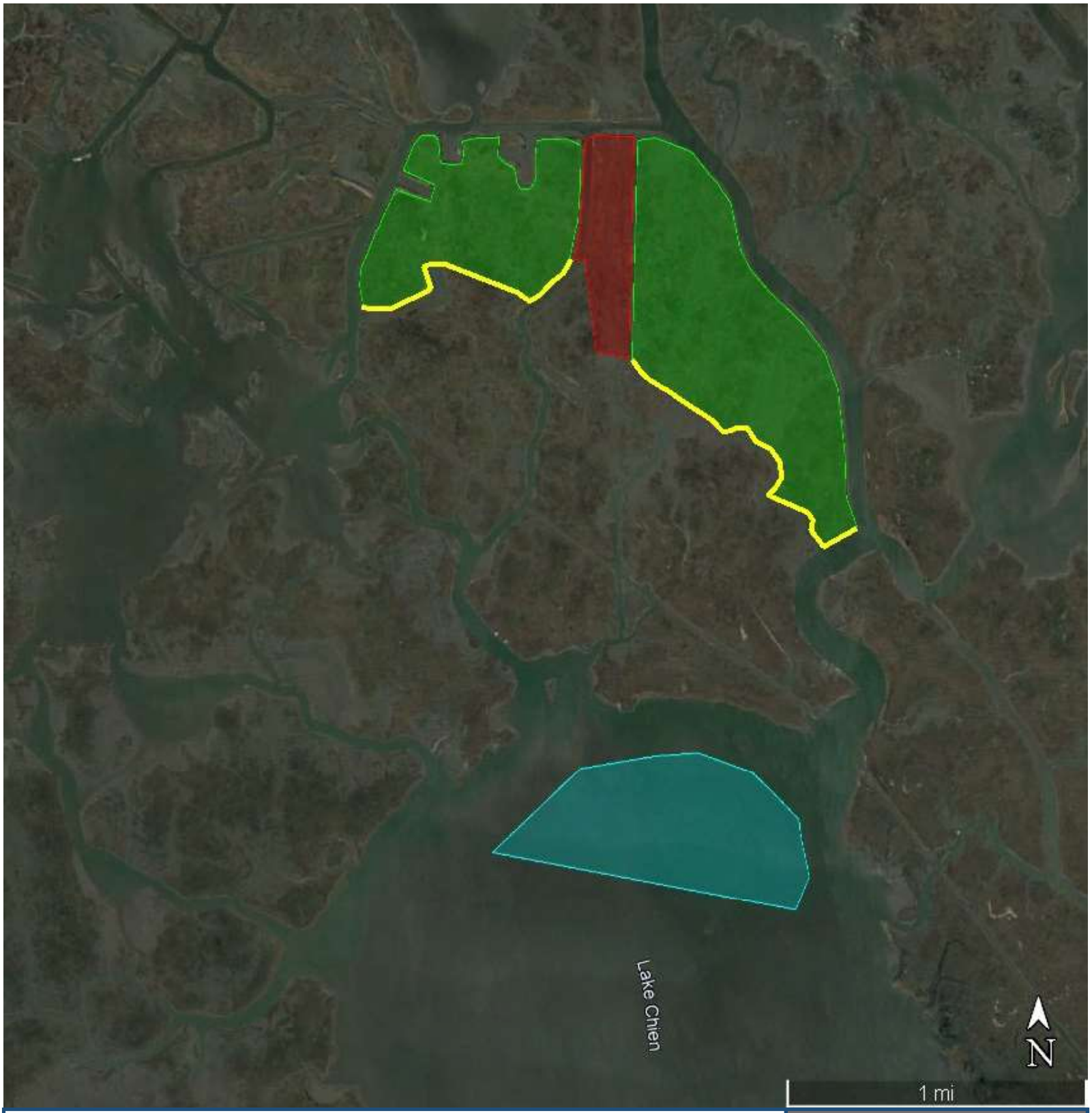
Considerations for this project include pipelines/utilities, oysters, West Indian Manatee, and Eastern Black Rail.

Preliminary Cost

The estimated constructed cost + 25% contingency range is $20M - $25M.

Preparer of Fact Sheet

Jason Kroll (225) 335-9659 jason.kroll@noaa.gov



PPL33 West Bayou Jean Lacroix Landbridge Project

199 Acres Marsh Creation
298 Acres Marsh Nourishment
10,970 LF Enhanced Dikes
Acreages and lengths are approximate

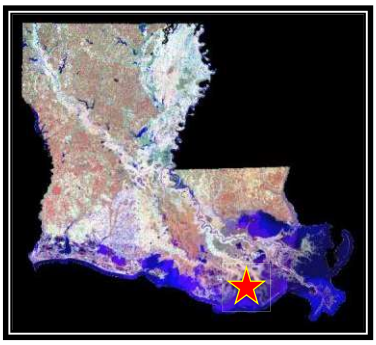
Federal Sponsor: NOAA Fisheries
2022 Aerial Imagery
Map Date 01-31-2023

Legend

- Marsh Creation & Nourishment
- Additional Phase 1 Investigation Area
- Borrow Area
- Bayou Bank Enhancement

PPL33 West Bayou Jean Lacroix Landbridge Creation Project

NOAA FISHERIES



REGION 3 – Terrebonne Basin

Presenter: Jason Kroll, NOAA

PPL33 CWPPRA Regional Planning Team Meeting
February 8, 2023

1

Priority Project Planning

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability Within the CWPPRA Program
- Develop Solutions with Preferred Project Features

2

Areas of Need Within Basin

Tough decisions… Many areas across the coast need restoration.

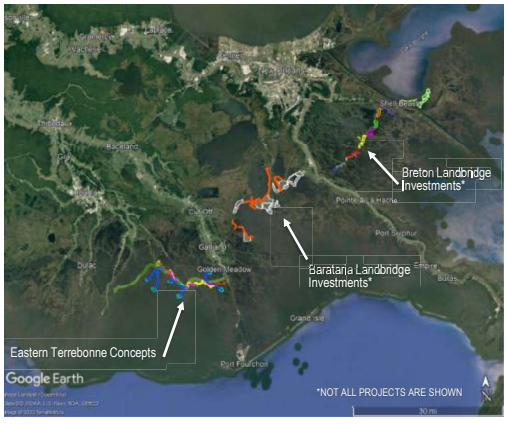
Focus… on critical landscape features to restore and maintain.

Eastern Terrebonne is rapidly succumbing to sea level rise, subsidence, and storm impacts. Approximate land loss -1.33%/yr

Need to intervene…Where should engineers and scientists step in to try and find solutions? Eastern Terrebonne.

3

Synergy With Other Restoration Efforts

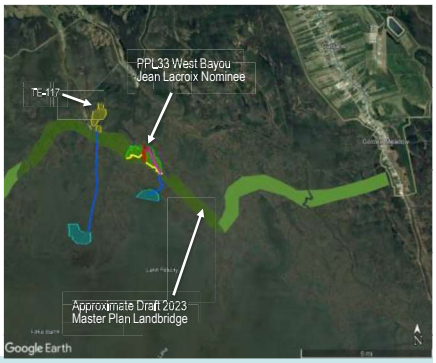


Synergy at scale!

Multiple program and multiple agency support for landbridge investments.

Applicability within the CWPPRA Program

- Plan a project that fits within the program.
- Formulate features that are consistent with what the program has funded.
- Provide project solutions that marry well with adjacent restoration efforts.
- Cost conscious



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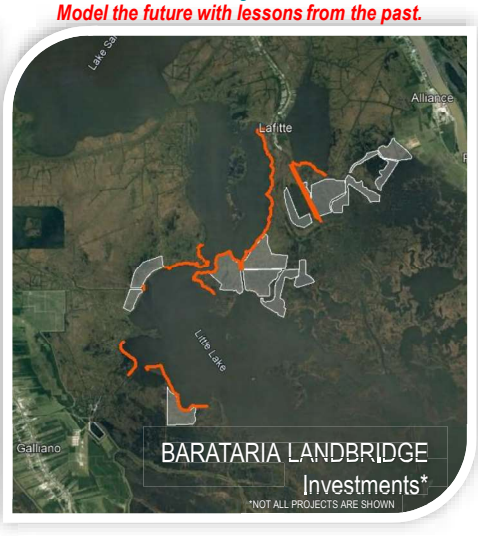
West Bayou Jean Lacroix Landbridge Creation Project

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability within the CWPPRA Program

Develop Solutions with Preferred Project Features

Model the future with lessons from the past.



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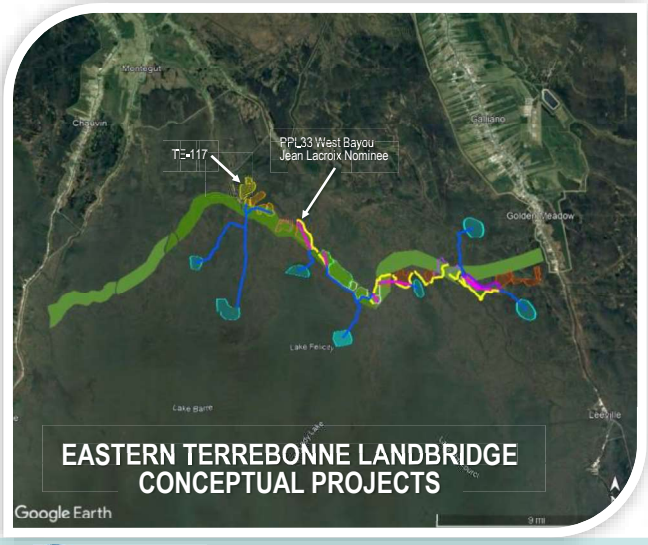
West Bayou Jean Lacroix Landbridge Creation Project

- Areas of Need Within Basin
- Synergy With Other Restoration Efforts
- Applicability within the CWPPRA Program



Develop Solutions with Preferred Project Features

Model the future with lessons from the past.

- 8 - 10 CWPPRA sized project increments
- Collaborate with multiple agencies and stakeholders for support and successful implementation.
- Leverage resources and other programs for faster and coordinated implementation

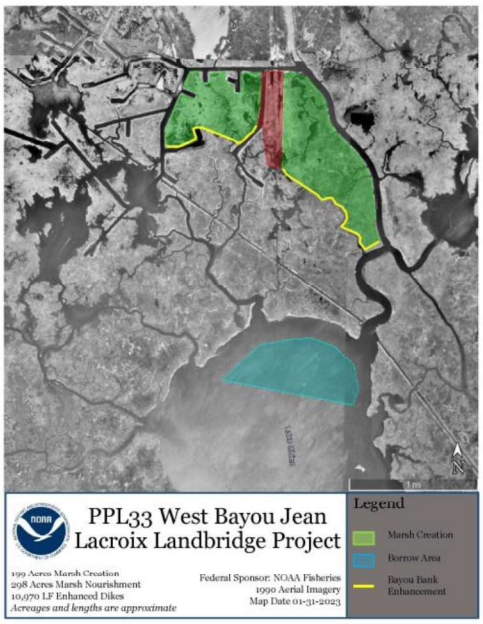
6

West Bayou Jean Lacroix Landbridge Creation Project

- ✓ Areas of Need Within Basin
- ✓ Synergy With Other Restoration Efforts
- ✓ Applicability within the CWPPRA Program

Develop Solutions with Preferred Project Features

- Marsh Creation to restore lost wetlands and to combat sea level rise and subsidence.
- ★ Add elevation to existing marsh through Marsh Nourishment to combat sea level rise and subsidence.
- Close borrow source for cost effective construction.
- Seaward Enhanced Containment Dikes to ensure resilience of the newly created marsh, and long term resilience of the landbridge.



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West Bayou Jean Lacroix Landbridge Creation Project

Priority Project Planning Summary

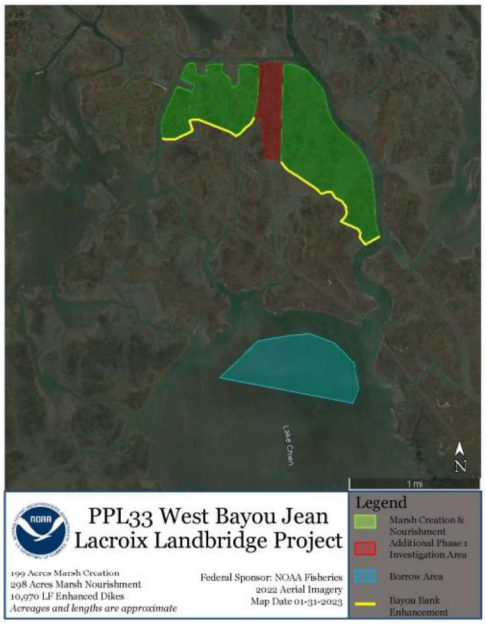
West Bayou Jean Lacroix Landbridge Creation

✓ **Areas of Need Within Basin**
Part of a prioritized larger scale restoration of a critical landscape feature, Eastern Terrebonne Landbridge

✓ **Synergy With Other Restoration Efforts**
Location vicinity, project approach, and restoration techniques are broadly supported and being implemented

✓ **Applicability within the CWPPRA Program**
Project type, scale, location, cost, etc. are a good fit for the CWPPRA program

✓ **Develop Solutions with Preferred Project Features**
497 acres Marsh Creation and Nourishment
10,970 LF Bayou Bank Enhancement
Borrow from Lake Chien
$20M - $25M Construction + Contingency
Estimated 200-250 Net Acres



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NOAA FISHERIES

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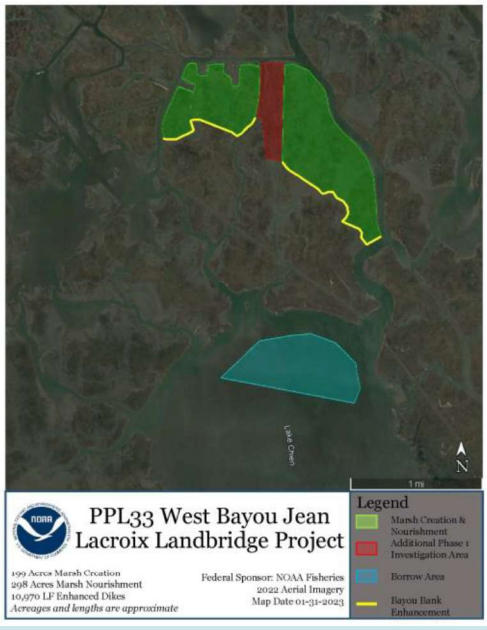


9

PPL33 PROJECT FACT SHEET
February 8, 2023

Project Name
Lake Billiot and Eastern Terrebonne Landbridge Restoration

Master Plan Strategy
- **2017 MP-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.**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.
- **2023 Draft MP-North Terrebonne Bay Marsh Creation:** Creation of marsh within a footprint of approximately 6,200 acres south of Montegut between Bayou St. Jean Charles and Bayou Pointe-aux-Chênes to create new wetland habitat, restore degraded marsh, and reduce wave erosion. **Eastern Terrebonne Landbridge – East:** Creation of marsh including filling areas deeper than 2.5 feet, from Bayou Pointe-aux-Chênes to the south Lafourche Levee near Catfish Lake. 30,000 feet of shoreline revetment to limit erosion in exposed areas and channel armoring to maintain channels at current dimensions at Bayou Pointe-aux-Chênes and Bayou Blue to reduce the tidal prism and to create new wetland habitat, restore degraded marsh, and reduce wave erosion. Restoration of approximately 44,000 feet of Bayou Pointe-aux-Chênes Ridge.

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

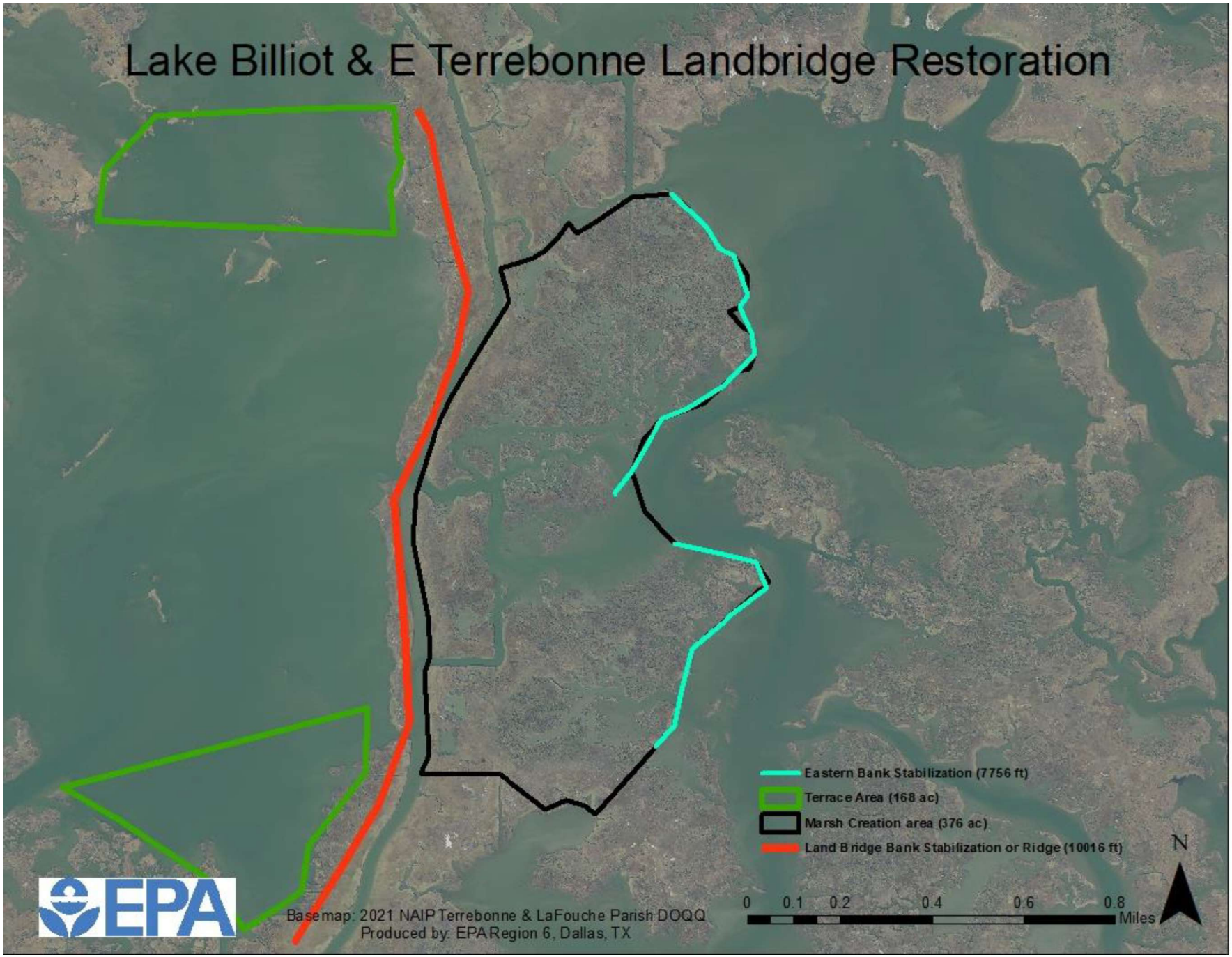
Problem
The Terrebonne Basin has experienced rapid interior wetland loss over the years. Between 1956 and 2004, Terrebonne Basin lost 321 square miles of land and an additional 17 square miles of coastal land was lost in 2005 due to the effects of Hurricanes Katrina and Rita. Wetland loss has also been attributed to sediment deficit, high subsidence, sea level rise, saltwater intrusion, historic oil and gas activity, and natural deterioration of barrier islands, which contributes to the inland invasion of marine tidal processes (including erosion, scour, and saltwater intrusion). The land loss rate for SW Golden Meadow PPL32 CWPPRA candidate is -1.37%/yr.

Proposed Solution
The proposed solution aims to have a triple impact: address the 2017 Master Plan MP-03a.MC.09b/2023 Draft Master Plan N Terrebonne Bay MC area, create ridge/bank stabilization features as support and to add habitat diversity, and to address the E Terrebonne Landbridge-East 2023 Draft Master Plan concept with marsh creation/nourishment. Locations within the larger marsh creation/nourishment area would naturally develop tidal creeks/ponds.

Project Benefits
Create 168 ac of terrace areas to address part of the N Terrebonne Bay MC 2023 MP feature (Lake Billiot). Create/nourish 376 acres of marsh to establish part of the Eastern Terrebonne Landbridge (East) 2023 Draft Master Plan feature. Create bank stabilization/ridge as support for the landbridge MC (7756 ft) and Lake Billiot terrace (10016ft) features.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $30M - $35M.

Preparer of Fact Sheet
Sharon L. Osowski, Ph.D.; EPA; (214) 665-7506; osowski.sharon@epa.gov
Jenny Byrd, EPA, (214) 665-7377, Byrd.Jennifer@epa.gov
Patty Taylor, P.E., Ph.D.; EPA, (214) 665-6403, taylor.patricia-a@epa.gov


Lake Billiot & E Terrebonne Landbridge Restoration
Eastern Bank Stabilization (7756 ft)
Terrace Area (168 ac)
Marsh Creation area (376 ac)
Land Bridge Bank Stabilization or Ridge (10016 ft)
N
0 0.1 0.2 0.4 0.6 0.8
Miles
EPA
Basemap: 2021 NAIP Terrebonne & LaFouche Parish DOQQ
Produced by: EPA Region 6, Dallas, TX

Lake Billiot & E Terrebonne Landbridge Restoration

Coastal Wetlands Planning, Protection and Restoration Act

1

Master Plan Solution

2017

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.

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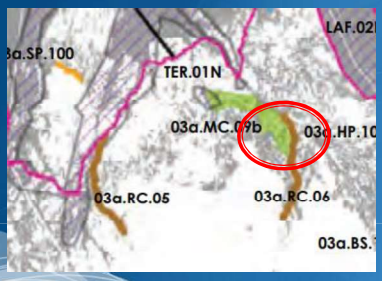
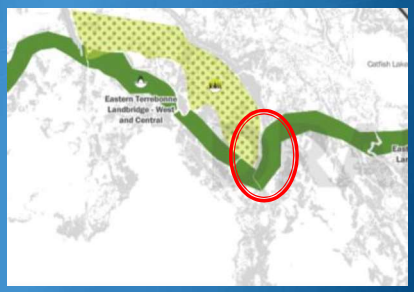


2023

North Terrebonne Bay Marsh Creation: Creation of marsh within a footprint of approximately 6,200 acres south of Montegut between Bayou St. Jean Charles and Bayou Pointe-aux-Chênes to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Eastern Terrebonne Landbridge – East: Creation of marsh including filling areas deeper than 2.5 feet, from Bayou Pointe-aux-Chênes to the south Lafourche Levee near Catfish Lake. 30,000 feet of shoreline revetment to limit erosion in exposed areas and channel armoring to maintain channels at current dimensions at Bayou Pointe-aux-Chênes and Bayou Blue to reduce the tidal prism and to create new wetland habitat, restore degraded marsh, and reduce wave erosion. Restoration of approximately 44,000 feet of Bayou Pointe-aux-Chênes Ridge.



Coastal Wetlands Planning, Protection and Restoration Act

2


Lake Billiot & E Terrebonne Landbridge Restoration
Master Plan Consistency
Eastern Bank Stabilization (7756 ft)
Terrace Area (168 ac)
Marsh Creation area (376 ac)
Land Bridge Bank Stabilization or Ridge (10016 ft)
2017MP: North Terrebonne Bay Marsh Creation - Component B
EPA
Basemap: 2021 NAIP Terrebonne & LaFourche Parish DOQQ
Produced by: EPA Region 6, Dallas, TX
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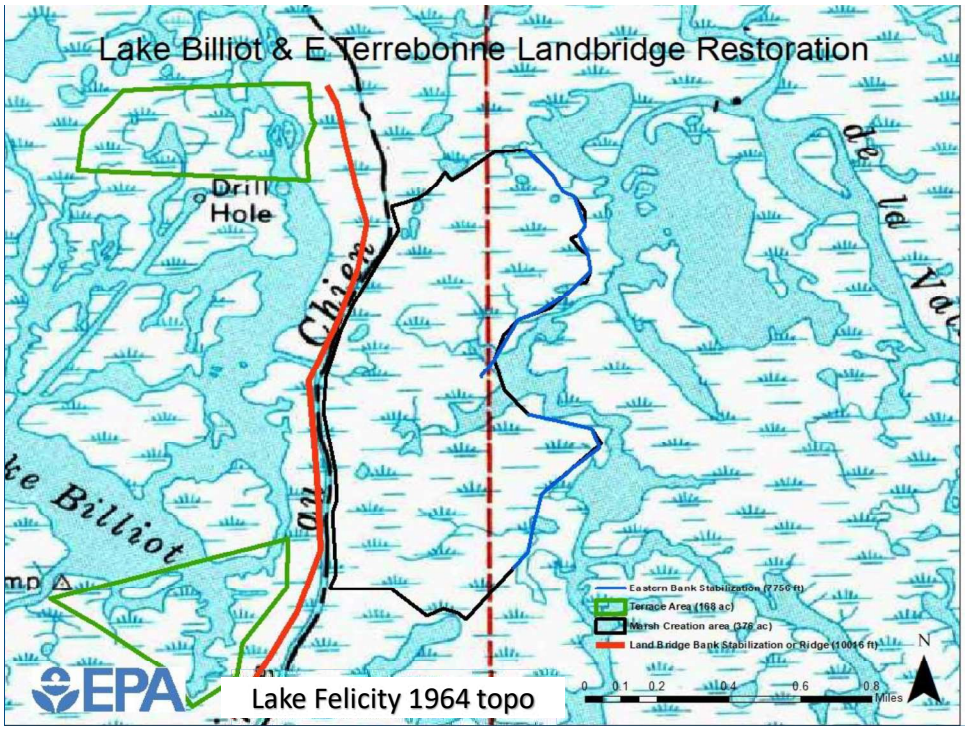
Lake Billiot & E Terrebonne Landbridge Restoration
Drill Hole
Eastern Bank Stabilization (7756 ft)
Terrace Area (168 ac)
Marsh Creation area (376 ac)
Land Bridge Bank Stabilization or Ridge (10016 ft)
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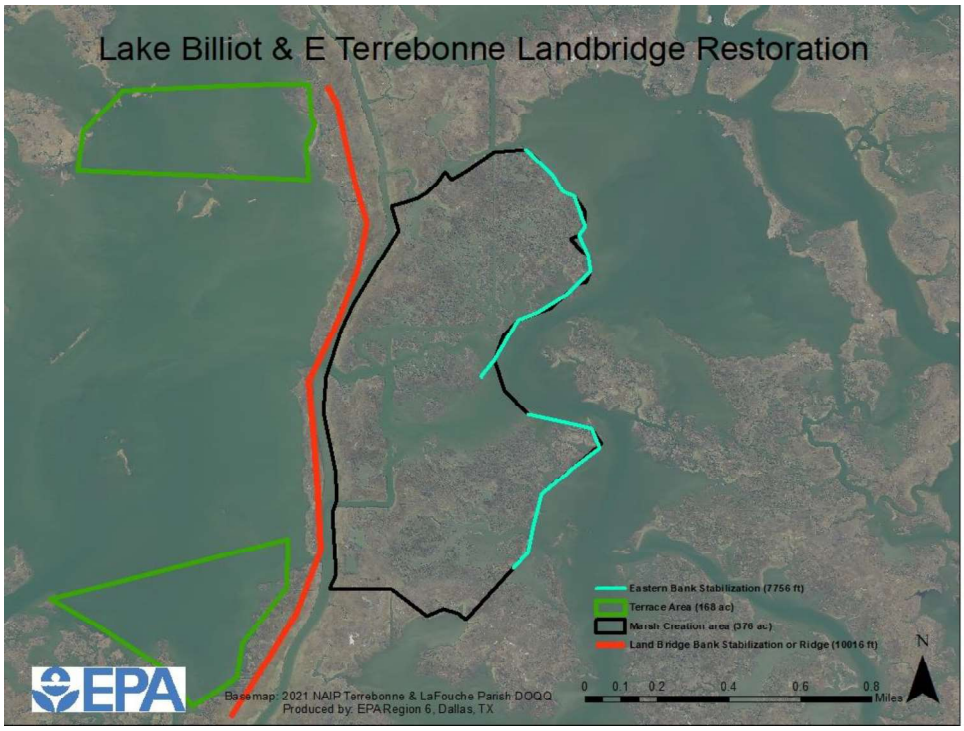
Lake Billiot & E Terrebonne Landbridge Restoration
Eastern Bank Stabilization (7756 ft)
Terrace Area (168 ac)
Land Bridge Bank Stabilization or Ridge (10016 ft)
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EPA
Basemap: 2021 NAIP Terrebonne & LaFouche Parish DOQQ
Produced by: EPA Region 6, Dallas, TX

5

PPL32 NOMINEE FACT SHEET
February 8, 2023

Project Name
Lake Pagie Small Scale Marsh Restoration

Project Location
Region 3, Mechant/de Cade Basin, Terrebonne Parish; located north of Lake Mechant and south of Bayou Decade between Bay Raccourci and Lake Pagie

Problem
Subsidence, canal dredging and storm damage have contributed significantly to the loss of marsh in the area. The zone of intermediate marsh is located just north of Lake Mechant. High salinity water has infiltrated through oil and gas canals and Bayou Raccourci and entered lower salinity marshes of Bay Raccourci and Bayou Decade. Increased freshwater input from Atchafalaya River water to the lower Penchant marshes influences the area. Much of that influence is filling in open bays and lakes. A loss rate was calculated for the area by USGS to be -0.21% /yr between years 1984 to 2019 (Bay Raccourci Inc II Marsh Creation).

Goals
The goal of this project is to restore low salinity brackish/intermediate marsh north of the "Y" canal to slow the movement of saline water north and moderate exchange. The project will work synergistically with terraces proposed through NAWCA to buffer salinities, restore habitat and continue to allow for the beneficial influence of freshwater flows south through the marsh. Restoration of this marsh will compliment adjacent marsh restoration projects and may help alleviate the need for the long-term maintenance of some of the structural components of TE-44.

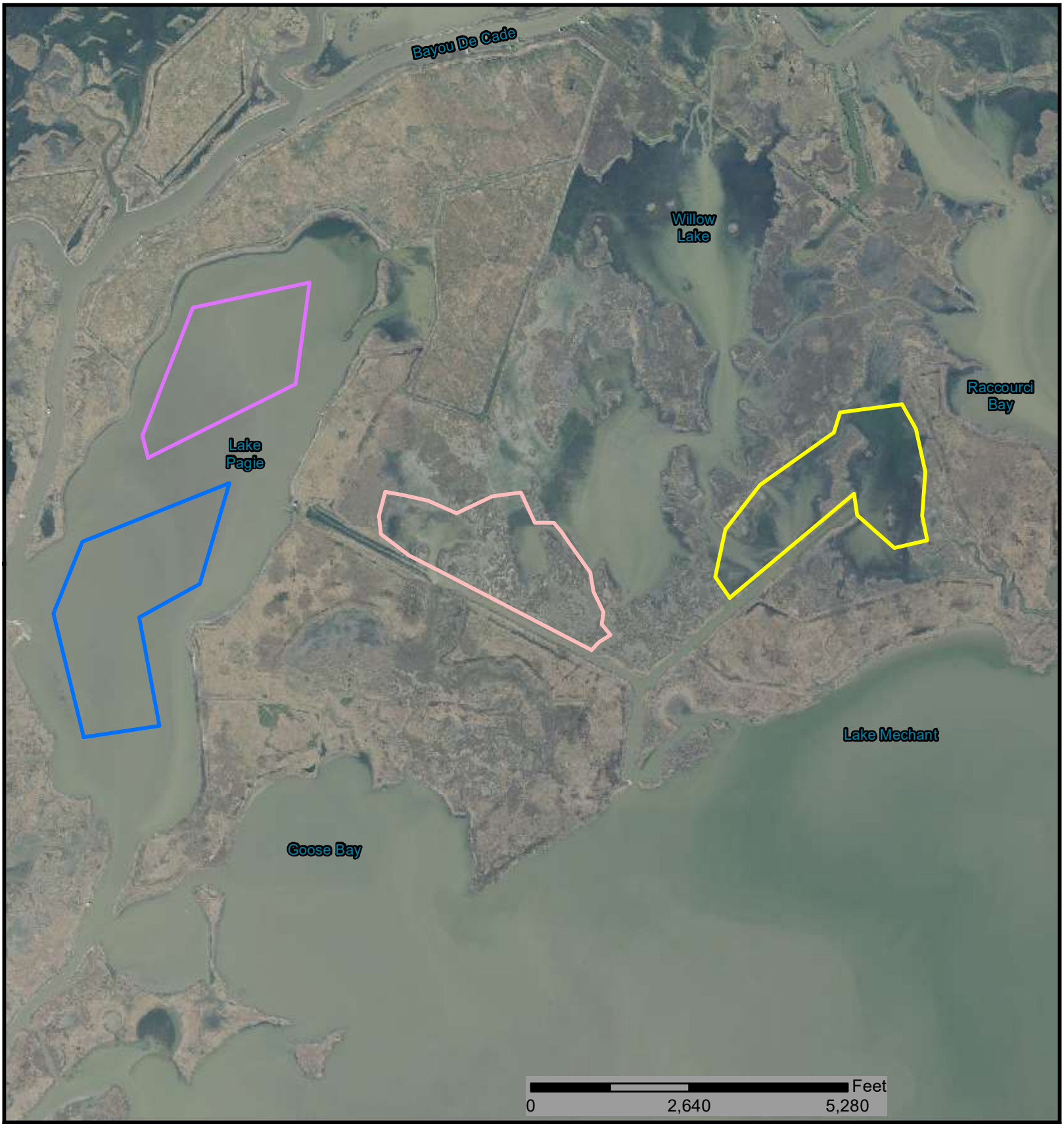
The project is being planned as a small-scale marsh creation project to strategically target areas of marsh creation that will provide greater benefits through hydrologic restoration and will work with other projects as a lower cost alternative solution.

Proposed Solution
Sediment will be dredged from a borrow site in Lake Pagie and pumped via pipeline to create/nourish approximately 241 acres (182 MC +59 MN) of marsh in two marsh creation areas immediately north of the "Y" canal. Earthen containment dikes will be constructed around the perimeter of marsh creation cells. Containment dikes will be gapped at the end of construction or by target year 3.

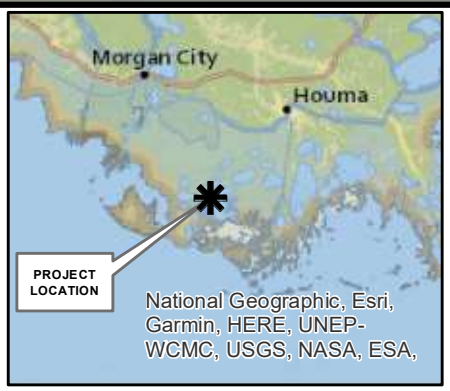
Considerations
Oil and gas infrastructure

Preliminary Cost
Construction cost plus 25% contingency is estimated to be $15-20M.

Preparer(s) of Fact Sheet:
Angela Trahan, Project Manager, Angela.Trahan@USDA.gov, 337/291-3142



PPL 33
LAKE PAGIE SMALL SCALE MARSH RESTORATION
TERREBONNE PARISH, LA



N
W
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Legend

- SMALL_SCALE_MC_WEST = 117 ACRES & 10,594 LF DIKE LENGTH
- SMALL_SCALE_MC_EAST = 124 ACRES & 11,893 LF DIKE LENGTH
- PRIMARY_BORROW_AREA = 143 ACRES
- ALTERNATE_BORROW_AREA = 103 ACRES

USDA

Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA

Data Source: NAIP 2021

Map Date: JANUARY 24, 2023

PPL33

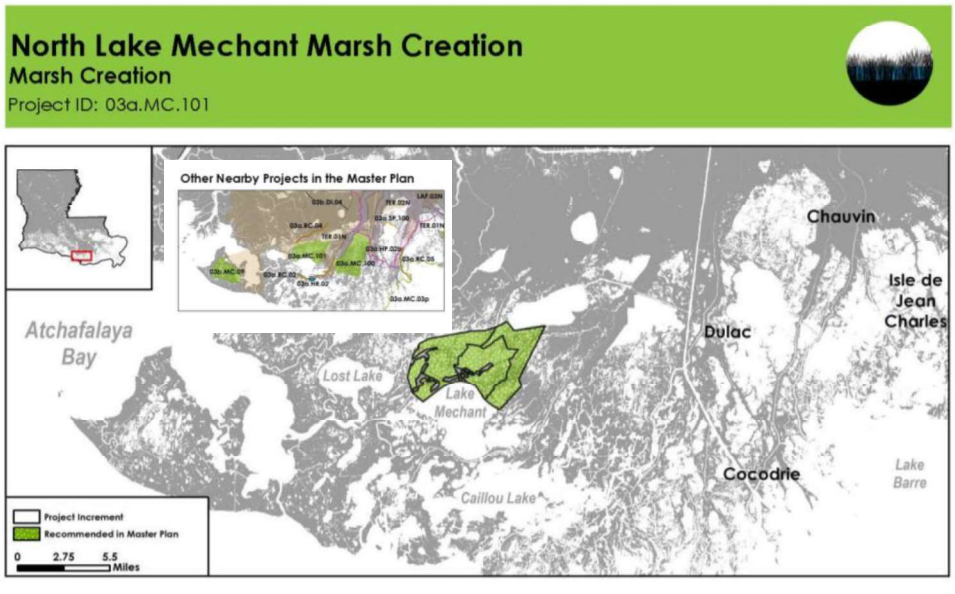
Lake Pagie Small Scale Marsh Restoration

Region 3, Terrebonne Basin

Special thanks to:
Ducks Unlimited
Apache Corp.
ConocoPhillips/LL&E

1

- Consistent with 2017 & 2023 Draft SMP
- Located north of Lake Mechant & south of Bayou Decade, between Bay Raccourci and Lake Pagie

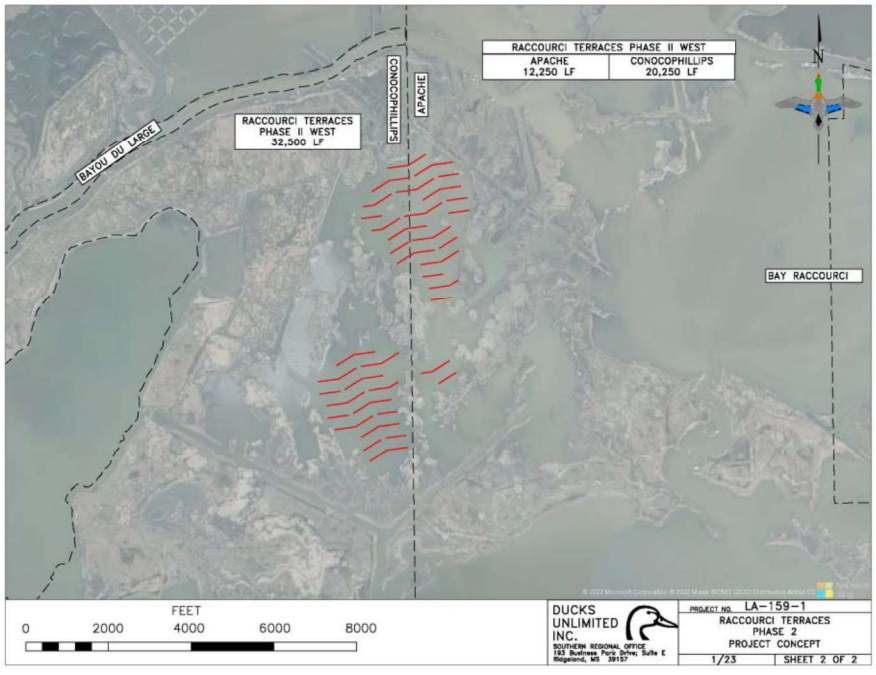


2

Problem:

- During lower water periods high salinity water has infiltrated through oil and gas canals & through Lake Pagie and Bayou Raccourci.
- Increased freshwater input from Atchafalaya River through the lower Penchant marshes does influence the area. However, much of that influence is filling in open bays and lakes.

3



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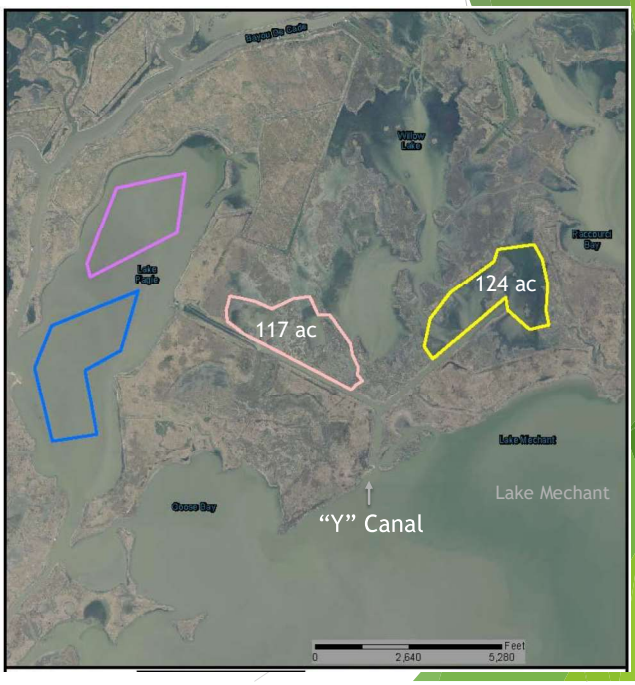
Goal:

- work synergistically with DU Terraces to buffer salinities, restore habitat & continue to allow for the beneficial influence of freshwater flows south through the marsh
- restore low salinity marsh north of the "Y" Canal to slow the movement of saline water north and moderate exchange

➢ Restoration of marsh north or the Y - Canal will help alleviate the need for the long-term maintenance of some of the structural components of TE-44.



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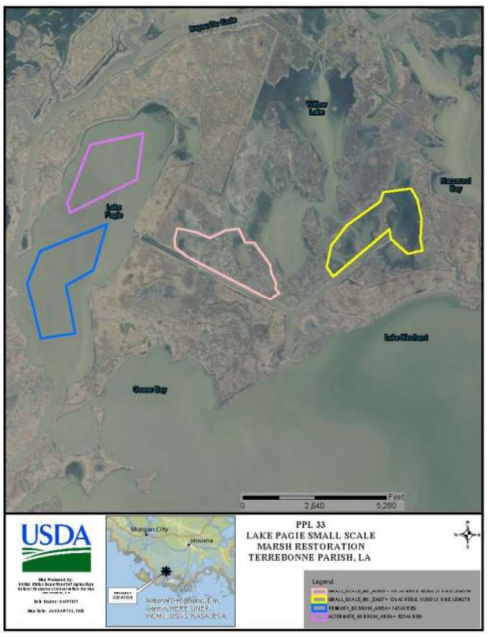

Solution:

Lake Pagie Borrow

182 ac marsh creation

59 ac nourishment

241 ac Total

The project is being planned as a small-scale marsh creation project to strategically target areas that will provide greater benefits.

Work with other projects as a lower cost alternative solution.

Construction Costs + 25% Continency

$15-20M (PPL32 Unit Costs)

6

PPL 33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name:
Bayou Barre Marsh Creation
(Eastern Terrebonne Landbridge Increment 1)

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 2020 loss rate for the Wonder Lake area is 1.08%/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 be the first of several marsh creation projects as part of the Eastern Terrebonne Landbridge and the first of two project that would tie Isle de Jean Charles and Bayou Terrebonne Ridges together.

Specific goals: 1) Create 406 acres and nourish 39 acres of brackish intertidal 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 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, King Rail, Louisiana Eyed Silkmoth and Saltwater topminnow.

Proposed Solution:
This project would propose to create/nourish approximately 445 acres of emergent marsh by utilizing a small hydraulic dredge to pump material from Maddison Bay borrow area. 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 445 acres.

2) How many acres of wetlands will be protected/created over the project life?
Approximately 367 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?
This project would be the first installment of the Eastern Terrebonne Landbridge concept.

5) What is the net impact of the project on critical and non-critical infrastructure?
Protects pipelines.

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 Island Road Marsh Creation project and would be the first installment of marsh creation within the Eastern Terrebonne Landbridge 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 $35 to 40M.

Preparer(s) of Fact Sheet:
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U.S. Fish & Wildlife Service

Louisiana Ecological Services

Legend

- Bayou Barre Marsh Creation
- Borrow Site

PPL33
Bayou Barre Marsh Creation
(Eastern Terrebonne LB Inc. 1)
Terrebonne Parish, Louisiana

PPL33

Bayou Barre Marsh Creation

(Eastern Terrebonne Landbridge Inc. 1)

Region 3, Terrebonne Basin

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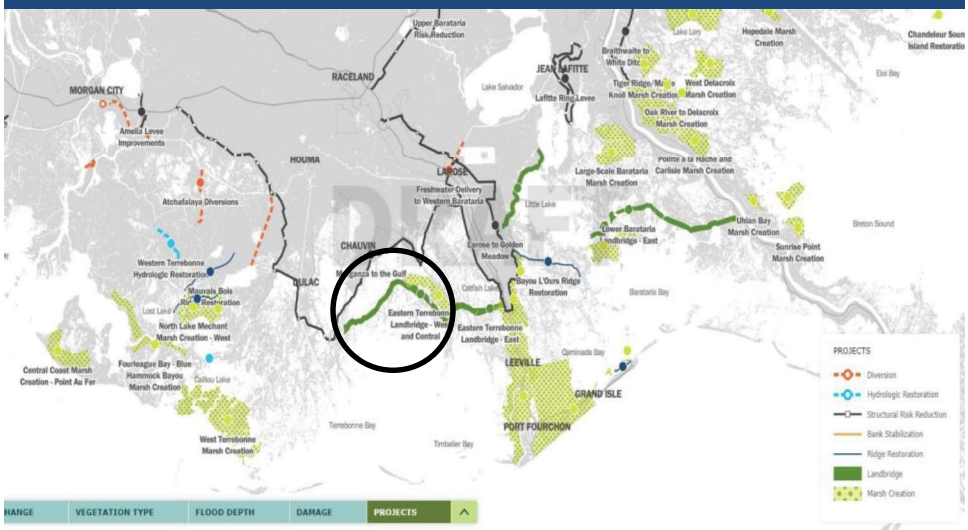
2023 State Master Plan – Eastern Terrebonne Landbridge - West and Central



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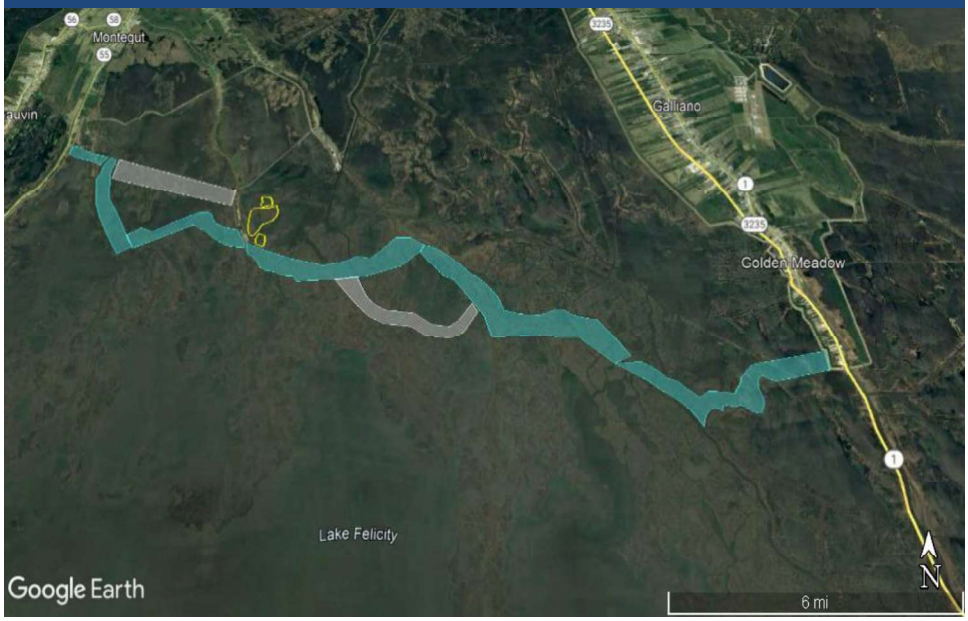
Proposed Alternative of the 23 Masterplan Eastern Terrebonne Landbridge



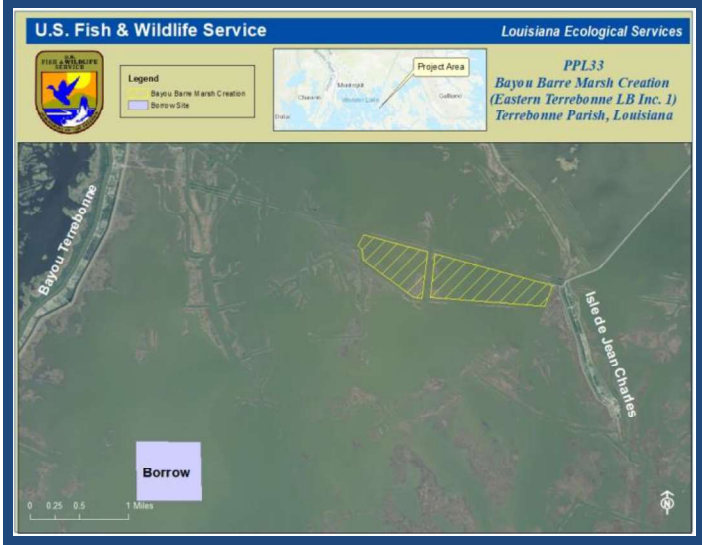
3

Bayou Barre Marsh Creation 1st Increment in Eastern Terrebonne Landbridge

- Stay in Marsh and Avoid Large Open Water Areas
- Shortest Distance to Connect Ridges
- Avoid Pipelines
- Stay Relatively Close to Borrow Source

4

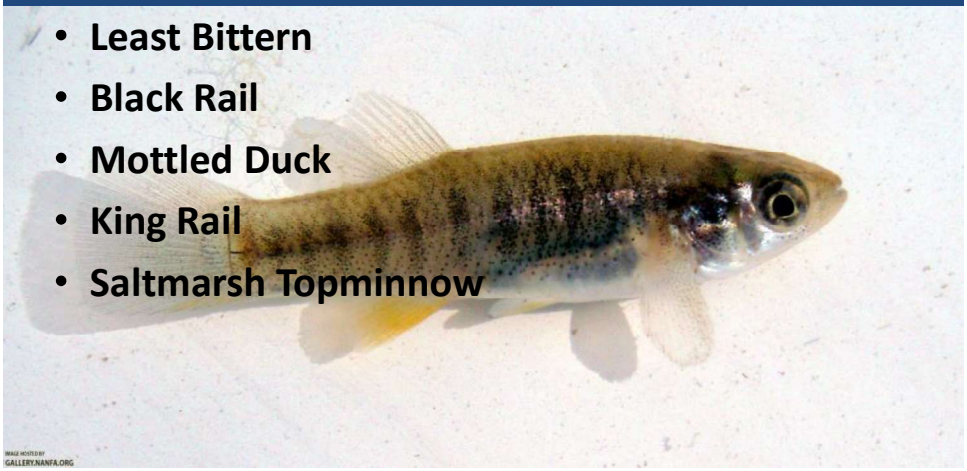
Bayou Barre Marsh Creation (Eastern Terrebonne Landbridge Inc. 1)



- 406 acres of marsh creation
- 39 acres of marsh nourishment
- Maddison Bay borrow
- Net acres = 350 - 400
- Construction plus contingency $35M - $40M
- Project synergy – TE-117 Island Road MC, 1st Increment of Eastern Terrebonne Landbridge

5

Species of Concern and Rare Species



- **Least Bittern**
- **Black Rail**
- **Mottled Duck**
- **King Rail**
- **Saltmarsh Topminnow**

6

PPL33 PROJECT NOMINEE FACT SHEET
February 8, 2023

Project Name
Eastern Terrebonne Landbridge Marsh Creation Increment 1

Project Location
Region 3, Terrebonne Basin, Lafourche Parish

Problem
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 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. Historic aerial photography indicates significant marsh loss in the project area west of Golden Meadow near Catfish Lake. 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. The most recent significant land loss in the area has been the recent hurricanes that have passed directly over or near the project area, including Hurricane Ida. The wetland loss rate for areas near the project area is -1.37%/year based on USGS hyper temporal data from 1984 to 2021.

Goals
The goals of the project are to: 1) create/nourish approximately 583 acres of marsh with material dredged from large open water south of project (Laurier Bayou) and 2) create approximately 14,000 LF (200 acres) of terraces (10 acres of marsh).

Proposed Solution
The proposed solution would be to create approximately 201 acres and nourish 382 acres to restore a portion of the Eastern Terrebonne Landbridge. Sediment will be hydraulically pumped from Lake Saint Catherine. Temporary containment dikes will be constructed and gapped within three years of construction to allow greater tidal exchange and estuarine organism access. In addition, 14,000 LF of terraces (10 acres of marsh) would be created south of the created marsh to help protect that marsh.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   The total project area is approximately 593 acres.

2) *How many acres of wetlands will be protected/created over the project life?*
   The net acre benefit range is 200-250 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 marsh 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 protect portions of the Huricane Protection Levee near Golden Meadow and is the first increment of the Eastern Terrebonne Landbridge.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project will help protect a portion of the Hurricane Protection Levee near Golden Meadow.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
None. It is the first increment of the Eastern Terrebonne Landbridge.

Considerations
None

Preliminary Costs
The fully funded cost range is $30M-$35M.

Preparer(s) of Fact Sheet:
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U.S. Fish & Wildlife Service

Louisiana Ecological Services

Marsh Creation

Terrace Field

Borrow Site

PPL33
Eastern Terrebonne Landbridge Marsh Creation (Increment I)
Lafourche Parish, Louisiana

0 0.25 0.5 1 Miles

N

PPL33

Eastern Terrebonne Landbridge Marsh Creation

(Increment 1)

Region 3, Terrebonne Basin

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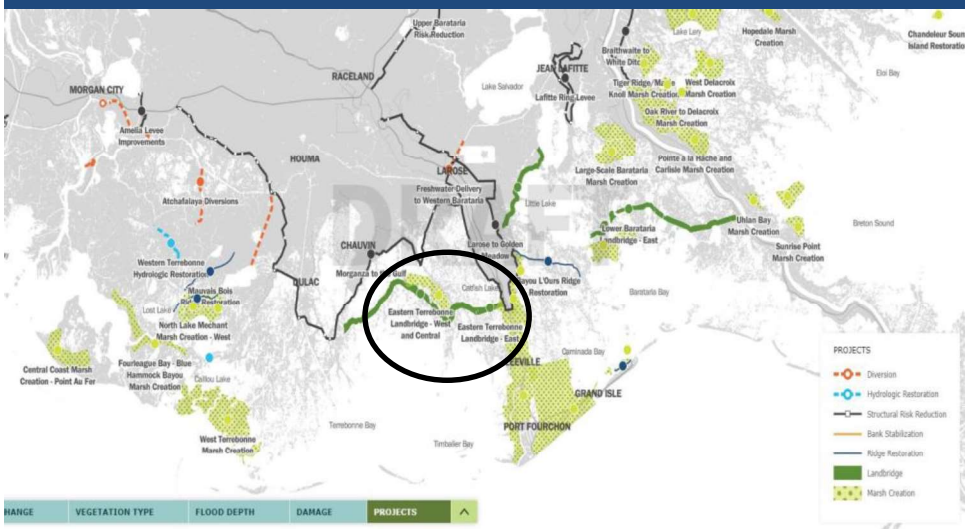
2023 State Master Plan
Eastern Terrebonne Landbridge - East



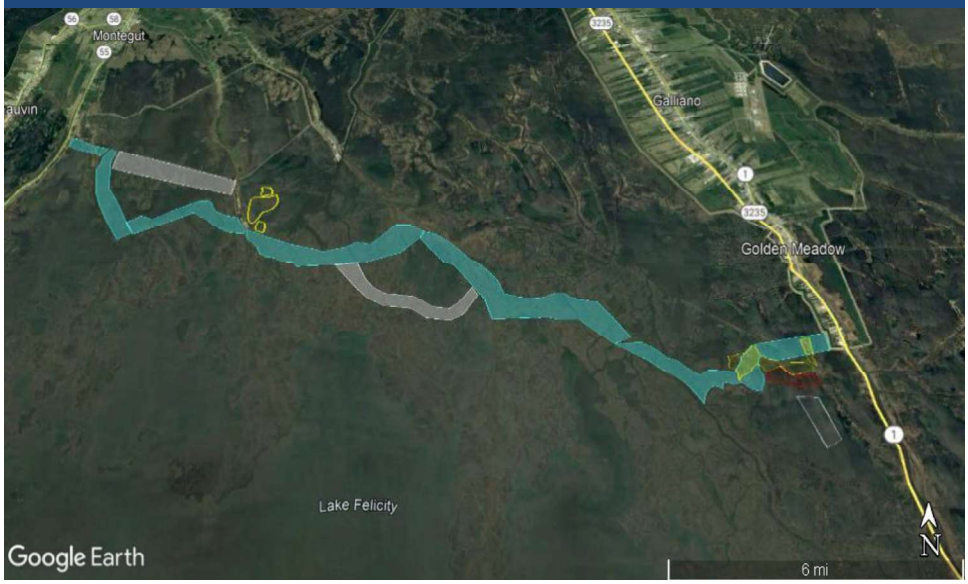
2

Proposed Alternative of the 23 Masterplan Eastern Terrebonne Landbridge

- Stay in Marsh and Avoid Large Open Water Areas
- Shortest Distance to Connect Ridges
- Avoid Pipelines
- Stay Relatively Close to Borrow Source

3

Proposed 1st Increment in the Eastern Terrebonne Landbridge



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Eastern Terrebonne Landbridge Marsh Creation (Increment 1)

- 206 acres of marsh creation
- 377 acres of marsh nourishment
- 14,000 LF/200 ac of earthen terraces (10 ac) marsh
- Laurier Bayou borrow
- Net acres = 231
  200 - 250
- Construction plus contingency $24.4 M
- 1st Increment of Eastern Terrebonne Landbridge, Ducks Unlimited Terrace Field

5

Species of Concern and Rare Species

- **Least Bittern**
- **Mottled Duck**
- **King Rail**

6