COASTAL DIVISION
ST. BERNARD PARISH

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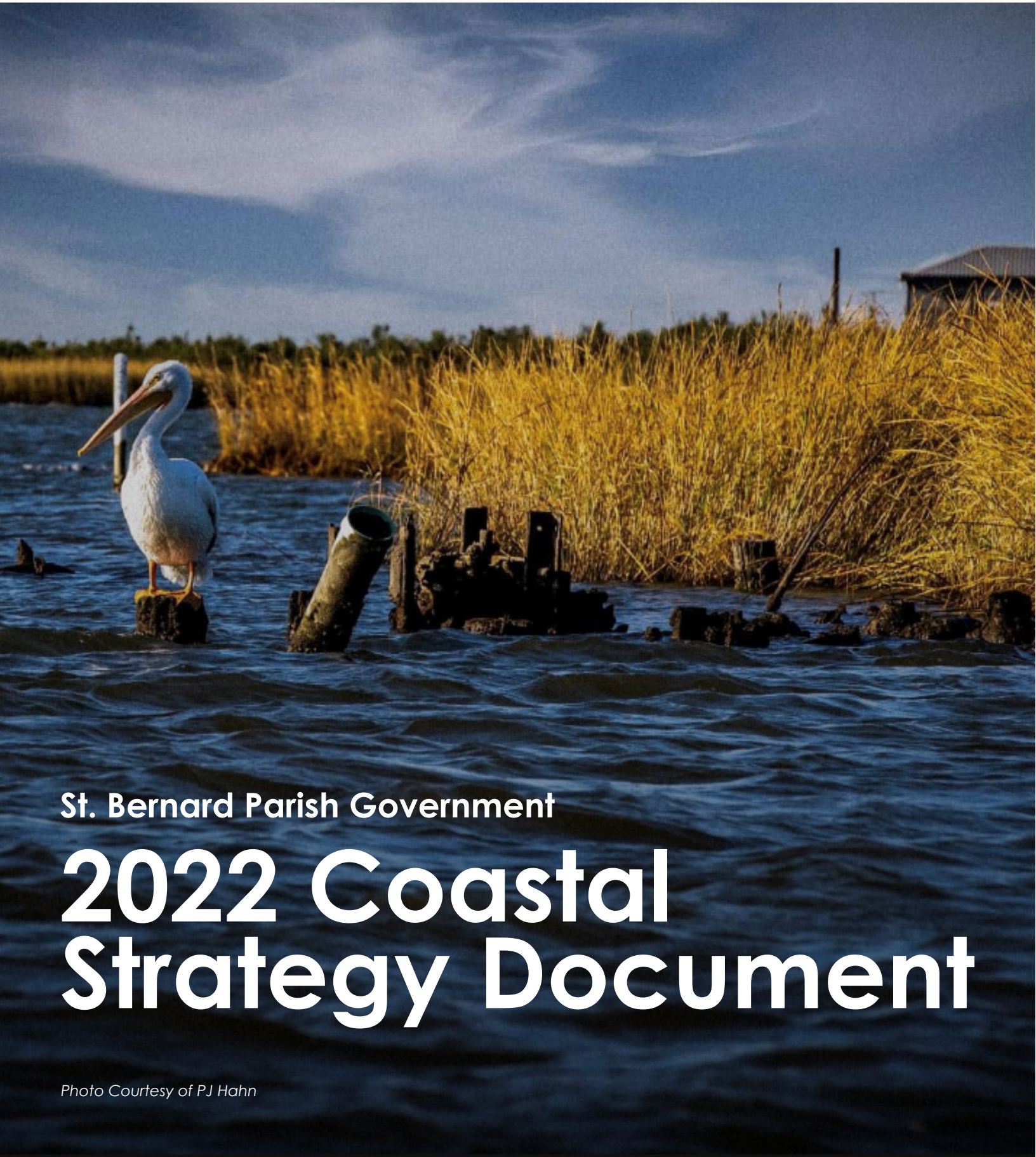


St. Bernard Parish Government

2022 Coastal Strategy Document

Photo Courtesy of PJ Hahn

St. Bernard Parish Government

St. Bernard Parish Council

District A	Gillis McCloskey
District B	Wanda Alcon
District C	Howard Luna
District D	Joshua Moran
District E	Fred Everhardt, Jr.
At-Large West	Richard J. Lewis
At-Large East	Kerri Callais

Administration

Parish President	Guy McInnis
Chief Administrative Officer	Ronnie Alonzo
Executive Director of Coastal Operations	John Lane

Coastal Zone Advisory Committee

Current Members

Ronnie Adams

Nicky Alphonso

Tony Cacioppo

Robbie Campo

Brian Clark

Casey Keiff

Brad LaCoste

Charles Leon

Philip Livaudais

Bobby Lovell

Chris Luna

Ricky Melerine

Ryan Miller

Monty Montelongo

Blaise Pezold

Brad Robin

In Memoriam

Henry "Junior" Rodriguez, Jr.

Raymond "Bozo" Couture

Arnold Rodriguez

Mark Munson

Message from Parish President Guy McInnis

Dear Coastal Stakeholders:

St. Bernard Parish Government is proud to present the 2022 Coastal Strategy Document, a local coastal master plan that reflects our parish's colorful history, current challenges, and future aspirations. Coastal restoration has been a top priority for my administration over the past six years. However, it is important to note that **coastal St. Bernard Parish is culturally, environmentally, and economically significant to our state and nation.**

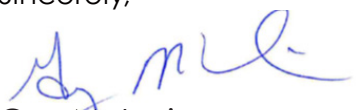
The Coastal Protection and Restoration Authority highlights commercial fisheries, oil and gas, and shipping as critical components of Louisiana's working coast. St. Bernard Parish has been a hub for each of these sectors for over a century. It is critical that stakeholders collaborate to restore our coast and sustain St. Bernard Parish for generations to come.

There are several ongoing coastal restoration projects that will drastically improve the natural environment in St. Bernard Parish. At over 2,800 acres, the Lake Borgne Marsh Creation project will be the largest ever constructed in Louisiana. Additionally, an Eastbank Sediment Pipeline Corridor is being developed for the purpose of providing the parish with the renewable source of sediment needed to restore our coast. Finally, we are happy to announce that efforts to restore our barrier islands are ongoing.

Developing, funding, and implementing coastal restoration projects takes a considerable amount of time and investment. Most of the activities featured in the 2022 Coastal Strategy Document have not yet been completed. However, the plan includes a pathway for all activities to be completed over time. We appreciate your partnership and support as we continue this journey

Thank you.

Sincerely,



Guy McInnis
Parish President
St. Bernard Parish Government

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Acronyms

BMLC Biloxi Marsh Land Corporation
BOEM Bureau of Energy Management
BUDMAT Beneficial Use of Dredged Material
CDBG Community Development Block Grant
Cfs Cubic feet per second
CIAP Coastal Impact Assistance Program
CPRA Coastal Protection and Restoration Authority
CSD Coastal Strategy Document
CWPPRA Coastal Wetlands Planning, Protection and Restoration Act
CWU Central Wetland Unit
CZAC Coastal Zone Advisory Committee
CZMP Coastal Zone Management Program
EPA U.S. Environmental Protection Agency
FEMA Federal Emergency Management Agency
GIWW Gulf Intracoastal Waterway
GOHSEP Governor's Office of Homeland Security and Emergency Preparedness
GOMESA Gulf of Mexico Energy Security Act
HSDRRS Hurricane Storm Damage and Risk Reduction System
IHNC Inner Harbor Navigation Canal
LDSP Long Distance Sediment Pipeline
LDWF Louisiana Department of Wildlife and Fisheries
LMOGA Louisiana Mid-Continent Oil and Gas Association
LPV Lake Pontchartrain and Vicinity Hurricane Protection Project
Mm/yr Millimeters per year
MIP Multi-year implementation plan
MR&T Mississippi River and Tributaries Project
MRGO Mississippi River Gulf Outlet
NOAA National Oceanic and Atmospheric Administration
NFIP National Flood Insurance Program
NRDA Natural Resource Damage Assessment
PPL Project Priority List
RESTORE Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf Coast States
SBPG St. Bernard Parish Government
USACE United States Army Corps of Engineers
USDA U.S. Department of Agriculture
USDOT U.S. Department of Transportation
USFWS U.S. Fish and Wildlife Service

Introduction

The 2022 Coastal Strategy Document (2022 CSD) is the third iteration of St. Bernard Parish Government's (SBPG) comprehensive local coastal master plan. The purpose of the plan is to articulate a vision for protecting and restoring coastal St. Bernard Parish and sustaining the community for future generations. Additionally, the 2022 CSD provides SBPG with a decision-making tool that will allow the parish to continue strategically and competitively advancing SBPG's coastal priorities through implementation. The plan is organized into three core sections:

- History of Coastal St. Bernard Parish;
- Coastal Protection and Restoration Activities in St. Bernard Parish; and
- Vision for the Future.

Coastal protection and restoration activities are featured in the 2022 CSD as fact sheets arranged in accordance with the same tiered system utilized in the 2016 and 2018 CSDs:

- **Tier 1** (Large-Scale, High Priority Protection, Restoration, and Risk Reduction Projects);
- **Tier 2** (Fisheries, Economic Development, and Community Resilience Projects); and
- **Tier 3** (Small-Scale Local Coastal Programming).

The 2022 CSD serves as an update to the 2018 plan, which was adopted by the St. Bernard Parish Coastal Zone Advisory Committee (CZAC) and St. Bernard Parish Council in February 2018. The updated plan is also intended to prepare SBPG and other local stakeholders for the Coastal Protection and Restoration Authority's (CPRA) forthcoming Louisiana's Comprehensive Master Plan for a Sustainable Coast (2023 State Master Plan). SBPG anticipates that CPRA's plan update will present new opportunities to protect, restore, and sustain coastal St. Bernard Parish, and the parish is committed to aligning its priorities and efforts with those of CPRA to the extent possible.

Introduction

Section I

The History of Coastal St. Bernard Parish

Image I-1: Captain Thomas Gonzalez hunting in eastern St. Bernard Parish

The coastal geography of St. Bernard Parish is the central feature of the community's unique history and character. However, the parish's location on the dynamic Louisiana coast has also presented challenges, including floods, tropical weather events, and industrial accidents. Despite such challenges, St. Bernard Parish residents are resilient people who have demonstrated their capacity to adapt to a constantly changing environment.

The population of St. Bernard Parish grew from 6,512 to over 67,000 between 1930 and 2000 (US Census Bureau, 2000). During this same period, the parish experienced hundreds of square miles of land loss due to erosion, saltwater intrusion, subsidence, and tropical weather events. Human factors such as development, oil and gas exploration, and the construction of navigation canals also contributed to these phenomena.

St. Bernard Parish reached a critical juncture following Hurricane Katrina (2005) and the Deepwater Horizon event (BP Oil Spill) (2010). After nearly all 27,000 structures in the parish were damaged or destroyed and 67,000 residents were displaced by the hurricane, the parish had to reevaluate its future.

Hurricane Katrina and the BP Oil Spill highlighted the environmental, social, and economic risks associated with life on the coast. While these events were very different, both significantly impacted the natural environment in southeast Louisiana. The 2022 CSD articulates a vision for the future of coastal St. Bernard Parish that is focused on the utility of coastal protection and restoration as a means of managing risk, sustaining local culture, and supporting the parish's vital economic role on Louisiana's working coast.

Coastal communities and the seafood industry are closely intertwined in Louisiana. Commercial oyster, shrimp, and crab fisheries have a combined annual economic impact of approximately $2 billion and account for over 22,000 jobs (State of Louisiana, 2019). Louisiana's seafood industry is also important nationally. Over 890 million pounds of seafood were landed in the state during 2017 (National Marine Fisheries Service, 2018). Louisiana produces 70% of all oysters and 40% of all blue crabs in the US (State of Louisiana, 2019), and 25% of all seafood consumed in the country is harvested from Louisiana (Jones, 2015). The Pontchartrain Basin is one of the most productive seafood harvest areas in Louisiana.

Natural Setting

St. Bernard Parish is situated in southeastern Louisiana between Orleans Parish, Plaquemines Parish, the Gulf of Mexico, and the Mississippi Sound. Approximately 84% of the parish's 1,383,700-acre footprint is water, and the entire parish is within the Louisiana Coastal Zone Boundary (Louisiana Department of Natural Resources, 2010). The parish includes parts of the Pontchartrain and Breton Sound basins, as defined by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) program. St. Bernard Parish also includes the Lower Pontchartrain and Breton ecoregions, as modeled in the 2017 State Master Plan (White et al., 2017).

Deltaic processes formed St. Bernard Parish through the deposition of Mississippi River sediment along former channels. These processes and subsequent reworking of deposits are responsible for constructing the natural levees, distributary channels, interdistributary marsh, and barrier islands present today. This deltaic origin makes St. Bernard Parish especially vulnerable to issues common in low-lying coastal areas, including subsidence, land loss, habitat change, flooding, saltwater intrusion, and tropical storm impacts.

The present rate of subsidence, estimated to be roughly a quarter of an inch per year (Twitchell et al., 2013; Moore, 2014; Reed & Yuill, 2017), amplifies the effects of local sea-level rise and has driven the extreme land loss observed in recent years (Dokka et al., 2006). The Breton and Pontchartrain basins have lost over 390 square miles of land since 1932 (Couvillion et al., 2017).

The parish has been impacted by over 50 hurricanes since the early 1900's, and approximately 82 square miles of land loss has been directly attributed to Hurricane Katrina alone (Barras, 2005). Additionally, the region regularly experiences winter storms during cold fronts. While these storms are less intense, they have played a significant role in shaping the landscape due to their high frequency (20-40 events annually) and associated subtidal water level variations (Georgiou et al., 2005; Nelson, 2017). Elsewhere in the state, such storms have been observed to cause more erosion than tropical weather events (Mossa & Roberts, 1990).

Early Settlement and Development

St. Bernard Parish's location along the Mississippi River made the area attractive for settlement and later, industrial development. However, the parish's coastal location has also presented significant challenges to area inhabitants. Acts of war, changing economic circumstances, tropical weather events, and other environmental factors have necessitated adaptation and resilience as a way of life in St. Bernard Parish over the past four centuries.

European settlers from the Canary Islands (Isleños) arrived in the parish beginning in 1778. Louisiana Governor Bernardo de Galvez carefully planned the settlement of Isleños colonists. He and a team of administrators surveyed areas surrounding New Orleans in 1777-1778 and selected five locations, including La Concepcion or Tierra de Bueyes (later St. Bernard Parish) along the banks of Bayou Terre-aux-Boeufs. (Hyland, 2021).

Isleños introduced cattle ranching to St. Bernard Parish. Ranchers throughout Louisiana and eastern Texas began driving herds of cattle to Isleños ranchers in the parish. In addition to ranching, Isleños worked on the sugar plantations along Bayou Terre aux Boeufs and Bayou La Loutre. A very small group of wealthy Isleños also emerged as sugar planters along Bayou Terre aux Boeufs. The community would later become proficient in hunting, fishing, and trapping (Hyland, 2021)

Early Settlers

Native Americans played a critical role in the settlement of St. Bernard Parish, as the Choctaw, Chitimacha, and Chaouacha tribes were the first to inhabit the land. Filipinos, Isleños, and other European settlers also began migrating to the parish during the 18th century. The area that would later become St. Bernard Parish was incredibly diverse throughout its early existence. (Hyland, 2021)

Image I-2: Louis-Eugene Lami's depiction on the Battle of New Orleans (Lami, 1839)

In the 1760s, the Saint Malo community, comprised of settlers from the Philippines (Filipinos) and fugitive slaves, was established near Lake Borgne. This was the first Filipino settlement and one of the earliest Asian settlements in the US (Gonzales, 2019)

The War of 1812

The area that would officially become St. Bernard Parish in 1807 was strategically significant due to its proximity to New Orleans, the Mississippi River, Lake Pontchartrain, and Lake Borgne. The British Royal Marines invaded Louisiana through Lake Borgne in December 1814, ultimately resulting in what came to be known as the Battle of New Orleans (January 8, 1815). Combatants fighting for the US under the leadership of General Andrew Jackson reflected the diversity of St. Bernard Parish and included European immigrants, Isleños, Filipinos, the Choctaw, and free men of color. The American effort was even supported by French pirate Jean Lafitte and his team of smugglers. The British retreated from Louisiana several days after suffering defeat in Chalmette.

Isleños ranchers and farmers had a difficult time recovering from the impacts of the British occupation leading up to the Battle of New Orleans. However, agricultural practices in eastern St. Bernard Parish would continue in the decades leading up to the Civil War. Construction of the Mexican Gulf Railroad began in 1836 and the line extended from New Orleans to Shell Beach by 1850. By the end of the Civil War, the sugar industry in St. Bernard Parish had been decimated. Many Isleños were forced to become subsistence farmers engaged in fur-trapping, hunting, moss gathering, and commercial fishing. The Mexican Gulf Railroad became a critical means of shipping products such as seafood and wild game from St. Bernard Parish to New Orleans beginning in the late-19th century (Hyland, 2021).

Early Industrial Development and Tropical Weather Events

St. Bernard Parish remained a small, agrarian downriver suburb of New Orleans throughout the 19th century. In 1904, shipping interests expanded Bayou Dupre and created the Lake Borgne Canal, a navigation channel connecting Lake Borgne to the Mississippi River. The viability of the Lake Borgne Canal (now referred to as the Violet Canal) was short-lived due to advances in shipbuilding technology and the construction of the Inner Harbor Navigation Canal (IHNC or Industrial Canal) in New Orleans during the early 1920's.

The Grand Isle Hurricane, a Category 3 storm that killed an estimated 353 people in southeast Louisiana, impacted St. Bernard Parish in 1909 (Roth, 2010). This was also a significant year for industrial development in the parish, as the Domino Sugar Refinery opened on the Mississippi River in Arabi. The refinery became the largest of its kind in the western hemisphere and has consistently employed hundreds of people for well over a century (ASR Group, 2021). Domino Sugar was the first of several major industrial developments to occur in St. Bernard Parish during the 20th century. In 1915, Tenneco Oil (also previously Exxon-Mobil and currently PBF) built a refinery on the Mississippi River in Chalmette. Like Domino, PBF consistently employs hundreds of people. The refinery currently has the capacity to process 185,000 barrels of crude per day (NS Energy, n.d.).

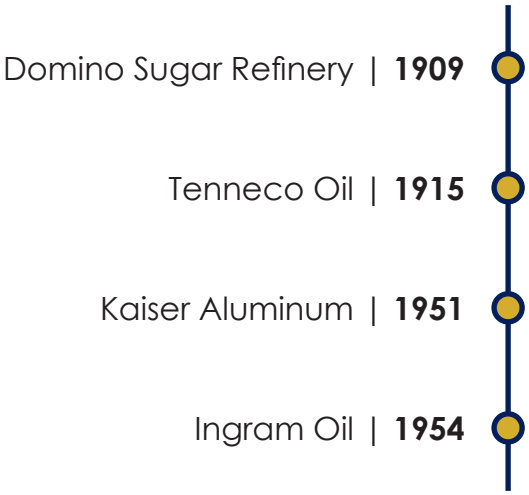
Industrial development and tropical weather events in St. Bernard Parish would continue to occur in tandem. The New Orleans Hurricane of 1915 was a Category 4 storm that devastated much of the New Orleans metropolitan area and killed 275 people in the city (Roth, 2010). The Saint Malo settlement in eastern St. Bernard Parish was destroyed during the event and was never reconstructed. Geographer Richard Campanella (2015) believes the hurricane would have been a lot worse for New Orleans if not for the approximately 1,900 square miles of marsh and swamp that surrounded the city in St. Bernard Parish and other outlying communities, which acted as "terrestrial friction against Gulf surges" throughout the early 20th century. However, as Campanella notes, several factors contributed to the gradual destruction of the natural environment surrounding New Orleans, making the entire metro area exponentially more vulnerable to tropical weather events over time.

Environmental Change and Risk During the 20th Century

A series of catastrophes, industrial developments, and infrastructure projects drastically and permanently altered the New Orleans metropolitan area landscape during the 20th century. The area was impacted by benchmark events such as the Great Mississippi River Flood of 1927 and Hurricane Betsy (1965), which prompted public policy responses that resulted in the funding of

major structural risk reduction projects throughout the region. Additionally, a network of navigation canals connecting the Gulf of Mexico and Lake Pontchartrain to the Mississippi River had been constructed around the metro area by 1968. The cumulative impacts of these phenomena were rapid environmental degradation and the introduction of significant flood risks throughout the region.

Major Industrial Developments



The Crevasse

St. Bernard Parish was indirectly impacted by the Great Mississippi River Flood of 1927. In what came to be known as the Crevasse, commercial interests in New Orleans gained approval from Louisiana Governor Oramel Simpson to destroy a section of levee along the Mississippi River in St. Bernard Parish to reduce water levels in New Orleans and spare the city from flooding (Day et al., 2016). The resulting influx of water, estimated to have been flowing at 250,000 cubic feet per second (cfs), flooded portions of eastern St. Bernard Parish.

A 1928 amendment to the Louisiana state constitution allowed the Orleans Levee Board to issue bonds and apply up to one million dollars in property tax for the purpose of paying "the expenses of breaking and restoring the levee below New Orleans and to satisfy the claims of property owners" (N. O. Levee Board, 1961). However, impacted residents were not satisfied with the claims process. The incident precipitated decades of litigation and mistrust between various coastal stakeholder groups in the New Orleans metro area.

Congress responded to the Great Mississippi River Flood by passing the Flood Control Act of 1928, which authorized the United States Army Corps of Engineers (USACE) to design and construct flood control projects. The Mississippi River and Tributaries Project (MR&T) was included in the authorization, ultimately resulting in the construction of over 3,700 miles of embankments and floodwalls along the Mississippi River (USACE, 2014). Several significant water control structures were also constructed along the Mississippi River in Louisiana as part of the MR&T, including the Bonnet Carré Spillway (1931) (Rentfro, 2017). Although the MR&T has served its purpose in terms of structural risk reduction, the loss of sediment input from the Mississippi River into coastal ecosystems in St. Bernard Parish and elsewhere has since been identified as a major contributor to coastal land loss (Coastal Environments, Inc., 2012).

Muskrats, Oil, Gas, and Aluminum

Despite the personal and financial hardships associated with the Crevasse, eastern St. Bernard Parish began experiencing an economic boom in the 1920's when global fashion trends increased demand for muskrat pelts. The parish quickly became one of the most productive fur-trapping regions in the world, and good trappers could earn up to $4,000 per season (Jeansonne, 2006; Gowland, 2003). Many Isleños were already experienced trappers, which placed the community in a great position to capitalize on the burgeoning muskrat pelt market. The fur-trapping boom in St. Bernard Parish would continue for several decades.

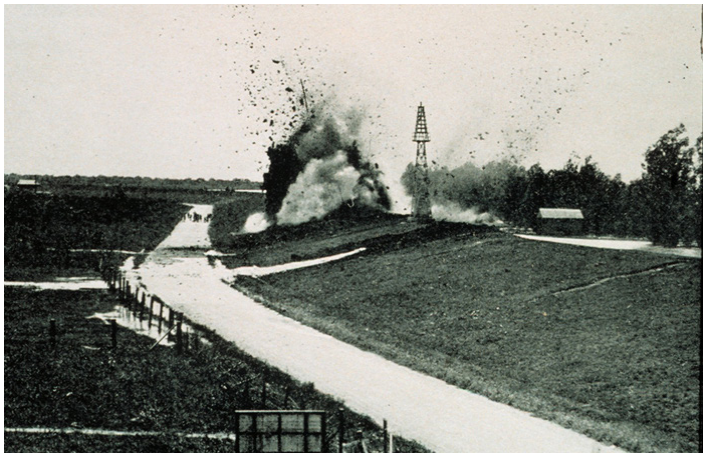


Image I-3: The Crevasse inundated eastern St. Bernard Parish in 1927 (NOAA, n.d)

The oil and gas industry also made great strides in Louisiana during the early 20th century. According to the Louisiana Mid-Continent Oil and Gas Association (LMOGA) (2021), the first oil well, refinery, and pipeline in the state were all constructed between 1901 and 1909. Oil production peaked at over 728 million barrels of crude by 1969 (LMOGA, 2021) and the oil and gas industry had dredged more than 10,000 miles of pipeline and access canals across coastal Louisiana by the end of the century (Schleifstein, 2013). The positive economic impact of oil and gas development cannot be overstated. However, it is estimated that oil and gas exploration in Louisiana is responsible for at least 36% of all land loss that occurred between 1932 and 1990 (Schleifstein, 2013).

Another major hurricane made landfall near New Orleans in 1947. The storm caused widespread flooding throughout the metro area and resulted in 12 fatalities across southeast Louisiana (Roth, 2010). The storm surge at Shell Beach was measured at 11.2 feet during the event (Roth, 2010). The 1947 hurricane impacted approximately 5,000 homes and caused an estimated $110 million in damage in the state (Boyd, 2021). As a result of this event, Congress authorized the USACE to develop a plan for hurricane protection around Lake Pontchartrain. The culmination of this effort was the Barrier Plan (1955), a proposed system of structural components such as levees, walls, and gates (SBPG v. US, 2018).

The persistent threat of tropical weather events did not temper industrial development in and around St. Bernard Parish during the mid-20th century. In 1951, Kaiser Aluminum opened a new aluminum and chemical plant on the Mississippi River in Chalmette. The plant employed thousands of people and was once the largest aluminum smelting operation in the world (Warren, 2009). The Ingram Oil Refinery (formerly Murphy and now Valero) was also constructed in the 1950's. Valero currently employs 300 people and has the capacity to process 135,000 barrels of crude per day (Valero, 2021).

> "The Delacroix Island and Bencheque sections of St. Bernard are virtually 'drowned out' by water from the artificial crevasse at Caernarvon. The tide at the island is reported at eight feet deep, with a number of homes swept away." (Delacroix Island Now Covered, 1927)
>
> The flooding became more widespread as crews used dynamite to open the levee over the course of many days. As of May 3, 1927, Violet, Poydras, Shell Beach, and Delacroix were "practically shut off from the outside world" because of the Crevasse (Many Families Remain, 1927).
>
> Impacted St. Bernard and Plaquemines Parish residents submitted $35 million in property damage claims to the Orleans Parish Levee Board, but less than 10% of the claims were paid (Barry, 1998; Bradshaw, 2011).

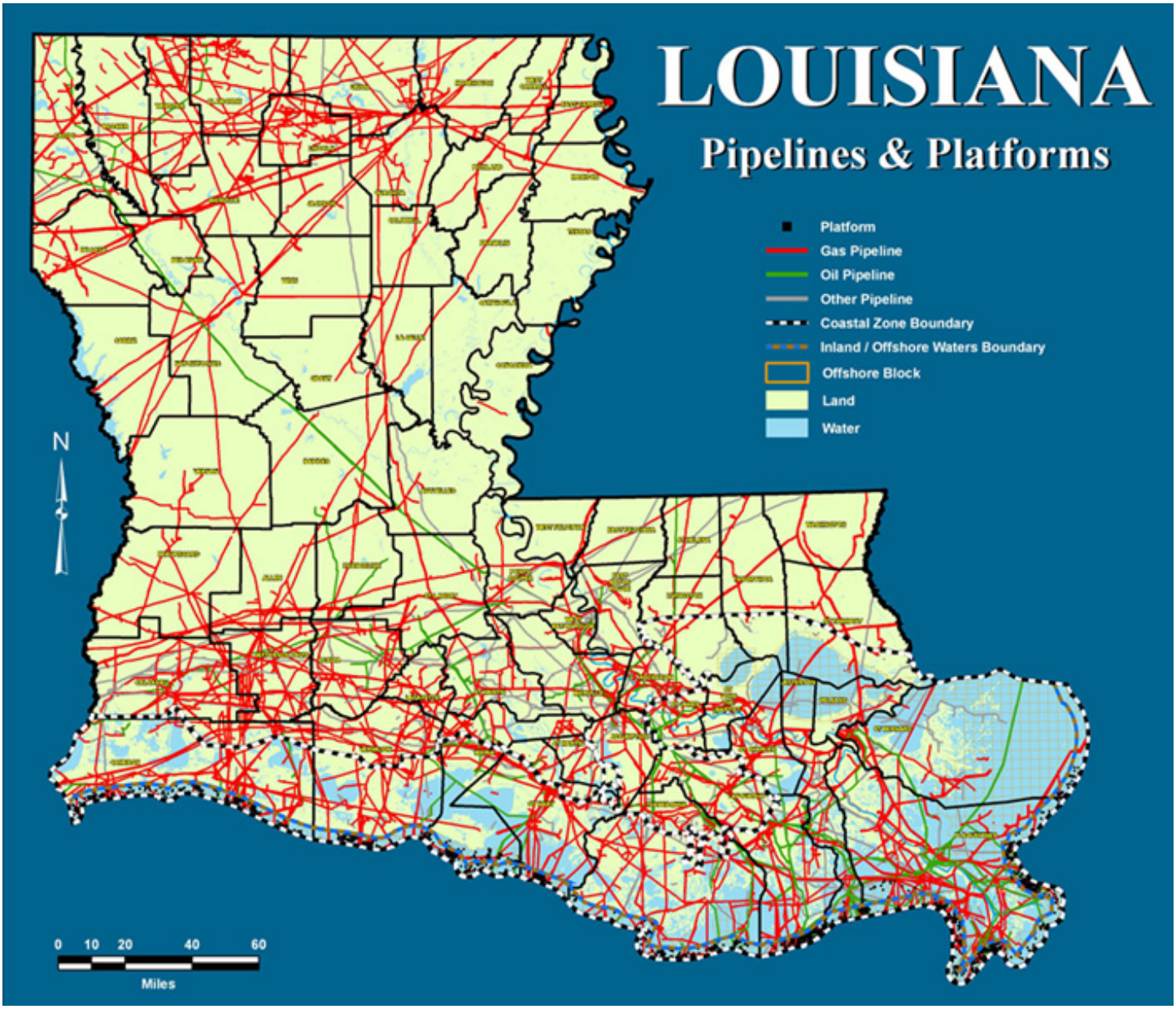


Image I-4: Pipelines and platforms in Louisiana (Source: Louisiana Department of Natural Resources, 2008)

Navigation Canals

Bayou Dupre, just south of Lake Borgne and east (downriver) of New Orleans in St. Bernard Parish, was widened and connected to the Mississippi River in 1904. Constructed as a private venture, the Lake Borgne Canal marked the first successful attempt at connecting the Mississippi River and Lake Pontchartrain (Freudenburg et al., 2009). However, the canal was only constructed at forty feet in width, and advances in shipbuilding technology quickly deemed it obsolete. The Lake Borgne Canal (now referred to as the Violet Canal) was eventually abandoned and disconnected from the Mississippi River. Efforts to connect the river and lake for the purpose of enhancing New Orleans' standing as a seaport would persist throughout the 20th century (Graves, 2012).

The Louisiana State Legislature authorized the construction of the Industrial Canal in New Orleans in 1914 for the purpose of accommodating shipping

and shipbuilding interests in the city and enhancing the city's prospects as a seaport. The canal had the spatial effect of separating both the Lower Ninth Ward of New Orleans and St. Bernard Parish from the rest of the city. Businesses in St. Bernard Parish began complaining about city streetcar services not long after construction of the canal began, claiming that they were already "having a hard time keeping their employees" due to the inconveniences associated with the canal and its impacts on transportation infrastructure (Complaints Against, 1918).

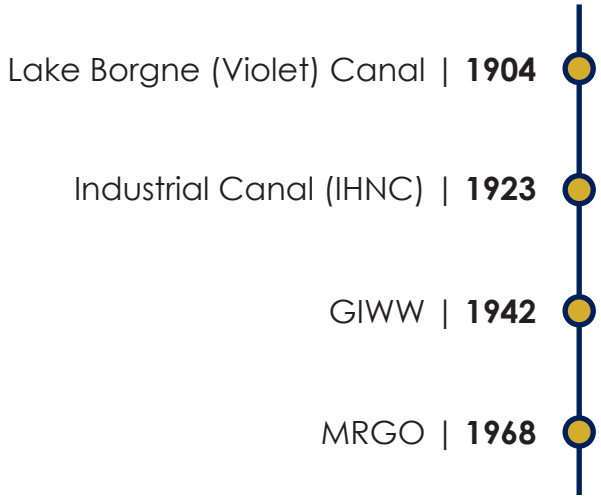
The Gulf Intercoastal Waterway (GIWW) system is a network of canals that allows ships to transport goods along the central Gulf Coast while remaining inside the coastline or on the interior of barrier islands. Congress authorized the westbound extension of the GIWW to the Industrial Canal in 1942. However, that portion of the GIWW that crosses the area north of Lake Borgne was problematic from the onset.

It was narrow, and obviously it was limited to vessels of less than a nine-foot draft. In addition, channels across shallow bays and estuaries are notoriously difficult to maintain. (Freudenburg et al., 2009, p. 71)

By early 1943, business interests in New Orleans and the Louisiana State Legislature had already began lobbying Congress to consider constructing another navigation canal in the metro area. The proposed canal would provide an even more direct route from the Gulf of Mexico to the Mississippi River. Project proponents argued that such a canal would not only be good for commerce but would also serve national security interests by providing an alternate route if the river ever became inaccessible due to an act of war.

Congress ordered a feasibility study for a new navigation canal project in 1943, and five years later the project was endorsed by the Chief Engineer of the Army (Freudenburg et al., 2009). Congress authorized the construction of the Mississippi River Gulf Outlet (MRGO) in 1956 and the project was completed in the late 1960's (SBPG vs. US, 2018). The adverse environmental impacts associated with the referenced network of navigation canals remain highly consequential in St. Bernard and Orleans parishes today (Graves, 2012).

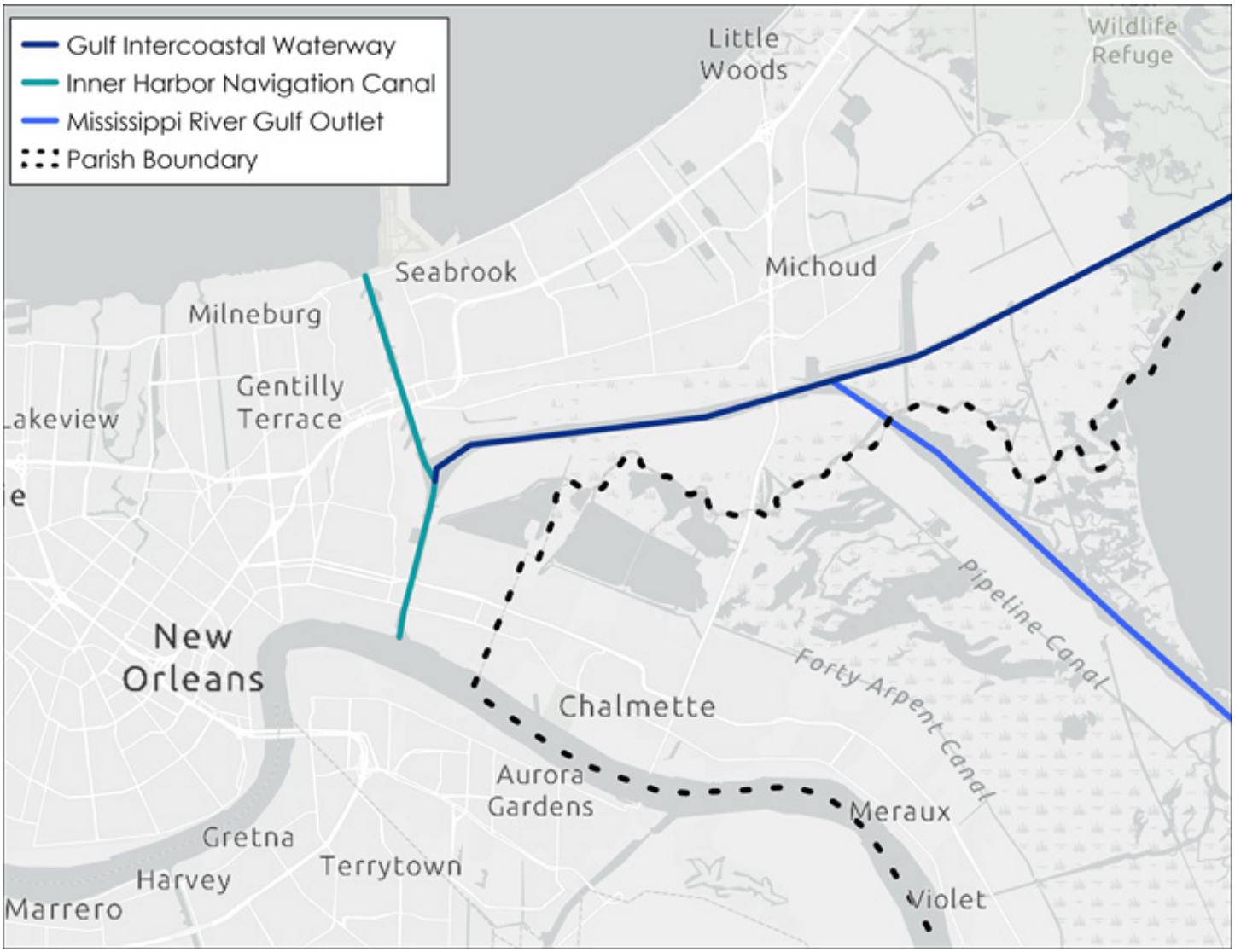
Navigation Canal Timeline



The 1955 Barrier Plan became the impetus for the Lake Pontchartrain and Vicinity Hurricane Protection Project (LPV) beginning in 1965. While the MRGO was still under construction, Congress authorized $56 million for the construction of the LPV, which included the beneficial use of dredged material from the channel to construct area levees (SBPG vs. US, 2018). However, the LPV system would not be completed in time for the historic 1965 hurricane season.

Hurricane Betsy

Hurricane Betsy (1965) was a Category 3 storm that became the first billion-dollar disaster in US history. The hurricane pushed storm surge through the MRGO and into the Industrial Canal, breaching levees and flooding approximately 164,000 structures in St. Bernard and Orleans parishes. The



Map I-1: Navigation canals have changed the St. Bernard Parish landscape and storm surge risk over the past century

Lower Ninth Ward and Arabi were the hardest hit areas in the metro area, and the destruction caused by Betsy would be unparalleled until Hurricane Katrina struck 40 years later.

Lower Ninth Ward and St. Bernard Parish residents filed a lawsuit (Graci v. US, 1971) against the US, alleging that the federal government was negligent in designing, constructing, and operating the MRGO in a manner that exacerbated the impacts of Hurricane Betsy. The courts found that the plaintiffs failed to prove any fault or negligence on the part of the federal government. However, Graci v. US did establish that the USACE "could be held liable

Image I-5: Arabi residents gather their remaining belongings after Hurricane Betsy (Walton, 2019)

for damages arising out of activities surrounding a navigation channel notwithstanding the fact that those actions caused the failure of certain levees" (In Re Katrina Canal Breaches Consolidated Litigation, 2009, p. 2).

The severity of Hurricane Betsy prompted Congress to pass the National Flood Insurance Act of 1968, which ultimately resulted in the establishment of the National Flood Insurance Program (NFIP). The storm also highlighted the risk associated with relying solely on structural risk reduction measures in a deteriorating coastal environment. However, "photos taken during the Betsy event bear a striking resemblance to photos taken 40 years later during Hurricane Katrina," when storm surge was again funneled into the Lower Ninth Ward and St. Bernard Parish, causing levee breaches and hundreds of fatalities (Graves, 2012, p. 119).

Post-Betsy, Pre-Katrina

Coastal restoration was not a salient public policy issue in Louisiana prior to Hurricane Betsy. However, Congress later passed the Coastal Zone Management Act (1972), and the Louisiana Constitution was amended in 1974 to include the following provision:

The natural resources of the state, including air and water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. (Louisiana State Constitution, Article IX, Section 1)

The Louisiana Legislature subsequently passed the State and Local Coastal Resources Act of 1978, which provided a mechanism for coastal parishes to establish their own local Coastal Zone Management Program (CZMP) and Coastal Zone Advisory Committee (CZAC). St. Bernard Parish had its CZMP and CZAC federally approved in 1987 (Coastal Environments, Inc., 2012).

Major Disasters Since 1927

- The Crevasse | **1927**
- 1947 Hurricane | **1947**
- Hurricane Betsy | **1965**
- Hurricane Katrina | **2005**
- BP Oil Spill | **2010**

MRGO Warning Signs and Early Activism

Public officials representing St. Bernard Parish became increasingly sensitive to the impacts of the MRGO. Facing a local cost-share of $6.7 million for the Chalmette Loop levee system around the most populated section of the parish, one St. Bernard Parish Police Juror pointed out that "If it hadn't been for the Gulf Outlet we wouldn't have had to construct this thing" (Hill, 1990). US Representative Billy Tauzin agreed, stating that "the project (the MRGO) has done more damage to St. Bernard than the parish could ever repair" (Hill, 1990). Local activism regarding the MRGO would become more intense in the years leading up to Hurricane Katrina.

> Concerns regarding the MRGO and its impacts on the natural environment and flood risk in St. Bernard and Orleans parishes persisted throughout the 1980's and 1990's. The average width of the channel had increased from 650 feet to 1,500 feet between 1968 and 1987. A 1994 USACE Reconnaissance Report highlighted the devastating impacts the MRGO was having on area wetlands: erosion along the banks of the channel had already resulted in the loss of at least 4,200 acres of highly productive marsh in addition to the approximately 15,000 acres of marsh that were lost during channel construction. A subsequent USACE Reconnaissance Report (1996) estimated that the MRGO would convert up to 2,700 acres of additional healthy marsh to open water by 2050. (In Re Katrina Canal Breaches Consolidated Litigation, 2009)

The St. Bernard Sportsman's League, comprised primarily of commercial and recreational fishermen, joined local public officials in regularly speaking out against the MRGO. Individual landowners also often expressed concerns regarding the adverse impacts the channel was having on area natural resources, including timber, fish, and waterfowl (Hill, 1991). Fishermen and other concerned citizens later staged a protest on Earth Day 1993, when they organized a flotilla of vessels that anchored across the MRGO and blocked navigation (Fishermen to Protest, 1993). Despite the ongoing concerns expressed by the USACE, public officials, and local activists regarding the MRGO and its impacts on flood risk, the channel continued to cause tremendous environmental harm in St. Bernard Parish for decades.

Coastal Restoration in the 1990's and Early 2000's

There were two significant developments in coastal restoration during the 1990's: 1) Congress passed the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in 1990 and 2) the CWPPRA Task Force and State of Louisiana collaborated to develop Coast 2050 (1998), the state's first comprehensive coastal restoration plan. The CWPPRA program

[…] is designed to identify, prepare, and fund construction of coastal wetlands restoration projects. Since its inception, 210 coastal restoration or protection projects have been authorized, benefiting approximately 100,000 acres in Louisiana. (CWPPRA, n.d.)

CWPPRA has been utilized to design and/or construct 15 projects in St. Bernard Parish, and four largescale CWPPRA projects are currently being designed in the parish (CWPPRA, n.d.).

Coast 2050 represented the State of Louisiana's first attempt at developing a comprehensive, statewide plan for restoring the state's coast.

Seeing a need, the Louisiana State Wetlands Authority and the CWPPRA Task Force collaborated to develop Coast 2050, a strategic plan for creating an enduring and sustainable Louisiana coast. Approved in 1998, the plan was a consensus-based, stakeholder-informed initiative that received explicit support from all 20 coastal parishes. (Robichaux & Garcia, 2015)

The plan inspired subsequent ambitious planning efforts, including the Louisiana Coastal Area Ecosystem Restoration Study (LCA Study) (2004) and multiple iterations of Louisiana's Comprehensive Master Plan for a Sustainable Coast (State Master Plan) (2007, 2012, and 2017). However, a lack of funding ultimately hindered the implementation

of the strategies and projects proposed in Coast 2050 and the LCA Study.

Near Misses: Hurricanes Georges and Ivan

Hurricane Georges (1998) was a Category 4 storm heading towards New Orleans before weakening and making landfall near Biloxi, MS as a Category 2 storm. Although impacts to life and property in St. Bernard Parish were minimal, the storm inflicted significant damage on the Chandeleur Islands. According to former Louisiana Department of Wildlife and Fisheries official Phil Bowman, "the Chandeleur chain is essentially gone" after being impacted by Hurricane Georges (Gulf Coast Damage, 1998). While the barrier island chain was not gone, it had been severely degraded by the storm.

Hurricane Ivan (2004) prompted another largescale evacuation effort in the New Orleans metropolitan area, but the storm was ultimately a near miss. The hurricane made landfall near the Alabama-Florida border and impacts to life and property in St. Bernard Parish were minimal. However, Hurricane Ivan highlighted the risk associated with storm surge throughout the region and foreshadowed the historic 2005 hurricane season.

Image I-7: The Murphy oil spill contaminated thousands of homes in St. Bernard Parish during Hurricane Katrina (EPA, 2006)

Levee failures in and around St. Bernard Parish caused floodwaters to reach up to ten feet in some locations, contributing to 127 fatalities and the destruction of nearly all 27,000 structures in the parish. Virtually all 67,000 St. Bernard Parish residents became homeless overnight, and the parish was forever changed. Compounding matters, over 25,000 barrels (one million gallons) of crude oil were spilled at the Murphy Oil refinery during the storm, contaminating approximately 1,800 already-flooded homes in St. Bernard Parish ($330 Million Settlement, 2006).

Between the storm surge and subsequent oil spill, over 8,300 parish structures had been demolished by 2015 (Thompson, 2015). According to the US Census Bureau (2019), it took nearly 15 years for the population of St. Bernard Parish to reach approximately 69% of its pre-Katrina level.

Simulations run by the Center for the Study of Public Health Impacts of Hurricanes at Louisiana State University in Baton Rouge show that direct hits by even Category 3 storms would have disastrous consequences […] "You're talking about total destruction," says the centre's director Ivor van Heerden, claiming that deaths could be in the tens of thousands. (Reichhardt, 2004)

FEMA also initiated the Hurricane Pam Exercise in 2004. This effort was intended to improve emergency operations planning and disaster response efforts in southeast Louisiana. The exercise was never quite

completed, and stakeholders did not have enough time to apply lessons learned from Hurricane Pam into 2005 hurricane season preparations.

Hurricane Katrina

On August 28, 2005, Hurricane Katrina intensified from a Category 2 to a Category 5 in a matter of 12 hours, reaching its peak strength when it was only approximately 200 miles from Louisiana's coast. Levee and floodwall failures began occurring in New Orleans and St. Bernard Parish on the morning of August 29th, resulting in catastrophic failures along the Industrial Canal, MRGO, and Forty Arpent Canal. (American Society of Civil Engineers, 2007)

Many significant reforms occurred in Louisiana following Hurricane Katrina. Perhaps most importantly, levee boards in the New Orleans metropolitan area were professionalized and consolidated into two core entities (Southeast Louisiana Flood Protection Authority East and West), and the USACE and State of Louisiana coordinated to design and construct the $14.5 billion Hurricane and Storm Damage Risk Reduction System (HSDRRS) around the New Orleans metropolitan area. The HSDRRS includes

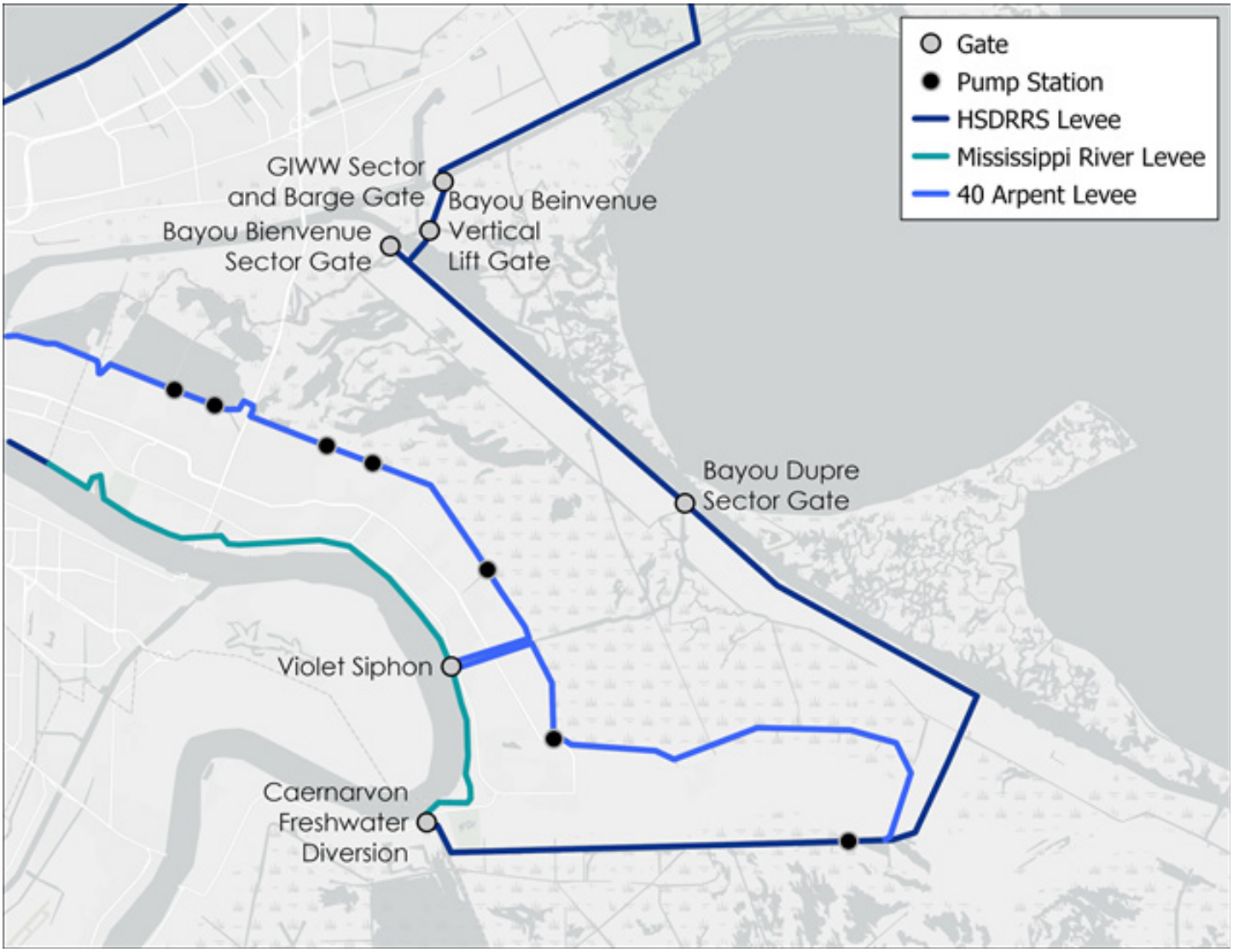
…the levees, floodwalls, gated structures and pump stations that form the 133–mile Greater New Orleans perimeter system, as well as improved approximately 70 miles of interior risk reduction structures. Among its technically-advanced engineering solutions, the HSDRRS now includes the world's largest surge barrier of its kind, the IHNC-Lake Borgne Surge Barrier, and the largest drainage pump station in the world, the GIWW-West Closure Complex. (USACE, 2018)

The HSDRRS was completed in 2011 and has since provided St. Bernard Parish with the highest level of storm surge risk reduction in the parish's history. *The St. Bernard system, also known locally as the Chalmette Loop, consists of approximately 23 miles of floodwalls, roadway gates and sector gates that extend from the existing Bayou Bienvenue sector gate in the northeast to the Mississippi River in Caernarvon in the southwest. Along three separate stretches – Lake Pontchartrain and Vicinity (LPV) 145, LPV 146 and LPV 148 – floodwalls were constructed on top of existing levees. Along LPV 145 and 146, the floodwalls range in height from 28 feet to 32 feet above sea level, and from 26 feet to 32 feet above sea level along LPV 148, which ties into the Mississippi River levee in Caernarvon (LPV 149) at about 21.5 feet. (USACE, 2015)*

The HSDRRS performed as designed during a number of significant events, including hurricanes Isaac (2012) and Ida (2021). The ongoing operation and maintenance of the system is critical to protecting life and property in southeast Louisiana, although many communities in eastern St. Bernard Parish are located outside of the system and therefore unprotected.

Another significant post-Katrina reform was the consolidation of coastal restoration and hurricane risk reduction duties into a single state agency: the CPRA.

The Coastal Protection and Restoration Authority's mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration Master Plan. For the first time in Louisiana's history, this single state authority is integrating coastal restoration and hurricane protection by marshaling the expertise and resources of the Department of Natural Resources, the Department of Transportation and Development and other state agencies, to speak with one clear voice for the future of Louisiana's coast (CPRA, n.d).



Map I-2: The HSDRRS system includes over 20 miles of floodwalls and gates around St. Bernard Parish

CPRA completed its initial State Master Plan in 2007. Although the plan was heralded as one of the most ambitious ecosystem restoration plans in US history, it was unclear how the State of Louisiana would fund its implementation. However, a significant post-Katrina federal policy intervention would partially address this challenge.

Congress passed the Gulf of Mexico Energy Security Act (GOMESA) of 2006, creating a new funding mechanism for coastal conservation, restoration, and hurricane protection in Louisiana and other targeted oil-producing states along the Gulf coast. This legislation was crafted to allow for up to $650 million/year of additional oil and gas revenue in each of the four states beginning in Fiscal Year 2016 and continuing through Fiscal Year 2055. However, cost estimates for implementing the State Master Plan have ranged from $50 billion to $100 billion. While the new GOMESA funding opportunity would certainly help CPRA efforts to restore and protect Louisiana's coast beginning in 2016, substantial financial resources were urgently needed to begin implementing the 2007 State Master Plan. A significant portion of the needed resources would become available a few years later following the BP Oil Spill, the second historic environmental catastrophe to occur in Louisiana during a period of only five years.

Deepwater Horizon

On April 20, 2010, a series of explosions on the Deepwater Horizon oil rig caused the Macondo well to blowout and release nearly five million barrels of crude oil (Austin et al., 2014). The BP Oil Spill was the deadliest and most environmentally devastating oil spill in US history. The economic impacts of the event were significant and far-reaching. All deepwater drilling activities in the US ceased within five days of the incident and would remain suspended by the US Department of Interior until October 2010 (Austin et al., 2014). This period of inactivity resulted in significant consequences for the petroleum industry. The fishing and ecotourism industries along the Gulf Coast, particularly in St. Bernard Parish, were devastated by the BP Oil Spill, and the environmental impacts of the incident would continue to adversely impact these sectors well into the future.

In 2016, a federal court found that BP Oil was primarily responsible for the spill and approved the largest environmental damage settlement ($20.8 billion) in US history (US Department of Justice, 2016). These penalties presented an opportunity to fund restoration efforts previously identified in CPRA's State Master Plan. Many of the funding sources referenced in the 2022 CSD are the direct result of the BP Oil Spill and subsequent settlements, penalties, and fines levied against BP Oil and other responsible parties.

Image I-6: Levee breaches in and around St. Bernard Parish (Swenson, 2005)

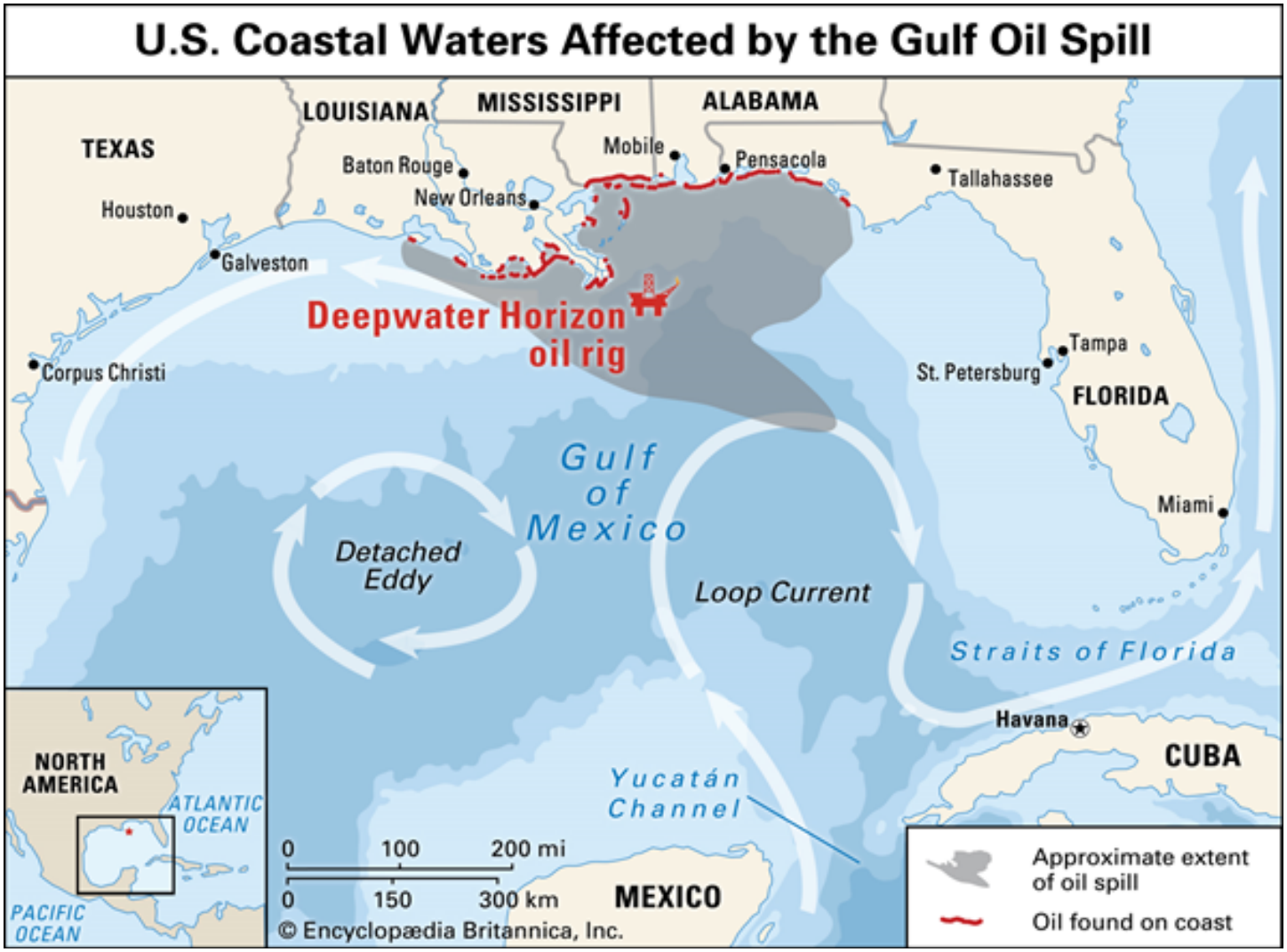


Image I-8: The location of damage caused by the BP Oil Spill (Pallardy, 2010)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Section 2

Coastal Protection and Restoration in St. Bernard Parish

St. Bernard Parish is extremely vulnerable to flood hazards. Approximately 90% of the total land area of the parish is located within the Federal Emergency Management Agency's (FEMA) 100-year floodplain. The parish has been the subject of over twenty flood-related Major Disaster declarations since 1965, which includes catastrophic events such as hurricanes Betsy (1965) and Katrina (2005). As of this writing, St. Bernard Parish is the subject of multiple ongoing Major Disaster declarations (hurricanes Zeta and Ida) and one US Department of Commerce federal fishery disaster declaration.

St. Bernard Parish reached a critical juncture following Hurricane Katrina and the BP Oil Spill. After nearly all 27,000 structures in the parish were damaged or destroyed and 67,000 residents were displaced during Katrina, the parish had to reevaluate its future. The BP Oil Spill shortly thereafter highlighted many other environmental, social, and economic risks in St. Bernard Parish. The 2022 CSD articulates a vision that is focused on the utility of ecosystem protection and restoration as a means of managing a wide range of risks while sustaining local culture and supporting the parish's critical economic role on Louisiana's working coast.

Protecting and restoring coastal St. Bernard Parish is critical not only to sustaining life and property, but also for maintaining ecological and economic functionality throughout the region. As described below, significant industrial activities, including petrochemical refining, have been occurring along the Mississippi River in the parish since the early 20th century. Such industries are vital components of the US economy, and SBPG considers protecting these assets a top priority.

Construction Highlights (Completed or Ongoing)

Lake Borgne Marsh Creation	$127 M
North Breton Island Restoration	$72 M
Golden Triangle Marsh Creation	$55 M
Living Shoreline	$22 M
Lake Lery Marsh Creation Phases 1 & 2	$11 M
Bayou Terre aux Boeufs Armoring	$8 M

Engineering/Design Highlights (Completed or Ongoing)

East Delacroix Marsh Creation	$39 M
North Delacroix Marsh Creation	$36 M
Bayou La Loutre Ridge Restoration	$31 M
Reggio Marsh Creation	$30 M
Lake Lery Marsh Creation Phase 3	$22 M
Chandeleur Island Restoration	$8 M

Planning/Development Highlights (Ongoing)

East Bank Sediment Pipeline	$20 M
Local Oyster Cultch Program	$3 M
Recreational Fishing Piers in Shell Beach/Hopedale	$2.3 M

Contemporary Challenges

The commercial seafood industry is a core component of the economy in St. Bernard Parish and throughout coastal Louisiana. After being significantly impacted by Hurricane Katrina, the industry faced an entirely new set of environmental and economic challenges during the BP Oil Spill. The industry has since been coping with various other disasters and challenges, including the periodic influx of freshwater into local waterways.

Seafood Industry

The economy of St. Bernard Parish has evolved since the 1920's, when agriculture, fishing, and trapping were paramount (Coastal Environments, Inc., 2012). However, commercial fishing and related industries remain economically and culturally significant in the parish. As noted above, Louisiana's coastal communities and seafood industry are highly productive but extremely vulnerable. Hurricanes are the most persistent and obvious threat, but it is also worth noting that heavy precipitation events across North America contribute to riverine flooding and increase the likelihood of freshwater discharge into local waterways.

The most recent federally funded national climate assessment and other studies project that adverse climate conditions and severe weather events will continue to increase in frequency and severity going forward (USGCRP, 2014; Levy & Patz, 2015; Annan & Schlenker, 2015; Seara et al., 2016; USGCRP, 2018). Such events are likely to: 1) adversely impact environmental conditions and hamper fisheries production in marine systems, thereby reducing landings and causing economic hardship and 2) directly impact coastal communities, businesses, individual commercial and recreational anglers, and others working in supporting industries by damaging infrastructure, facilities, equipment, and personal property (Brander, 2007; Chang et al., 2013; Seara et al., 2016).

Commercial fishermen in St. Bernard Parish generally view the influx of freshwater into St. Bernard Parish waterways as an existential threat to the seafood industry. Sources include the Caenarvon Freshwater Diversion, Mardi Gras Pass, and the Bonnet Carré Spillway.

Caernarvon Freshwater Diversion

The Caernarvon Freshwater Diversion structure was constructed in 1991 "to abate saltwater intrusion and marine tidal invasion, while promoting coastal restoration and enhancing fisheries and wildlife in the basin" (Avenal v. State, 2004). The structure has the ability to divert freshwater from the Mississippi River into the Breton Basin at a rate of 8,000 cfs (Lake Pontchartrain Basin Foundation, n .d.). However, after only three years of operation, a class action lawsuit was filed by a group of commercial oyster fishermen regarding the diversion's adverse impacts on over 200 area oyster leases. Plaintiffs were initially awarded more than $1 billion in compensation, but the decision was later overturned by the Louisiana Supreme Court. The operation of Caernarvon and the structure's impacts on salinity and local fisheries remain contentious in St. Bernard and Plaquemines parishes.

Mardi Gras Pass

Mardi Gras Pass began forming in 2011 approximately 35 miles downriver from New Orleans when the Mississippi River overcame the failed Bohemia Spillway and breached the adjacent natural levee. A new channel between the Mississippi River formed, and by 2013 the river was discharging

into adjacent waterways at up to 3,840 cfs (Lake Pontchartrain Basin Foundation, 2013). According to the Hydrocoast monitoring program, the river was discharging into local waterways at a rate of approximately 45,000 cfs by June 2019, indicating a dramatic increase in the size and flow capacity of the pass (Lake Pontchartrain Basin Foundation, 2019). Consequently, the influence of the Mississippi River at Mardi Gras Pass has drastically reduced salinity in local waterways and devastated oyster productivity in once prolific harvest areas such as Black Bay.

Bonnet Carré Spillway and the 2019 Fisheries Disaster

The Bonnet Carré Spillway was constructed in 1931 with the primary goal to control Mississippi River water levels from New Orleans to the mouth of the river for the purpose of reducing flood risk (USACE, 2014). The spillway accomplishes this by diverting water from the Mississippi River into Lake Pontchartrain, thereby relieving pressure on the MR&T. The Bonnet Carré Spillway includes a total of 350 bays and is capable of conveying water at a rate of 250,000 cfs (USACE, 2019). The decision to open the spillway is typically based on the flood stage (17' or higher) and flow (1.25 million cfs or greater) of the Mississippi River at the Carrolton Gage (New Orleans). Such conditions are also the primary factors considered in determining the discharge rate (number of bays) and duration of Bonnet Carré Spillway openings.

Historically, the Bonnet Carré Spillway has been opened rather infrequently. Prior to 2008, the spillway had only been opened eight times (1937, 1945, 1950, 1973, 1975, 1979, 1983, and 1997) (USACE, 2019). The Bonnet Carré Spillway has since been opened seven times, including an unprecedented two openings in 2019 (USACE, 2019). The US experienced more precipitation between April 2018 and May 2019 than during any previous 12-month period on record (Donegan, 2019). Consequently, the volume of water being absorbed by the Mississippi River, which drains 1.25 million square miles of land (40% of all drainage in the US) across 31 states and two Canadian provinces, was unprecedented in 2019 (National Aeronautics and Space Administration, 2019). The 2019 Mississippi River Flood surpassed the Great Flood of 1927 in many locations and the river was in flood stage from January 5, 2019 through July 27, 2019 (Donegan, 2019).

In February 2019, Louisiana Governor John Bel Edwards declared an emergency in anticipation of the Mississippi River flood event. Four months later, Governor Edwards and the entire Louisiana congressional delegation requested that the US Secretary of Commerce declare a federal fishery disaster because of the Bonnet Carré Spillway's devastating impacts on local fisheries. The Secretary of Commerce officially declared the federal fishery disaster (Gulf of Mexico Freshwater Flooding) on September 25, 2019.

The State of Louisiana estimates that approximately $258 million in economic damage occurred in the state during the Gulf of Mexico Freshwater Flooding event (Blank, 2019). The impacts of the event were particularly devastating to osyters, an immobile shellfish that depends upon ideal salinity. Other commercially significant fisheries that were impacted include shrimp, crabs, and finfish. Finally, the bottlenose dolphin, which is particularly sensitive to prolonged exposure to freshwater, became the subject of a National Oceanic and Atmospheric Administration (NOAA) unusual mortality event following the 2019 Bonnet Carré Spillway openings (NOAA, 2019). NOAA later determined that over 300 dolphins perished in the northern Gulf of Mexico region during the federal fishery disaster.

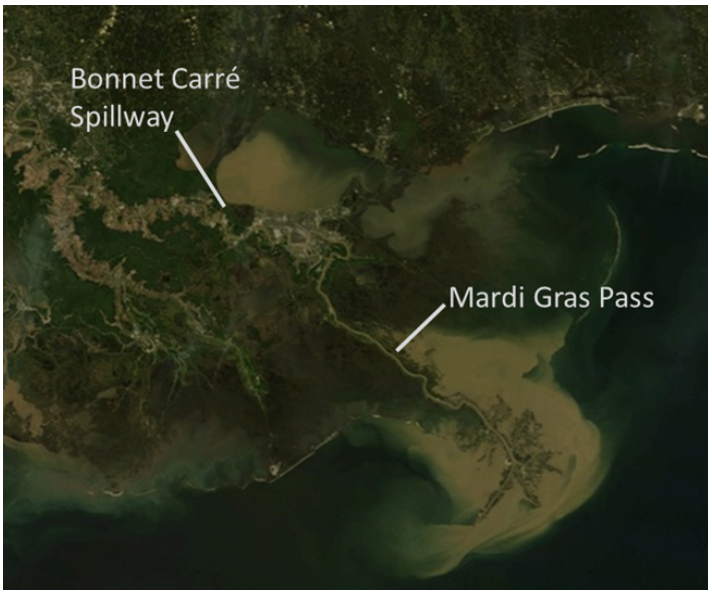


Image II-1: Satellite imagery of freshwater and sediment moving into the Pontchartrain and Breton basins (Louisiana State University, 2018)

Proposed Largescale Sediment Diversions

SBPG and other local stakeholders have opposed largescale sediment diversions since those projects were initially included in the 2012 State Master Plan. However, CPRA has advanced the agency's Mid-Basin Sediment Diversion program, which includes the Mid-Barataria and Mid-Breton sediment diversions. CPRA has also submitted USACE permit applications for both projects, and the draft environmental impact study (EIS) for the Mid-Barataria project was completed in 2021. Official SBPG comments regarding the Mid-Barataria and Mid-Breton projects are in Appendix B.

SBPG's position vis-à-vis largescale sediment diversions is informed by nearly one century of experiences with failed infrastructure projects and other human interventions that ultimately resulted in severe adverse impacts to life, property, and the natural environment in St. Bernard Parish. Many of these interventions have been described above: the Crevasse, the MRGO, levee failures during hurricanes Betsy and Katrina, the BP Oil Spill, the Caernarvon Freshwater Diversion, and the failure of the Bohemia Spillway at Mardi Gras Pass.

Relevant Plans

As described above, the BP Oil Spill and subsequent litigation, penalties, and fines marked a turning point for coastal restoration funding in Louisiana. SBPG has since been focused on capitalizing on new funding opportunities and closely coordinating with its federal partners and CPRA to implement those State Master Plan projects that would be most beneficial to St. Bernard Parish. Many significant coastal protection and restoration projects and activities have been advanced during the past decade.

The 2017 State Master Plan is currently the most critical coastal protection and restoration planning document in Louisiana. SBPG developed the initial 2016 CSD for the purpose of aligning parish and CPRA priorities to the extent possible. Additionally, SBPG developed its RESTORE Act Multiyear Implementation Plan (MIP) in 2017 as a subcomponent of the CSD that focuses solely on those activities that would be funded by the RESTORE Act Direct Component program. Both the CSD and RESTORE MIP have been updated periodically to reflect changing priorities and new opportunities.

Many other foundational planning documents exist, including previous iterations of the State Master Plan (2007 and 2012) and SBPG's Coastal Program Document (Coastal Environments, Inc., 2012). There are also several relevant federal planning documents, including the USACE MRGO Ecosystem Restoration Plan (2012). Finally, Biloxi Marsh Land Corporation, a private entity with significant land holdings in St. Bernard Parish, has developed its own plan for protecting and restoring coastal resources

Image II-2: Bayou Terre aux Boeufs Ridge Armoring (Source: Captain George Ricks)

in the critical Biloxi Marsh Complex (King et al., 2006; Day et al., 2019). Each of the referenced relevant plans are profiled below.

State Master Plan and Annual Plan

Following Hurricanes Katrina and Rita in 2005, the Louisiana Legislature created the CPRA and tasked it with coordinating the local, state, and federal efforts to achieve comprehensive coastal protection and restoration. To accomplish these goals, CPRA was charged with developing a master plan to guide our work toward a sustainable coast. Developed using the best available science and engineering, the master plan focuses our efforts and guides the actions needed to sustain our coastal ecosystem, safeguard coastal populations, and protect vital economic and cultural resources. (CPRA, 2013)

The Louisiana Legislature adopted the initial State Master Plan in 2007 and adopted subsequent plans in 2012 and 2017. CPRA is currently developing the 2023 State Master Plan. The agency also develops and publishes an Annual Plan each Fiscal Year for the purpose of providing new information between comprehensive plan updates.

The 2017 State Master Plan and previous iterations can be retrieved here: https://coastal.la.gov/our-plan/2017-coastal-master-plan/

The Fiscal Year 2022 Annual Plan and other recent annual reports can be retrieved here: https://coastal.la.gov/our-plan/annual-plan/

SBPG Coastal Strategy Document and Annual Coastal Report

The purpose of the CSD is to articulate a vision for protecting and restoring coastal St. Bernard Parish and sustaining the community for generations to come. The plan also provides SBPG with a decision-making tool that allows the parish to strategically and competitively advance coastal priorities from funding through implementation.

The most recent version of the CSD and previous Annual Coastal Reports can be retrieved here: https://www.sbpg.net/150/Coastal-Division

SBPG RESTORE Act Multiyear Implementation Plan

In July 2012, President Barack Obama signed into law the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act), which was passed by Congress as a means of creating a mechanism by which a portion of the civil penalties associated with the BP Oil Spill could be utilized to mitigate the impacts of the incident. The Direct Component of the RESTORE Act makes 35% of all penalty funds available to four Gulf States (Louisiana, Mississippi, Alabama, and Florida); twenty-three (23) Florida counties; and twenty (20) Louisiana parishes for eligible activities, programs, and projects as per the 31 CFR, Part 34. As an eligible applicant for Direct Component funding, SBPG is required to

submit an MIP outlining and prioritizing eligible program activities in preparation of future requests for funding. The parish submitted its initial MIP in 2017 and has since amended the plan on three occasions.

The most recent version of the SBPG RESTORE Act MIP can be retrieved here: https://www.sbpg.net/150/Coastal-Division

SBPG Coastal Program Document

St. Bernard Parish's local Coastal Zone Management Program (CZMP), which was finalized in 1982 and received federal approval in 1987, has enabled the parish to be an active participant in the management of their coastal zone since that time. The parish was in the process of updating their approved CZMP when Hurricane Katrina interrupted the process…This present document builds upon the content and structure of the originally approved program document, the previously updated draft document, and numerous environmental studies but it also reflects the current environmental and socioeconomic conditions and concerns as well as the goals, policies, priorities of uses and environmental management units revised with input from the Coastal Zone Advisory Committee and public review. (Coastal Environments, Inc., 2012, p. xxi)

The most recent version of the SBPG Coastal Program Document (SBPG 2012) can be retrieved here: https://www.sbpg.net/150/Coastal-Division

USACE MRGO Ecosystem Restoration Plan

As described above, construction of the MRGO resulted in severe adverse environmental impacts in St. Bernard Parish. Additionally, the channel contributed to the devastating storm surge and subsequent levee failures during Hurricane Katrina. The MRGO was officially deauthorized following the hurricane, and the MRGO Ecosystem Restoration Plan (2012) was later developed by the USACE for the purpose of developing a strategy to restore those natural features that had been damaged by the channel over the previous 50 years. The plan called for the restoration of 57,000 acres of coastal and wetland habitat at a cost of $3 billion.

The full text of the MRGO Ecosystem Restoration Plan and all associated reports and background documents can be retrieved at: https://www.mvn.usace.army.mil/Missions/Environmental/MRGO-Ecosystem-Restoration/

The Biloxi Marsh Stabilization and Restoration Plan

This Biloxi Marsh suffered significant degradation from the unintended effects of two major engineering projects: the Mississippi River levees, which prevented annual over bank flooding, and the MRGO. Following Hurricane Katrina, Biloxi Marsh Lands Corporation developed its own plan to stabilize and restore its property in the Biloxi Marsh Complex. The overarching purpose of this plan is to reverse the root causes that changed the hydrology of this valuable ecosystem and promote restoration projects that will restore protection and ecological function.

The Biloxi Marsh Stabilization and Restoration Plan (2006) and other supporting documents can be retrieved here: https://www.biloximarshlandscorp.com/biloxi-marsh-coastal-restoration/

Other Relevant Local Plans

The SBPG Comprehensive Land Use Plan (2014) and Integrated Water Resources Management Plan (2016) can be retrieved at: https://www.sbpg.net/154/Planning-Zoning-Division

The St. Bernard Parish Hazard Mitigation Plan Update (2015) can be retrieved at: https://www.sbpg.net/165/Homeland-Security-Emergency-Preparedness

Critical Funding Sources

The ability to leverage funding from a variety of federal, state, and local sources has been critical to implementing the CSD over the past five years. SBPG developed the original 2016 CSD to better position the parish to obtain funding through legacy programs such as CWPPRA, capitalize on funding opportunities relative to the BP Oil Spill, and take advantage of emerging funding sources. Additionally, previous iterations of the CSD facilitated SBPG's ability to leverage its own internal funding for coastal protection and restoration activities. The section below highlights the most critical funding sources for the parish and provides a summary of how SBPG has leveraged these opportunities to fund CSD activities.

RESTORE Act

The RESTORE Act will provide a significant amount of funding for eligible coastal activities through 2032. This program provides a mechanism for spending over $6.6 billion in Clean Water Act penalty funding collected due to the BP Oil Spill. RESTORE Act funding has been made available both directly

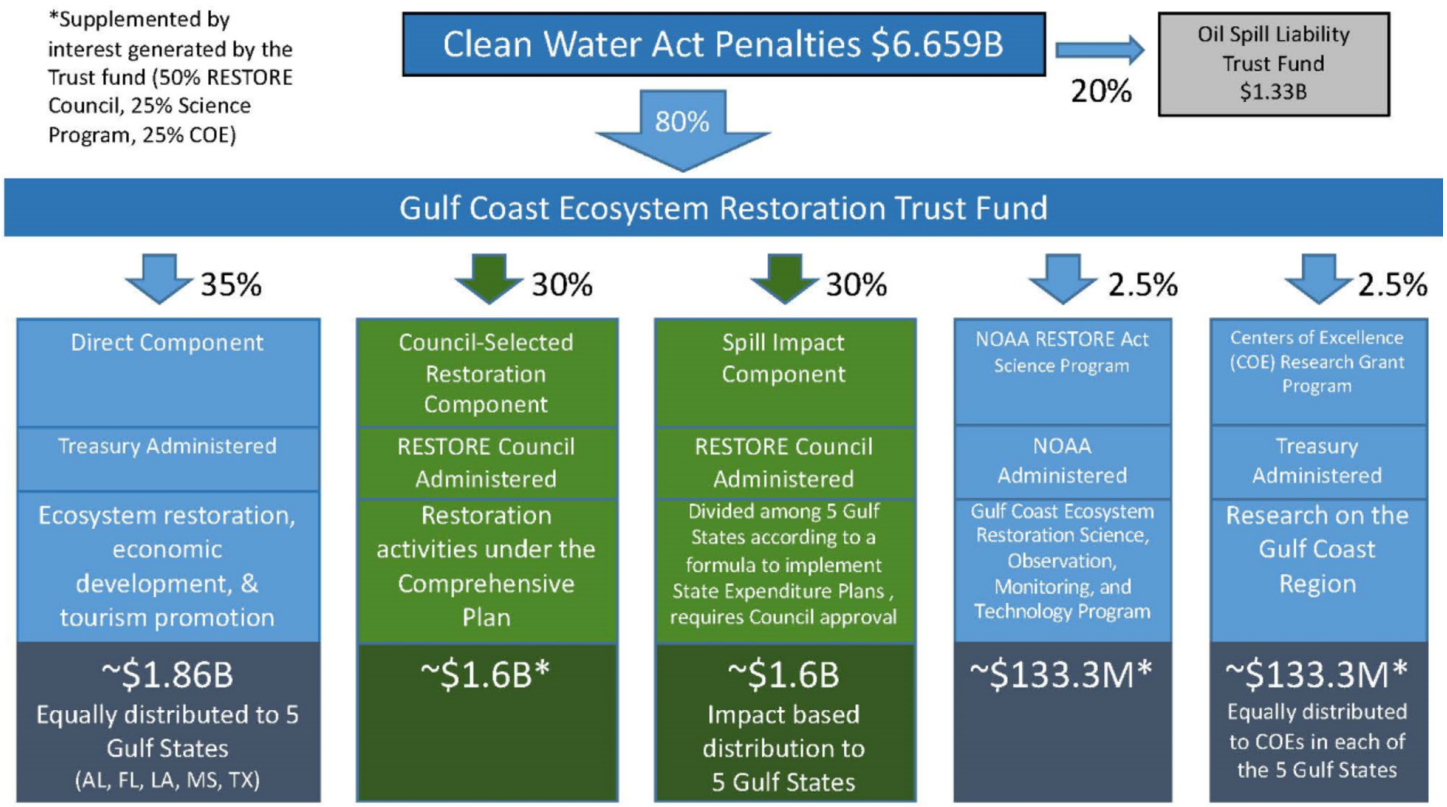


Image II-4: RESTORE Act funding breakdown (Gulf Coast Ecosystem Restoration Council, n.d.)

to eligible parishes (Direct Component) and via the CPRA through its Parish Matching program. The US Department of the Treasury (Treasury) has been tasked with administering Direct Component funds. The Treasury approved the SBPG RESTORE Act MIP in 2017, which was required for the parish to access Direct Component funding. SBPG's RESTORE Act Direct Component allocations (including interest) have been approximately $600,000/year since 2016. CPRA also elected to make $100 million of the State's total allocation available for its Parish Matching program, whereby parishes may request matching funds for eligible coastal activities. SBPG has already utilized Direct Component and Parish Matching program funding for many activities included in the parish's MIP.

NRDA

Ecosystem damage caused by the BP Oil Spill were settled as part of the National Resource Damage Assessment (NRDA) process in a global settlement signed in April 2016. The settlement dictates that $288 million/year ($5 billion total) be allocated to approved NRDA projects in Louisiana. Many of the projects referenced in the original settlement have since moved forward into implementation. However, there are still opportunities to submit additional coastal activities for NRDA funding consideration.

NRDA trustees, including the Louisiana Trustee Implementation Group, must develop a bi-annual restoration plan accounting for NRDA-funded coastal activities. Approved NRDA activities are ultimately implemented by the CPRA.

GOMESA

Congress passed the Gulf of Mexico Energy Security Act (GOMESA) of 2006, creating a new funding mechanism for coastal conservation, restoration, and hurricane protection in Louisiana and other targeted oil-producing states along the Gulf coast. This legislation was crafted to allow for up to $650 million/year of additional oil and gas revenue in each of the four states beginning in Fiscal Year 2016 and continuing through Fiscal Year 2055. The State of Louisiana has received between $66 million

Table II-11: RESTORE Act Direct Component and Parish Matching program projects in St. Bernard Parish

Projects	Direct Component	Parish Matching	Status
Nunez Workforce Development	$325,000	NA	Funded
Paris Road Streetscape	$824,000	NA	Funded
Lake Lery Marsh Creation (Ph. 2)	$300,000	$2,781,000	Funded
Islenos Community Archive	$100,000	NA	Pending
Bayou Terre aux Boeufs (Ph. 2)	$1,300,000	NA	Pending
Total	$2,849,000	$2,781,000	
Grand Total	**$5,630,000**		

Table II-2: NRDA projects in and around St. Bernard Parish

Projects	Budget	Status
Golden Triangle Marsh Creation (Ph. 1)	$50,000,000	Construction
Lake Borgne Marsh Creation (Increment 1)	$115,000,000	Construction
Biloxi Marsh Living Shoreline	$66,600,000	Engineering/Design
Isle au Pitre Restoration	$3,500,000	Engineering/Design
Louisiana Outer Coast Restoration	$319,000,000	Construction
Oyster Brood Reefs (Biloxi Marsh)	$9,700,000	Engineering/Design
Louisiana Oyster Cultch Program	$14,800,000	Complete
Cultch Plant Restoration	$10,000,000	Engineering/Design
Grand Total	**$588,600,000**	

and $124 million per year and SBPG has received between $780,000 to $1.1 million per year since GOMESA Phase 2 began in Fiscal Year 2017. The State of Louisiana voted to put several additional restrictions on GOMESA funds, including:

- Funds must be deposited directly in the CPRA Trust Fund;
- GOMESA funds may only be used only for the purposes of coastal protection and restoration; and
- No more than 7% of the funds may be used for administrative costs.

GOMESA authorizes the states and local entities to use revenue for the following purposes:

- Projects and activities for the purposes of coastal protection, including conservation, coastal restoration, hurricane protection, and infrastructure directly affected by coastal wetland losses;
- Mitigation of damage to fish, wildlife, or natural resources;
- Implementation of a federally approved marine, coastal, or comprehensive conservation management plan;
- Mitigation of the impact of outer continental shelf activities through the funding of onshore infrastructure projects; and
- Planning assistance and the administrative costs (capped at 3%) of complying with GOMESA.

CWPPRA

The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) program, administered by five federal agencies (USACE, NOAA, USFWS, USDA, and EPA) and the State of Louisiana (collectively represented on the CWPPRA Technical Committee and Task Force), is a competitive program that provides funding for a wide range of coastal projects. Projects considered for CWPPRA funding are nominated by federal agencies and subsequently vetted through a competitive process that includes a vote from coastal parishes (by

basin); feasibility analysis and vote by the Technical Committee (statewide); planning and feasibility analysis (Technical Committee); and a final vote for Phase 1 (engineering/design) funding by the Technical Committee and Task Force.

Once Phase 1 is completed, the Technical Committee and Task Force must also approve Phase 2 (construction) funding via a similar competitive process. The cost-share for CWPPRA is 85% federal and 15% non-federal, and CPRA typically funds the non-federal portion for 2017 State Master Plan projects. The CWPPRA process is administered on an annual basis, and SBPG has successfully nominated many funded projects since the program's inception.

FEMA BRIC

In 2020, Building Resilient Infrastructure and Communities (BRIC) replaced Pre-Disaster Mitihgation (PDM) as FEMA's annual pre-disaster mitigation program. BRIC makes federal funds available to states, U.S. territories, federally recognized tribal governments, and local communities for hazard mitigation activities. FEMA priorities for BRIC include mitigation projects that are cost-effective and designed to increase resilience and public safety; reduce injuries and loss of life; encourage and enable innovation; promote partnerships; reduce damage and destruction to property, critical services, facilities, and infrastructure; promote equity; and support the adoption and enforcement of building codes, standards, and policies that protect health, safety, and general welfare of the public.

BRIC funds are allocated on an annual basis. $1 billion in funding was set aside for Fiscal Year 2021. This is a nationally competitive program and up to $50 million may be allocated for each project. Eligible activities include mitigation projects and management costs as well as planning and scoping related activities. The program's sample portfolio of eligible projects includes multiple marsh creation and shoreline protection projects on the Gulf (FEMA, 2020). Priority is given to large-scale projects that utilize nature-based solutions.

Table II-3: SBPG GOMESA allocations since 2018

GOMESA Phase 2 Allocation	Year
$781,611.41	2018
$892,386.94	2019
$1,468,661.50	2020
$1,035,622.20	2021

National Coastal Resilience Fund

This program, administered through a partnership between NOAA Fisheries and the National Fish and Wildlife Foundation, is a nationally competitive program that emphasizes improving ecology and enhancing coastal communities' resilience in the face of climate change and extreme weather events. The program allocated $34 million in funds for fiscal year 2021 for planning, design, construction, and monitoring for restoration or expansion of natural coastal features. The program funds an average of $0.25 – 5 million per project with a 50% federal match. Priority is given to design-ready projects, projects in at-risk communities, and projects that utilize innovative approaches to enhance coastal resilience with natural infrastructure. Emphasis is placed on "healthy oceans" and "resilient coastal communities and oceans." The following program goals are included in recent program publications:

Table II-4: Funded CWPPRA projects in St. Bernard Parish since 2016

Projects	Budget
Reggio Marsh Creation	$33,600,000
North Delacroix Marsh Creation	$35,500,000
East Delacroix Marsh Creation	$39,800,000
Bayou La Loutre Ridge Restoration	$29,700,000
Grand Total	**$138,600,000**

- Restore habitat to support healthy fish populations and provide sustainable and lasting ecosystem functions that reduce hazard vulnerability and risks posed to coastal communities from extreme weather events, changing environmental conditions, and allow for adaptation to known or potential climate change impacts;
- Demonstrate collaboration and alignment among multiple stakeholders, including state and federal agencies, by proposing projects that implement ecosystem-based restoration recommendations and site-specific strategies outlined in existing coastal vulnerability or resiliency studies and comprehensive planning efforts;
- Result in socio-economic benefits associated with the restoration of healthy and resilient coastal ecosystems, such as increased economic activity, enhanced recreation including fishing, changes in human well-being, improved or protected infrastructure, decreased flooding impacts, elimination of safety hazards, and/or reduced maintenance costs;
- Restore habitat within NOAA priority areas, such as Blueprint Habitat Focus Areas;
- Implement on-the-ground restoration actions that will begin within 24 months of the proposed award start date, will result in beneficial impacts, and achieve the stated ecosystem resiliency and habitat goals; and
- Receive approval from the State Governor as evidenced by a letter or other form of documented correspondence, such as a letter from a Governor's appointee, prior to award.

Louisiana CPRA

CPRA provides oversight on multiple programs and funding sources (see above regarding RESTORE Act and GOMESA). Additionally, coastal restoration and protection are allowable State surplus funding expenditures. Keeping CPRA leadership apprised of local coastal priorities and making direct appeals to them regarding funding needs are the most likely means of moving projects forward with CPRA assistance. Focusing on local projects that are consistent with the State Master Plan is critical to gaining support and/or leveraging funding from CPRA.

Proposed Project Types

As part of the vision for protecting and restoring coastal St. Bernard Parish and sustaining the community for future generations, thirty-five coastal projects have been proposed in this plan, some of which are currently in some stage of development through CWPPRA or other funding sources described in Section D. Proposed coastal protection and restoration activities are summarized on the following pages, and have been indexed as fact sheets arranged in accordance with the same tiered system utilized in the 2016 and 2018 CSDs:

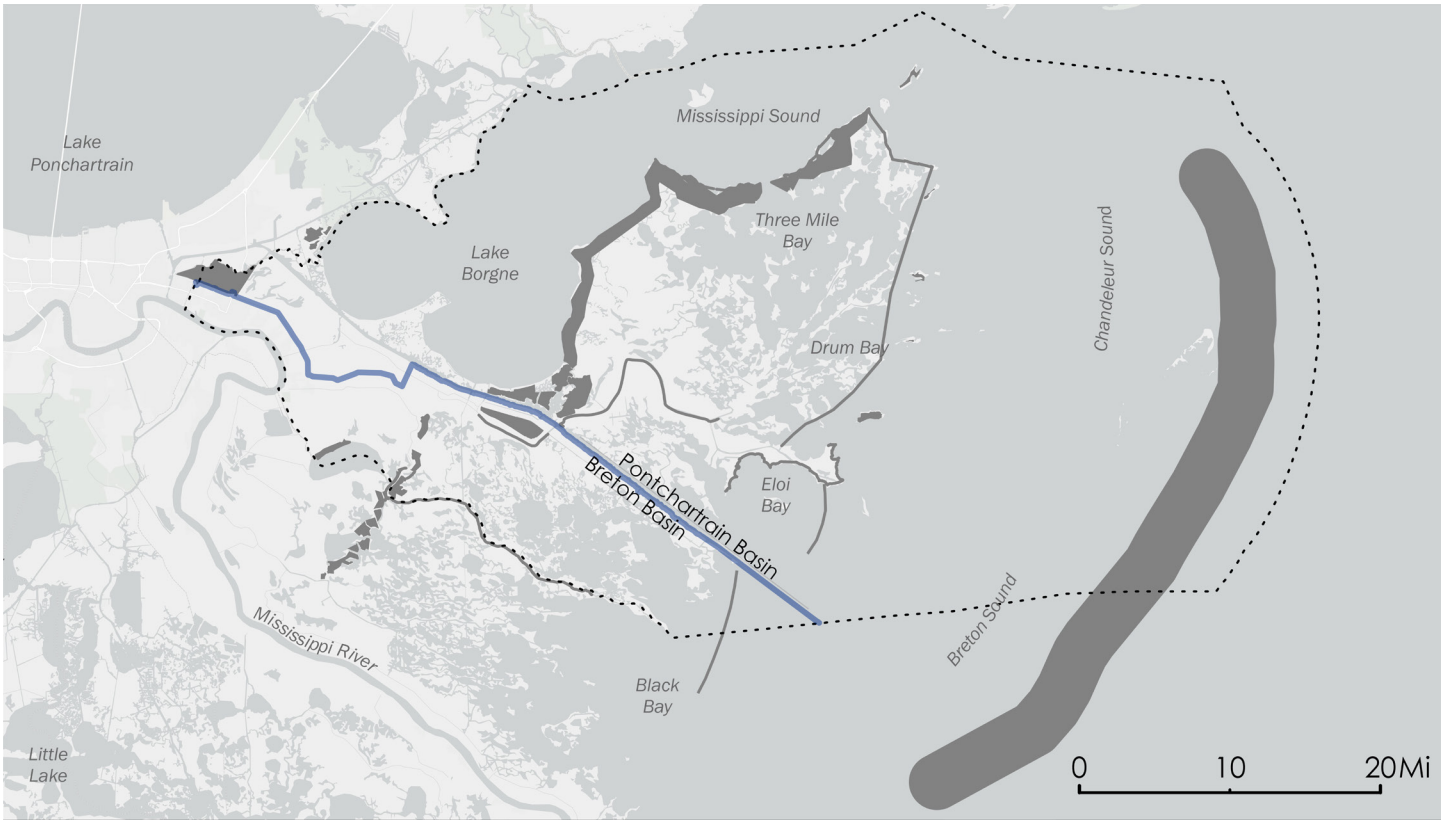
- **Tier 1** (Large-Scale, High Priority Protection, Restoration, and Risk Reduction Projects);
- **Tier 2** (Fisheries, Economic Development,

and Community Resilience Projects); and

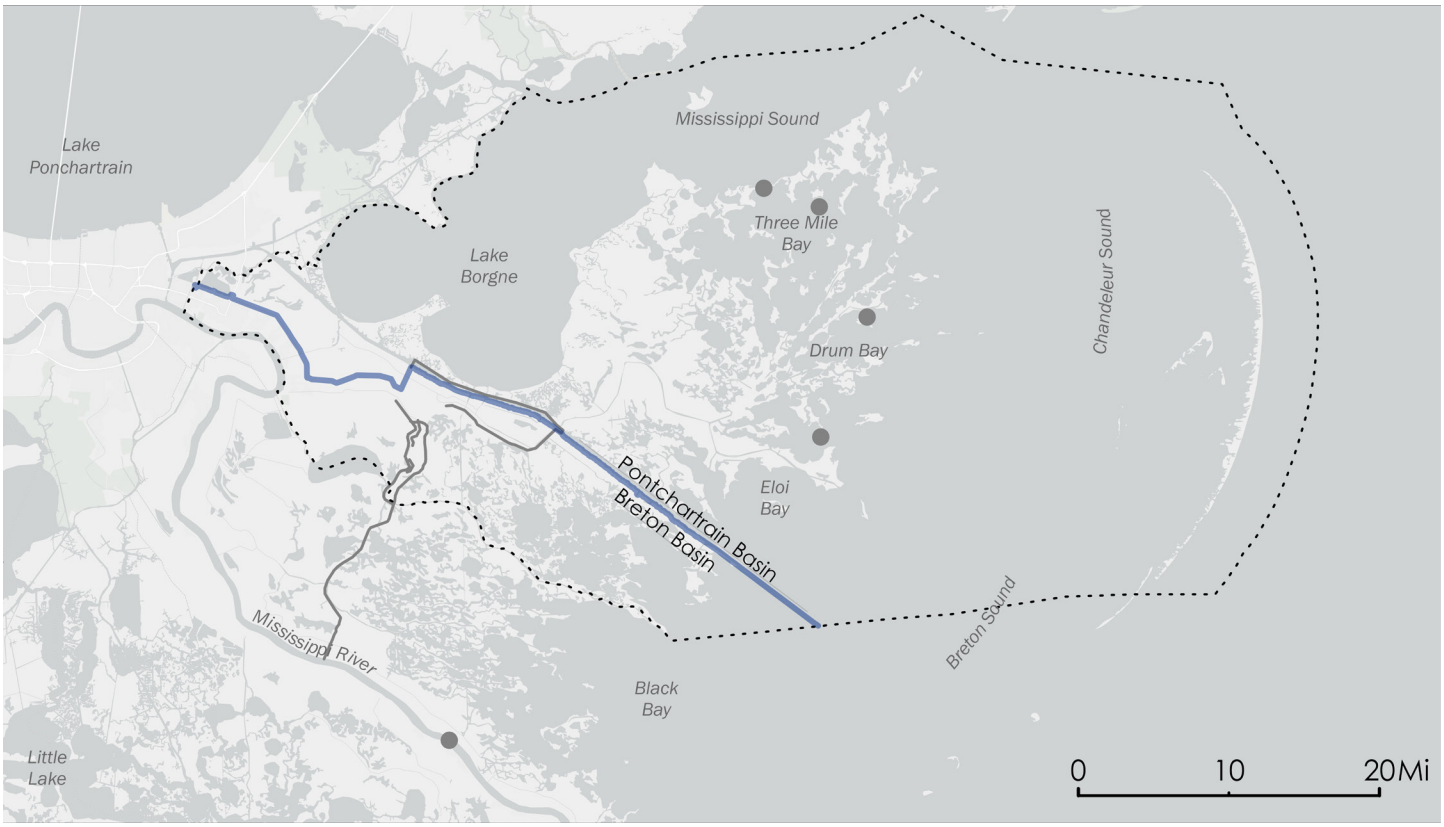
- **Tier 3** (Small-Scale Local Coastal Programming).

Most projects presented in this plan are restoration projects, such as marsh creation or ridge restoration, while the rest represent more human-centric proposals, such as those related to economic development or community outreach. Project types are further described in the table below.

Project Type	Description
Marsh Creation	Creating or restoring wetlands through dredging and placement of sediment from a nearby borrow source
Economic Development and Tourism	Promoting local economies through recreation improvements or small-scale infrastructure enhancements
Community Education and Outreach	Engaging community members to promote awareness of relevant coastal topics and participation in coastal restoration activities
Ridge Restoration	Restoring natural ridges using in-situ material and vegetative plantings
Barrier Island Restoration	Creating, restoring, and enhancing coastal barrier islands and headlands through placement of dredged material from an offshore borrow source
Hydrologic Restoration	Rerouting freshwater to maintain a healthy salinity balance in natural habitats
Shoreline Protection	Hardening shoreline to prevent erosion and enhance ecosystems, such as oyster reefs
Structural Risk Reduction	Constructing floodwalls, floodgates, and/or earthen levees to reduce loss of life and damages in a flood event
Other	Promoting a coastal activity that does not fall into any of the above categories, such as establishing a permanent sediment pipeline corridor



Map II-1: Marsh creation, ridge restoration, and barrier island restoration projects featured in the 2022 CSD



Map II-2: Hydrologic restoration, structural flood risk reduction, and oyster habitat restoration projects featured in the 2022 CSD

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Section 3

Vision for the Future

Image III-1: Golden Triangle Marsh Creation (Source: Capt. George Ricks)

SBPG's vision for the future of St. Bernard Parish includes a comprehensive approach to coastal protection and restoration that is focused on sustaining the parish's cultural, environmental, and economic resources for future generations. To achieve this vision, SBPG has identified four strategic areas of focus:

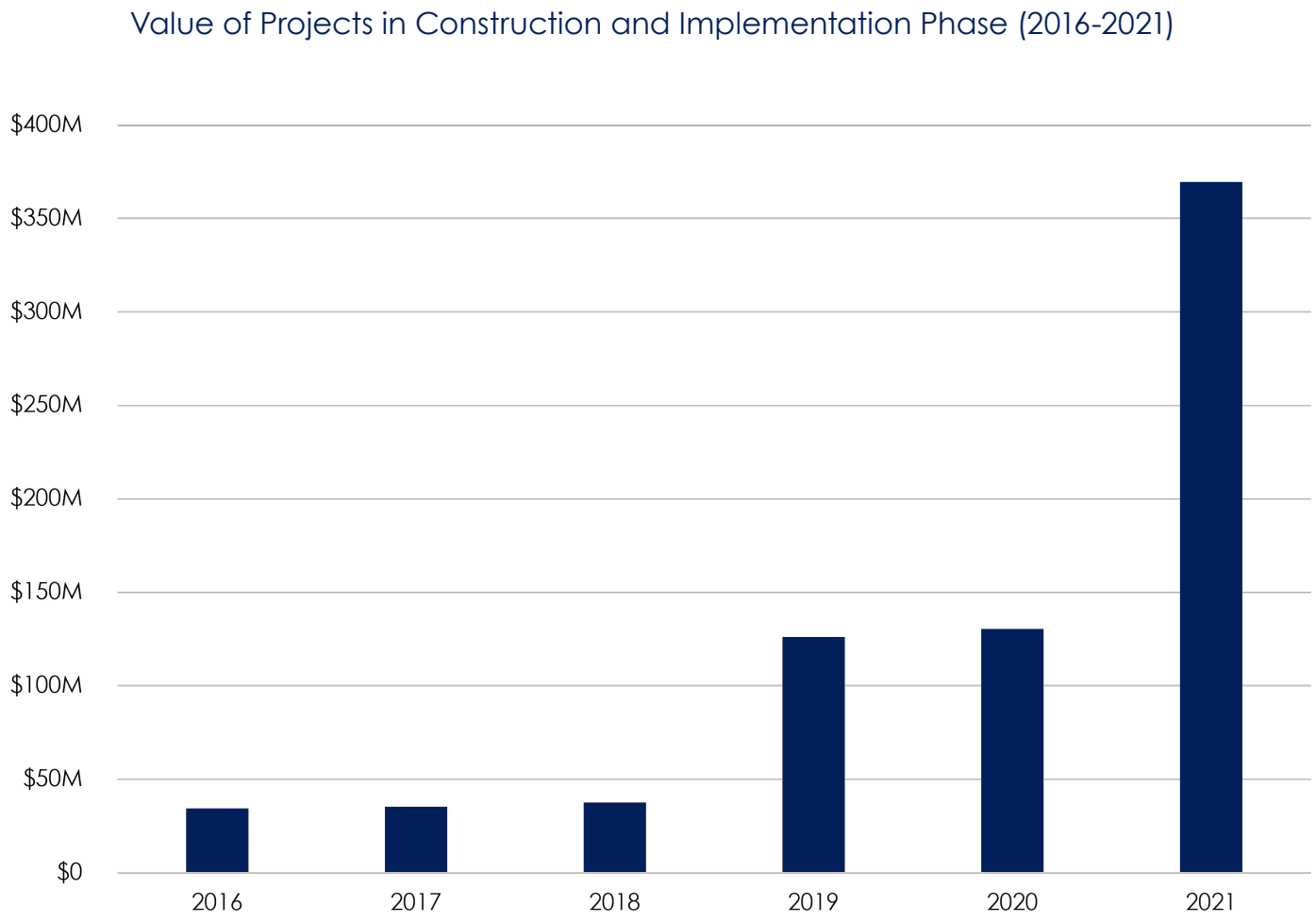
- Largescale Coastal Restoration and Flood Risk Reduction;
- Small-scale Projects, Sustainable Fisheries, and Economic Development;
- Local Coastal Programming and Community Engagement; and
- Advocacy.

Largescale Coastal Restoration and Flood Risk Reduction

After years of planning and engineering/design, several largescale coastal restoration projects in St. Bernard Parish and vicinity were finally under construction in 2021. CPRA began constructing the Lake Borgne Marsh Creation project ($127 million), the largest marsh creation project ever constructed in Louisiana (SBPO.08). The agency also broke ground on the Golden Triangle Marsh Creation project ($54.5 million) (SBPO.06). At the federal level, the US Department of the Interior (DOI) has continued dredging activities as part of the agency's North Breton Island Restoration project ($72 million) (SBPO.04).

The recent uptick in construction activity marked a significant turning point in the effort to restore coastal St. Bernard Parish. In 2017, there were only six CSD projects that had been completed, were under construction, or were actively being implemented. There are currently 27 CSD projects that have been completed, are in the construction phase, or are actively being implemented. In monetary terms, there is currently approximately $370 million in completed or ongoing work on CSD projects in St. Bernard Parish.

Table III-1: Value of completed and ongoing CSD projects by year (2016-2021)



The projects that will be completed over the next two years include many that SBPG and parish residents have been promoting for decades. Additional largescale marsh creation, ridge restoration, and barrier island restoration projects are also currently being designed, and the ongoing East Bank Sediment Pipeline Corridor project (SBBS.04) has the potential to provide a renewable source of sediment to service all projects in the Breton Basin. Finally, SBPG has been exploring the possibility of fortifying the existing HSDRSS around St. Bernard Parish by strategically constructing additional levees around vulnerable coastal communities (SBPO.09).

Many other largescale coastal restoration projects are expected to be under construction over the next several years. CPRA has continued the engineering/design processes for the Bayou La Loutre Ridge Restoration (SBPO.01), North Delacroix Marsh Creation (SBBS.12), East Delacroix Marsh Creation (SBBS.13), and Reggio Marsh Creation (SBBS.11) CWPPRA projects. Engineering/design for the ridge restoration project is now complete and the project will be considered for construction funding in 2022. The combined benefits of the CWPPRA projects include approximately 1,000 acres of marsh creation and over five miles of restored ridge. SBPG will continue working with its federal partners to nominate projects for CWPPRA consideration each year.

Engineering/design for two new largescale restoration projects was funded in 2021. The Deepwater Horizon Regionwide Trustee

Implementation Group (TIG), which oversees NRDA funding on behalf of the Gulf Coast region, advanced two St. Bernard Parish projects in 2021. The TIG allocated $8 million for the purpose of evaluating design alternatives, completing engineering/design, and preparing construction bid documents for a largescale Chandeleur Islands restoration project. Additionally, the TIG allocated $35.8 million for the purpose of constructing 30 acres of oyster reef at five locations, including the Biloxi Marsh. Both projects are scheduled to begin in 2022. SBPG had previously submitted a Chandeluer Islands restoration project and an oyster habitat restoration project for NRDA funding consideration in 2017. The parish will continue submitting projects for inclusion in future NRDA restoration plans.

Small-scale Projects, Sustainable Fisheries, and Economic Development

SBPG has directly engaged in many construction, engineering/design, and planning efforts over the past several years. The Lake Lery Marsh Creation project (Phase 2, $3 million) (SBBS.06) is currently under construction and the Paris Road Streetscape Enhancement ($800,000) (SBPO.13) and Bayou Terre aux Boeufs Ridge Restoration (Armoring Phase 2, $5.2 million) projects (SBBS.01) will be going up for construction bid in early 2022. The parish has also been closely coordinating with CPRA to complete the preliminary design for the sediment pipeline corridor, an effort that will resume during the upcoming year.

SBPG recognizes the economic significance of St. Bernard Parish's natural environment and remains committed to sustaining and promoting commercial and recreational fisheries in the parish. The Delacroix Fishing Complex (SBBS.10) was the first in a series of projects intended to promote local fisheries and facilitate the direct-to-market sale of fresh seafood in the parish. SBPG will be developing similar projects in Shell Beach (SBBS.09) and Hopedale (SBBS.08) over the next few years. In the interim, the parish will continue hosting public seafood market events at the permanent facility in Delacroix and at temporary sites in Hopedale and Chalmette.

Image III-2: Ongoing construction at the Lake Lery Marsh Creation site near Delacroix (Source: Capt. George Rick)

Providing local amenities that improve quality of life and promote tourism will continue to be a priority for SBPG. The Delacroix Fishing Complex includes a boat hoist and dry dock that provide commercial fishermen with an opportunity to store and repair their vessels without leaving St. Bernard Parish. The Paris Road Streetscape Enhancement project represents the most significant beautification effort to ever occur along this critical gateway to the parish. Finally, SBPG has partnered with Nunez Community College to construct an Isleños Community Archive in the school's library, where locals, tourists, and researchers will have access to a unique collection of historical records and cultural artifacts (SBPO.11).

SBPG has also been partnering with Nunez since 2018 to develop, fund, and implement a workforce development program that is focused on training people for employment opportunities in coastal

protection and restoration (SBPO.12). Although still in its infancy, the program has the potential to engage more parish residents in the emerging coastal workforce. This is one of many ongoing efforts to better engage the public in coastal affairs, which SBPG will continue to emphasize going forward.

Local Coastal Programming and Community Engagement

The parish has been actively engaged in a wide array of local coastal programming and community engagement activities over the past five years. Such programming has included Bayou Bash (SB.02) marine debris removal efforts, Cookoff for the Coast (SB.01), and many volunteer-driven coastal reforestation and re-vegetation projects (SB.04). Most notably, SBPG has partnered with several public, private, and nonprofit entities to develop, fund, and implement the parish's black mangrove planting program since 2017. Students from Chalmette High and Nunez have been heavily engaged in this program from the onset, creating many opportunities for local youth to experience coastal St. Bernard firsthand. SBPG intends on continuing these efforts and exploring new ways to leverage small-scale coastal restoration activities as community engagement and public awareness tools.

Advocacy

There has never been a greater need for advocacy in coastal St. Bernard Parish, both from public officials at all levels of government and everyday citizens. The parish is subject to the ongoing threats of coastal land loss and tropical weather events. Additionally, chronic (Mardi Gras Pass and Caernarvon) and acute (Bonnet Carre' Spillway) influxes of freshwater into St. Bernard Parish waterways continue to

Table III-2: Public seafood market attendance and sales in Delacroix, Hopedale, and Chalmette (2018-2021)

Date	Attendance	Shrimp (lb.)	Crabs (doz.)	Oysters (doz.)	Fish (lb.)
Jun-18	300	1,406	111	0	0
Sep-18	450	1,879	84	0	0
Jun-19	700	2,579	96	0	0
Sep-19	800	2,590	171	0	0
Jun-20	1,000	3,439	30	32	0
Sep-20	1,000	3,405	172	279	0
Nov-20	300	1,184	20	60	0
Jun-21	350	1,270	32	30	90
Jul-21	800	1,996	37	143	60
Nov-21	300	1,026	104	198	55
TOTAL	**6,000**	**20,774**	**857**	**742**	**205**

Image III-3: Chalmette High students have been involved in potting, raising, and planting black mangroves in the eastern Biloxi Marsh since 2017 (Snell, 2016)

threaten commercial and recreational fisheries and the local economy. Finally, in terms of coastal protection and restoration, it is critical that local stakeholders ensure that federal and state resources are being leveraged in a manner that maximizes environmental and flood risk reduction benefits for St. Bernard Parish. Unfortunately, this sometimes requires that SBPG advocates against proposed federal or state actions.

SBPG has developed a great working relationship with CPRA, USACE, and many other partners in the public, private, and nonprofit sectors. The parish will continue to nurture these relationships while also remaining vigilant with respect to federal or state actions that are inconsistent with the 2022 CSD. SBPG is sensitive to residents' concerns regarding the two proposed largescale sediment diversions and how those projects might impact the natural environment, commercial and recreational fishing industries, and local economy. The parish has been submitting public comments in opposition of both mid-basin largescale sediment diversions based on the above concerns and general uncertainty regarding the effectiveness of such projects. SBPG will continue monitoring the permitting process for each project and will take every opportunity to promote the parish's interest in coastal restoration projects that enhance the natural environment and reduce flood risk without introducing new environmental or economic risks.

Restoring coastal St. Bernard Parish to its early 20th century condition is highly unlikely. However, the parish's population has rebounded since Hurricane Katrina, increasing by 31.6% (35,897 to 47,244) between 2010 and 2019 (US Census Bureau, 2019). As illustrated throughout the 2022 CSD, the parish's role on Louisiana's working coast continues across many critical sectors: energy and petrochemical refining, commercial and recreational fishing, shipping, tourism, and many others. Consequently, SBPG is committed to continuing its coastal protection and restoration efforts, including being a strong advocate for those who depend upon a healthy coast for their livelihood. The parish has also accepted a leadership role in preparing the next generation of coastal St. Bernard Parish advocates.

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Appendices

Appendix A: Project Fact Sheets

Appendix B: Mid-Basin Sediment Diversion Comments

Appendix C: 2019 Fishery Disaster Spending Plan

Appendix D: Environmental Justice and Social Vulnerability Considerations.

Appendix A:
Project Fact Sheets

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

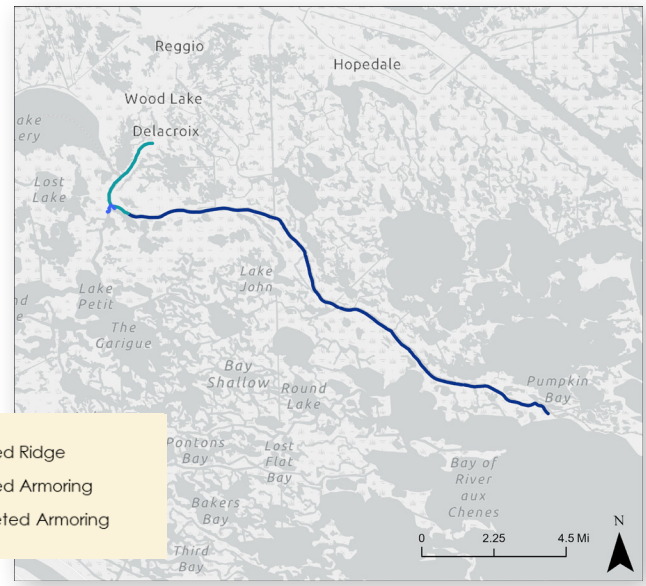
Ridge Restoration

Bayou Terre aux Boeufs Ridge Restoration

Project ID: SBBS.01

PROBLEM

The historic Bayou Terre Aux Boeufs Ridge is fading through subsidence, sea-level rise, and shoreline erosion. Historically, ridges and vegetation have provided natural protection for the Delacroix area by damping storm surge energy. However, the ridges are now lower and gaps have formed in many places, exposing the surrounding communities to storm surge, increased tidal exchange, and scouring.



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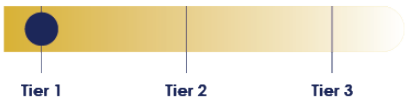


SCOPE OF WORK

This project includes one set of long-term interventions (ridge restoration) and one set of near-term interventions (armoring/shoreline protection). SBPG completed engineering/design of the armoring/shoreline protection features (Phases I-IV) (approximately 3.6 linear miles) and constructed Phase I (CPRA BS-40) (approximately one-half of a mile) along Bayou Terre aux Boeufs to protect some of the most vulnerable reaches of the ridge while the parish seeks funding for a more robust ridge restoration effort. Construction of Phase II (1.5 linear miles) armoring/shoreline protection is forthcoming.

BUDGET AND TIMELINE

Planning/Engineering and Design (5 Years)	$1,500,000
Construction (10 Years)	$14,900,000
Total	**$16,400,000**

FUNDING STRATEGY

SBPG funded engineering/design of Phases I-IV of the armoring/shoreline protection component. CPRA provided construction funding for Phase I (BS-40) in 2020. SBPG subsequently secured NFWF, RESTORE Act Direct Component, and State of Louisiana surplus funding for the construction of Phase II. Future armoring/shoreline protection construction funding will likely come from state and local sources, while CWPPRA or NRDA are the most likely funding sources for engineering/design and the construction of ridge restoration features.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Ridge Restoration

Bayou Terre aux Boeufs Ridge Restoration

Project ID: SBBS.01

ADDITIONAL INFORMATION

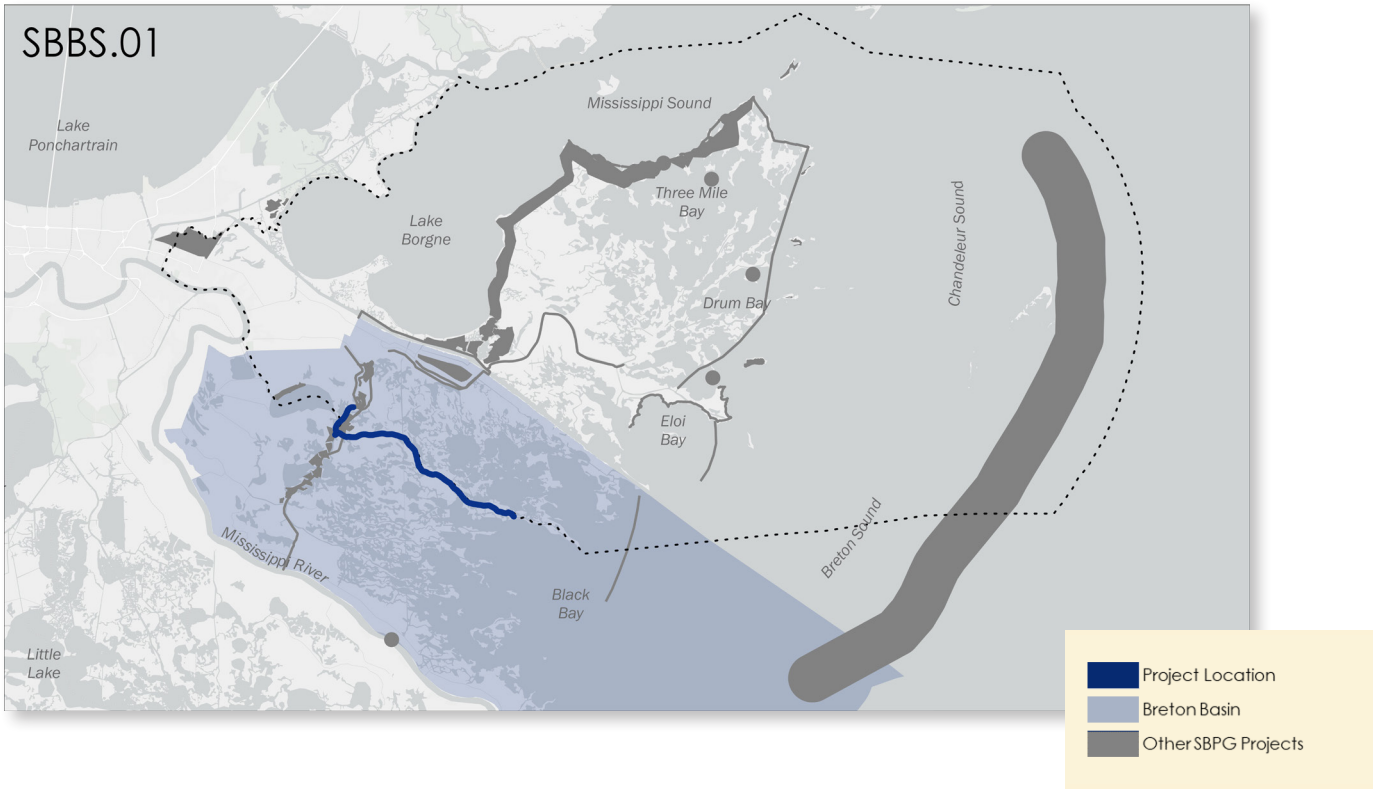
Several federal agencies have proposed different iterations of this project as part of the CWPPRA project nomination process. SBPG considers the northernmost reaches of the ridge near Delacroix to be the highest priority along the bayou. Phase I of the amoring/shoreline protection component has been completed and Phase II will be under construction in 2021.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Ridge Restoration

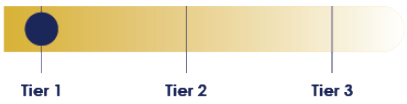
Black and Eloi Bay Ridge

Project ID: SBBS.02

PROBLEM

CPRA anticipates that without drastic action, much of the remaining marsh in the Breton and Pontchartrain basins may be lost over the next 50 years. The Breton and Chandeleur Islands are located too far from the current extent of marsh to provide sufficient wave attenuation or storm surge buffering. Additionally, previous iterations of the State Master Plan did not include any projects that offer wave attenuation or storm surge protection for marshes located in close proximity to the MRGO near Black Bay and Eloi Bay.

PRIORITY



SCOPE OF WORK

This project includes the construction of two vegetated ridges with foreshore ridge stability foundations and back-marshes in Black Bay and Eloi Bay for the purpose of creating new habitat and providing wave attenuation and storm surge buffering for existing marshes located in both the Breton and Pontchartrain basins. The horizontal cross section of each landform will include 600 feet of foreshore ridge stability foundation (target elevation of 5 feet), 100 feet of vegetated ridge (target elevation of 7 feet), and 1,000 feet of back-marsh (target elevation of 3 feet).

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$35,800,000
Construction (TBD)	$358,400,000
Total	**$394,200,000**

FUNDING STRATEGY

SBPG funded a feasibility study and preliminary design for the project. This effort is complete and CPRA is currently considering the project for inclusion in the 2023 State Master Plan.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Ridge Restoration

Black and Eloi Bay Ridge

Project ID: SBBS.02

ADDITIONAL INFORMATION

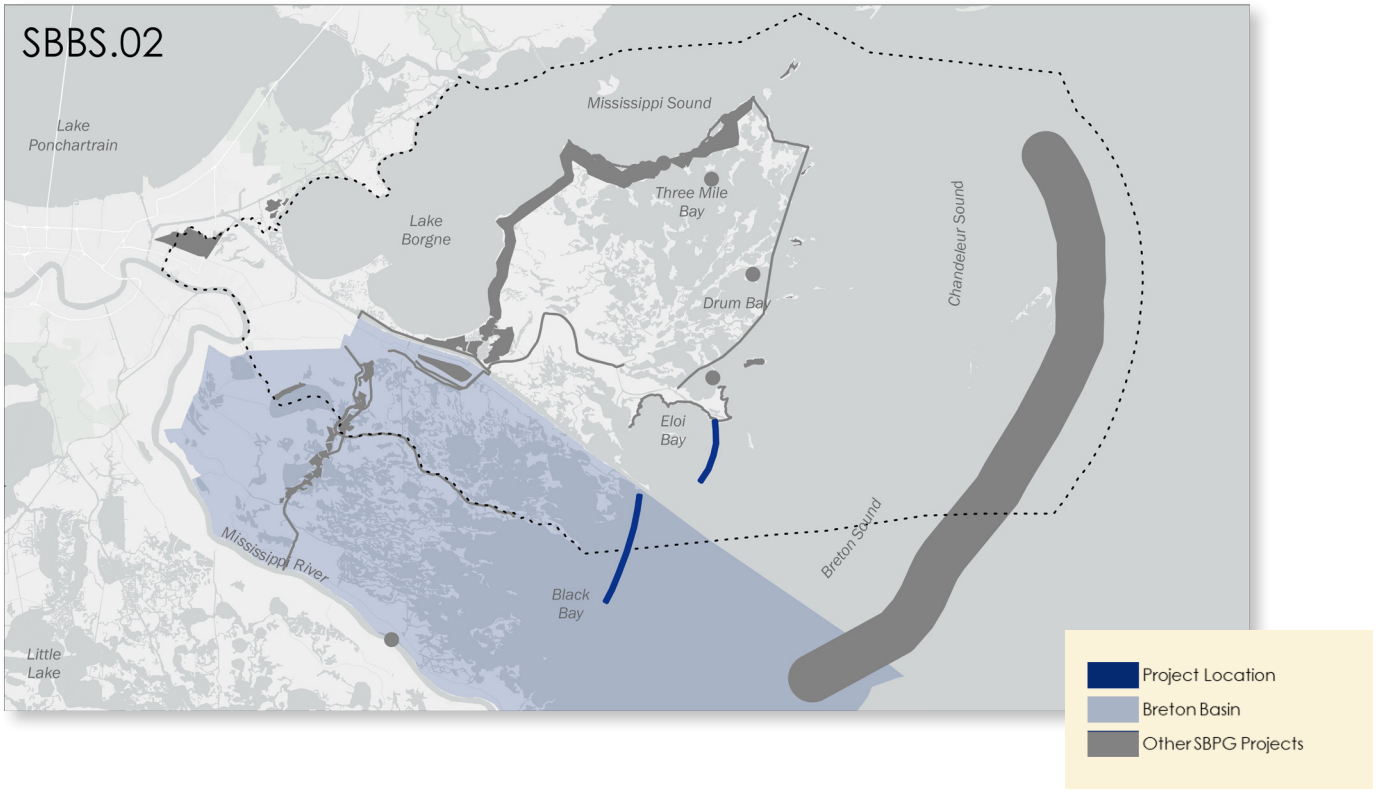
Due to the harsh open water conditions at the project sites, the cross section of the proposed ridge is intended to be more robust than the standard CPRA ridge. This project would create approximately 1,660 acres of marsh, 170 acres of upland ridge habitat, and 1,000 acres of foreshore ridge stability foundation.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana. CPRA is currently considering the project for inclusion in the 2023 State Master Plan.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

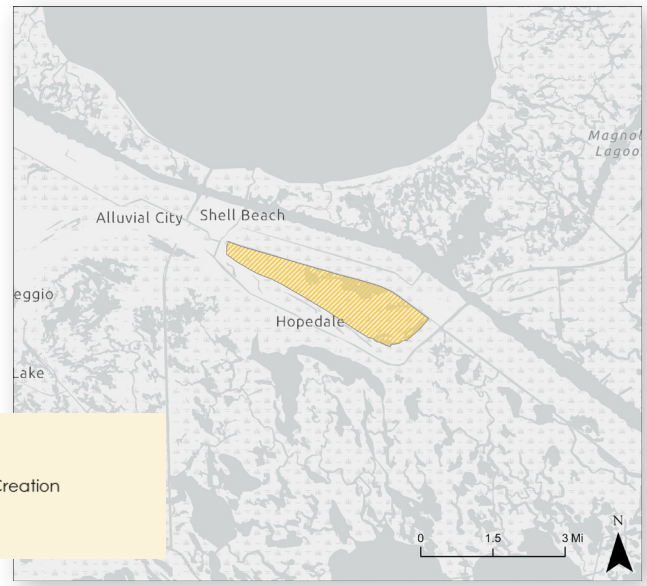
Marsh Creation

Hopedale Marsh Creation

Project ID: SBBS.03

PROBLEM

Subsidence, saltwater intrusion, erosion, tropical weather events, and the construction of the MRGO have caused the marsh near Hopedale to deteriorate over time. The deterioration of the marsh has resulted in the loss of land and critical habitat.



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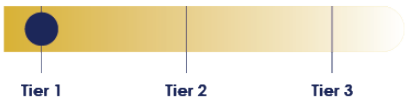


SCOPE OF WORK

This project includes the creation of approximately 1,900 acres of marsh near Hopedale south of the MRGO and west of Bayou La Loutre for the purpose of creating new wetland habitat, restoring degraded marsh, and mitigating decades of adverse environmental impacts caused by the MRGO.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$7,500,000
Construction (TBD)	$74,800,000
Total	**$82,300,000**

FUNDING STRATEGY

It is likely that this 1,900-acre polygon will be phased, designed, and constructed with CWPPRA, NRDA, or RESTORE Act funding. CPRA is currently considering the project for inclusion in the 2023 State Master Plan.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Marsh Creation

Hopedale Marsh Creation

Project ID: SBBS.03

ADDITIONAL INFORMATION

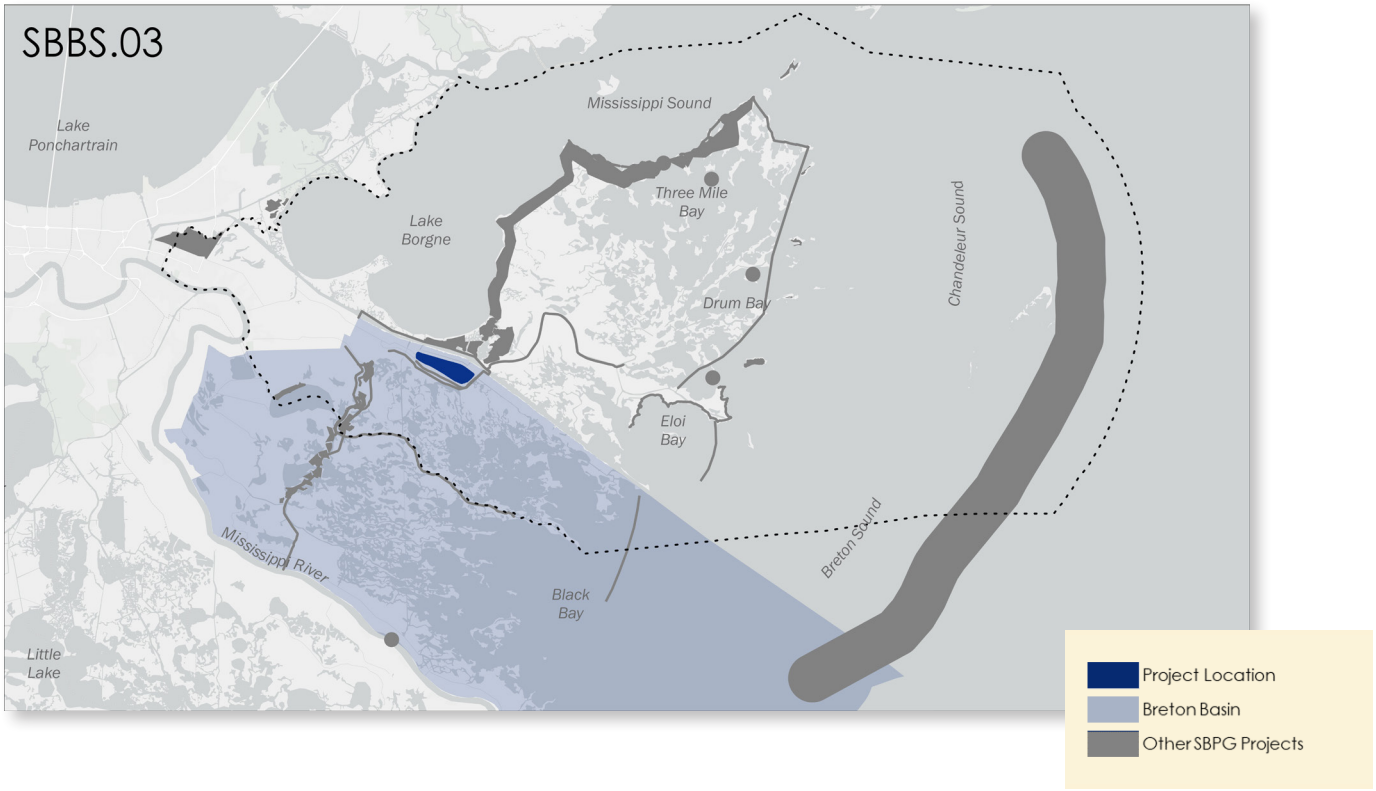
Hopedale is one of many historic and iconic fishing communities in St. Bernard Parish. The area is a major hub for both commercial and recreational activities.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the 2017 State Master Plan and the MRGO Ecosystem Restoration Plan.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

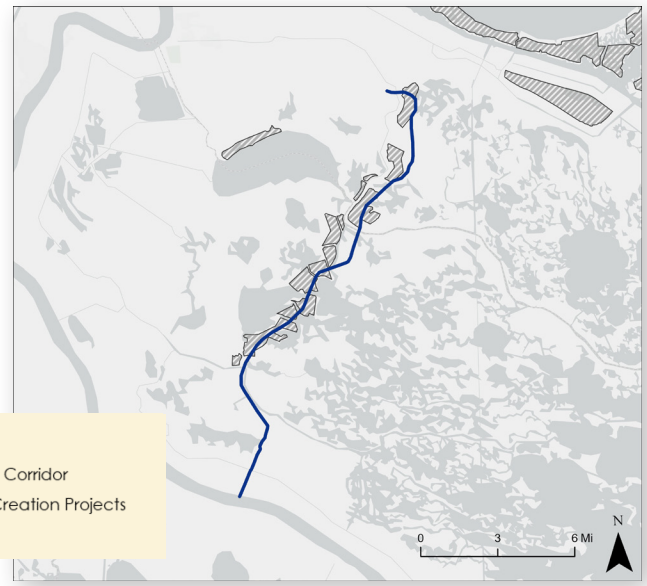
Other

East Bank Sediment Pipeline

Project ID: SBBS.04

PROBLEM

The 2017 State Master Plan includes over 50,000 acres of marsh creation (valued at over $2 billion) in the Breton Basin, but the basin lacks the renewable sources of sediment necessary to efficiently complete the proposed projects. The Mississippi River could provide an out-of-system, renewable sediment borrow source. However, a sediment pipeline transportation corridor is needed to transport sediment from the river into strategic locations throughout the Breton Basin.



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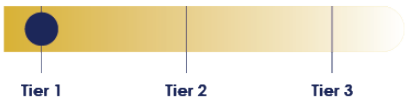


SCOPE OF WORK

This project (CPRA BS-33) includes the investigation and establishment of a sediment pipeline corridor on the East Bank of the Mississippi River. The East Bank Sediment Transport Corridor Project Preliminary Design and Implementation Plan included the necessary engineering, environmental, geotechnical, economic, logistical, and land rights requirements for implementation. This initial effort ($1,000,000) was completed in 2021. An additional $1,500,000 is required to complete project engineering/design. The preliminary estimated construction cost is $30,000,000.

BUDGET AND TIMELINE

Planning/Engineering and Design (1 Year)	$1,500,000.0
Construction (TBD)	$30,000,000.0
Total	**$31,500,000**

FUNDING STRATEGY

SBPG and CPRA funded the feasibility study and preliminary design ($1,000,000) and will also cost-share the remaining engineering/design ($1,500,000). The parish has submitted the project to the Louisiana Trustee Implementation Group for NRDA construction funding consideration.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Other

East Bank Sediment Pipeline

Project ID: SBBS.04

ADDITIONAL INFORMATION

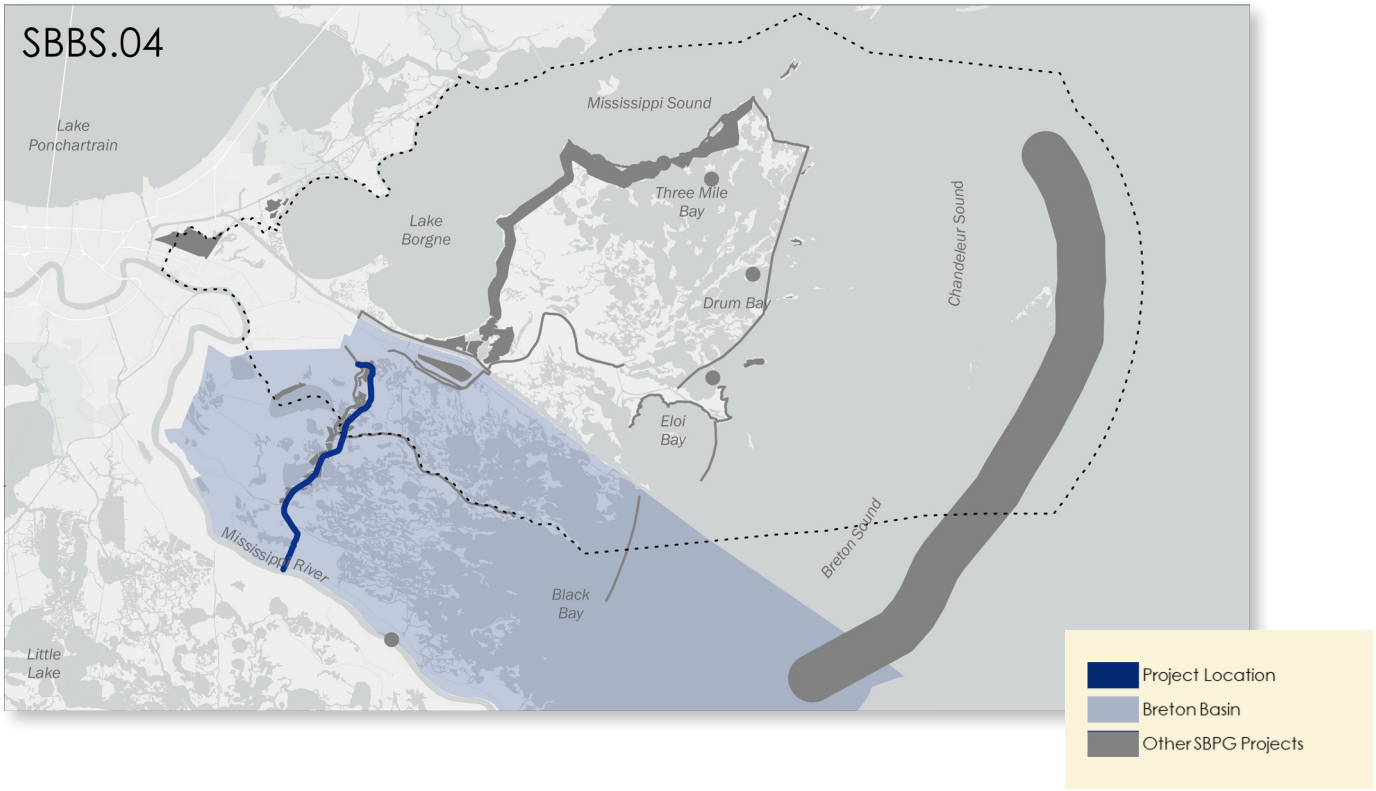
The East Bank Sediment Pipeline would facilitate the implementation of largescale coastal protection and restoration projects throughout the Breton Basin.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

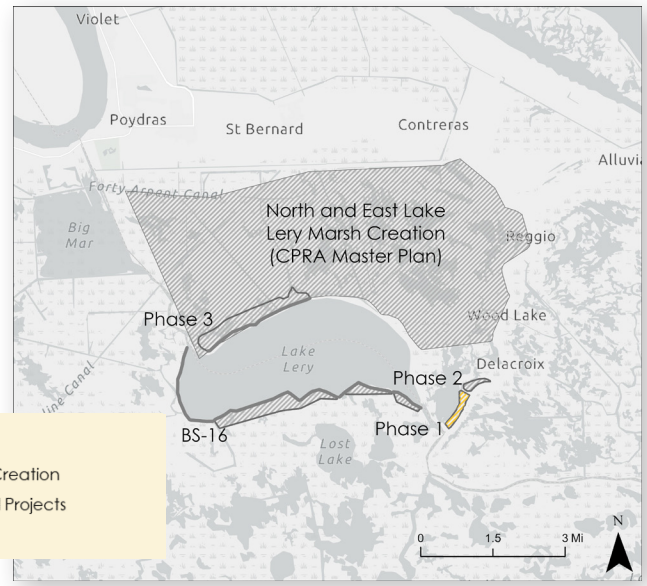
Marsh Creation

Phase 1 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.05

PROBLEM

In 2005, Hurricane Katrina severely damaged the shoreline and marsh surrounding Lake Lery. Subsidence, sea-level rise, tropical weather events, and erosion have continued to cause land and habitat loss in the area, particularly near the southeastern quadrant of the lake near Bayou Terre aux Boeufs.



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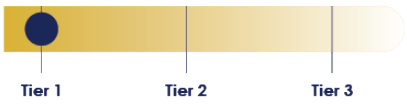


SCOPE OF WORK

This project, which was completed in 2016, included 68 acres of marsh creation and nourishment in one of the most vulnerable areas between Lake Lery and Bayou Terre aux Boeufs. SBPG also installed a shoreline protection product along the exterior of the marsh creation containment dike. The newly created marsh polygon is currently being targeted for a largescale Cypress-Tupelo reforestation effort.

BUDGET AND TIMELINE

Planning/Engineering and Design (Complete)	$1,000,000
Construction (Complete)	$7,000,000
Total	**$8,000,000**

FUNDING STRATEGY

CIAP funding was used to design (2014) and construct (2016) this project. NFWF and RESTORE Act funding will be used to complete the forthcoming Cypress-Tupelo planting at the site.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Marsh Creation

Phase 1 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.05

ADDITIONAL INFORMATION

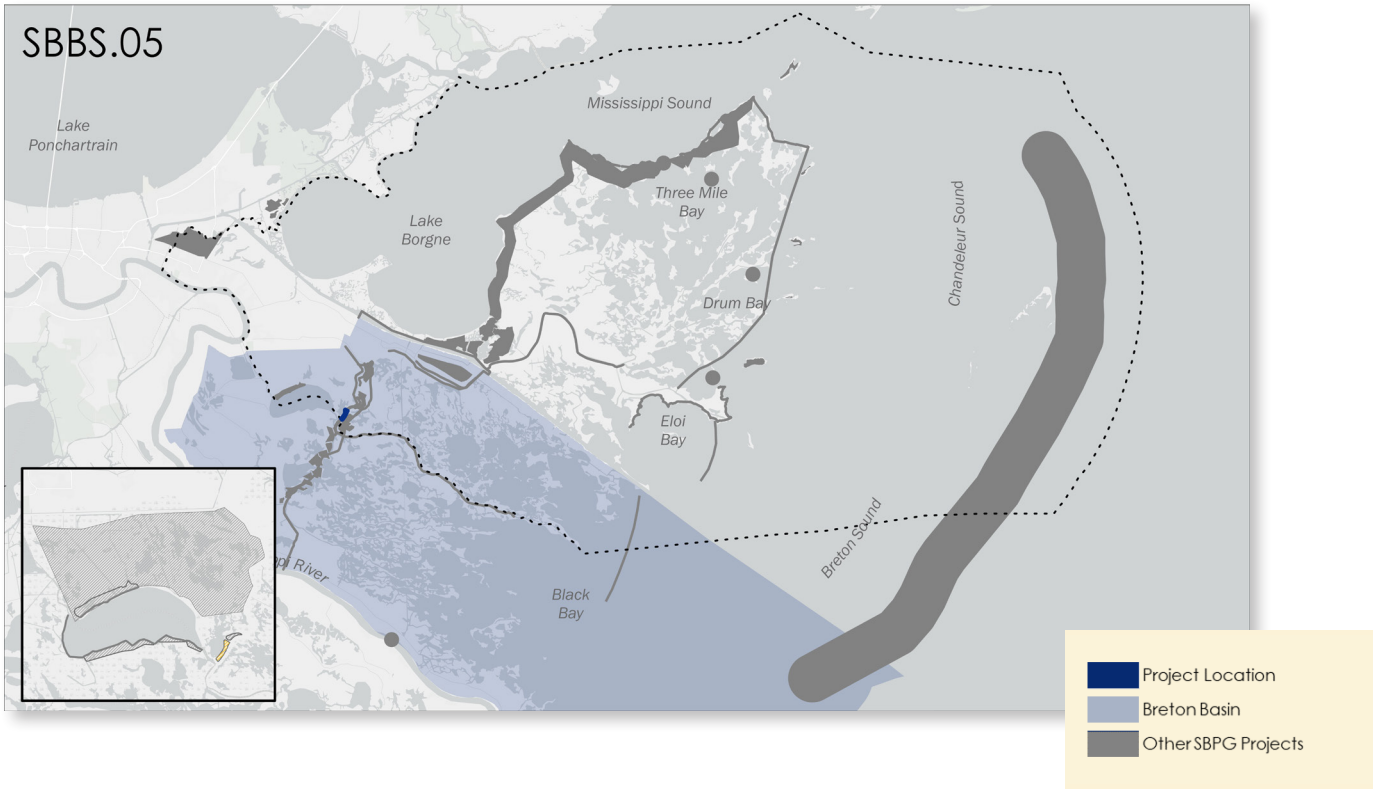
CIAP funded engineering/design for a larger marsh creation polygon that included both Lake Lery Marsh Creation Phase 1 (68 acres) and Phase 2 (30 acres). However, construction funding was previously only available for Phase 1. There is synergy between this project and other completed and proposed marsh creation projects near Lake Lery.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

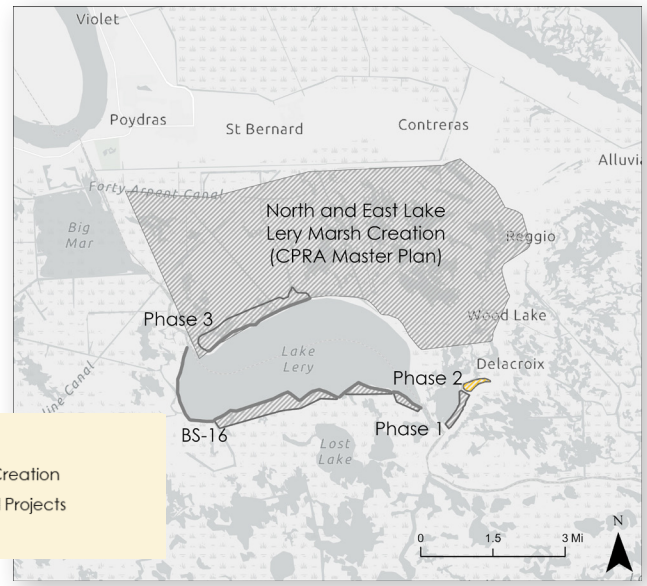
Marsh Creation

Phase 2 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.06

PROBLEM

In 2005, Hurricane Katrina severely damaged the shoreline and marsh surrounding Lake Lery. Subsidence, sea-level rise, tropical weather events, and erosion have continued to cause land and habitat loss in the area, particularly near the southeastern quadrant of the lake near Bayou Terre aux Boeufs.



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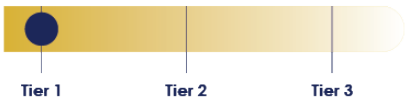


SCOPE OF WORK

This project, which was designed in 2016, includes 30 acres of marsh creation and nourishment in one of the most vulnerable areas between Lake Lery and Bayou Terre aux Boeufs. As part of this effort, SBPG also intends on installing a shoreline protection product and/or vegetation along the exterior of the marsh creation containment dike.

BUDGET AND TIMELINE

Planning/Engineering and Design (Complete)	$1,000,000
Construction (1 Year)	$3,000,000
Total	**$4,000,000**

FUNDING STRATEGY

CIAP funding was used to design (2014) this project. SBPG has since leveraged RESTORE Act Direct Component ($300,000) and CPRA RESTORE Act Parish Matching Program ($2,781,000) funding to complete construction, which is scheduled to begin in 2021.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Marsh Creation

Phase 2 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.06

ADDITIONAL INFORMATION

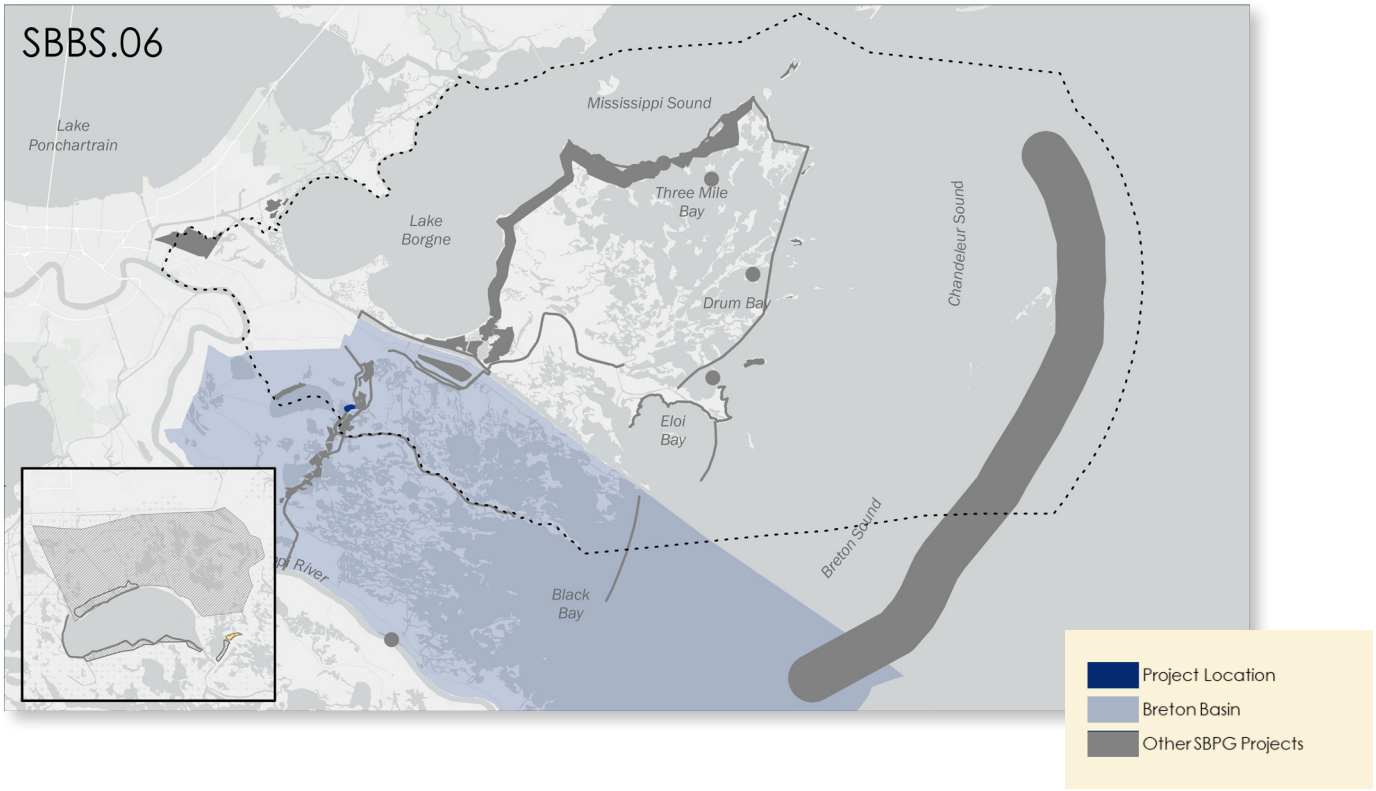
CIAP funded engineering/design for a larger marsh creation polygon that included both Lake Lery Marsh Creation Phase 1 (68 acres) and Phase 2 (30 acres). However, construction funding was previously only available for Phase 1. There is synergy between this project and other completed and proposed marsh creation projects near Lake Lery.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

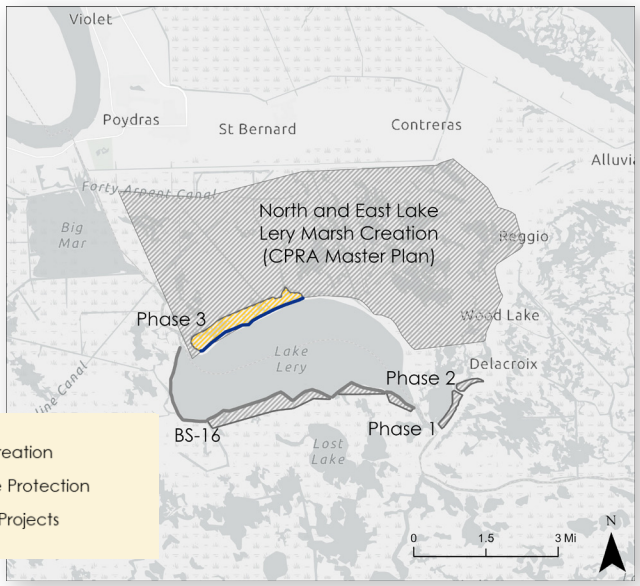
Marsh Creation

Phase 3 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.07

PROBLEM

In 2005, Hurricane Katrina severely damaged the shoreline and marsh surrounding Lake Lery. Subsidence, sea-level rise, tropical weather events, and erosion have continued to cause land and habitat loss in the area. The shoreline along the northwestern quadrant of the lake has become severely eroded, exposing interior marshes to wave action and land loss.



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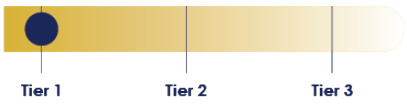

SCOPE OF WORK

This project, which was designed in 2021, includes approximately 400 acres of marsh creation and nourishment along the northwestern quadrant of Lake Lery. The project area is part of a much larger proposed 14,000-acre marsh creation polygon (North and East Lake Lery Marsh Creation) that CPRA is considering for inclusion in the 2023 State Master Plan.

BUDGET AND TIMELINE

Planning/Engineering and Design (Complete)	$1,300,000
Construction (TBD)	$13,500,000
Total	**$14,800,000**

FUNDING STRATEGY

SBPG funded engineering/design ($1,300,000). The parish anticipates that once the larger North and East Lake Lery Marsh Creation polygon is included in the 2023 State Master Plan, the designed portion of the project may be considered for RESTORE Act funding. SBPG has also submitted the designed portion of the project to FEMA for BRIC funding consideration. Other areas within the larger polygon may also be considered for future CWPPRA PPLs.

COASTAL DIVISION
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Marsh Creation

Phase 3 Lake Lery Marsh Creation and Rim Restoration

Project ID: SBBS.07

ADDITIONAL INFORMATION

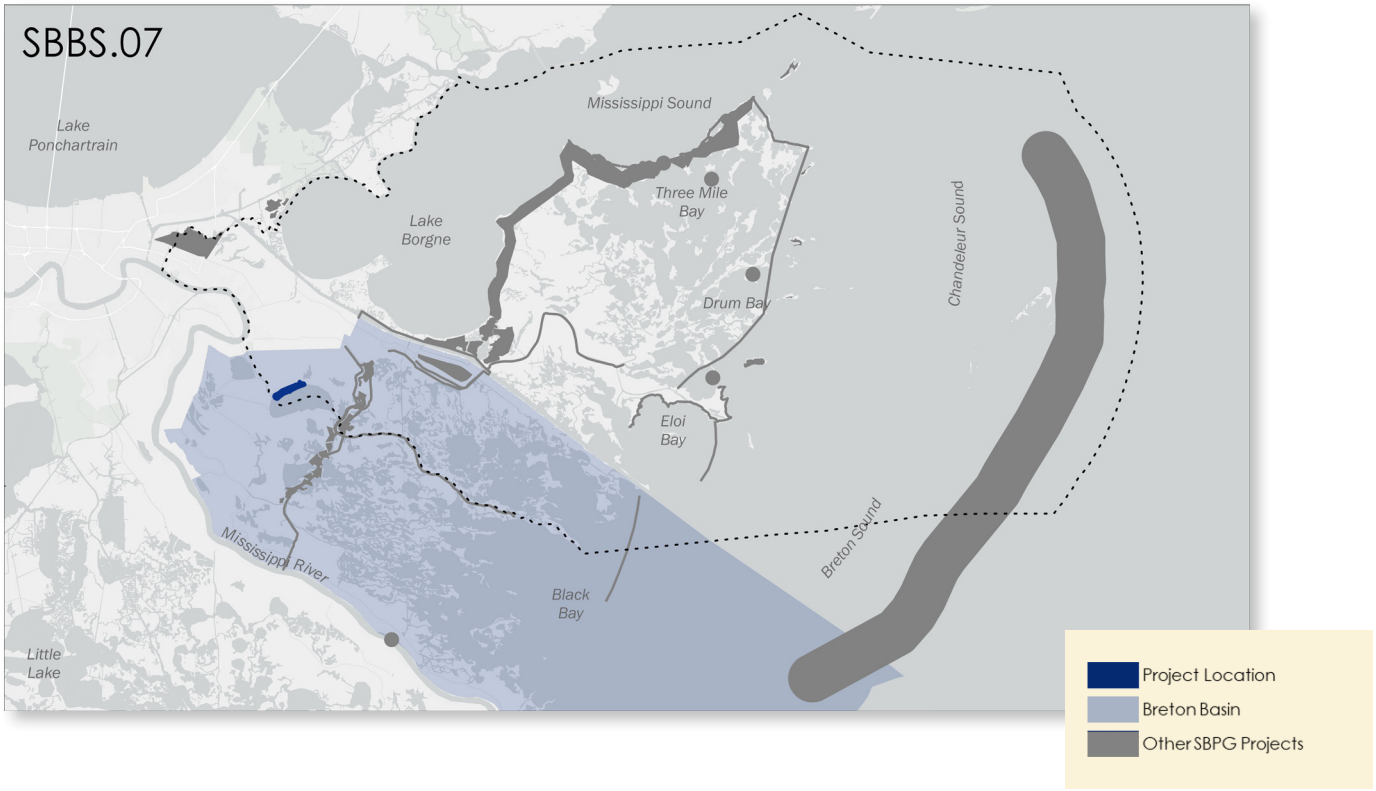
The Phase 3 marsh creation polygon was recently considered for the USACE BUDMAT program. However, the logistical challenges associated with transporting sediment from maintenance dredging areas near New Orleans proved too costly. There is synergy between this project and other completed and proposed marsh creation projects near Lake Lery.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
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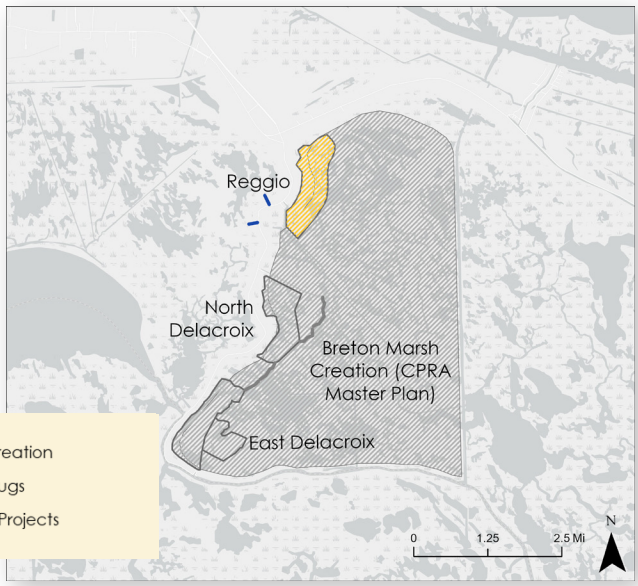
Marsh Creation

Reggio Marsh Creation and Hydrologic Restoration

Project ID: SBBS.11

PROBLEM

In 2005, Hurricane Katrina caused significant wetland loss in eastern St. Bernard Parish. Wind erosion and saltwater intrusion also resulted in the loss of marsh, vegetation, and wetland soils near Reggio. Marsh loss has increased exposure of the adjacent communities to flooding from the east/southeast. Additionally, canals near Reggio often channel saltwater into nearby marshes, thereby exacerbating saltwater intrusion and land loss.



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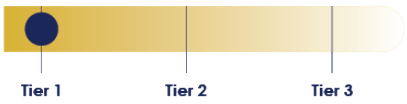

SCOPE OF WORK

The Reggio project (CWPPRA BS-43) includes the creation and nourishment of approximately 484 acres of marsh east of Reggio and the closure (hydrologic restoration) of two existing canals along Bayou Terre aux Boeufs. The project area is part of the larger Breton Marsh Creation polygon in the 2017 State Master Plan, and the Reggio project has a great deal of synergy with two other adjacent ongoing projects: North Delacroix Marsh Creation and East Delacroix Marsh Creation.

BUDGET AND TIMELINE

Planning/Engineering and Design (3 Years)	$3,640,000
Construction (TBD)	$30,000,000
Total	**$33,640,000**

FUNDING STRATEGY

The CWPPRA program funded the planning/engineering and design of the Reggio project. Upon design completion, the project will likely be considered for construction funding as part of future CWPPRA PPLs.

COASTAL DIVISION
ST. BERNARD PARISH

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Marsh Creation

Reggio Marsh Creation and Hydrologic Restoration

Project ID: SBBS.11

ADDITIONAL INFORMATION

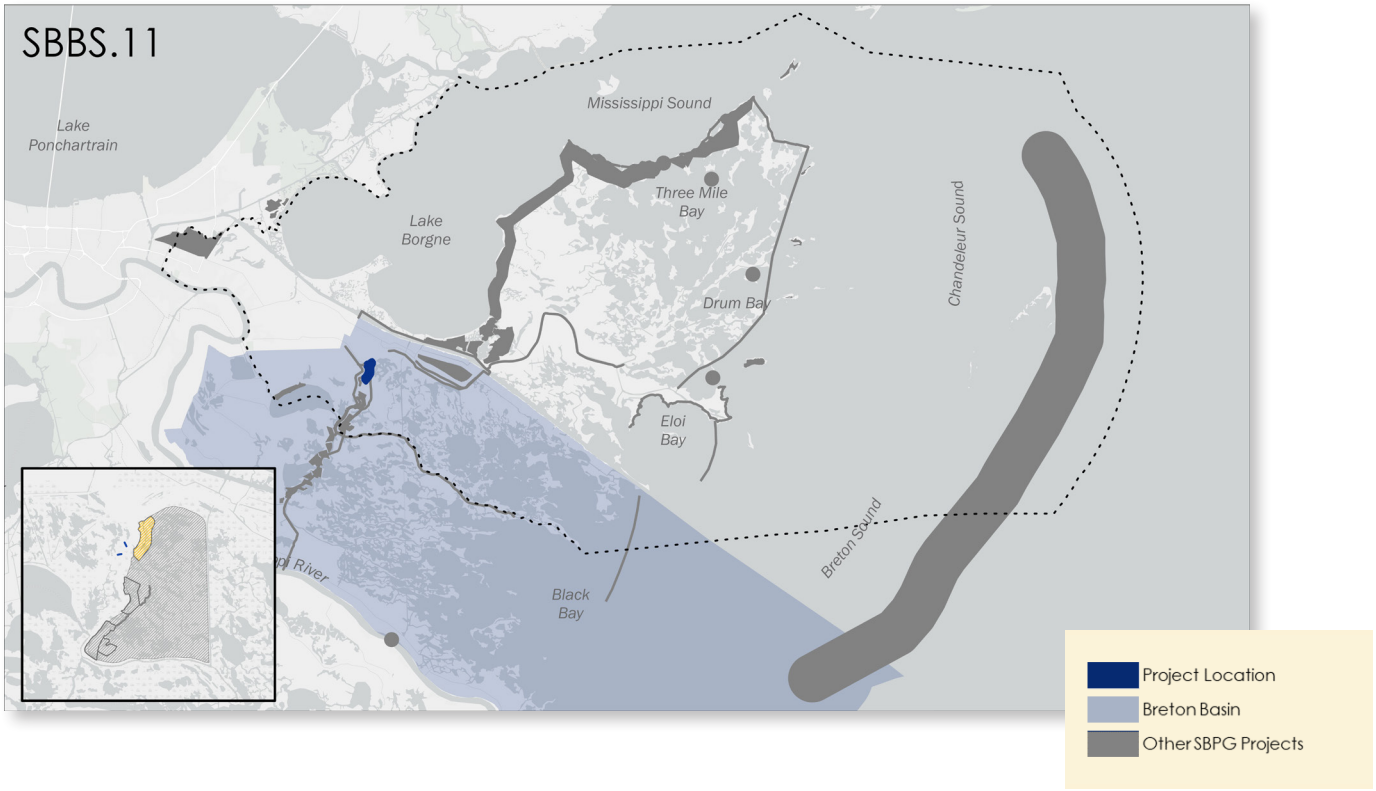
The Reggio project is one of three adjacent CWPPRA projects within the Breton Marsh Creation polygon that are currently being designed. Each of the projects were approved for CWPPRA engineering/design funding during consecutive PPLs (2019-2021).

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



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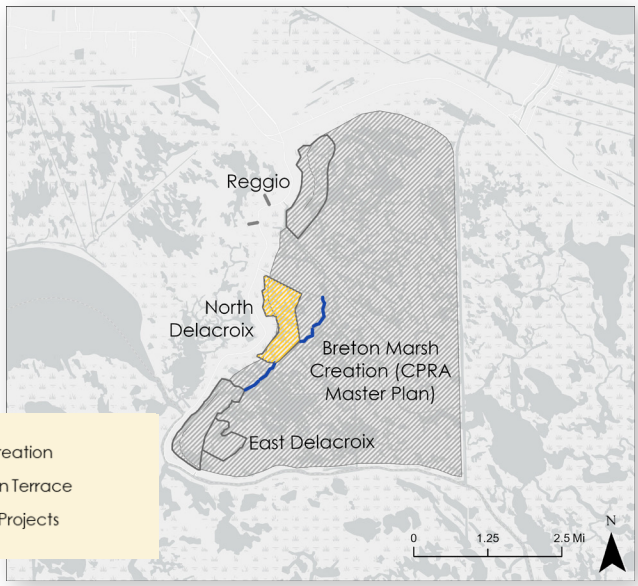
Marsh Creation

North Delacroix Marsh Creation and Terracing

Project ID: SBBS.12

PROBLEM

In 2005, Hurricane Katrina caused significant wetland loss in eastern St. Bernard Parish. Wind erosion and saltwater intrusion also resulted in the loss of marsh, vegetation, and wetland soils near Delacroix. Marsh loss has increased exposure of the adjacent communities to flooding from the east/southeast. The USGS land loss rate is -1.4%/year for the extended project boundary area.



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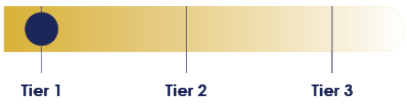

SCOPE OF WORK

The North Delacroix project (CWPPRA BS-41) includes the creation and nourishment of approximately 389 acres of marsh and the construction of approximately 8,548 linear feet of marsh terraces. The marsh terrace field will be strategically located and planted with the appropriate bare root plants 2.5 feet apart in one row per side and crown. The project area is part of the larger Breton Marsh Creation polygon in the 2017 State Master Plan, and the North Delacroix project has a great deal of synergy with two other adjacent ongoing projects: Reggio Marsh Creation and East Delacroix Marsh Creation.

BUDGET AND TIMELINE

Planning/Engineering and Design (2 Years)	$3,710,000
Construction (TBD)	$31,800,000
Total	**$35,510,000**

FUNDING STRATEGY

The CWPPRA program funded the planning/engineering and design of the North Delacroix project. Upon design completion, the project will likely be considered for construction funding as part of future CWPPRA PPLs.

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Marsh Creation

North Delacroix Marsh Creation and Terracing

Project ID: SBBS.12

ADDITIONAL INFORMATION

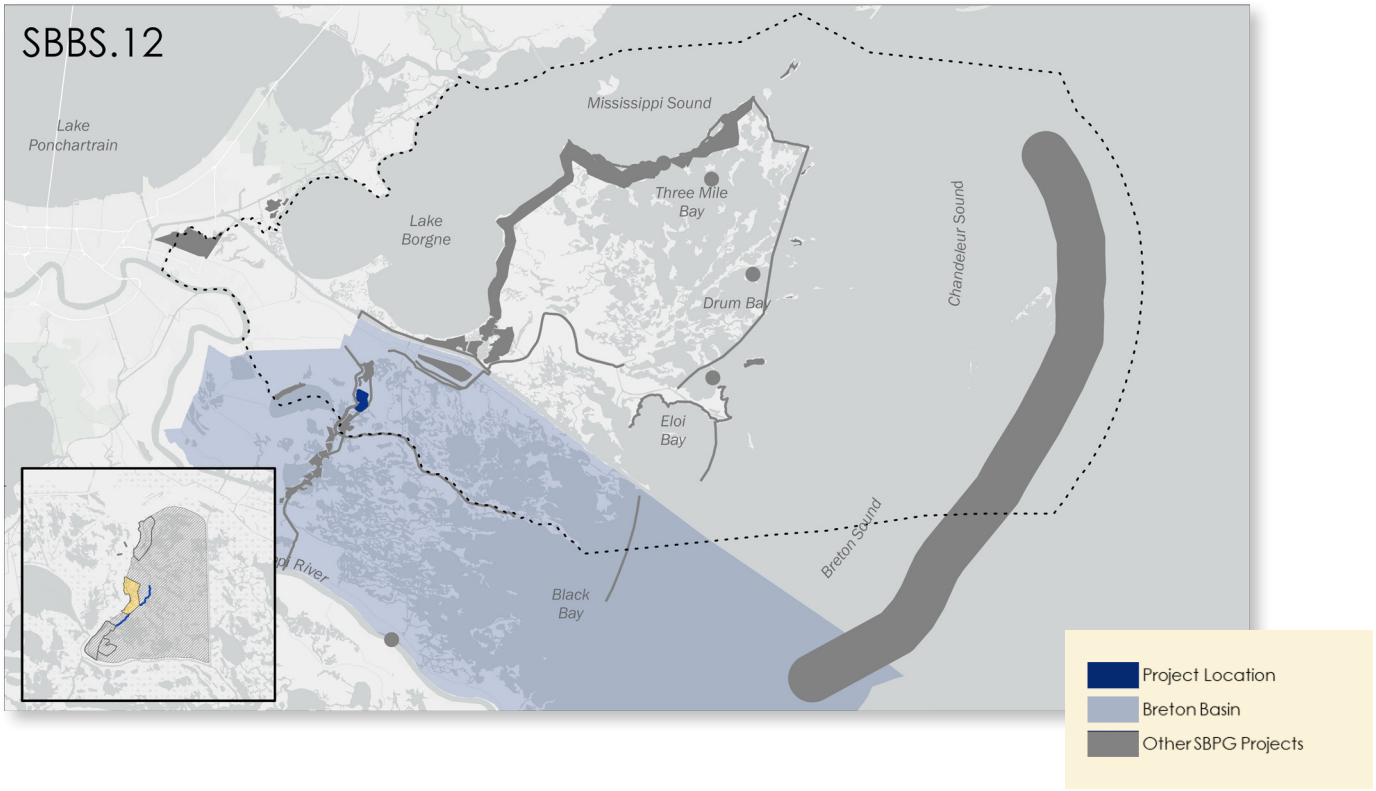
The North Delacroix project is one of three adjacent CWPPRA projects within the Breton Marsh Creation polygon that are currently being designed. Each of the projects were approved for CWPPRA engineering/design funding during consecutive PPLs (2019-2021).

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



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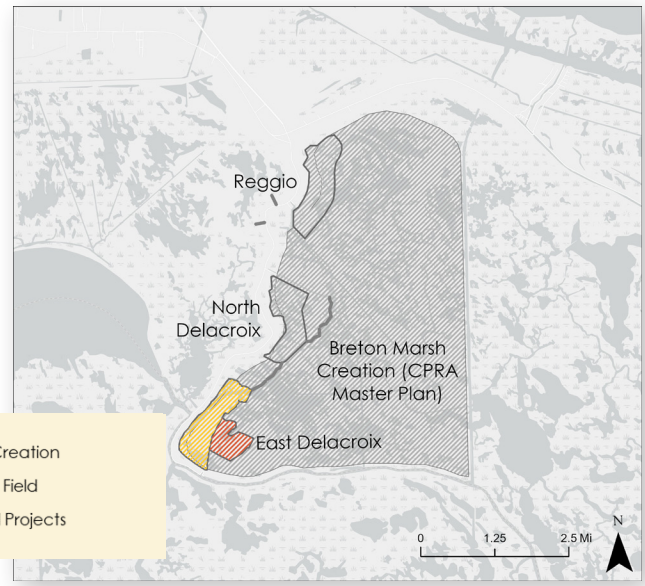
Marsh Creation

East Delacroix Marsh Creation and Terracing

Project ID: SBBS.13

PROBLEM

In 2005, Hurricane Katrina caused significant wetland loss in eastern St. Bernard Parish. Wind erosion and saltwater intrusion also resulted in the loss of marsh, vegetation, and wetland soils near Delacroix. Marsh loss has increased exposure of the adjacent communities to flooding from the east/southeast. The USGS land loss rate is -1.58%/year for the extended project boundary area.



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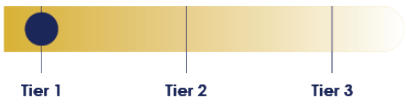

SCOPE OF WORK

The East Delacroix project (CWPPRA BS-37) includes the creation and nourishment of approximately 406 acres of marsh and the construction of approximately 12,950 linear feet of marsh terraces. The marsh terrace field will be strategically located and planted with the appropriate bare root plants 2.5 feet apart in one row per side and crown. The project area is part of the larger Breton Marsh Creation polygon in the 2017 State Master Plan, and the East Delacroix project has a great deal of synergy with two other adjacent ongoing projects: Reggio Marsh Creation and North Delacroix Marsh Creation.

BUDGET AND TIMELINE

Planning/Engineering and Design (1 Year)	$3,640,000
Construction (TBD)	$36,100,000
Total	**$39,740,000**

FUNDING STRATEGY

The CWPPRA program funded the planning/engineering and design of the East Delacroix project. Upon design completion, the project will likely be considered for construction funding as part of future CWPPRA PPLs.

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Marsh Creation

East Delacroix Marsh Creation and Terracing

Project ID: SBBS.13

ADDITIONAL INFORMATION

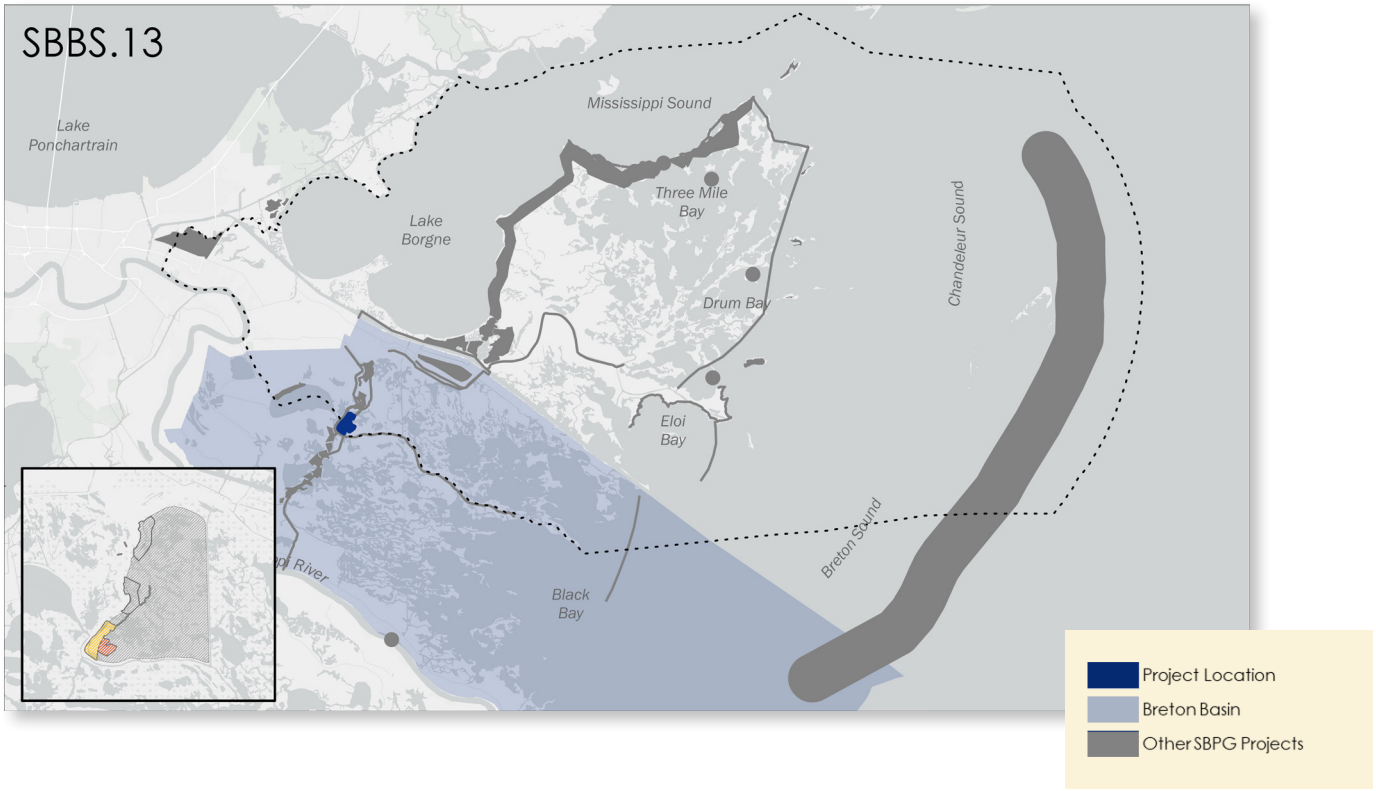
The East Delacroix project is one of three adjacent CWPPRA projects within the Breton Marsh Creation polygon that are currently being designed. Each of the projects were approved for CWPPRA engineering/design funding during consecutive PPLs (2019-2021).

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

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Hydrologic Restoration

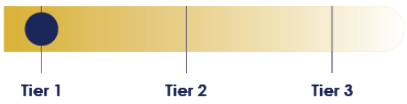
Mardi Gras Pass Closure

Project ID: SBBS.14

PROBLEM

Mardi Gras Pass began forming in 2011 when the Mississippi River overcame the failed Bohemia Spillway water control structure and breached the adjacent natural levee. A new channel subsequently formed and by 2013, the river was discharging into adjacent waterways at up to 3,800 CFS. The rate of discharge had increased to approximately 45,000 CFS by 2019. The influence of the Mississippi River near Mardi Gras Pass has drastically reduced salinity in local waterways and devastated oyster productivity in once prolific harvest areas.

PRIORITY



SCOPE OF WORK

This project includes two core components: 1) an emergency closure (Phase 1) at the confluence of Mardi Gras Pass and the Mississippi River utilizing a combination of a rock weir (31,000 tons) and steel sheet piling (360 linear feet); and 2) the permanent rehabilitation of the Bohemia Spillway structure and the installation of associated gates, dikes, and access roads (Phase 2).

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$265,500.0
Construction (TBD)	$38,000,000.0
Total	**$38,265,500**

FUNDING STRATEGY

The Louisiana Oyster Task Force and other stakeholders funded a feasibility study and preliminary design ($230,000) for this project. SBPG has since requested that the State of Louisiana utilize 2019 federal fishery disaster recovery funds to complete both phases of the project.

COASTAL DIVISION
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Hydrologic Restoration

Mardi Gras Pass Closure

Project ID: SBBS.14

ADDITIONAL INFORMATION

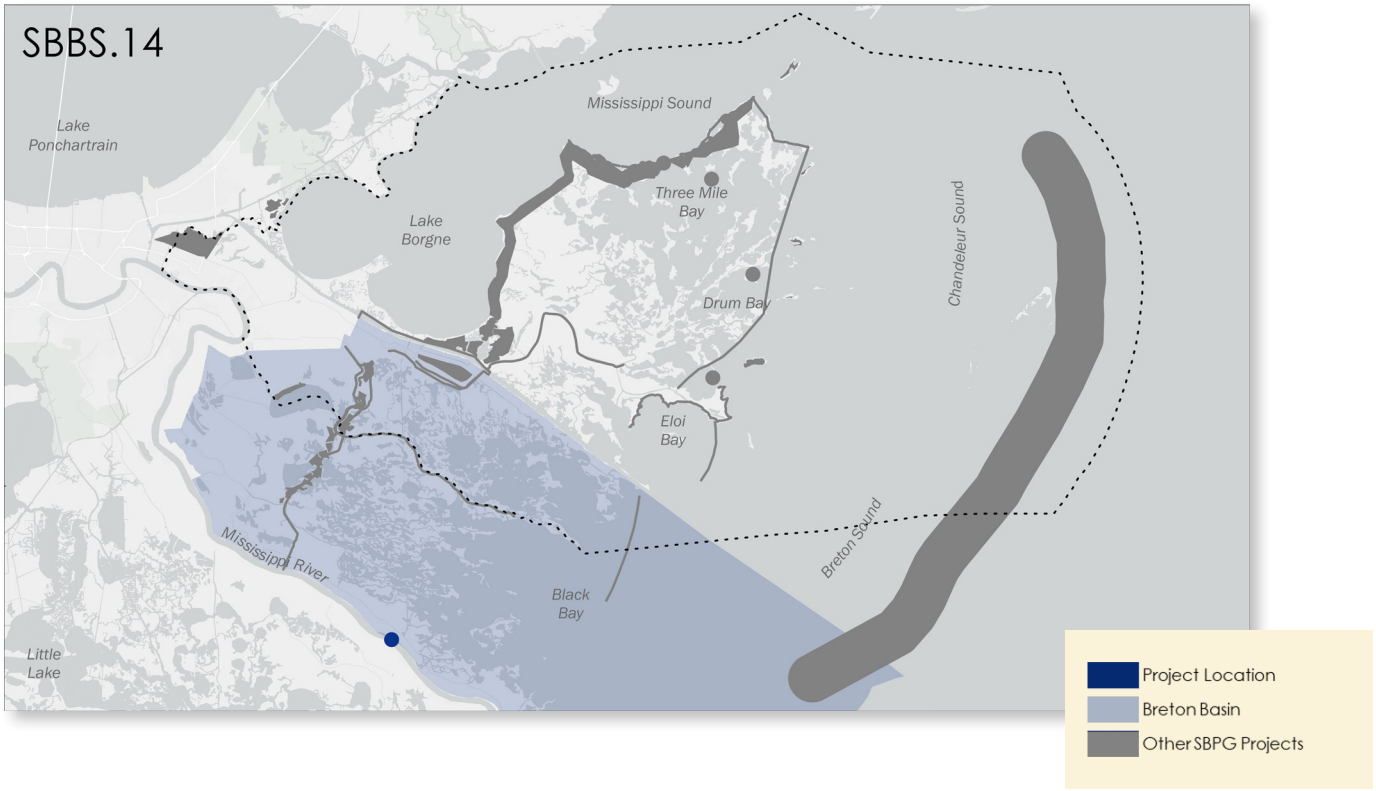
The closure of Mardi Gras Pass and permanent rehabilitation of the Bohemia Spillway structure are costly endeavors for which funding will be difficult to obtain. SBPG suggests that the State of Louisiana utilize current and future fishery disaster recovery funds for this effort.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

No identified relevant plan consistencies.



COASTAL DIVISION
ST. BERNARD PARISH

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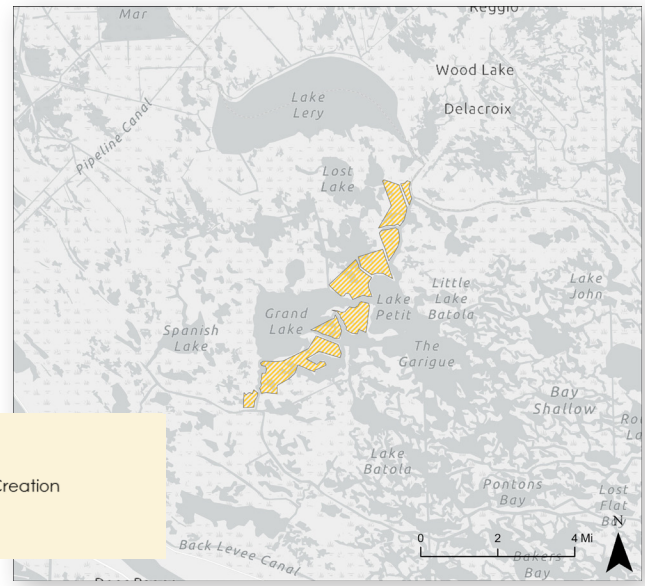
Marsh Creation

Oak River to Delacroix Marsh Landbridge

Project ID: SBBS.15

PROBLEM

Subsidence, saltwater intrusion, erosion, and tropical weather events have caused the marsh throughout the Breton Basin to deteriorate over time, resulting in the loss of land and critical habitat. CPRA anticipates that without drastic action, much of the remaining marsh in the basin may be lost over the next 50 years.



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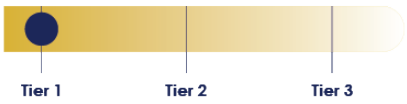


SCOPE OF WORK

This project includes the creation of marsh within a footprint of approximately 2,400 acres in Plaquemines Parish extending from Grand Lake to Lake Lery near Delacroix in St. Bernard Parish. The purpose of the project is to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$10,400,000.0
Construction (TBD)	$103,800,000.0
Total	**$114,200,000**

FUNDING STRATEGY

CPRA is currently considering the project for inclusion in the 2023 State Master Plan. If selected, the most likely source of project funding would be CWPPRA, a program in which several other landbridge projects in the Breton Basin have already been funded and are currently in engineering/design.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Marsh Creation

Oak River to Delacroix Marsh Landbridge

Project ID: SBBS.15

ADDITIONAL INFORMATION

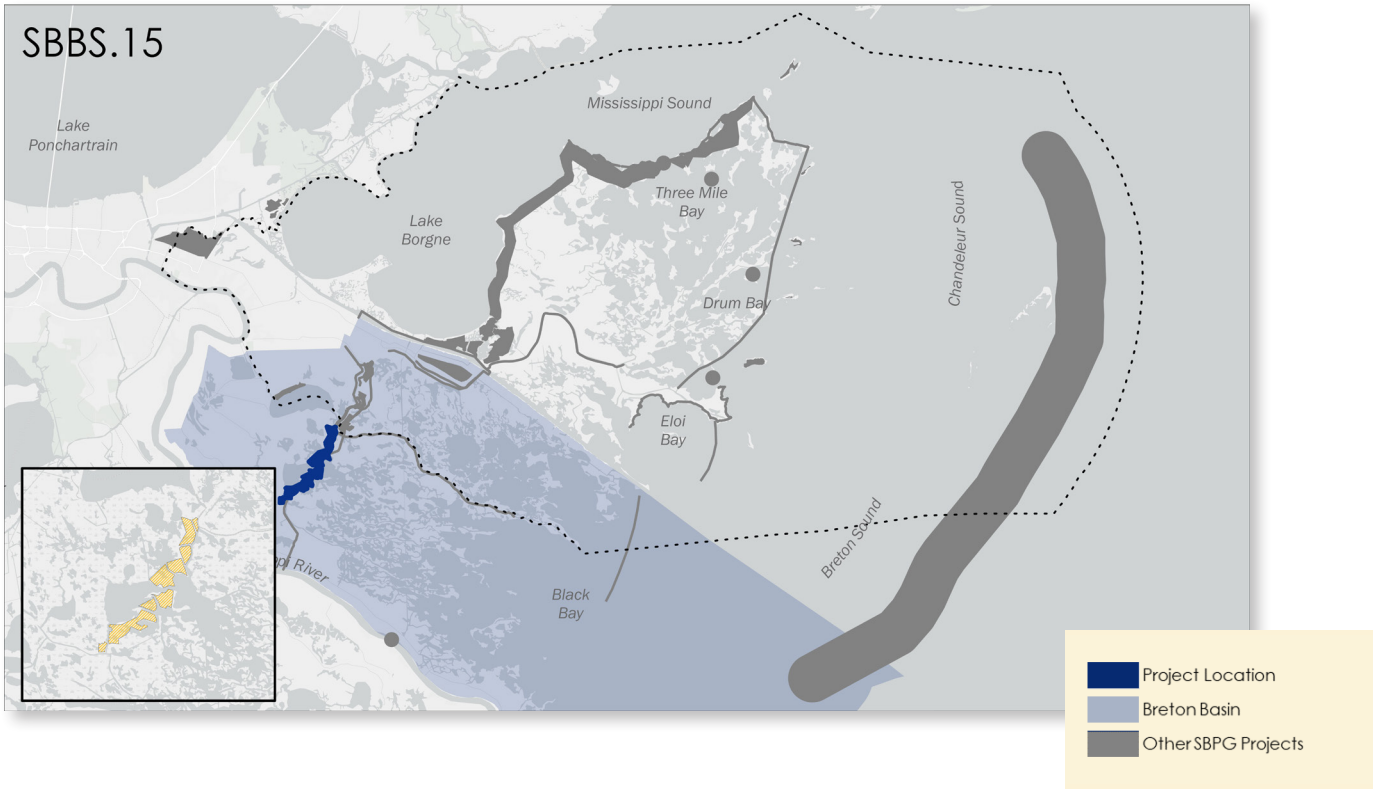
Although this project is located in Plaquemines Parish, the proposed marsh creation polygon extends to St. Bernard Parish and has a great deal of synergy with other completed, ongoing, and proposed projects near Delacroix and throughout the Breton Basin.

BASIN PROFILE: BRETON

The Breton Basin is bounded on the west by the Mississippi River, on the north by Bayou La Loutre, on the east by the south bank of the Mississippi River Gulf Outlet (MRGO), and on the south by Baptiste Collette Bayou and Breton Island. The basin is a nearly 700,000-acre remnant of the abandoned St. Bernard Delta. The area includes approximately 185,000 acres of wetlands.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana. CPRA is currently considering the project for inclusion in the 2023 State Master Plan.



COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

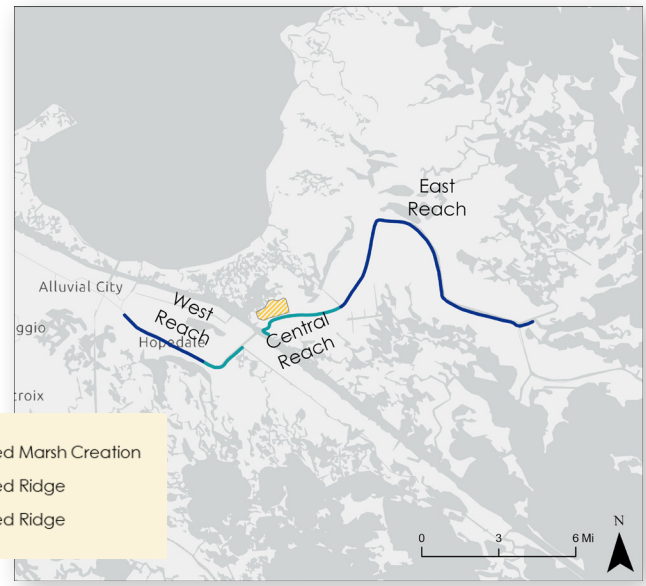
Ridge Restoration

Bayou La Loutre Ridge Restoration

Project ID: SBPO.01

PROBLEM

Subsidence, shoreline erosion, tropical weather events, and the construction of the MRGO have caused the Bayou La Loutre ridge to deteriorate over time. The deterioration of the historic ridge has resulted in the loss of critical habitat and hindered the landform's ability to attenuate storm surge and function as a hydrological barrier.



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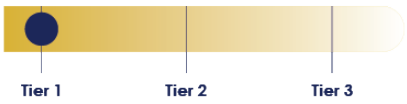

SCOPE OF WORK

The project will restore coastal upland habitat and natural hydrology and provide wave and storm surge attenuation. The designed Central Reach (CWPPRA PO-178) includes the restoration of 5.25 miles (32 acres) of ridge (elevation of +5 feet NAVD88 with a 5:1 H:V slope) and 20 acres of Live Oak/Hackberry Maritime forest habitat along Bayou La Loutre. Additionally, the CWPPRA project includes 421 acres of marsh creation and nourishment along Lena Lagoon. CPRA and SBPG versions of this project include additional ridge restoration beyond the Central Reach, designated as the East and West reaches.

BUDGET AND TIMELINE

Planning/Engineering and Design (4 years)	$7,200,000
Construction (8 years)	$68,000,000
Total	**$75,200,000**

FUNDING STRATEGY

The CWPPRA program funded the planning/engineering and design of the Central Reach and Marsh Creation features of this project. These features will be considered for CWPPRA construction funding in 2021. The East and West reaches may be funded as part of future CWPPRA or NRDA Restoration efforts.

COASTAL DIVISION
ST. BERNARD PARISH

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Ridge Restoration

Bayou La Loutre Ridge Restoration

Project ID: SBPO.01

ADDITIONAL INFORMATION

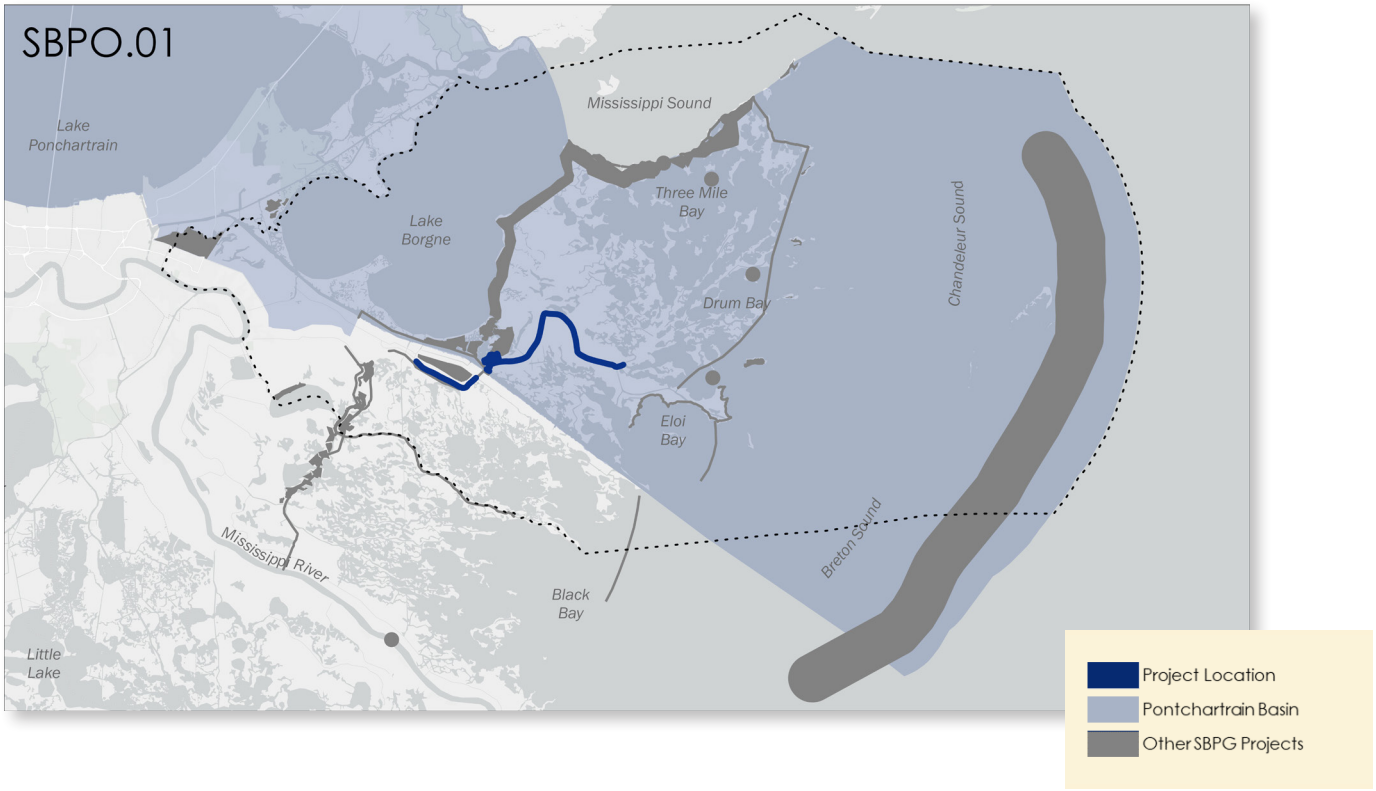
Previous planning efforts related to the restoration of the Bayou La Loutre Ridge date back to 2006 when the project was included in the Biloxi Marsh Lands Corporation Restoration Plan. The project has since been endorsed by over twenty elected officials, scientists, and nongovernmental organizations, including the MRGO Must Go Coalition.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the 2017 State Master Plan and the MRGO Ecosystem Restoration Plan.



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ST. BERNARD PARISH

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Other

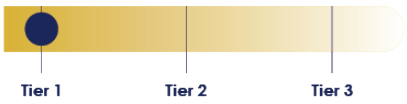
Biloxi Marsh Protection and Restoration

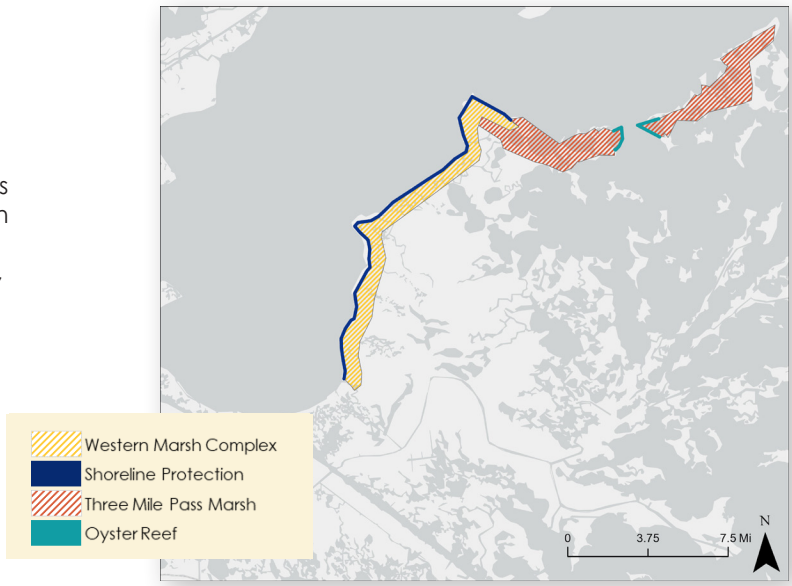
Project ID: SBPO.02

PROBLEM

The Biloxi Marsh Complex is a 210,000-acre network of wetlands located in St. Bernard Parish between Lake Borgne (west) and the Chandeleur Sound (east). The landform provides a vast and productive ecosystem for fish and wildlife. Additionally, the Biloxi Marsh attenuates storm surge approaching the New Orleans metropolitan area and coastal Mississippi. Although the landform is geologically stable in comparison to surrounding areas, shoreline erosion remains the greatest threat to the sustainability of the Biloxi Marsh.

PRIORITY





SCOPE OF WORK

CPRA is proposing a suite of projects intended to protect and restore the Biloxi Marsh: 1) Western Biloxi Marsh Complex shoreline protection (101,000 linear feet) and marsh creation (8,500 acres); 2) Three Mile Pass Marsh Creation and Hydrologic Restoration (11,260 acres of marsh creation and 20,000 linear feet of oyster reef); and 3) Biloxi Marsh Hydrologic Restoration (reconnection of the marshes north and south of the MRGO via construction of 2 channels 150 feet wide and 10 feet in order to promote water exchange and improve water quality).

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$87,600,000
Construction (TBD)	$875,200,000
Total	**$962,800,000**

FUNDING STRATEGY

CPRA is currently considering this group of projects for inclusion in the 2023 State Master Plan. If selected, it is likely that each of the projects will be phased and nominated for future CWPPRA PPLs. Additionally, the projects may be considered for RESTORE Act or NRDA funding.

COASTAL DIVISION
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Other

Biloxi Marsh Protection and Restoration

Project ID: SBPO.02

ADDITIONAL INFORMATION

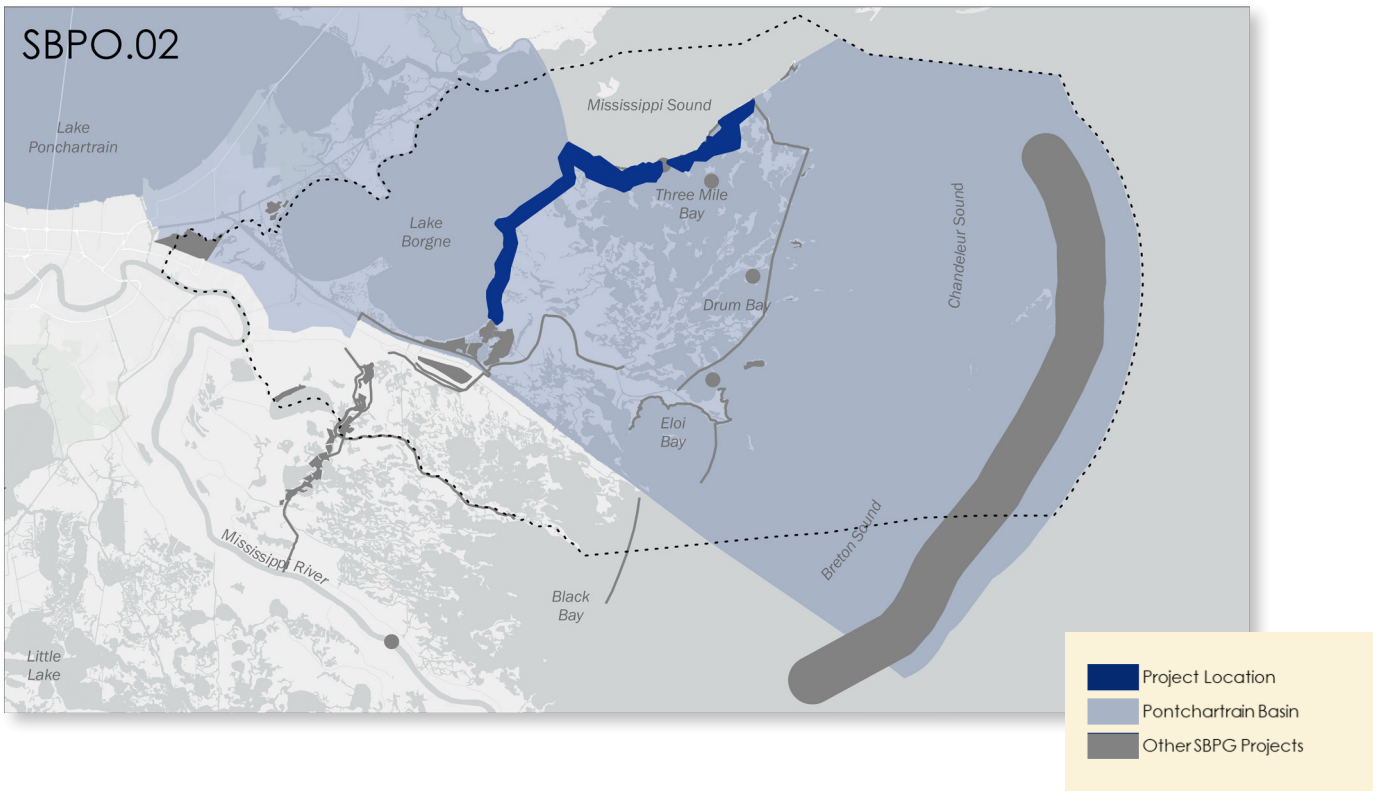
SBPG acknowledges and supports the extraordinary coastal restoration planning work undertaken by the Biloxi Marsh Lands Corporation in 2006 and 2019. The parish concurs with their assessment that the Western Biloxi Marsh Complex project is currently the most critical need.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

These projects are consistent with the goals set forth in the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana and the MRGO Ecosystem Restoration Plan. CPRA is currently considering the projects for inclusion in the 2023 State Master Plan.



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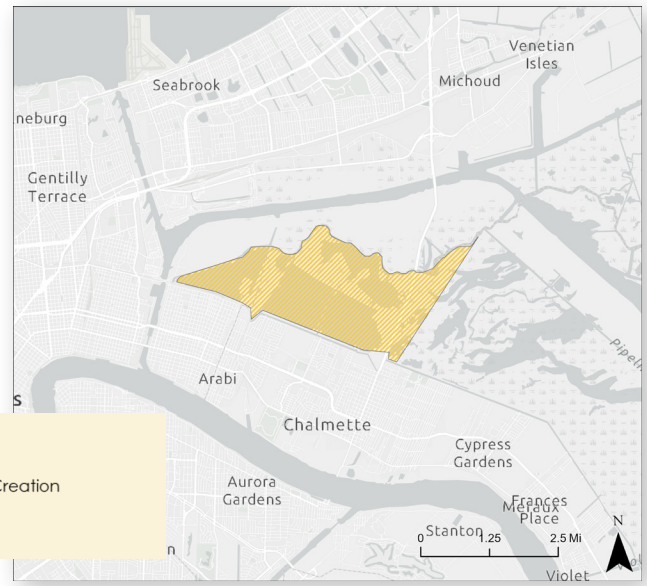
Marsh Creation

Central Wetlands Marsh Creation

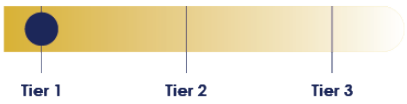
Project ID: SBPO.03

PROBLEM

Prior to construction of the MRGO, the Central Wetlands Unit, a 29,000-acre semi-impounded marsh, was composed of Cypress-Tupelo swamps, freshwater marsh, and bottomland hardwood forests. However, as a result of the MRGO, sea-level rise, subsidence, and tropical weather events, much of the area has become open water and ghost swamp, with increased salinities in the surface water and soil.



PRIORITY



SCOPE OF WORK

This project includes the creation of approximately 2,800 acres of marsh in the Central Wetlands Unit along Bayou Bienvenue in St. Bernard and Orleans parishes for the purpose of creating new wetland habitat, restoring degraded marsh, and mitigating decades of adverse environmental impacts caused by the MRGO.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$11,600,000.0
Construction (TBD)	$115,600,000.0
Total	**$127,200,000**

FUNDING STRATEGY

It is likely that this 2,800-acre polygon will be phased, designed, and constructed with CWPPRA, NRDA, or RESTORE Act funding. CPRA has already included the project In multiple iterations of the State Master Plan.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Marsh Creation

Central Wetlands Marsh Creation

Project ID: SBPO.03

ADDITIONAL INFORMATION

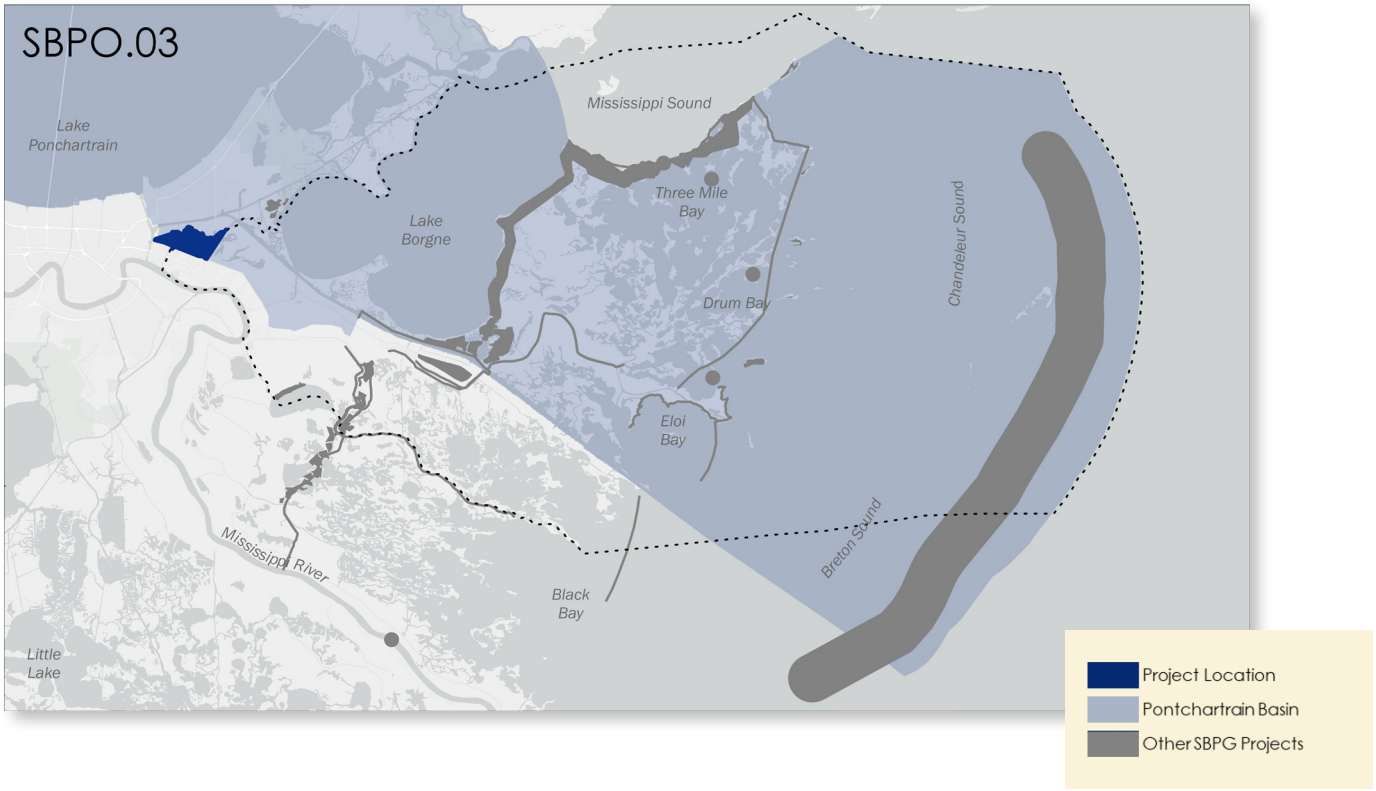
Historically, the Central Wetlands Unit provided natural storm surge protection to parts of St. Bernard and Orleans parishes. However, the area is now located within the HSDRRS and has pure ecological value rather than risk reduction value.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the 2017 State Master Plan and the MRGO Ecosystem Restoration Plan.



COASTAL DIVISION
ST. BERNARD PARISH

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Barrier Island Restoration

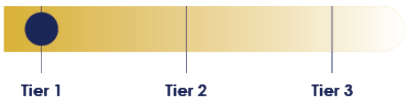
Chandeleur Islands Restoration

Project ID: SBPO.04

PROBLEM

The cumulative effects of natural degradation, extreme weather events, and the DWH Oil Spill have caused grave concerns regarding the long-term sustainability of the Chandeleur Islands. The islands not only function as a storm surge barrier for the New Orleans metropolitan area, but also provide critical habitat to more than 50 species of flora and fauna designated as species of greatest conservation need.

PRIORITY



SCOPE OF WORK

This project includes the planning and engineering/design of alternatives for creating, restoring, and enhancing coastal barrier islands and headlands, enhancing habitat, and improving bird nesting and foraging areas. Project alternatives will likely include the placement of dredged sediment as a restoration technique.

BUDGET AND TIMELINE

Planning/Engineering and Design (3 Years)	$8,000,000.0
Construction (TBD)	TBD
Total	**$8,000,000**

FUNDING STRATEGY

The Regionwide Trustee Implementation Group (NRDA) has proposed funding this effort. Other potential funding sources include the RESTORE Act and NFWF.

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Barrier Island Restoration

Chandeleur Islands Restoration

Project ID: SBPO.04

ADDITIONAL INFORMATION

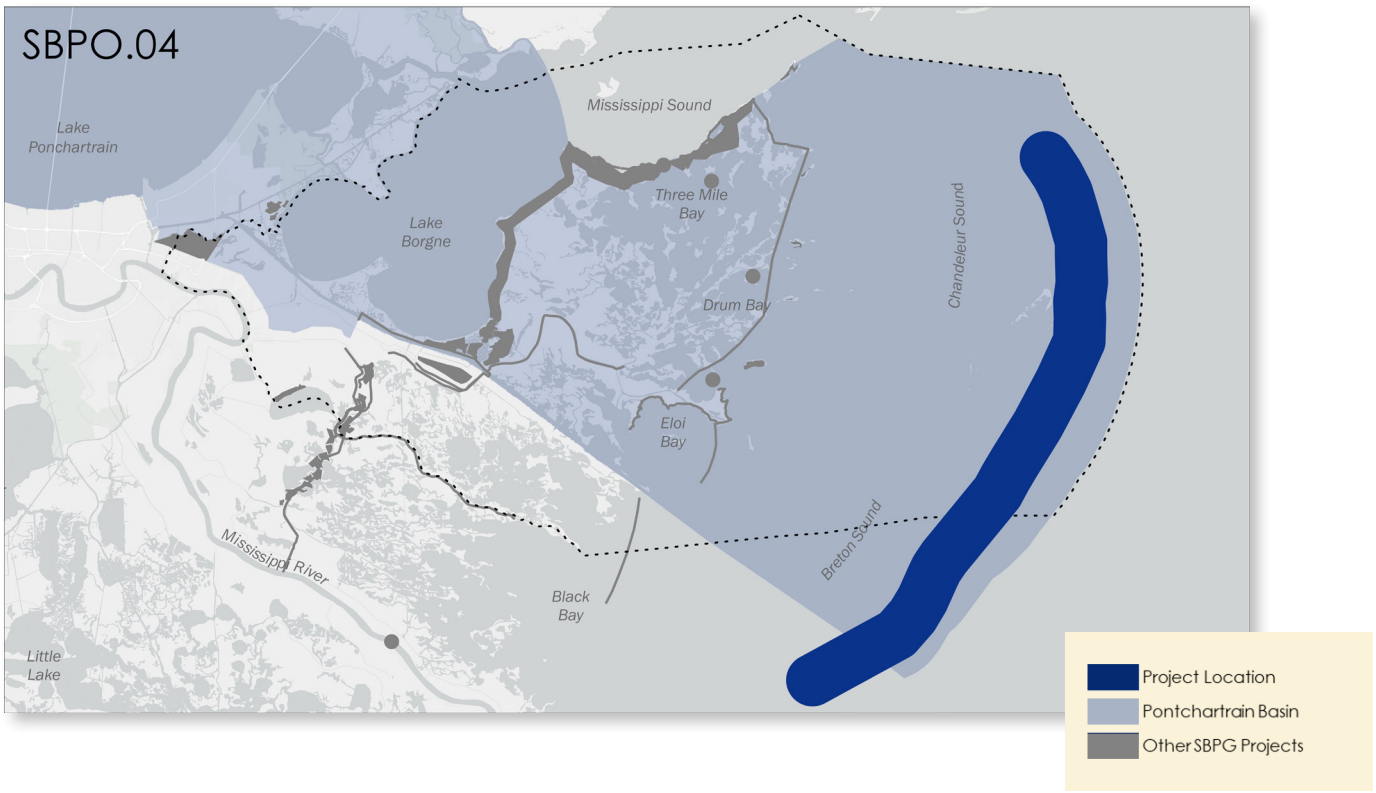
The Regionwide Trustee Implementation Group (NRDA) included planning and engineering/design funding for this project in its initial Draft Restoration Plan (2021). Future NRDA Restoration Plans may address construction funding for this effort.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

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Marsh Creation

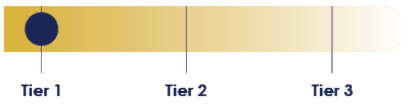
Chandeleur Sound Marsh Creation

Project ID: SBPO.05

PROBLEM

Relative sea-level rise, tropical weather events, and the DWH Oil Spill have caused the outlying islands along the eastern side of the Biloxi Marsh to deteriorate. The islands not only function as a storm surge barrier for the New Orleans metropolitan area, but also provide critical habitat for birds and other species.

PRIORITY



SCOPE OF WORK

This project includes marsh creation within a footprint of approximately 940 acres in the eastern Biloxi Marsh Complex to create new wetland habitat, restore degraded marsh, and reduce wave erosion on Isle au Pitre, Comfort Island, Mitchell Island, Martin Island, and Brush Island.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$8,300,000.0
Construction (TBD)	$82,500,000.0
Total	**$90,800,000**

FUNDING STRATEGY

The Louisiana Trustee Implementation Group (NRDA) is currently funding engineering/design for the Isle au Pitre (PO-0190) portion of the project. Other project features are likely to be designed and constructed with NRDA and/or RESTORE Act funding.

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Marsh Creation

Chandeleur Sound Marsh Creation

Project ID: SBPO.05

ADDITIONAL INFORMATION

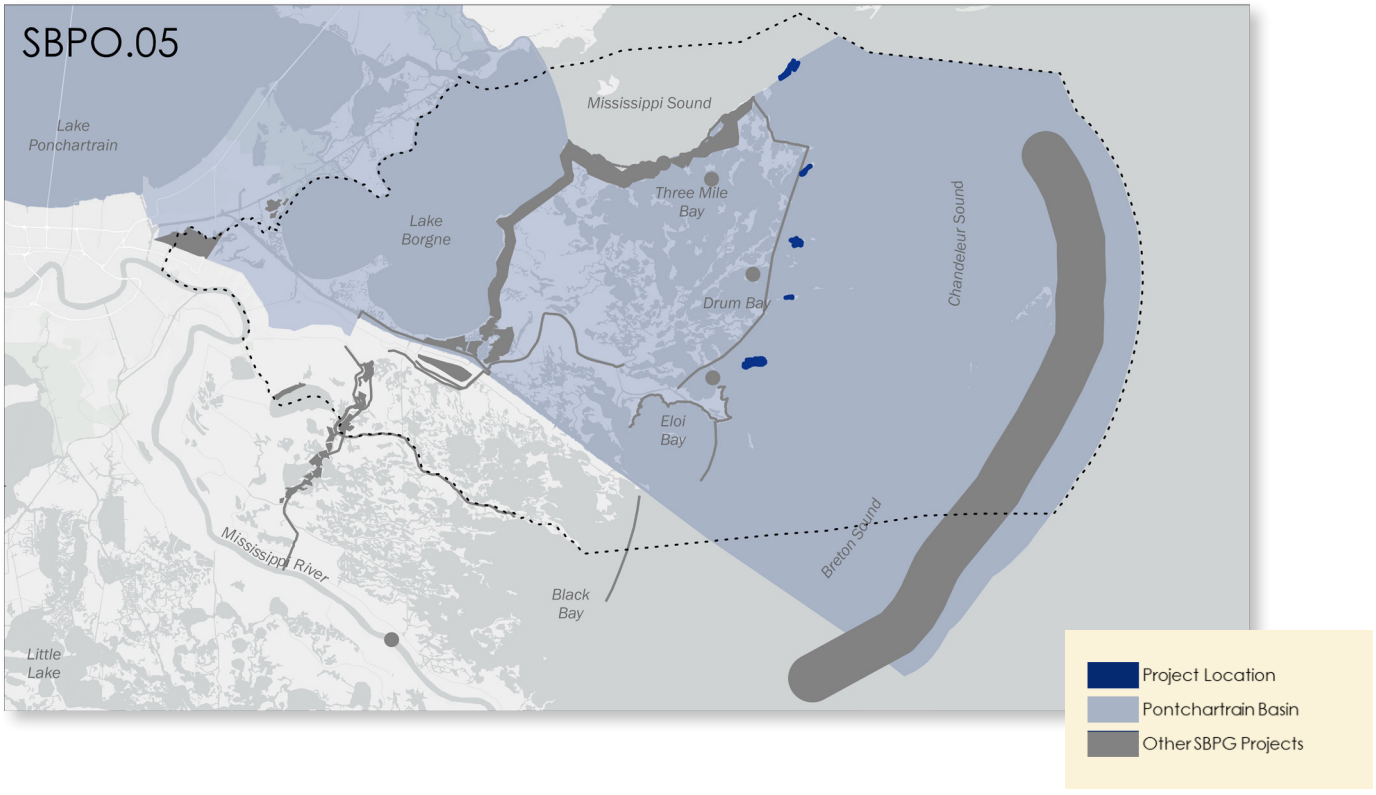
Substantial NRDA resources have been made available for the restoration of bird habitat damaged during the DWH Oil Spill, including at Isle au Pitre. This initial effort (PO-0190) is projected to benefit 50 acres of the island for a total cost of $36.6 million.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana. CPRA is currently considering the project for inclusion in the 2023 State Master Plan.



COASTAL DIVISION
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Marsh Creation

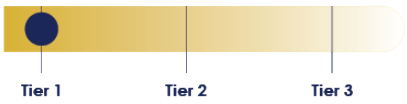
Golden Triangle Marsh Creation

Project ID: SBPO.06

PROBLEM

Subsidence, shoreline erosion, tropical weather events, and the construction of the MRGO and other navigation canals have caused the Golden Triangle marsh to deteriorate over time. The deterioration of the marsh has resulted in the loss of critical habitat and hindered the landform's ability to attenuate storm surge near St. Bernard and Orleans parishes.

PRIORITY



SCOPE OF WORK

This project includes the creation of marsh within a footprint of approximately 4,400 acres in the Golden Triangle between the MRGO and GIWW to create new wetland habitat, restore degraded marsh, and reduce wave erosion. Due to the size and cost of the project, it will be implemented in multiple increments, the first of which (CPRA PO-163) has already been designed. Increment 1 of the Goldent Triangle project includes over 700 acres of marsh creation.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$11,600,000.0
Construction (TBD)	$96,652,267.0
Total	**$108,252,267**

FUNDING STRATEGY

NRDA funding ($3,200,000) was utilized to fund the engineering/design of the initial project increment and will also be used for the 2-year construction phase ($51,000,000). The remaining increments (costs shown to the left) are likely to be funded either under NRDA or as part of future CWPPRA PPLs.

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Marsh Creation

Golden Triangle Marsh Creation

Project ID: SBPO.06

ADDITIONAL INFORMATION

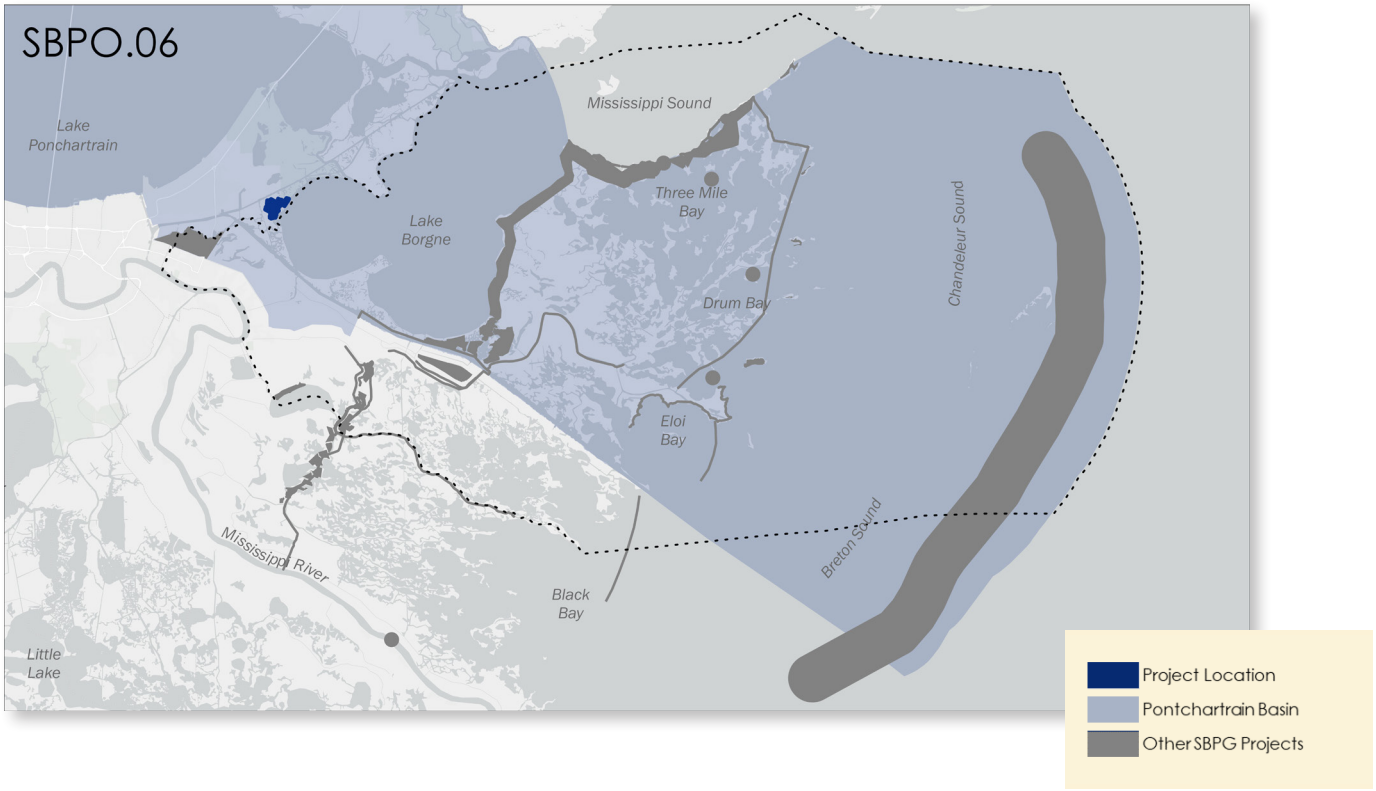
This project will provide an additional buffer near the HSDRRS Storm Surge Barrier. Additionally, it has a great deal of synergy with the adjacent Lake Borgne Marsh Creation project. Both projects will restore critical habitat that had previously been damaged by the MRGO.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
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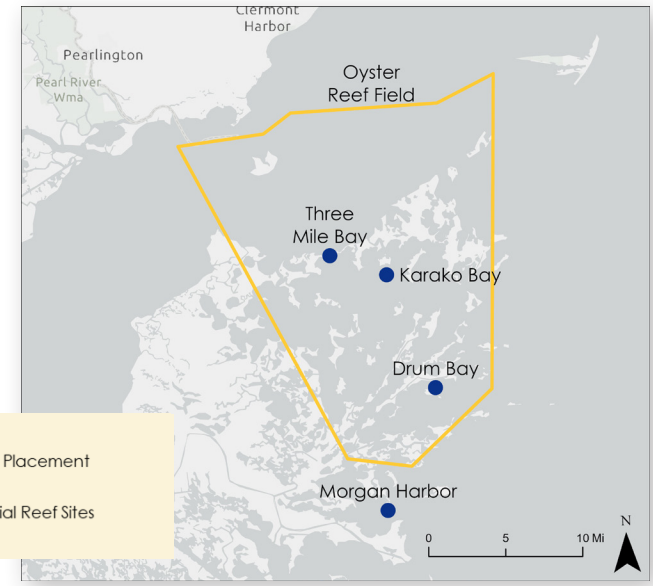
Other

Oyster Fishery Enhancement

Project ID: SBPO.07

PROBLEM

Oyster productivity in the Breton Basin has suffered as a result of the DWH Oil Spill, the influx of freshwater from the Mississippi River at Mardi Gras Pass, and other environmental factors. Additionally, oyster productivity in the Pontchartrain Basin is subject to the acute shocks associated with the opening of the Bonnet Carre Spillway. Consequently, it is critical that stakeholders capitalize on the ideal conditions that typically exist in much of the eastern Biloxi Marsh and facilitate oyster productivity in the area to the extent possible.



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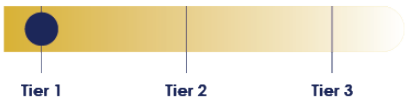

SCOPE OF WORK

This project includes two core components in the eastern Biloxi Marsh: 1) the strategic installation of 1,600 acres of cultch material on critical public seed grounds (Louisiana Oyster Cultch, Phase 2); and 2) the strategic installation of 30 acres of oyster reef between public seed grounds (Improving Resilience for Oysters).The Louisiana Oyster Cultch component specifically targets Drum Bay, Three-Mile Bay, Karako Bay, and Morgan Harbor. This component includes a total of 72,000 acres of limestone (45.8 cubic yards per acre) for a total cost of approximately $4,000,000. The Improving Resilience for Oysters component is currently being developed and is projected to cost approximately $7,000,000.

BUDGET AND TIMELINE

Planning/Engineering and Design (NA)	$-
Construction (TBD)	$11,000,000.0
Total	**$11,000,000**

FUNDING STRATEGY

SBPG submitted the Louisiana Oyster Cultch component ($4,000,000) to the Louisiana Trustee Implementation Group for NRDA funding consideration in 2019. The Regionwide Trustee Implementation Group proposed NRDA funding for the Improving Oyster Resilience component ($7,000,000) in its initial Draft Restoration Plan (2021).

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Other

Oyster Fishery Enhancement

Project ID: SBPO.07

ADDITIONAL INFORMATION

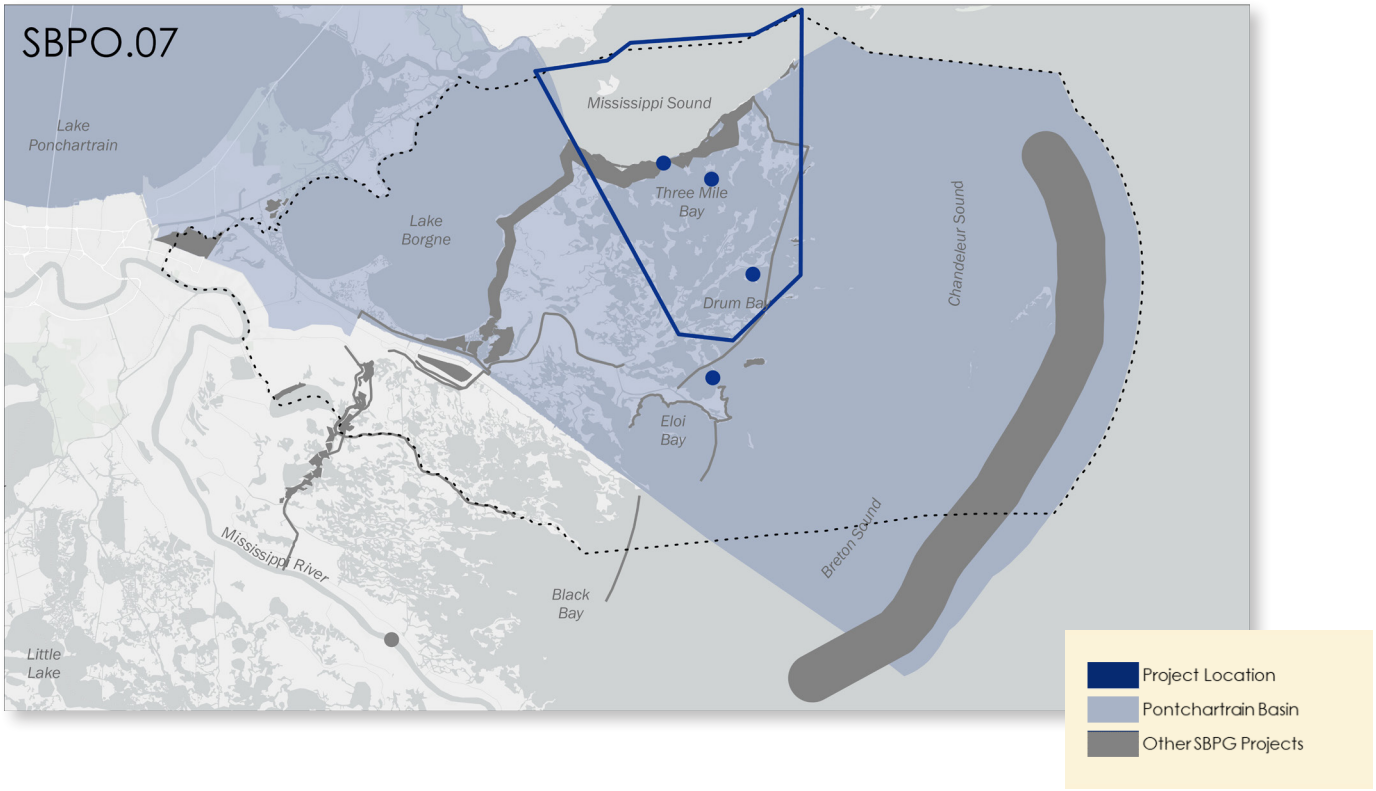
Oysters have been cultivated and harvested in Louisiana for nearly two centuries and the state has led the nation in production for much of the past 35 years. The Biloxi Marsh has historically provided some of the most productive oyster habitat in Louisiana. It is therefore critical to the oyster industry on a national scale that production in the area be preserved and enhanced.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the goals set forth in the 2017 State Master Plan.



COASTAL DIVISION
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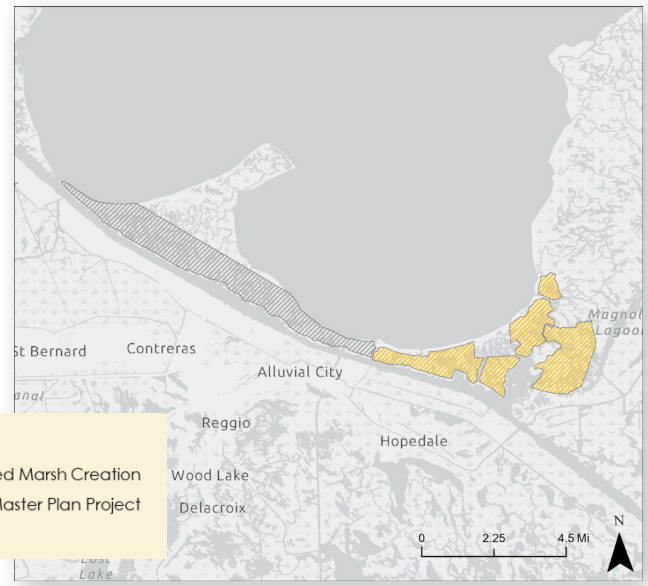
Marsh Creation

Lake Borgne Marsh Creation

Project ID: SBPO.08

PROBLEM

The landform separating Lake Borgne and the MRGO has undergone both interior and shoreline wetland loss due to subsidence, tropical weather events, and wave fetch via the MRGO. Although much of the project area is now protected from edge erosion by rock dike features, interior wetland loss attributed to subsidence continues to cause marsh fragmentation and open water conversion.



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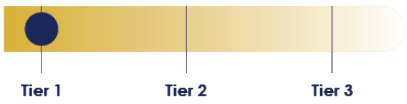

SCOPE OF WORK

This project includes the creation of marsh within a footprint of approximately 6,900 acres along the south shoreline of Lake Borgne near Proctors Point to create new wetland habitat, restore degraded marsh, and reduce wave erosion. Due to the size and cost of the project, it will be implemented in multiple increments, the first of which (CPRA PO-180) has already been designed. Increment 1 includes over 2,400 acres of marsh creation and will be the largest ever constructed in Louisiana.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$14,330,000.0
Construction (TBD)	$110,000,000.0
Total	**$124,330,000**

FUNDING STRATEGY

NRDA funding ($3,200,000) was utilized to fund the engineering/design of the initial project increment and will also be used for the proposed 3-year construction phase ($110,000,000). The remaining increments (costs shown to the left) are likely to be funded either under NRDA or as part of future CWPPRA PPLs.

COASTAL DIVISION
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Marsh Creation

Lake Borgne Marsh Creation

Project ID: SBPO.08

ADDITIONAL INFORMATION

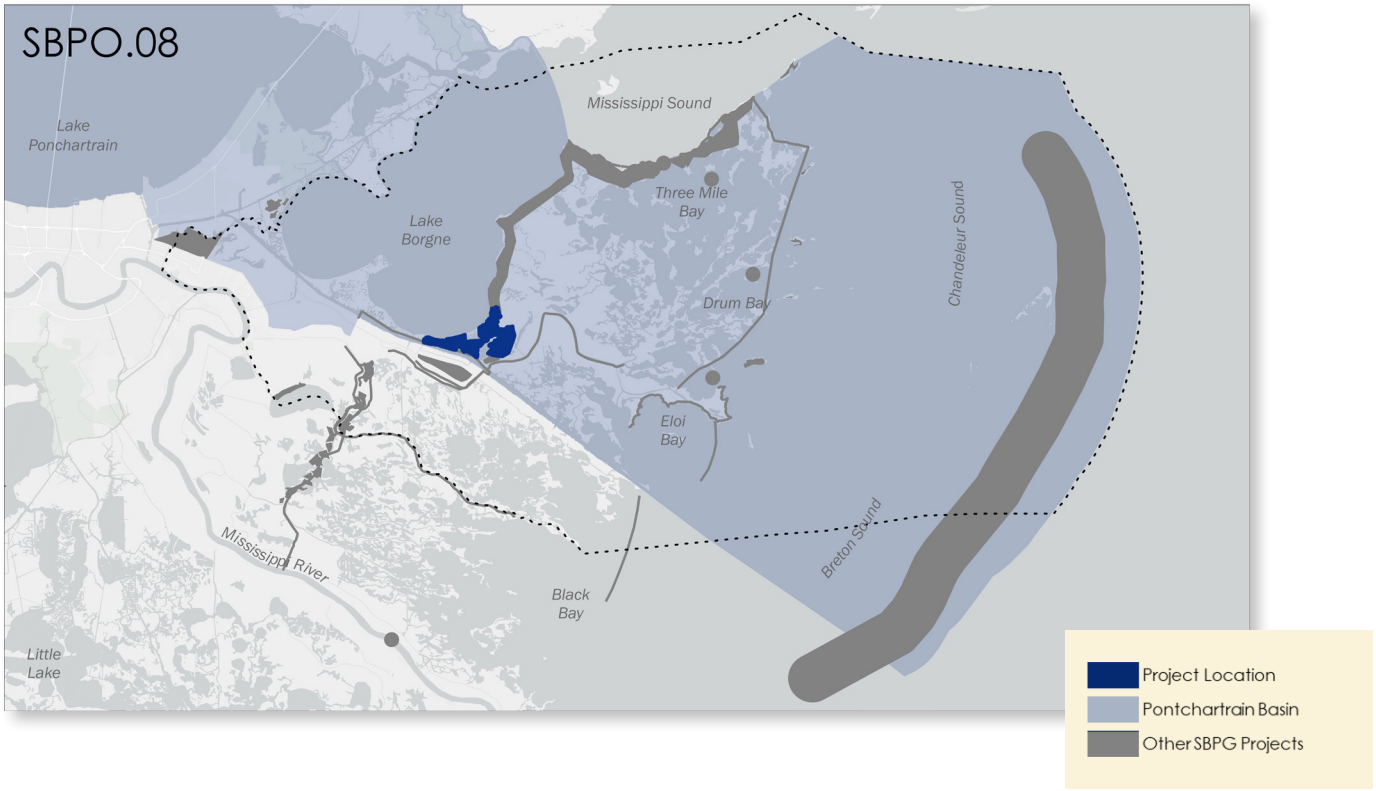
According to CPRA, Increment 1 (PO-180) will be the largest marsh creation project ever completed in Louisiana. Additionally, this project has a great deal of synergy with the adjacent Golden Triangle Marsh Creation project. Both projects will restore critical habitat that had previously been damaged by the MRGO.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
ST. BERNARD PARISH

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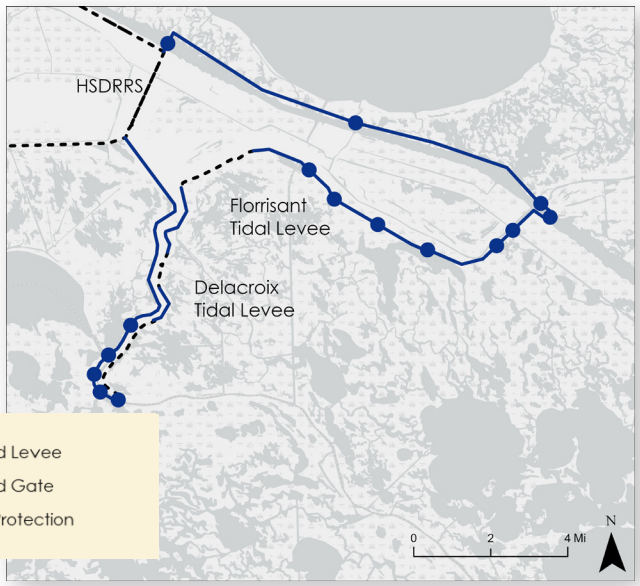
Structural Risk Reduction

Local Structural Risk Reduction

Project ID: SBPO.09

PROBLEM

The HSDRRS was constructed as a complex network of structural flood risk reduction features designed to mitigate storm surge throughout much of the New Orleans metropolitan area. However, there are many communities in eastern St. Bernard Parish that are located outside of the system. Such communities are not only exposed to storm surge during tropical weather events, but are also subject to flooding due to tidal, rain, and wind events throughout the year.



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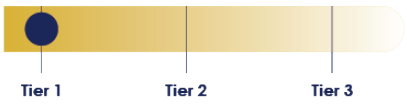

SCOPE OF WORK

This project includes the construction of approximately 30 miles of earthen levee; one mile of floodwall; and 14 gates around eastern St. Bernard Parish for the purpose of supplementing the existing HSDRRS and reducing flood risk in Shell Beach, Hopedale, Yscloskey, Woodlake, Reggio, and Delacroix. The network of gates associated with the project (including two along the MRGO) will facilitate navigation throughout the area and improve water quality and hydrology near the existing MRGO rock dam.

BUDGET AND TIMELINE

Planning/Engineering and Design (TBD)	$61,000,000.0
Construction (TBD)	$609,000,000.0
Total	**$670,000,000**

FUNDING STRATEGY

SBPG may utilize its own funding to conduct a project feasibility study. However, the scope and scale of the project will likely require the parish to build a coalition of federal, state, and local stakeholders and leverage funding from various sources.

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Structural Risk Reduction

Local Structural Risk Reduction

Project ID: SBPO.09

ADDITIONAL INFORMATION

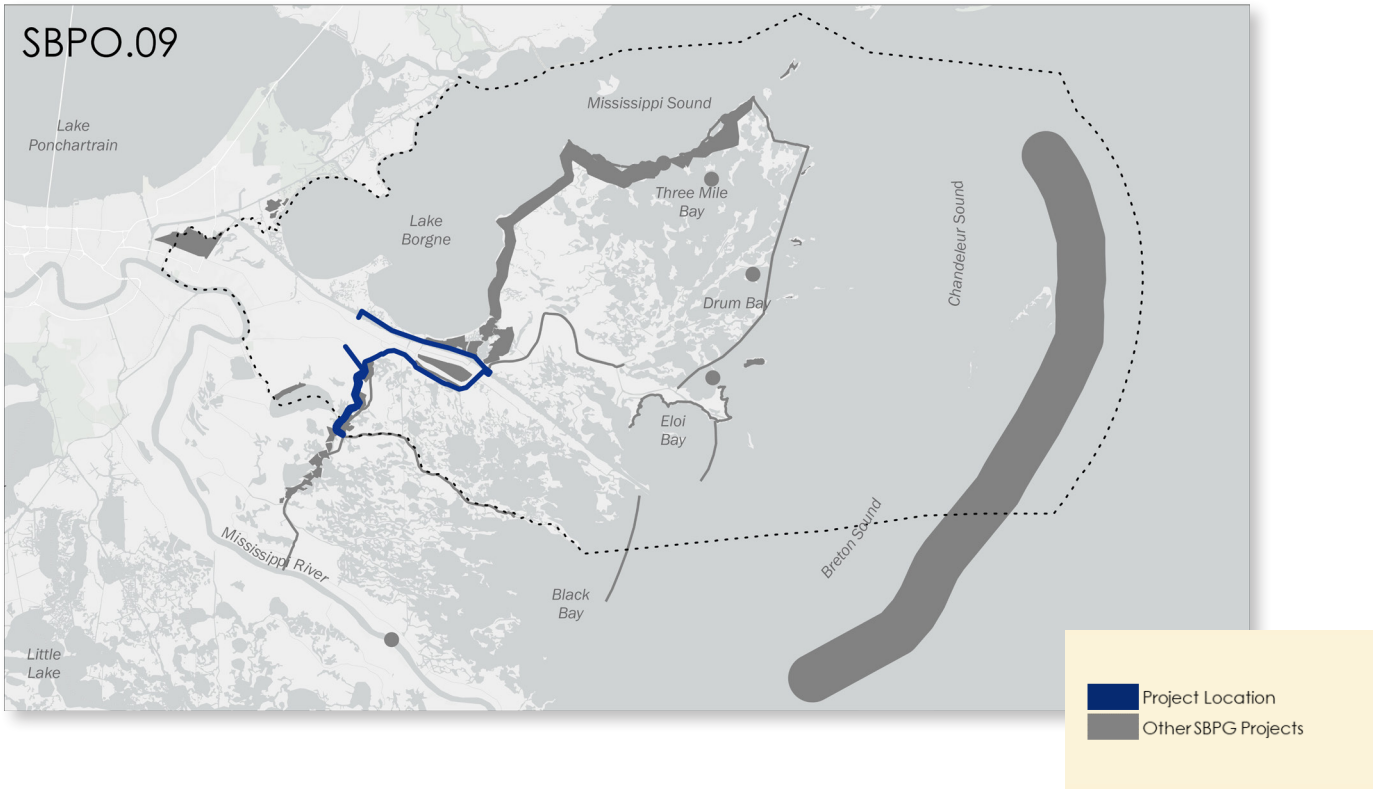
SBPG considers this project to be concept that warrants further investigation. The parish intends on coordinating with federal, state, and local stakeholders to explore the desirability and feasibility of the project.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



COASTAL DIVISION
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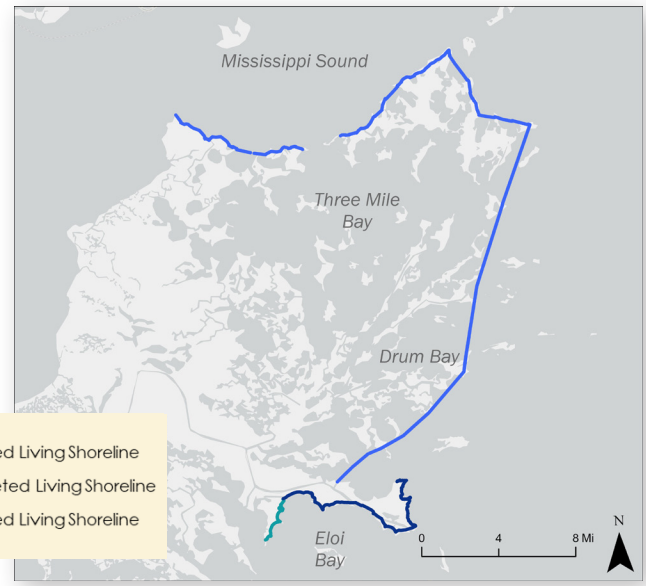
Shoreline Protection

Biloxi Marsh Living Shoreline

Project ID: SBPO.15

PROBLEM

The Biloxi Marsh Complex is a 210,000-acre network of wetlands located in St. Bernard Parish between Lake Borgne (west) and the Chandeleur Sound (east). The landform provides a vast and productive ecosystem for fish and wildlife. Additionally, the Biloxi Marsh attenuates storm surge approaching the New Orleans metropolitan area and coastal Mississippi. Although the landform is geologically stable in comparison to surrounding areas, shoreline erosion remains the greatest threat to the sustainability of the Biloxi Marsh.



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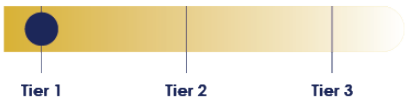

SCOPE OF WORK

Artificial oyster reef technology (living shorelines) may protect the most vulnerable stretches of coastline and combat marsh erosion by altering water flow patterns, attenuating wave forces, and trapping and stabilizing sediment. These products also produce a hard structure of calcium carbonate, thereby allowing individual oysters to bond together and build biogenic carbonate reefs. CPRA has completed one living shoreline project (Living Shoreline Demonstration, PO-148) and has designed a second installation (Biloxi Marsh Living Shoreline, PO-174). The initial project was three miles in length, and the proposed project will be over nine miles long. Additional installations are proposed extending from PO-174 to the western side of the Biloxi Marsh Complex near Point aux Marchettes.

BUDGET AND TIMELINE

Planning/Engineering and Design (Complete)	$3,220,460
Construction (1 year)	$66,600,000
Total	**$69,820,460**

FUNDING STRATEGY

Coastal Impact Assistance Program funding ($22,000,000) was utilized to complete the initial demostration project. The RESTORE Act funded the engineering/design of the Biloxi Marsh Living Shoreline component ($3,220,460) and NRDA funding ($66,600,000) will be utilized to fund construction. The Meraux Foundation and CRCL have also been developing funding strategies focused on private and nongovernmental sources.

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Shoreline Protection

Biloxi Marsh Living Shoreline

Project ID: SBPO.15

ADDITIONAL INFORMATION

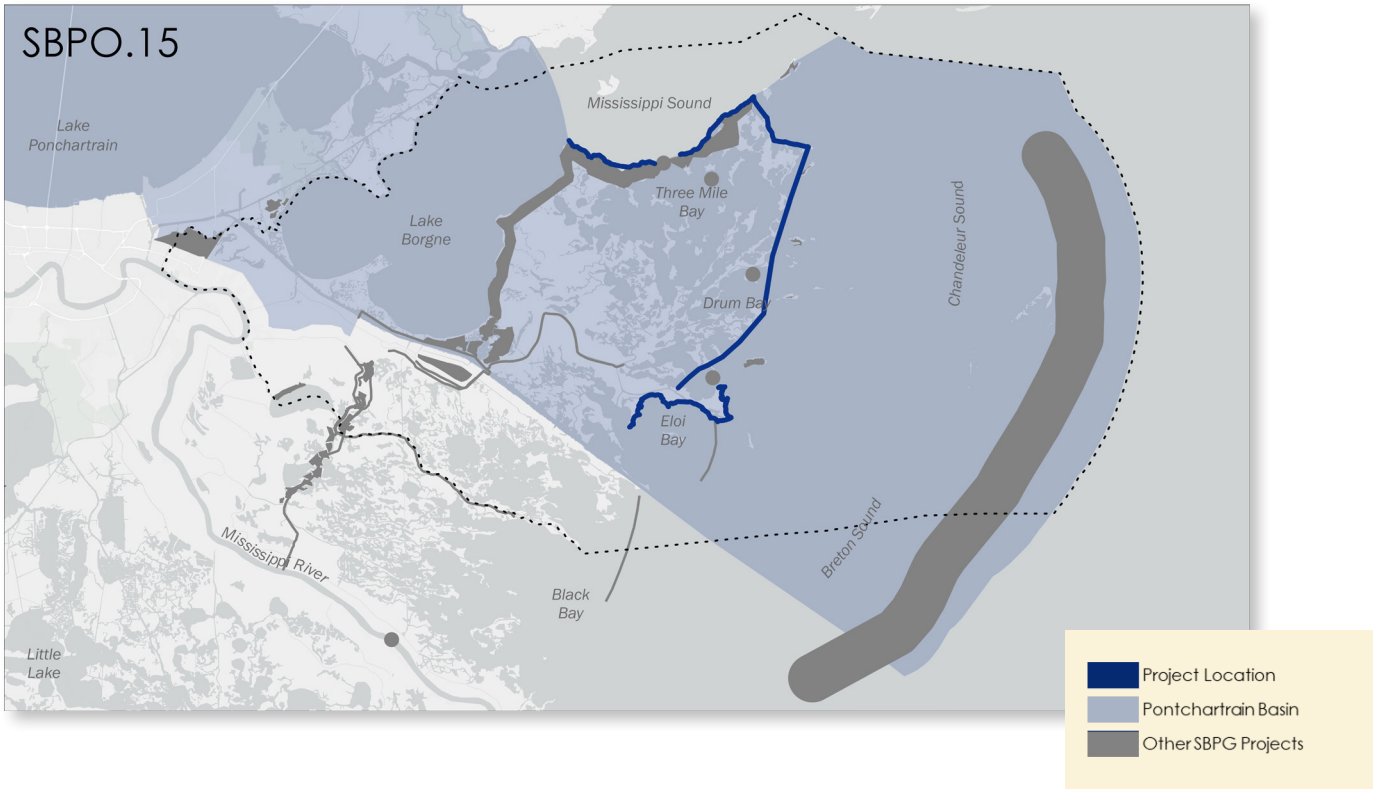
The 2017 State Master Plan included living shoreline installation as the primary project type in the Biloxi Marsh. However, CPRA is considering a more robust set of interventions for inclusion in the 2023 State Master Plan.

BASIN PROFILE: PONTCHARTRAIN

The Pontchartrain Basin consists of an approximately 1,700,000-acre abandoned delta generally bounded by the Pleistocene Terrace on the north and west, by the Chandeleur Sound on the east, and by the Mississippi River and MRGO spoil bank on the south. Portions of nine parishes lie within the basin, including St. Bernard Parish.

PLAN CONSISTENCY

This project is consistent with the 2017 State Master Plan and the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.



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ST. BERNARD PARISH

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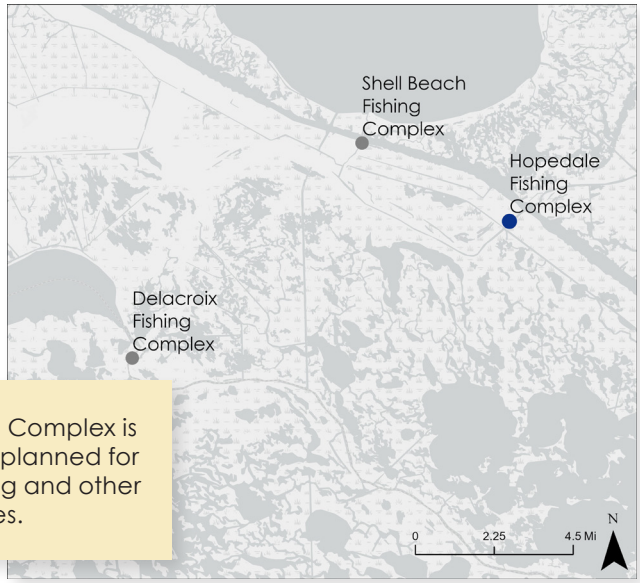
Economic Development and Tourism

Hopedale Fishing Complex and Public Seafood Market

Project ID: SBBS.08

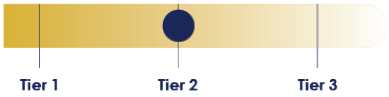
SCOPE OF WORK

Recreational fishing piers are needed in St. Bernard Parish to provide space for locals and tourists to fish and enjoy the natural environment while remaining a safe distance from area highways. The purpose of the Hopedale Fishing Complex project is to establish a recreational fishing pier and public seafood market in the Hopedale area. The fishing complex will be utilized to promote ecotourism and the consumption of Gulf seafood in eastern St. Bernard Parish.



Hopedale Fishing Complex is one of three sites planned for recreational fishing and other purposes.

PRIORITY



STATUS

SBPG has obligated RESTORE Act Direct Component funding for this project. Site selection is ongoing and will be based on the location and availability of waterfront property in Hopedale. The Hopedale Fishing Complex is one of three proposed recreational fishing facilities in eastern St. Bernard Parish.

A local commercial crab fisherman participating in the direct-to-market sale of fresh seafood.

BUDGET

Engineering/design ($110,000) and construction ($890,000) funding have been included in SBPG's RESTORE Act Multiyear Implementation Plan.

PARTNERS

Project partners include the SBPG Coastal Division and Office of Tourism.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

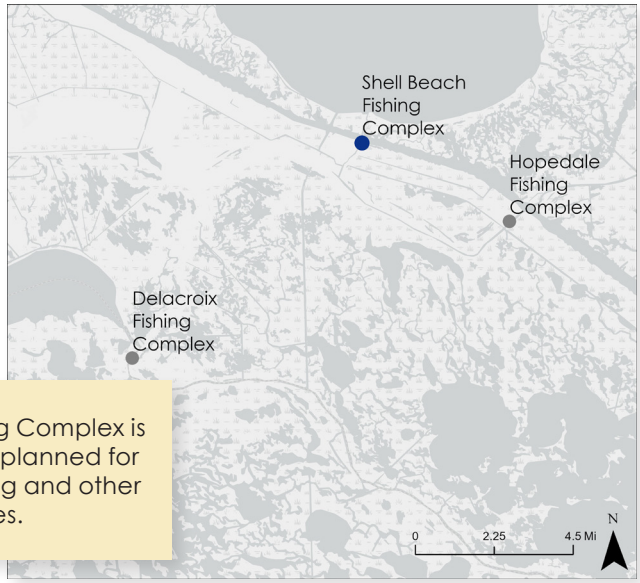
Economic Development and Tourism

Shell Beach Fishing Complex at the Katrina Memorial

Project ID: SBBS.09

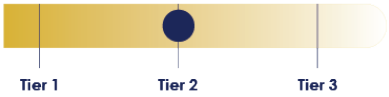
SCOPE OF WORK

Recreational fishing piers are needed in St. Bernard Parish to provide space for locals and tourists to fish and enjoy the natural environment while remaining a safe distance from area highways. The purpose of the Shell Beach Fishing Complex project is to establish a recreational fishing pier and provide greater access to the Katrina Memorial in Shell Beach. The fishing complex will be utilized to promote ecotourism and the consumption of Gulf seafood in eastern St. Bernard Parish.



Shell Beach Fishing Complex is one of three sites planned for recreational fishing and other purposes.

PRIORITY



STATUS

SBPG has obligated RESTORE Act Direct Component funding for this project. Site selection is ongoing and will be based on the location and availability of waterfront property in Shell Beach. The Shell Beach Fishing Complex is one of three proposed recreational facilities in eastern St. Bernard Parish.

The Hurricane Katrina Memorial at Shell Beach was constructed as a tribute to those St. Bernard Parish residents who perished during the storm.

BUDGET

Property acquisition ($250,000), engineering/design ($130,000), and construction ($1,244,000) funding have been included in SBPG's RESTORE Act Multiyear Implementation Plan.

PARTNERS

Project partners include the SBPG Coastal Division and Office of Tourism.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

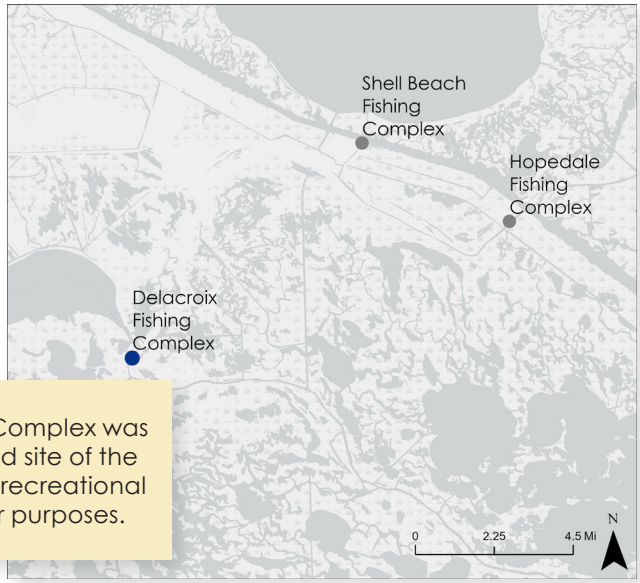
Economic Development and Tourism

Delacroix Fishing Complex

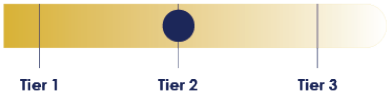
Project ID: SBBS.10

SCOPE OF WORK

The Delacroix Fishing Complex, which includes a fishing pier, boat hoist, and dry dock facility, was constructed during 2018 and 2019. SBPG has since hosted numerous public seafood market events at the complex, facilitating the direct-to-market sale of approximately 20,000 pounds of fresh seafood. The boat hoist and dry dock facility have also serviced over 340 vessels since 2019.



PRIORITY



Delacroix Fishing Complex was the first completed site of the three planned for recreational fishing and other purposes.

STATUS

The Delacroix Fishing Complex serves as proof of concept for the other two proposed recreational facilities in eastern St. Bernard Parish. Public seafood market events have attracted an average of 650 visitors. In addition to recreational fishing, seafood market events, and boat hoisting/dry docking, the facility has been utilized for boat blessings and other community gatherings in Delacroix.

The Delacroix Fishing Complex also serves as a location for the public seafood market.

BUDGET

SBPG spent approximately $1,000,000 designing and constructing the facility over the course of two years.

PARTNERS

Project partners include the Meraux Foundation, Louisiana Sea Grant, LSU Ag Center, and the SBPG Coastal Division, Office of Tourism, and Department of Public Works.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Economic Development and Tourism

Nunez Islenos Community Archive

Project ID: SBPO.11

SCOPE OF WORK

Nunez Community College was donated a suite of Islenos cultural artifacts and records but has been unable to establish a designated site in its existing library to house the archive. SBPG has proposed collaborating with the school to renovate an existing wing of the library for the purpose of creating an archive that is intended to be a destination for residents, tourists, and visiting researchers.

St. Bernard Parish hosts visitors from the Canary Islands each year during the Islenos Fiesta.

PRIORITY

Tier 1 | Tier 2 | Tier 3

STATUS

SBPG has obligated RESTORE Act Direct Component funding for this project. The parish has submitted a grant application to the US Treasury and anticipates approval by June 2021. The project is scheduled to be under construction in 2021.

Eastern St. Bernard Parish was once the center of the fur-trapping industry.

BUDGET

Construction ($100,000) funding has been included in SBPG's RESTORE Act Multiyear Implementation Plan.

PARTNERS

Project partners include Nunez Community College, the SBPG Coastal Division, and SBPG Office of Tourism.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Economic Development and Tourism

Nunez Community College Workforce Development Program

Project ID: SBPO.12

SCOPE OF WORK

SBPG collaborated with Nunez Community College to develop and implement a workforce development program focused on emerging fisheries-oriented sectors, including coastal applications in GIS. The program has been ongoing since 2018.

Nunez Community College is the only institution of higher learning in St. Bernard Parish.

PRIORITY

Tier 1 | Tier 2 | Tier 3

STATUS

SBPG has received RESTORE Act Direct Component funding ($231,744) for the initial two years of program implementation and has a pending funding request ($100,000) for year three. The program is expected to be ongoing through 2022.

State and local leaders celebrated the official launch of the Fisheries Workforce Development program in 2018.

BUDGET

Three years of program implementation ($331,744) funding has been included in SBPG's RESTORE Act Multiyear Implementation Plan.

PARTNERS

Program partners include Nunez Community College and the SBPG Coastal Division.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Economic Development and Tourism

Paris Road Corridor Streetscape Enhancement

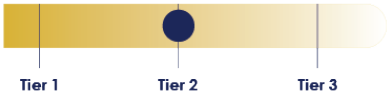
Project ID: SBPO.13

SCOPE OF WORK

Paris Road is one of only three thoroughfares connecting St. Bernard Parish to New Orleans. While other major thoroughfares have been enhanced since Hurricane Katrina, the Paris Road corridor remains unimproved. The proposed project includes the design and installation of a suite of streetscape enhancements along Paris Road, including lighting, landscaping, and other improvements.

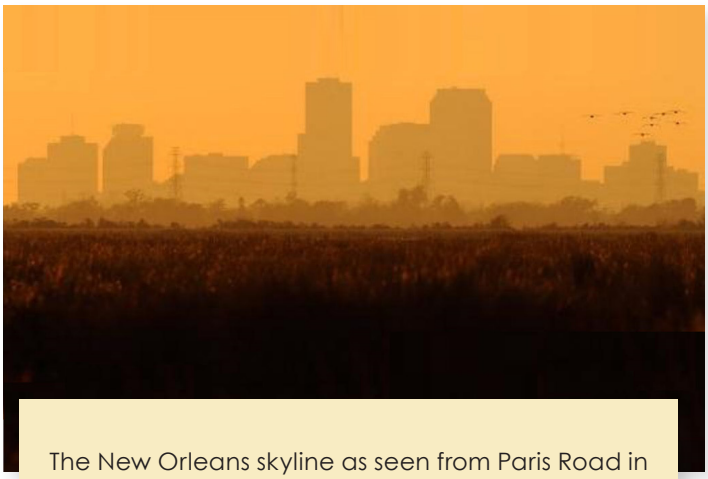
Paris Road is one of only three major thoroughfares connecting St. Bernard Parish and New Orleans.

PRIORITY



STATUS

SBPG has received RESTORE Act Direct Component funding ($824,000) for this project. Engineering/design was completed in 2020 and the project is scheduled to be under construction in 2021.



The New Orleans skyline as seen from Paris Road in Chalmette.

BUDGET

Engineering/design ($108,800) and construction ($691,200) funding have been included in SBPG's RESTORE Act Multiyear Implementation Plan.

PARTNERS

Project partners include the SBPG Coastal Division, Office of Tourism, and Department of Public Works.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

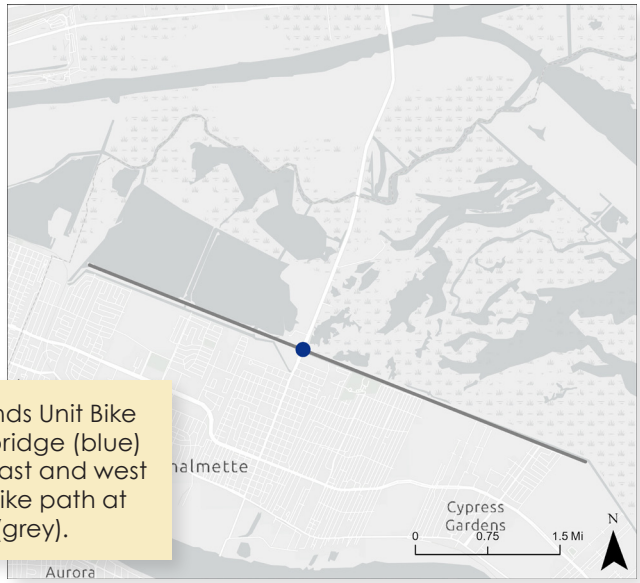
Economic Development and Tourism

Central Wetlands Unit Bike Path Pedestrian Bridge

Project ID: SBPO.14

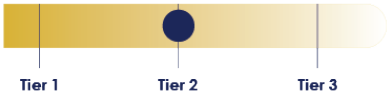
SCOPE OF WORK

The Central Wetlands Unit Bike Path extends across the back levee along the 40-Arpent Canal in St. Bernard Parish. The trail is accessible at selected points near existing parks, recreational facilities, and neighborhoods. The purpose of this project is to construct a pedestrian bridge over Paris Road, thereby connecting the east and west reaches of the bike path.



The Cetral Wetlands Unit Bike Path pedestrian bridge (blue) will connect the east and west reaches of the bike path at Paris Road (grey).

PRIORITY



STATUS

SBPG has obligated RESTORE Act Direct Component funding for this project. However, this funding is only intended to cover approximately 20% of the total estimated construction cost ($5,000,000). The project schedule is contingent upon the completion of other Central Wetlands Unit Bike Path project features.

A rendering of the proposed Central Wetlands Unit Bike Path pedestrian bridge.

BUDGET

Construction ($1,000,000) funding has been included in SBPG RESTORE Act Multiyear Implementation Plan.

PARTNERS

Project partners include the SBPG Coastal Division, Office of Tourism, and Department of Public Works.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Community Education and Outreach

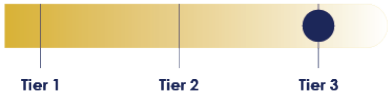
Cookoff for the Coast

Project ID: SB.01

SCOPE OF WORK

SBPG partnered with the Meraux Foundation and other stakeholders to develop and host an annual fundraiser for coastal activities in St. Bernard Parish. Hundreds of visitors have attended Cookoff for the Coast at Docville in Violet since 2018. The events have generated approximately $20,000 for local coastal restoration projects and 4-H activities.

PRIORITY



This event was inspired by other local invasive species cookoffs and coastal restoration fundraising events.

STATUS

Cookoff for the Coast was a virtual event in 2021 due to the ongoing COVID-19 pandemic. However, SBPG will be coordinating with its partners to begin planning a safe, in-person event for 2022.

Cookoff for the Coast has attracted some of the best seafood, wild game, and waterfowl cooks in St. Bernard Parish.

BUDGET

The St. Bernard Parish Council makes funding for this event available on an as-needed basis. The National Wildlife Federation and the Meraux Foundation have also been major event contributors.

PARTNERS

Program partners include the SBPG Coastal Division and Office of Tourism, the Meraux Foundation, National Wildlife Federation, LSU Ag Center, 4-H Club, and Louisiana Sea Grant.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Economic Development and Tourism

Local Marine Debris Removal Program

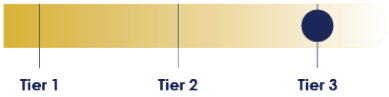
Project ID: SB.02

SCOPE OF WORK

The Local Marine Debris Removal Program is a funding mechanism for the extraction of navigational hazards such as sunken vessels and the removal of litter from local waterways and shorelines where imminent threats to public health and safety or environmental quality exist.

Tons of marine debris have been removed from local waterways as a result of parish and volunteer efforts.

PRIORITY



STATUS

SBPG has removed many sunken vessels and tons of litter from local waterways dating back to 2016. Although the parish's Bayou Bash Marine Debris Removal volunteer events were cancelled in 2020 due to the COVID-19 pandemic, one event was hosted in 2021 and future events are being planned.

St. Bernard Parish Government has hosted several Bayou Bash volunteer events along some of the parish's busiest waterways.

BUDGET

The St. Bernard Parish Council makes funding for the Local Marine Debris Removal Program available on an as-needed basis.

PARTNERS

Program partners include the SBPG Coastal Division, St. Bernard Parish Council, and Coastal Zone Advisory Committee.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Economic Development and Tourism

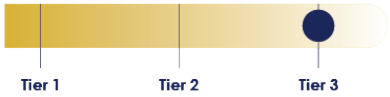
Local Navigational Aids Program

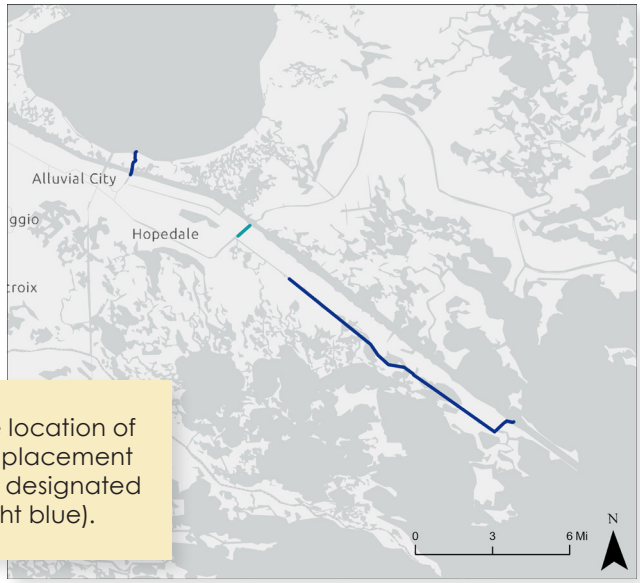
Project ID: SB.03

SCOPE OF WORK

The Local Navigational Aids Program is a funding mechanism for the installation of navigational aids in waterways where imminent threats to public health and safety exist. SBPG works with stakeholders to identify navigational hazards and install navigational aids on an emergency basis in accordance with US Coast Guard standards.

PRIORITY





Map showing the location of navigational aid placement (dark blue) and a designated kayak trail (light blue).

STATUS

SBPG has largely focused its navigational aids efforts on high-traffic waterways that have silted in and created hazards. However, the parish has also installed some kayak lanes for recreational fishermen in Hopedale and is considering other projects aimed at promoting access and safety for non-motorized vessels.

The parish has installed channel markers and other signage throughout eastern St. Bernard Parish.

BUDGET

The St. Bernard Parish Council makes funding for the Local Navigational Aids Program available on an as-needed basis.

PARTNERS

Program partners include the SBPG Coastal Division, St. Bernard Parish Council, and Coastal Zone Advisory Committee.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

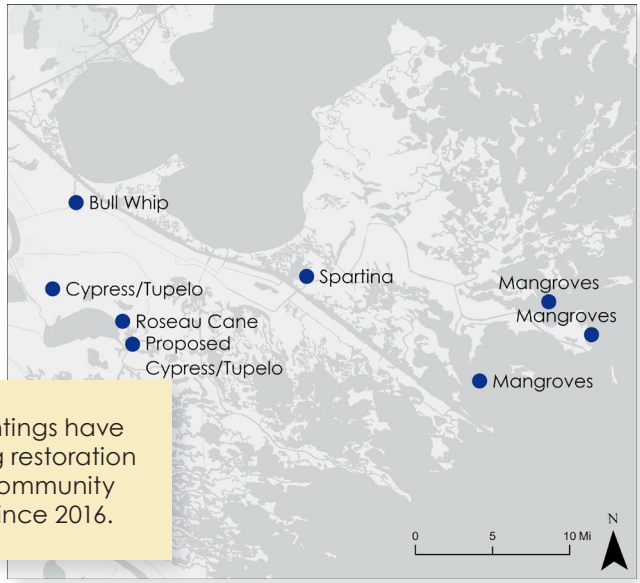
Community Education and Outreach

Local Reforestation and Re-vegetation Program

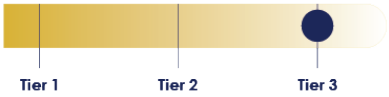
Project ID: SB.04

SCOPE OF WORK

SBPG has been actively engaged in various reforestation and re-vegetation efforts since 2016. The parish has worked with many partners to cultivate and plant over 5,000 black mangroves in the Biloxi Marsh and thousands of cypress and tupelo trees near Caernarvon.



PRIORITY



Small-scale plantings have been an ongoing restoration practice and community outreach tool since 2016.

STATUS

Planting efforts were cancelled in 2020 and limited in 2021 due to the COVID-19 pandemic. However, SBPG and its partners have been preparing for black mangrove and other plantings in 2022. Additionally, the parish has received a NFWF grant to plant a 68-acre cypress/tupelo forest near Delacroix in 2022.

Chalmette High students potting black mangroves in the school greenhouse.

BUDGET

The St. Bernard Parish Council makes funding for the Local Reforestation and Re-vegetation Program available on an as-needed basis.

PARTNERS

Program partners include the SBPG Coastal Division, Biloxi Marsh Lands Corporation, Orvis, Nicholls State University, Pontchartrain Conservancy, Anglers Bettering Louisiana's Estuaries, Louisiana Department of Agriculture and Forestry, Meraux Foundation, Louisiana Sea Grant, LSU Ag Center, 4-H Club, Chalmette High School, St. Bernard Wetlands Foundation, and the American Flyfishing Trade Association.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

Community Education and Outreach

Marsh Dawgs

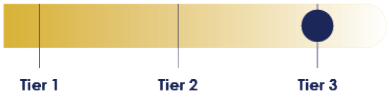
Project ID: SB.05

SCOPE OF WORK

SBPG partnered with Louisiana Sea Grant and the LSU Ag Center to develop and implement a coastal education program for high school students in St. Bernard and Plaquemines parishes. The Marsh Dawgs program was offered in 2018 and 2019, and dozens of students from both parishes learned about coastal topics ranging from public policy to water quality testing and GIS mapping. Participants also learned how to fish, throw cast nets, and clean fish.

Learning how to fish and clean fish have been components of the Marsh Dawgs program since its inception.

PRIORITY



STATUS

Marsh Dawgs was cancelled in 2020 due to the COVID-19 pandemic. However, Anglers Bettering Louisiana's Estuaries and Louisiana Sea Grant are currently planning a 2021 event. Program funding has come from various public and private sources. Marsh Dawgs has also benefitted from the voluntary participation of many local fishing guides, commercial fishermen, and public officials.

Local 4-H Club students had an opportunity to engage in a three-day experiential learning program in St. Bernard, Orleans, and Plaquemines parishes.

BUDGET

Two years of program implementation ($13,800) funding and other resources were made available through Anglers Bettering Louisiana's Estuaries (Yellow Dog grant) and other in-kind contributions. Anglers Bettering Louisiana's Estuaries has also allocated a third year of program implementation ($2,500) funding.

PARTNERS

Program partners include the SBPG Coastal Division, Louisiana Sea Grant, LSU Ag Center, Anglers Bettering Louisiana's Estuaries, Yellow Dog Flyfishing, Chalmette High School, Meraux Foundation, Louisiana Department of Wildlife and Fisheries, the Atakapas-Ishak/Chawasha tribe in Grand Bayou, and the University of New Orleans.

COASTAL DIVISION
ST. BERNARD PARISH

St. Bernard Parish Government 2021 Coastal Strategy Document

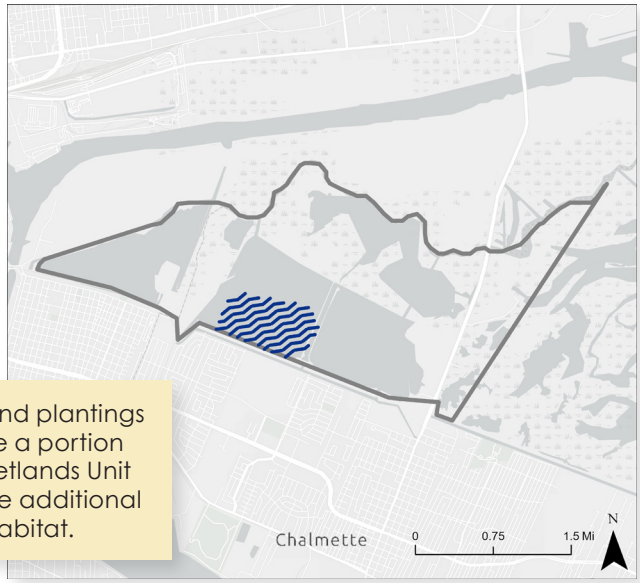
Economic Development and Tourism

Ducks Unlimited Restoration Program

Project ID: SBPO.10

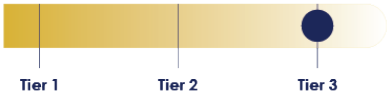
SCOPE OF WORK

SBPG partnered with Ducks Unlimited and the Meraux Foundation to develop a restoration project with two core components: 1) the installation of 28,000 linear feet of marsh terraces (including vegetation) in the Central Wetlands Unit; and 2) hydrologic restoration (6,000 linear feet of canal dredging) near Caernarvon.



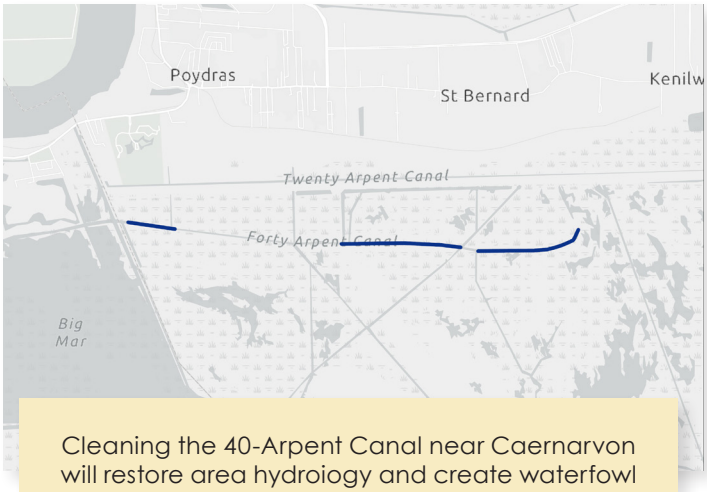
Marsh terracing and plantings (blue) will restore a portion of the Central Wetlands Unit (grey) and provide additional waterfowl habitat.

PRIORITY



STATUS

Ducks Unlimited secured $1 million from the North American Wetlands Conservation Act (NAWCA) grant program and contributions from SBPG ($100,000), Delacroix Corporation ($10,000), and the Meraux Foundation ($5,000) to design and construct this project. Engineering/design is nearing completion and construction is tentatively scheduled to begin in 2022.



Cleaning the 40-Arpent Canal near Caernarvon will restore area hydroiogy and create waterfowl habitat.

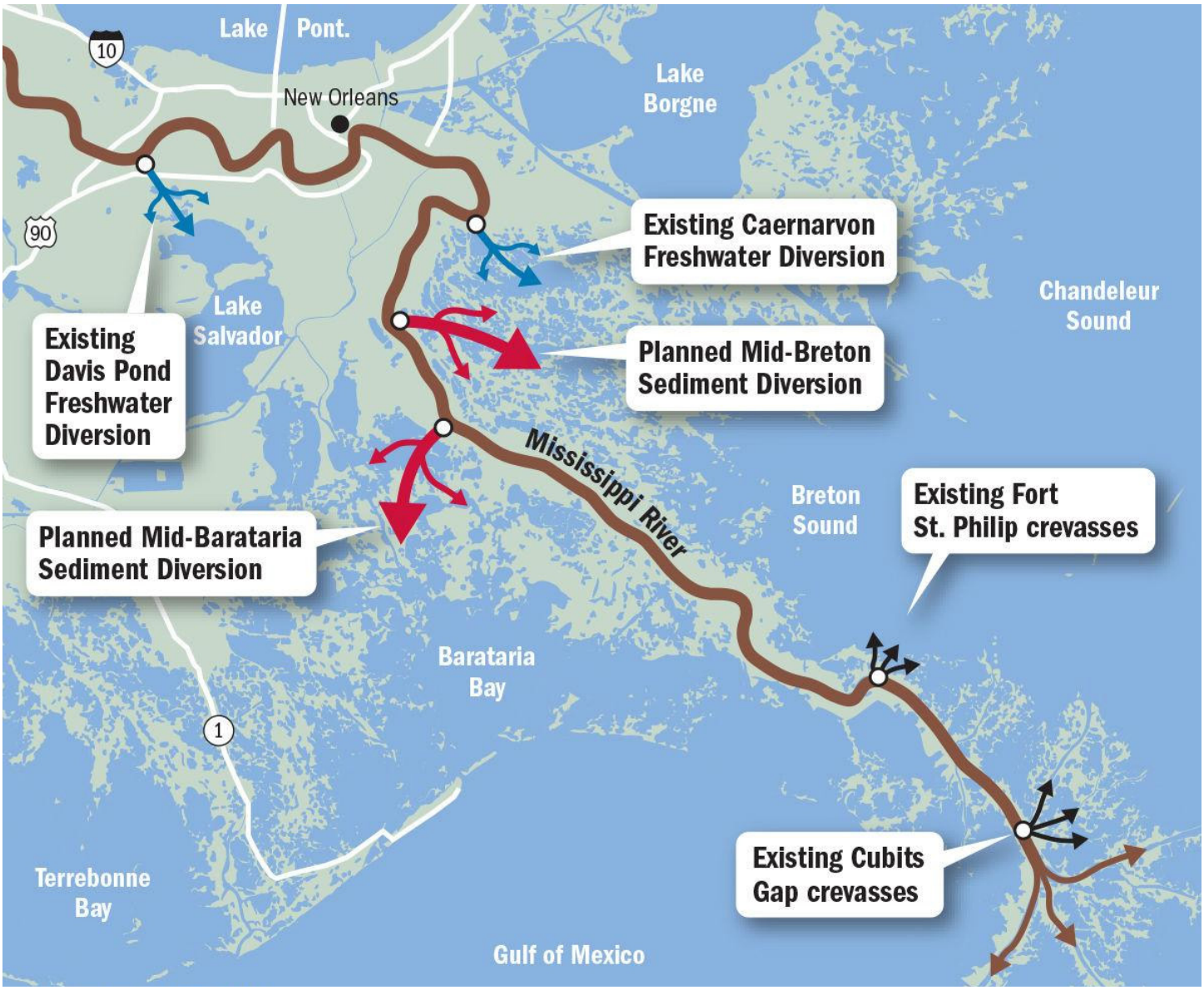
BUDGET

Ducks Unlimited has developed preliminary cost estimates for engineering/design ($115,300) and construction ($1,037,700).

PARTNERS

Project partners include Ducks Unlimited, the SBPG Coastal Division, the Meraux Foundation, and Delacroix Corporation.

Appendix B:
Mid-Basin Sediment Diversion Comments



(Swenson, 2019)

St. Bernard Parish Government
8201 West Judge Perez Drive Chalmette, Louisiana, 70043
(504) 278-4227 Fax (504) 278-4330
www.sbpg.net

Guy McInnis
Parish President

April 8, 2019

United States Army Corps of Engineers
New Orleans District
Attn: Regulatory Branch
7400 Leake Avenue
New Orleans, Louisiana 70118

Re: Permit Application #MVN-2018-1120-EOO (Mid-Breton Sediment Diversion)

To Whom It May Concern:

Please accept the below comments, questions, and concerns from St. Bernard Parish Government (SBPG) regarding the above referenced permit application.

1. The proposed maximum discharge listed in the permit application is 75,000 CFS (Joint Public Notice, 2). However, the maximum discharge proposed by the Louisiana Coastal Protection and Restoration Authority (CPRA), included in *Louisiana's Comprehensive Plan for a Sustainable Coast* (2017 State Master Plan), and adopted by the Louisiana State Legislature is 35,000 CFS. The significant increase in the proposed maximum discharge absent prior review and approval by the CPRA board and Louisiana State Legislature is unacceptable.

2. According to the permit application, approximately 111,000 cubic yards of material will be excavated around the proposed construction site (Joint Public Notice, 2). SBPG urges the United States Corps of Engineers (USACE) to mandate that the permit applicant devise a plan to beneficially use all residual excavated material on marsh creation and/or ridge restoration projects in the Breton Basin once the proposed project is complete.

3. The proposed project "would convey sediment, water, and nutrients into the Mid-Breton Basin…" (Joint Permit Notice, 2). SBPG is interested in learning more about the typical sediment-to-water ratio being delivered and how the proposed project is expected to perform compared to other methods of sediment delivery, including dredging and the use of sediment pipelines. Additionally, SBPG is concerned about the discharge of

contaminants from the Mississippi River into the Breton Basin and would like to learn more about any potential adverse impacts to water quality.

4. It has been estimated that the proposed project would adversely impact approximately 7,530 acres of jurisdictional wetlands and waters (Joint Public Notice, 2). However, given the proposed operational regime and maximum discharge level, the number of estimated acres adversely impacted seems drastically understated. Furthermore, SBPG anticipates that changes in salinity (including associated impacts to vegetation), increased periods of inundation, and tropical weather events will have cascading negative impacts throughout the entire Breton Basin during the life of the proposed project.

5. The USACE has identified the West India manatee as a marine mammal that is "not likely" to be adversely impacted by the proposed project (Joint Permit Notice, 4). Congress also approved a waiver to the Marine Mammal Protection Act in order to exclude the consideration of adverse impacts to the bottlenose dolphin from this permitting process. SBPG urges the USACE to request that the permit applicant provide an analysis of anticipated adverse impacts to the bottlenose dolphin in the Breton Basin for the purpose of better informing the public and Congress regarding the impacts of largescale sediment diversions on marine mammals. This information could be used to inform future decisions involving waivers to the Marine Mammal Protection Act.

6. The USACE has identified the "destruction or alteration" of at least 7,530 acres of Essential Fish Habitat (EFH) as a result of the proposed project (Joint Permit Notice, 4). Additionally, the USACE has identified six (6) Federally listed endangered or threatened species "that the proposed project could impact" (Joint Permit Notice, 4). Other species that are likely to be impacted include: white and brown shrimp; red drum; dog snapper; lane snapper; grey snapper; bonnet heat shark; Atlantic sharpnose shark; blacknose shark; American Oyster; Atlantic croaker; Gulf Menhaden; Spotted Seatrout; Sand Seatrout; Black Drum, Southern Flounder; Blue Crab; Striped Mullet; and mackerel. SBPG finds the destruction or alteration of thousands of acres of EFH that supports the aforementioned ecologically and economically significant species in the Breton Basin to be unacceptable.

7. The permit application describes the purpose of the proposed project as being "an attempt to reduce coastal land loss and sustain surrounding wetlands" (Joint Permit Notice, 1). However, the gradual depletion of the Mississippi River sediment budget has been well documented and increased periods of inundation have been found to adversely impact existing vegetation and contribute to land loss. Consequently, the Expert Panel on River Diversions expressed concerns over the potential for land loss during the first ten (10) years of the proposed project being in operation. SBPG believes that the purported land-building capacity of the proposed project is overstated and that it will likely cause land loss and increase the risks associated with storm surge during at least the first ten (10) years of operation.

8. The gradual depletion of the Mississippi River sediment budget and the permit applicant's stated commitment to adaptive management may eventually result in the

permit applicant making substantial adjustments to the operational regime of the proposed project. SBPG is concerned that such adjustments may increase the adverse impacts described above. The permit applicant has made adjustments to the operational regime of similar projects (specifically, the Caernarvon freshwater diversion) for decades, adversely impacting local fisheries with minimal oversight and limited recourse for the commercial and recreational fishermen who are regularly impacted by such decisions.

9. St. Bernard Parish is home to thriving commercial and recreational fishing industries, and is proud of its many historic fishing communities, including: Delacroix, Reggio, Woodlake, Yscloskey, Hopedale, and Shell Beach. The residents of St. Bernard Parish were subjected to the worst natural disaster in US history (Hurricane Katrina, 2005) and the worst human-caused environmental catastrophe in US history (BP Oil Spill, 2010) in a matter of five (5) years. The aforementioned fishing communities were particularly devastated during both events and continue to recover. SBPG finds the public funding of a largescale infrastructure project that will likely result in further environmental and economic harm for such communities to be unacceptable.

10. St. Bernard Parish has historically been subjected to human interventions and failed public infrastructure projects that resulted in significant adverse environmental and economic impacts for which the community was never fully compensated, including: a) the Crevasse (1927); b) construction of the Mississippi River Gulf Outlet (1956-currently); c) levee failures during Hurricane Betsy (1965); d) Caernarvon freshwater diversion (1991-currently); and e) levee failures during Hurricane Katrina (2005). Consequently, SBPG believes the proposed project would introduce a number of new environmental and economic risks that are unacceptable to the citizens of St. Bernard Parish.

11. In accordance with the referenced Joint Public Notice, SBPG hereby requests a public hearing regrading the subject permit application to be held in St. Bernard Parish at the earliest possible date. The reasons for the request are as follows: a) St. Bernard Parish residents who are most likely to be adversely impacted by the proposed project are those who regularly work on the water and are less likely to have accessed and responded to the Joint Public Notice prior to the established deadline; and b) the USACE will be in a better position to weigh all relevant factors (conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people) after hearing directly from the residents of St. Bernard Parish (Joint Public Notice, 3).

Sincerely,

Guy McInnis
Parish President
St. Bernard Parish Government

St. Bernard Parish Government

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Guy McInnis
Parish President

August 12, 2020

Mr. Brad Laborde
United States Army Corps of Engineers
New Orleans District
Attn: CEMVN–ODR–E
7400 Leake Avenue
New Orleans, Louisiana 70118

Re: Environmental Impact Statement for #MVN-2018-1120-EOO (Mid-Breton Sediment Diversion)

Dear Mr. Laborde:

St. Bernard Parish Government (SBPG) concurs with the United States Army Corps of Engineers (USACE) that the referenced project may "significantly impact the quality of the human environment" (USACE, 2020, p. 1). Please see the below comments, questions, and concerns from SBPG regarding *potentially significant issues* that should be taken into consideration during the upcoming Environmental Impact Statement (EIS) process.

1. ***SBPG is concerned that the operational regime is too ambiguous and has not been properly vetted by critical stakeholder groups***. The maximum discharge listed in the permit application is 75,000 CFS (USACE, 2019a, p. 2). Additionally, the maximum baseline flowrate is listed as 5,000 CFS and the "trigger" Mississippi River flowrate for opening the diversion at maximum capacity is listed as 450,000 CFS. However, the flowrates included in the Coastal Protection and Restoration Authority (CPRA) *Comprehensive Plan for a Sustainable Coast* (2017 State Master Plan) and adopted by the State Legislature were as follows: 35,000 CFS (maximum discharge); 2,500 CFS (baseline flowrate); and 600,000 CFS (maximum capacity trigger flowrate). The changes made in the permit application represent a significant increase in proposed cumulative discharge. Such changes (and associated projected increase in adverse impacts to the natural and human environment) have not been properly vetted by critical stakeholder groups.

2. ***SBPG is concerned that the operational regime will continue to evolve in a manner that exacerbates adverse impacts over time***. The gradual depletion of the Mississippi River sediment budget and CPRA's stated commitment to *adaptive management* may eventually result in the agency making substantial adjustments to the operational regime of the proposed project. CPRA has made similar adjustments to the operational regime of other diversion projects (such as the Caernarvon freshwater diversion) for decades, adversely impacting local fisheries while providing virtually no recourse for impacted stakeholder groups. SBPG is concerned that any initial required compensatory mitigation effort will fail to address future adverse impacts resulting from adaptive management and changes to the operational regime.

3. ***SBPG is concerned that nutrients and contaminants will adversely impact water quality throughout the Breton Basin***. The proposed project "would convey sediment, water, and nutrients into the Mid-Breton Basin…" (USACE, 2019a, p. 2). Such discharges will undoubtedly result in adverse impacts to aquatic resources, commercial and recreational fisheries, wildlife resources, essential fish habitat, and water quality. The recent *Gulf of Mexico Freshwater Flooding in Louisiana, Mississippi, and Alabama* federal fishery disaster (declared in October 2019) adversely impacted water quality and caused over $500 million in economic damage throughout the northern Gulf Coast region.

4. ***SBPG is interested in learning more about the sediment-to-water ratio being delivered and how the proposed project is expected to perform compared to alternative methods of sediment delivery***. SBPG, CPRA, and other stakeholders have successfully engaged in largescale coastal restoration activities via dredging and the use of sediment pipelines. Diverting the Mississippi River for the purpose of delivering sediment will likely be less efficient and cost-effective compared to other proven methods of sediment delivery. Additionally, the drastic changes in salinity resulting from the proposed project will undoubtedly have adverse impacts to aquatic resources, commercial and recreational fisheries, wildlife resources, essential fish habitat, and water quality throughout the Breton Basin.

5. ***SBPG is concerned that the land-building capacity of the proposed project is overstated and that the project will likely cause land loss and increase flood risk***. The permit application describes the purpose of the proposed project as being "an attempt to reduce coastal land loss and sustain surrounding wetlands" (USACE, 2019a, p. 1). However, the gradual depletion of the Mississippi River sediment budget has been well documented and increased periods of inundation have been found to adversely impact existing vegetation and contribute to land loss. Consequently, the Expert Panel on Diversion Planning and Implementation (convened by the Water Institute of the Gulf) previously expressed concerns regarding the possibility of the project causing land loss during at least the first ten years of operation (http://www.coastal.louisiana.gov/diversion-resources/).

6. ***SBPG is concerned that the natural and human environment (including the local economy) cannot sustain the further loss of productive habitat.*** It has been estimated that the proposed project would adversely impact approximately 7,500 acres of jurisdictional wetlands and waters (USACE, 2019a, p. 2). However, given the ambiguity of the proposed operational regime and potential for future adjustments (adaptive management), the number of estimated acres impacted seems understated. A modeling report recently commissioned by the USACE Engineer Research and Development Center (ERDC) concluded that:

> [...] diversion-induced inundation results in a reduction in plant productivity, which induces an acceleration of land loss. Significant uncertainty exists with respect to the response of the existing wetland vegetation to diversion-induced inundation. (Brown et al., 2019, p. iii)

Such findings illustrate the potential for cascading adverse impacts throughout the Breton Basin and highlight the level of risk and uncertainty surrounding the proposed project.

7. ***SBPG is concerned that an additional source of freshwater entering the Breton Basin will place southeast Louisiana in a constant state of environmental and economic crisis that exceeds federal, state, and local capacity and resources.*** Acute influxes of freshwater from the Bonnet Carre' Spillway and the persistent flow of freshwater from Mardi Gras Pass (MGP) and other crevasses on the east bank of the Mississippi River already pose serious threats to the sustainability of aquatic resources, commercial and recreational fisheries, wildlife resources, essential fish habitat, and water quality in the Breton Basin. The adverse impacts associated with these sources of freshwater have been well documented. Prior to 2008, the Bonnet Carre' Spillway had only been opened eight times (1937, 1945, 1950, 1973, 1975, 1979, 1983, and 1997) (USACE, 2019b). The spillway has since been opened six times, including an unprecedented two openings for a record number of days (123) in 2019 (USACE, 2019b).

The 2019 Bonnet Carre' Spillway openings severely impacted fish and wildlife and caused harmful algae blooms throughout the northern Gulf Coast region. In June 2019, the governors of Louisiana, Mississippi and Alabama formally requested a federal fishery disaster declaration from the United States Secretary of Commerce. The Secretary granted the request (Gulf of Mexico Freshwater Flooding in Louisiana, Mississippi, and Alabama) in October 2019 (National Oceanic and Atmospheric Administration, 2019a).

The State of Louisiana has estimated that at least $258,462,169 in economic damages occurred as a result of the federal fishery disaster. This preliminary assessment is based on biological samples, trip ticket data, and industry surveys, but does not include the residual economic losses that will occur during subsequent years. For example: the *eastern oyster*, an immobile shellfish that depends upon ideal salinity, will likely take three years to recover. Other commercially significant fisheries that were impacted include shrimp, crabs, and finfish. Finally, the *bottlenose dolphin*, an ecologically significant and freshwater-sensitive species, became the subject of an ongoing National Oceanic and Atmospheric Administration (NOAA) *unusual mortality event* on the

northern Gulf Coast during the federal fishery disaster (NOAA, 2019b). The cumulative preliminary economic damage estimates in the three impacted states (LA, MS, AL) have now exceeded $500 million. However, Congress only approved $88,301,898 in recovery funds and as of this writing, zero disaster relief had been administered to impacted stakeholder groups.

According to the United States Global Change Research Program's (2018) *Fourth National Climate Assessment*, "the severity of compound events—the coupling of surge, discharge from rivers, and heavy precipitation—has increased…" and "warmer air temperatures have increased the probability of heavy precipitation events…" in the United States (329). The frequency and duration of Mississippi River flood events and Bonnet Carre' Spillway openings are therefore expected to increase going forward. This prospect alone threatens the ecological and economic sustainability of southeast Louisiana.

Compounding matters, the Bohemia Spillway and MGP *Hydrocoast* program monitors indicated that the Mississippi River was discharging into local waterways at a rate of approximately 45,000 CFS as of June 2019 (Lake Pontchartrain Basin Foundation, 2019). Consequently, the influence of the river at MGP has drastically reduced salinity in local waterways and devastated oyster productivity in once prolific harvest areas such as Black Bay. The ongoing adverse impacts associated with influxes of freshwater into the Breton Basin have already exceeded federal, state, and local capacity and resources, as evidenced by the stalled 2019 federal fishery disaster recovery. The persistent threat of similar events exists absent the existence of the proposed project.

8. ***SBPG is concerned that the proposed project poses an existential threat to dolphins in the Breton Basin***. The USACE has identified the *West India manatee* as a marine mammal that is "not likely" to be adversely impacted by the proposed project (USACE, 2019a, p. 4). Congress also recently waived the Marine Mammal Protection Act (MMPA) in order to exclude adverse impacts on the bottlenose dolphin from consideration during the permitting process. This decision was made in 2018 based on an earlier version of the operational regime that is substantially different from what was ultimately included in the CPRA's permit application (please refer to #1 above).

   SBPG urges the USACE to request that the applicant provide an analysis of anticipated adverse impacts to the bottlenose dolphin in order to better inform Congress and the public regarding the impacts of largescale sediment diversions on marine mammals. Additionally, SBPG urges the USACE to request that Congress reconsider the 2018 MMPA waiver based on the operational regime included in CPRA's permit application and a wide range of potential future adaptive management scenarios.

9. ***SBPG is concerned that the proposed project will damage or destroy the very natural resources and economic functions that federal, state, and local officials have been tasked with restoring in the aftermath of the Deepwater Horizon event***. The USACE has stated that the "destruction or alteration" of at least 7,530 acres of Essential Fish Habitat (EFH) may occur as a result of the proposed project (USACE, 2019a, p. 4).

Additionally, the USACE identified six Federally listed endangered or threatened species "that the proposed project could impact" (USACE, 2019a, p. 4). Other species that are likely to be impacted include: *white* and *brown shrimp*; *red drum*; *dog snapper*; *lane snapper*; *grey snapper*; *bonnet heat shark*; *Atlantic sharpnose shark*; *blacknose shark*; *American Oyster*; *Atlantic croaker*; *Gulf Menhaden*; *Spotted Seatrout*; *Sand Seatrout*; *Black Drum*, *Southern Flounder*; *Blue Crab*; *Striped Mullet*; and *mackerel*.

In Louisiana, coastal communities and the seafood industry are closely intertwined. Commercial oyster, shrimp, and crab fisheries in the state have a combined annual economic impact of approximately $2 billion and account for over 22,000 jobs (State of Louisiana, 2019). The economic functionality of Louisiana's seafood industry also has national implications. Over 890 million pounds of seafood were landed in Louisiana during 2017 (second only to Alaska) (National Marine Fisheries Service, 2018). The state is responsible for producing 70% of all oysters and 40% of all blue crabs in the United States (State of Louisiana, 2019), and 25% of all seafood consumed in the country is harvested from Louisiana (Jones, 2015).

Although the commercial finfish industry in southeast Louisiana is relatively small compared to other coastal regions, recreational fishing is a critical component of the local economy. Please refer to the below regional recreational license data summary.

Summary of Recreational Licenses in the Pontchartrain Basin, 2017 (Source: LDWF)

	Total Licenses	Basic Fish/Salt	Crb/Shr/Oys
Jefferson	63,281	51,449	1,125
Orleans	25,691	20,101	319
St. Bernard	7,999	6,771	129
St. Charles	11,884	9,907	288
St. Tammany	49,349	38,928	1,073
Tangipahoa	21,402	17,049	410
TOTAL:	**179,606**	**144,205**	**3,344**

Like recreational fishing, the charter fishing industry is a critical component of the local economy. Please refer to the below regional charter fishing license data summary.

Summary of Charter Fishing Licenses in the Pontchartrain Basin, 2017 (Source: LDWF)

	Charter 6	Charter 6+
Jefferson	202	3
Orleans	34	0
St. Bernard	24	0
St. Charles	20	1
St. Tammany	81	0
Tangipahoa	11	0
TOTAL:	**372**	**4**

One of the stated purposes of the proposed project is to "create, preserve, restore, and sustain wetlands to counteract the effects of natural and man-made disturbances, such as the Deepwater Horizon oil spill" (USACE, 2020). SBPG finds the destruction or alteration of thousands of acres of EFH that support the aforementioned ecologically and economically significant species to be counterproductive. Furthermore, as described above (please refer to #7), the commercial and recreational fishing industries have yet to recover from other natural and anthropogenic disturbances that have occurred since the Deepwater Horizon event, including the 2019 federal fishery disaster.

10. ***SBPG is concerned that properly mitigating the adverse impacts associated with the proposed project is not feasible and that litigation may cause CPRA and other stakeholder groups to exhaust valuable time and resources***. The proposed project will adversely impact over 100,000 acres of State of Louisiana water bottoms currently being leased by commercial oyster harvesters. The USACE "requires compensatory mitigation to offset unavoidable impacts to jurisdictional wetlands and other aquatic resources" (USACE, 2020). The process by which the State of Louisiana acquires oyster leases and compensates harvesters is outlined in the *Oyster Lease Acquisition and Compensation Program* (OLACP) (LA Revised Statute 56:432.1).

    Historically, the OLACP has only been invoked to acquire approximately 4,000 acres of oyster leases over a period of fifteen years. In such instances, the cost of each biological assessment ranged from $25,000 to $300,000 and the cost of each lease appraisal ranged from $17,000 to $70,000. The State of Louisiana has historically compensated leaseholders at a rate of $50 to $100 per acre (CPRA Board Presentation, 7/15/20). Fairly compensating thousands of impacted oyster harvesters in the manner described above seems infeasible given the amount of time and resources involved. This will likely precipitate a prolonged litigation process that is detrimental to all parties.

11. ***SBPG is concerned that the proposed project may do irreparable harm to cultural resources, employment and income, property values, tax revenue, community cohesion, and recreation in eastern St. Bernard Parish***. St. Bernard Parish is home to thriving commercial and recreational fishing industries and is proud of its many historic fishing communities, including: Delacroix, Reggio, Woodlake, Yscloskey, Hopedale, and Shell Beach. St. Bernard Parish was subjected to the worst natural disaster in US history (Hurricane Katrina, 2005) and the worst human-caused environmental catastrophe in US history (Deepwater Horizon event, 2010) in a matter of five years. The aforementioned fishing communities were particularly devastated during both events and continue to recover. SBPG is concerned that the risk and uncertainty associated with the proposed project now pose existential threats to cultural resources, employment and income, property values, tax revenue, community cohesion, and recreation in communities that have existed in coastal St. Bernard Parish since the 18th century. Consequently, the St. Bernard Parish Council has passed a number of resolutions since 2008 confirming the parish's firm stance against largescale sediment diversions.

12. ***SBPG is concerned that the proposed project may disproportionately impact cultural resources, employment and income, property values, tax revenue, community cohesion, and recreation among minorities, those living in poverty, and minority- and woman-owned businesses***. St. Bernard Parish has a population of 47,244. The parish has become increasingly diverse since Hurricane Katrina (2005), with 24% of the population now identifying as Black or African-American and 10% identifying as Hispanic or Latino. Unfortunately, more than 20% of the parish's population was living in poverty as of 2019. St. Bernard is also home to a thriving business community that relies on natural resources and related industries. The parish is proud to have 1,217 minority-owned firms and 1,200 woman-owned firms among its 3,665 businesses. (United States Census Bureau, 2019)

13. ***SBPG would like the EIS to address the legacy of environmental and economic harm inflicted on St. Bernard Parish as the result of failed public infrastructure projects and other government interventions***. St. Bernard Parish has been subjected to a century of failed public infrastructure projects and other government interventions that resulted in significant adverse environmental and economic impacts: a) the *Crevasse* (1927); b) construction of the Mississippi River Gulf Outlet (1956); c) levee failures during Hurricane Betsy (1965); d) the Caernarvon freshwater diversion (1991); and e) levee failures during Hurricane Katrina (2005). In each instance, stakeholder groups were never fully compensated for their losses. Consequently, St. Bernard Parish residents are very skeptical of largescale infrastructure projects that involve a high degree of risk and uncertainty.

A references page has been included on page 8. Thank you for your time and consideration.

Sincerely,

Guy McInnis
Parish President
St. Bernard Parish Government

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Guy McInnis
Parish President

June 1, 2021

U.S. Army Corps of Engineers
New Orleans District
Attn: CEMVN-ODR-E; MVN-2012-2806-EOO
7400 Leake Avenue
New Orleans, Louisiana 70118

Re: Mid-Barataria Sediment Diversion Draft Environmental Impact Statement

To Whom It May Concern:

As noted in the attached St. Bernard Parish Council Resolution SBPC #2124-04-21 (pages 6 & 7) and April 21, 2021 letter from Parish President Guy McInnis (page 8), St. Bernard Parish Government is opposed to the referenced project. The parish's specific concerns regarding the findings outlined in the draft environmental impact statement (EIS) are provided below.

The stated project purpose and need are inconsistent with the actual project scope of work and likely outcomes.

The applicant describes the project's purpose and need as follows:

> …to restore for injuries caused by the DWH oil spill by implementing a large-scale sediment diversion in the Barataria Basin through the delivery of sediment, fresh water, and nutrients to support the long-term viability of existing and planned coastal restoration efforts. The proposed Project is needed to restore habitat and ecosystem services injured in the northern Gulf of Mexico as a result of the DWH oil spill. (ES-2)

The DWH oil spill did not deprive the Barataria Basin of sediment, freshwater, or nutrients. Consequently, the diversion of these materials from the Mississippi River into the Barataria Basin will not restore habitat or ecosystem services to pre-DWH oil spill conditions or mitigate the risk associated with future industrial accidents. According to the EIS, the proposed project would instead introduce new and permanent risks to habitat, ecosystem services, and coastal communities in the affected area.

The environmental and economic risks associated with the largescale diversion of freshwater into Louisiana's estuaries are well documented.

The proposed discharge of freshwater into the Barataria Basin will result in adverse impacts to aquatic resources, commercial and recreational fisheries, wildlife resources, essential fish habitat, and water quality. The discharge of freshwater at the Bonnet Carre' Spillway during the *Gulf of Mexico Freshwater Flooding in Louisiana, Mississippi, and Alabama* (2019) federal fishery disaster recently caused over $500 million in economic damage in less than six months. Additionally, the event triggered a NOAA-declared unusual mortality event (UME) for the *bottlenose dolphin* in the northern Gulf of Mexico. A total of 328 deceased dolphins were found throughout the region during the event. NOAA concluded its UME investigation as follows:

> Based on necropsy, histopathology, and diagnostic findings and the extreme environmental conditions documented in the NGOM during this time period, the cause of the mortality event was determined to be environmentally driven by exposure to low salinity waters resulting from extreme freshwater discharge from watersheds that drain into the NGOM, including rivers in Florida, Alabama, Mississippi and Louisiana. (NOAA, 2020)

The EIS identifies project impacts that are very similar to those experienced during the 2019 fishery disaster. Many of the expected impacts on commercial and subsistence fisheries are described in the EIS as "major, permanent, and adverse" (ES-15). The EIS describes the impacts on bottlenose dolphins in the Barataria Basin as "immediate and permanent, major, adverse impacts on survival" (ES-12). The primary difference between the 2019 fishery disaster and the proposed project is the EIS describes many of the project's adverse impacts as *permanent*.

The EIS describes the project's likely severe adverse impacts on the natural environment, including many that may be permanent.

> The proposed Project would result in impacts on the general character of the Barataria Basin, including but not limited to salinity, temperature, land accretion, and water quality [...] and subsequently to the people that rely on the area plants and animals for economic, recreational, and other purposes. (ES-6)

The EIS specifically references major, permanent, and adverse impacts on the shrimp fishery. The study also predicts that impacts on commercial shrimping "may also exacerbate trends in the aging workforce to leave the industry" (ES-15). According to the Louisiana Department of Wildlife and Fisheries (LDWF) (2016b), shrimp landings in the Barataria Basin averaged over 27 million pounds per year between 2000-2013. Brown shrimp landings in the basin represented 44% of all landings statewide and were the highest in Louisiana during the same period (LDWF, 2016b). The mitigation measures proposed in Appendix R would not sufficiently offset economic impacts to the Barataria Basin shrimp industry due to the proposed project.

The EIS also references major, permanent, and adverse impacts on the oyster fishery. Persistent low salinity is expected to drastically reduce oyster abundance. Additionally, "the introduction of Mississippi River water containing elevated fecal coliform concentrations into oyster propagation areas could cause permanent, major, direct adverse impacts" (ES-9). Oyster landings in the Barataria Basin averaged over 2.8 million pounds per year between 2000-2014, second only to the Pontchartrain Basin (LDWF, 2016a). Oyster value per pound ($3.62) landed in the basin was the highest and average total annual value (over $10.8 million) was the second highest in Louisiana during the same period (LDWF, 2016a). The mitigation measures proposed in Appendix R would not sufficiently offset economic impacts that to the Barataria Bay oyster industry due to the proposed project.

The EIS describes the project's likely severe adverse impacts on the socioeconomic well-being of coastal communities.

Many coastal communities are also *fishing communities*, which the Magnuson-Stevens Fishery Conservation and Management Act defines as "geographic areas encompassing a specific locale where residents are dependent on fishery resources or are engaged in the harvesting or processing of these resources" and who are "substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs" (Shaw & Conway, 2007, p. 12). It has been estimated that resource-dependent communities in the United States are five to ten times less economically stable than other communities around the country (Freudenburg & Frickel, 1994). This is primarily because such communities rely heavily upon favorable environmental conditions and government regulations but are often unable to effectively control either (Shaw & Conway, 2007). The EIS appropriately points out that:

> The Project area includes numerous coastal communities that rely heavily on commercial fishing activities. Community members are employed as captains or crew on fishing boats, as seafood dealers, or as employees of businesses serving the commercial seafood industry (3-184).

The health of commercial fisheries and the socioeconomic well-being of coastal communities in Louisiana are closely intertwined. Commercial fisheries have a combined annual economic impact of over $2 billion and account for at least 22,000 jobs (State of Louisiana, 2019). Landings in Louisiana (nearly 900 million pounds in 2017) are second only to Alaska, and 70% of all oysters in the United States are harvested from the state (State of Louisiana, 2019). Twenty-five percent (25%) of all seafood consumed nationwide comes from coastal Louisiana (Jones, 2015). The EIS describes immediate, major, and permanent adverse impacts on several critical species in the Barataria Basin, including shrimp and oysters. Such impacts will undoubtedly change the commercial fishing industry and inflict economic harm on area businesses, families, and individuals.

> The proposed Project is expected to cause minor to moderate, permanent, adverse impacts on economy, population, housing and property values, tax revenues, public service, and community cohesion in communities near the outfall area (ES-13).

However, the adverse economic impacts described above will not be limited to communities located near the outfall area. Entire parishes and municipalities within the affected region will face a decline in overall tax revenue and the associated consequences: poor fiscal health, a decline in public services and quality of life, and the prospect of an increased per capita tax burden.

The EIS identifies many particularly vulnerable communities that are likely to be disproportionately impacted by the proposed project.

Vulnerability has been defined as "the characteristics of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from the impact of a hazardous event" (Wisner et al., 2004, p. 11). Factors contributing to vulnerability include race, class, gender, political influence, and access to critical resources (Cutter, Boruff, & Shirley, 2003). The EIS identifies Myrtle Grove, Hermitage, Grand Bayou, and Happy Jack as low-income and minority communities that might experience disproportionately high and adverse economic impacts as a result of the proposed project, particularly as such impacts relate to commercial and subsistence fishing (ES-14).

The EIS also identifies vulnerable communities located outside of structural risk reduction systems as being more likely to experience the following as a result of the proposed project: 1) increased days of inundation due to tidal flooding; 2) impacts on public health and safety due to increased risk of storm surge flooding; and 3) outmigration and permanent adverse impacts on community cohesion (ES-13 & 19).

The land-building capacity of the proposed project is likely overstated and the EIS supports previous findings regarding the possibility of the project causing land loss and increasing flood risk.

The gradual depletion of the Mississippi River sediment budget has been well documented and increased periods of inundation have been found to adversely impact existing vegetation and contribute to land loss. Consequently, the Expert Panel on Diversion Planning and Implementation (convened by the Water Institute of the Gulf) previously expressed concerns regarding the possibility of largescale sediment diversions causing land loss during at least the first ten years of operation (http://www.coastal.louisiana.gov/diversion-resources/).

A modeling report recently commissioned by the USACE Engineer Research and Development Center (ERDC) similarly concluded that:

> […] diversion-induced inundation results in a reduction in plant productivity, which induces an acceleration of land loss. Significant uncertainty exists with respect to the response of the existing wetland vegetation to diversion-induced inundation. (Brown et al., 2019, p. iii)

The EIS projects that the proposed project will increase water levels in the Barataria Basin by 1.1 feet and prolong inundation periods (ES-8). With regard to communities outside of existing

structural risk reduction systems, it is expected that increased water surface elevations and tidal durations will not only have adverse impacts on public health and safety (ES-13 & 19) but will also flood local roadways and other property at grade (Appendix R, 21 & 22). Finally, it is reasonable to expect that increased periods of inundation outside of existing structural risk reduction systems will hamper the ability of responsible parties to access and maintain such systems, thereby adversely impacting system functionality and useful life.

The operational regime for the project may evolve in a manner that exacerbates adverse impacts to the natural and human environment over time.

CPRA's stated commitment to *adaptive management* may eventually result in the agency making substantial adjustments to the operational regime of the proposed project. CPRA has made similar adjustments to the operational regime of other diversion projects for decades (specifically the Caernarvon freshwater diversion), adversely impacting local fisheries with minimal oversight while providing virtually no recourse for affected stakeholder groups.

A list of references is provided on page 9.

Thank you for your time and consideration.

Sincerely,

Guy McInnis
Parish President
St. Bernard Parish Government

St. Bernard Parish Council

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#16

EXTRACT OF THE OFFICIAL PROCEEDINGS OF THE COUNCIL OF THE PARISH OF ST. BERNARD, STATE OF LOUISIANA, TAKEN AT A REGULAR MEETING HELD IN THE COUNCIL CHAMBERS OF THE ST. BERNARD PARISH GOVERNMENT COMPLEX, 8201 WEST JUDGE PEREZ DRIVE, CHALMETTE, LOUISIANA ON TUESDAY, APRIL 20, 2021 AT THREE O'CLOCK P.M.

On joint motion of the Chair, without objection and by unanimous consent, it was moved to **adopt** the following resolution:

RESOLUTION SBPC #2124-04-21

A RESOLUTION OPPOSING THE PROPOSED MID-BARATARIA SEDIMENT DIVERSION PROJECT.

WHEREAS, The Coastal Protection and Restoration Authority is proposing the Mid-Barataria Sediment Diversion Project; and,

WHEREAS, water, and the wildlife that inhabits it, does not respect parish boundaries, any project effecting Plaquemines water quality and estuaries will have similar impact on the waters and related businesses of St. Bernard Parish; and,

WHEREAS, while the loss of coastal wetlands is a valid concern, the resolution or remediation of that problem must avoid ancillary damages to the people and wildlife of Plaquemines and St. Bernard Parish; and,

WHEREAS, the Environmental Impact Statement related to the current proposed Mid-Barataria Sediment Diversion Project indicates that the project will do permanent harm to the wildlife of Plaquemines and St. Bernard Parish and their respective seafood industries; and,

WHEREAS, the seafood industry of Plaquemines and St. Bernard Parish are central to their respective economies, culture, and heritage; and,

WHEREAS, the environmental remediation efforts related to the potential harm caused by the current proposed Mid-Barataria Sediment Diversion Project is insufficient; and,

WHEREAS, the potential benefits in the minimal land development that is predicted are far outweighed by the unremediated damage that the Mid-Barataria Sediment Diversion Project will cause to the people and wildlife of Plaquemines and St. Bernard Parish; and,

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WHEREAS, the long term damage caused by the Mid-Barataria Sediment Diversion Project to the wildlife and fisheries of Plaquemines and St. Bernard Parish will destroy the livelihood of countless local businesses and people; and,

WHEREAS, the destruction of those livelihoods will lead to the loss of the St. Bernard tax revenues that are used to fund vital services to the people of St. Bernard Parish.

NOW THEREFORE, BE IT RESOLVED, that the St. Bernard Parish Council, the Governing Authority, opposes the proposed Mid-Barataria Sediment Diversion Project.

BE IT FURTHER RESOLVED, that this Resolution be forwarded to all of the following:

- Governor John Bel Edwards
- The Coastal Protection and Restoration Authority
- The House Natural Resources and Environment Committee
- The Senate Natural Resource Committee
- Representative Mack Cormier, Representative Ray Garofalo, Senator Sharon Hewitt, Senator Joseph Eouie and Senator Troy Carter
- U.S. Army Corps of Engineers, Brad Laborde

The above and foregoing having been submitted to a vote, the vote thereupon resulted as follows:

YEAS: McCloskey, Moran, Luna, Alcon, Everhardt, Callais

NAYS: None

ABSENT: None

The Council Chair, Mr. Lewis, cast his vote as **YEA.**

And the motion was declared **adopted** on the 20th day of April, 2021.

April 21, 2021 Letter from Parish President Guy McInnis

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Guy McInnis
Parish President

April 21, 2021

At its April 20, 2021 regularly scheduled council meeting, the St. Bernard Parish Council unanimously approved Resolution SBPC #2124-04-21, "A Resolution opposing the proposed Mid- Barataria Sediment Diversion project". As Parish President, I join with the council in objecting to this proposed project. As the draft Environmental Impact Statement from the US Army Corps of Engineers confirms, this project will do irreparable harm to the wildlife and estuaries of St. Bernard and Plaquemines Parish, and therefore to our respective seafood and tourism industries. We respectfully request alternative projects be considered to rebuild our all-important coastlines in St. Bernard Parish, while preserving our economy, culture, and heritage.

Respectfully,

Guy McInnis
Parish President
St. Bernard Parish

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Appendix C:
2019 Fishery Disaster Spending Plan

St. Bernard Parish Government
Coastal Division

2019 Mississippi River Flood Fishery Disaster Spending Proposal for Southeast Louisiana

October 2019

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I. Executive Summary

The United States experienced more precipitation between April 2018 and May 2019 than during any previous 12-month period on record (Donegan, 2019). Consequently, the volume of water being absorbed by the Mississippi River, which drains 1.25 million square miles of land (40% of all drainage in the United States) across 31 states and two Canadian provinces, was unprecedented in 2019 (National Aeronautics and Space Administration, 2019). The *2019 Mississippi River Flood* surpassed the *Great Flood of 1927* in many locations and the river was in flood stage from January 5, 2019 through July 27, 2019 (Donegan, 2019). As a result of this historic flood event, the Bonnet Carre' Spillway was opened for an unprecedented two times in one calendar year and remained open for a record number of days (United States Army Corps of Engineers, 2019).

In February 2019, Louisiana Governor John Bel Edwards declared an emergency in anticipation of the Mississippi River flood event. Four months later, Governor Edwards and the entire Louisiana congressional delegation requested that the United States Secretary of Commerce declare a *federal fishery disaster* as a result of the Bonnet Carre' Spillway's devastating impacts on local fisheries. The Secretary of Commerce officially declared the federal fishery disaster on September 25, 2019. **The purpose of the *2019 Mississippi River Flood Fishery Disaster Spending Proposal for Southeast Louisiana* is to outline a number of short- and long-term interventions that would facilitate the recovery and sustainability of the commercial fishing, recreational fishing, and related industries in the Pontchartrain Basin.**

The proposal includes a summary of the 2019 Mississippi River Flood event and its impacts on local fisheries, as determined by the Louisiana Department of Wildlife and Fisheries (LDWF). Additionally, a number of interventions have been outlined and organized into two distinct categories:

1. Emergency relief and short-term recovery ($67,518,000); and
2. Long-term recovery, mitigation, and sustainability ($34,147,000).

The total sum requested for the proposed interventions is $101,665,000.

Short-term interventions include the provision of direct financial compensation to impacted businesses and individuals, as well as the emergency construction of fishery-related infrastructure throughout the region. Long-term interventions outlined in the report include habitat restoration and research, both of which are intended to mitigate the risks associated with future spillway openings and sustain local fisheries going forward.

II. 2019 Mississippi River Flood and Fishery Disaster

The flood control infrastructure along the Mississippi River in southeast Louisiana ultimately functioned as designed during the 2019 Mississippi River Flood event, and no significant flooding occurred in the region. However, there were significant adverse environmental impacts associated with the two openings of the Bonnet Carre' Spillway. The drastic influx of freshwater from the spillway into brackish and saline estuaries severely impacted fish and wildlife by disrupting their life cycles and causing harmful algae blooms.

In southeast Louisiana, the impacts of the Bonnet Carre' Spillway have been particularly devastating to the *eastern oyster*, an immobile shellfish that is dependent upon ideal salinity. Other commercially significant fisheries that have been impacted include shrimp, crabs, and finfish. Finally, the *bottlenose dolphin*, which is particularly sensitive to prolonged exposure to freshwater, has been the subject of an *unusual mortality event* since the initial 2019 opening of the Bonnet Carre' Spillway (National Oceanic and Atmospheric Administration, 2019).

The below estimates are based on data collected by LDWF from March 2019 through May 2019 and have been compared to the six-year average (2012-2018) for the specified months.

Eastern Oyster
Change (%) in Statewide Dockside Value (-13.9%)
Change ($) in Statewide Dockside Value (-$2.8 million)
Estimated Change ($) in Dockside Value in Pontchartrain Basin (-$1.12 million)

LDWF has estimated the dockside value of oysters lost due to direct mortality following the influx of freshwater to be approximately $2.8 million. The total estimated loss in dockside value represents a 13.9% reduction in the average dockside value of landings during the specified months. LDWF has estimated that the Pontchartrain Basin generates 40% of annual oyster landings value.

The Louisiana Department of Health (LDH) also closed some of the most productive oyster harvest areas in the state due to low salinity, poor water quality, and associated health concerns. LDWF expected that oyster mortality would increase throughout the summer months due to a combination of freshwater and rising water temperatures. It is likely that the oyster fishery in southeast Louisiana will take up to three years to recover from the event.

Shrimp
Change (%) in Statewide Dockside Value (-33.9%)
Change ($) in Statewide Dockside Value (-$8.5 million)
Estimated Change ($) in Dockside Value in Pontchartrain Basin (-$680,000)

LDWF has estimated the dockside value of shrimp (brown and white only) lost due to direct mortality following the influx of freshwater to be approximately $8.5 million. The total estimated loss in dockside value represents an approximately 33.9% reduction in the average dockside value of landings during the specified months. LDWF has estimated that the Pontchartrain Basin generates 8% of annual shrimp landings value.

Blue Crab
Change (%) in Statewide Dockside Value (-21.1%)
Change ($) in Statewide Dockside Value (-$2.7 million)
Estimated Change ($) in Dockside Value in Pontchartrain Basin (-$1.08 million)

LDWF has estimated the dockside value of crab lost due to direct mortality following the influx of freshwater to be approximately $2.7 million. The total estimated loss in dockside value represents an approximately 21.1% reduction in the average dockside value of landings during the specified months. LDWF has estimated that the Pontchartrain Basin generates 40.3% of annual crab landings value.

Recreational Fishing

Although the commercial finfish industry in southeast Louisiana is relatively small compared to other coastal regions, recreational fishing is a critical component of the local economy. According to LDWF, the popular *spotted seatrout*, which prefers to spawn in high salinity waters, began being displaced from the Pontchartrain Basin in May 2019 and experienced an observed decrease in population beginning in June 2019. LDWF has estimated a 50% below average catch per unit effort for the spotted seatrout in the Pontchartrain Basin through September 2019.

The opening of the Bonnet Carre' Spillway has adversely impacted all recreational licensees throughout the region. Please refer to the below regional recreational license data summary from 2017.

Table II.1: Summary of Recreational Licenses by Parish, 2017 (Source: LDWF)

	Total Licenses	**Basic Fish/Salt**	**Crb/Shr/Oys**
Jefferson	63,281	51,449	1,125
Orleans	25,691	20,101	319
St. Bernard	7,999	6,771	129
St. Charles	11,884	9,907	288
St. Tammany	49,349	38,928	1,073
Tangipahoa	21,402	17,049	410
TOTAL:	**179,606**	**144,205**	**3,344**

Charter Fishing

Like recreational fishing, the charter fishing industry is a critical component of the local economy. The opening of the Bonnet Carre' Spillway has adversely impacted all charter captains throughout the region. Please refer to the below regional charter fishing license data summary from 2017.

Table II.2: Summary of Charter Fishing Licenses by Parish, 2017 (Source: LDWF)

	Charter 6	Charter 6+
Jefferson	202	3
Orleans	34	0
St. Bernard	24	0
St. Charles	20	1
St. Tammany	81	0
Tangipahoa	11	0
TOTAL:	**372**	**4**

Bottlenose Dolphin

A total of 310 dolphins were stranded (deceased or distressed) in the Northern Gulf of Mexico between February 1, 2019 and September 1, 2019 (National Oceanic and Atmospheric Administration, 2019). St. Bernard Parish Government identified 44 of the strandings in local waterways between April 2019 and June 2019. According to the National Oceanic and Atmospheric Administration (NOAA), the standings represent a 300% increase above the annual average, constituting an *unusual mortality event* (NOAA, 2019).

Table II.3: Dolphin Strandings by Month and State, 2019 (Source: NOAA)

2019	FL Pan.	AL	MS	LA
February	11	9	8	12
March	15	5	14	19
April	11	11	27	31
May	0	4	56	31
June	0	6	18	4
July	0	4	4	1
August	0	3	3	3
Total:	**37**	**42**	**130**	**101**

III. Emergency Relief and Short-Term Recovery

The economic and environmental impacts described above have created a crisis for the commercial fishing, recreational fishing, and related industries in southeast Louisiana. Consequently, it is critical that immediate emergency relief be provided to those businesses and individuals that have been affected. Furthermore, although the Bonnet Carre' Spillway has been closed, additional emergency measures must be taken in order to improve fishery-related infrastructure and restore hydrology, salinity levels, and water quality throughout the region.

Table III.1: Proposed Emergency Relief and Short-Term Recovery Interventions

Title	Typology	Estimated Cost
Fishery Disaster Emergency Relief Program Phase 1	Direct Assistance	$27,018,000.00
Mississippi River Gulf Outlet Hydrologic Restoration	Fishery-Related Infrastructure	$500,000.00
Mardi Gras Pass Closure	Fishery-Related Infrastructure	$40,000,000.00
	TOTAL:	**$67,518,000.00**

Fishery Disaster Emergency Relief Program Phase 1
Direct Assistance
Budget: $27,018,000

The purpose of the *Fishery Disaster Emergency Relief Program* (FDERP) Phase 1 is to provide immediate financial relief to commercial fishing, recreational fishing, and related industries that were economically damaged during the Bonnet Carre' Spillway openings.

$24,518,000 (Commercial Component)
$ 500,000 (Recreational Component)
$ 1,000,000 (Charter Component)
$ 1,000,000 (Related Industries Component)

The commercial component was calculated using recent changes in the value of dockside landings (see Section II) and projected losses through March 2020. Conservative lump sum budget figures have been included for the recreational, charter, and related industries components. It is suggested that the FDERP be designed and administered in a manner similar to the claims-based relief program that was implemented following the *Deepwater Horizon* explosion and oil spill.

Eastern Oyster
Budget: $16,000,000

An estimated $1,120,000 in dockside value has already been lost in the Pontchartrain Basin since the Bonnet Carre' Spillway opening. Due to the opening of the spillway, recent LDH closures, increasing water temperatures during the summer months, and the lengthy recovery process for oysters, it is reasonable to project that the overall

decrease in dockside value in the Pontchartrain Basin through March 2020 may exceed 50% of the annual average. According to LDWF, the average statewide dockside value of oysters is $80 million/year and 40% of all dockside value ($32 million/year) is generated in the Pontchartrain Basin. It is suggested that 50% of this figure be made available to commercial oystermen in southeast Louisiana.

Shrimp
Budget: $3,559,500

An estimated $680,000 in dockside value has already been lost in the Pontchartrain Basin since the Bonnet Carre' Spillway opening. According to LDWF, the average statewide dockside value of shrimp is $132 million/year and 8% of all dockside value ($10.5 million/year) is generated in the Pontchartrain Basin. It is suggested that 33.9% of this figure be made available to commercial shrimpers in southeast Louisiana.

Blue Crab
Budget: $4,958,500

An estimated $1,080,000 in dockside value has already been lost in the Pontchartrain Basin since the Bonnet Carre' Spillway opening. According to LDWF, the average statewide dockside value of crab is $54.5 million/year and 40.3% of all dockside value ($23.5 million/year) is generated in the Pontchartrain Basin. It is suggested that 21.1% of this figure be made available to commercial crabbers in southeast Louisiana.

Mississippi River Gulf Outlet Hydrologic Restoration
Fishery-Related Infrastructure
Budget: $500,000

Congress de-authorized the Mississippi River Gulf Outlet (MRGO) in 2006 and the USACE immediately began evaluating options for permanently closing the channel. After studying several alternatives, the USACE ultimately decided to close the MRGO to deep-draft and shallow-draft vessels by blocking the channel with a rock dam structure near Bayou La Loutre (USACE, 2007). The rock dam structure was constructed in 2012 and has since adversely impacted hydrology, salinity, and water quality in adjacent waterways. Additionally, when the Bonnet Carre' Spillway is open, the rock dam prevents freshwater from passing through the MRGO into the Chandeleur Sound, thereby intensifying and prolonging the negative impacts of low salinity and poor water quality between the dam and spillway. It is suggested that the rock dam be slightly modified for the purpose of restoring area hydrology, maintaining salinity levels, and improving water quality.

Mardi Grass Pass Closure
Fishery-Related Infrastructure
Budget: $40,000,000

Mardi Gras Pass (MGP) began forming in 2011 approximately 35 miles downriver from New Orleans when the Mississippi River overcame the failed Bohemia Spillway water

control structure and breached the adjacent natural levee. A new channel between the Mississippi River subsequently formed and by 2013, the river was discharging into adjacent waterways at up to 3,840 cubic feet/second (CFS) (Lake Pontchartrain Basin Foundation, 2013). According to the Bohemia Spillway and MGP *Hydrocoast* program monitors, the river was discharging into local waterways at a rate of approximately 45,000 CFS as of June 2019, indicating a dramatic increase in the size and flow capacity of MGP over the past several years (Lake Pontchartrain Basin Foundation, 2019). Consequently, the influence of the Mississippi River at MGP has drastically reduced salinity in local waterways and devastated oyster productivity in once prolific harvest areas such as Black Bay.

Historically, the Bonnet Carre' Spillway has been opened rather infrequently. Prior to 2008, the spillway had only been opened eight (8) times (1937, 1945, 1950, 1973, 1975, 1979, 1983, and 1997) (USACE, 2019). The Bonnet Carre' Spillway has since been opened five (5) times, including an unprecedented two (2) openings in 2019 (USACE, 2019). According to the US Global Change Research Program's (2018) *Fourth National Climate Assessment*, "the severity of compound events—the coupling of surge, discharge from rivers, and heavy precipitation—has increased…" and "warmer air temperatures have increased the probability of heavy precipitation events…" (329) It is therefore reasonable to assume that more frequent and intense Mississippi River flood events and Bonnet Carre' Spillway openings will occur in the future.

The Bonnet Carre' Spillway reduces flood risk for millions of people across hundreds of squares miles in southeast Louisiana. Undoubtedly, the spillway will continue being utilized in order to protect life and property throughout the region. However, MGP: 1) has no value as a risk reduction measure; 2) adversely impacts once productive oyster harvest areas; and 3) prevents oyster fishermen from utilizing alternate harvest areas that are a comfortable distance from the influence of the Bonnet Carre' Spillway. It is suggested that MGP be closed immediately in order to reduce the influence of the Mississippi River on the west side of the Pontchartrain Basin, thereby providing an alternate harvest area for oyster fishermen who will otherwise be directly impacted by future Bonnet Carre' Spillway openings.

IV. Long-Term Recovery, Mitigation, and Sustainability

The aforementioned emergency relief and short-term recovery interventions are intended to immediately restore the basic economic functionality of fisheries in southeast Louisiana. However, it is important that stakeholders ensure a successful long-term recovery from the current event while also planning to cope with future events. Investing in interventions that mitigate the impacts of future Bonnet Carre' Spillway openings will ultimately reduce the costs associated with subsequent recovery activities and foster the sustainability of commercial fishing, recreational fishing, and related industries for decades to come.

Table IV.1: Proposed Long-Term Recovery, Mitigation, and Sustainability Interventions

Title	Typology	Estimated Cost
FDERP Phase 2 (2020-2022 Oyster Fund)	Direct Assistance	$25,500,000.00
Southeast Louisiana Oyster Cultch Program	Habitat Restoration	$7,647,000.00
Southeast Louisiana Sustainable Fisheries Study	Research	$1,000,000.00
	TOTAL:	**$34,147,000.00**

FDERP Phase 2 (2020-2022 Oyster Fund)
Direct Assistance
Budget: $25,500,000

The purpose of the proposed FDERP Phase 1 (see pages 6 and 7) is to provide immediate financial relief to commercial fishing, recreational fishing, and related industries that were economically damaged during the Bonnet Carre' Spillway openings. The commercial component was calculated using recent changes in the value of dockside landings and projected losses through March 2020. However, it is anticipated that the oyster fishery in southeast Louisiana will likely take up to three years to recover.

FDERP Phase 2 (2020-2022 Oyster Fund) would be a claims-based relief program intended to address economic damages to the oyster fishery that occur after March 2020. According to LDWF, the average statewide dockside value of oysters is $80 million/year and 40% of all dockside value ($32 million/year) is generated in the Pontchartrain Basin. It is suggested that 25% of this figure ($8,000,000) be made available to commercial oystermen in southeast Louisiana each year from 2020-2022. A conservative lump sum figure ($500,000/year) has also been included to address economic damages sustained by related industries during the same time period.

Southeast Louisiana Oyster Cultch Program
Habitat Restoration
Budget: $7,647,000

In 2013, the Louisiana Trustee Implementation Group (LA TIG) selected the *Louisiana Oyster Cultch Project* as a Phase I Natural Resource Damage Assessment (NRDA) Early Restoration effort to compensate for the damages sustained by the oyster fishery during the Deepwater Horizon event. Six cultch placement sites were selected and once the installations were completed, LDWF monitored oyster recruitment and production in restored areas in order to assess performance against specific criteria. The project fostered an increase in oyster production across all test sites, proving the effectiveness of the intervention. Dredge sampling conducted in July 2014 and October 2014 confirmed the settlement of spat onto cultch material and high rates of survival. As of July 2014, the average area-weighted density of seed-sized oysters across all project sites had also exceeded the prescribed 20/square meter standard. (Deepwater Horizon NRDA Trustees, 2014)

The Louisiana Oyster Cultch Project is a model for oyster habitat and production recovery in southeast Louisiana. The long-term recovery and sustainability of the oyster fishery following the 2019 Mississippi River Flood will require a similar effort, although at a much larger scale. The proposed *Southeast Louisiana Oyster Cultch Program* (SELA-OCP) includes a strategy not only for recovering oyster habitat and production in those areas directly impacted by the recent flood event, but also aims to mitigate the impacts of future Bonnet Carre' Spillway openings by creating new oyster habitat and production opportunities on the west side of the Pontchartrain Basin at Black Bay. It is worth noting that proposed mitigation efforts at Black Bay are contingent upon the closure of MGP (see pages 7 and 8).

While the costs associated with oyster seed grounds restoration varies depending on the location, materials, and methods employed, SBPG used the previous Louisiana Oyster Cultch Project installation at Drum Bay (Biloxi Marsh) to develop preliminary cost estimates for SELA-OCP. The original Louisiana Oyster Cultch Project included a budget of $1,019,783.84 to place approximately 18,000 cubic yards of limestone (91.6 cubic yards/acre) on 200 acres of water bottom at the Drum Bay site, amounting to approximately $5,098/acre.

SBPG recently consulted with local commercial oyster fishermen regarding the benefits of the previous Drum Bay oyster cultch installation. The fishermen offered two critical recommendations: (1) the quantity of limestone per acre should be reduced in order to increase the overall acreage of future installations; and (2) any future installations should be accompanied by no less than a five-year prohibition on users removing the material for bedding purposes. The reduction in quantity of limestone per acre is supported by best industry practices on private oyster leases. With respect to the suggested five-year prohibition on bedding, both LDWF and the Lake Pontchartrain Basin Foundation have found that the cultch material installed during the previous Drum Bay effort was rapidly depleted after it was made available to the public (Hopkins & Lopez, 2016; LDWF, 2016; De Santiago & Lopez, 2018).

As a result of the input received from local commercial oyster fishermen, SBPG has incorporated two significant modifications to the proposed SELA-OCP: (1) the quantity of limestone per acre should be reduced by 50% from 91.6 cubic yards to 45.8 cubic yards, thereby reducing the cost per acre to $2,549; and (2) upon completion, LDWF should impose no less than a five-year prohibition on using the newly-installed material for bedding purposes. Additionally, it is recommended that licensed commercial oyster fishermen from the region be utilized to the extent practical and feasible for the purpose of identifying specific plant locations within each proposed area, as well as sourcing, transporting, and installing the cultch material for the life of the program.

The following public seed ground sites have been included in the proposed SELA-OCP:

Three Mile Bay (500 Acres)
Budget: $1,274,500

Karako Bay (500 Acres)
Budget: $1,274,500

Drum Bay (500 Acres)
Budget: $1,274,500

Morgan Harbor (500 Acres)
Budget: $1,274,500

Black Bay (1,000 Acres)
Budget: $2,549,000

Southeast Louisiana Sustainable Fisheries Study
Research
Budget: $1,000,000

The Water Resources Development Act (WRDA) of 2018 includes a provision that required the USACE to evaluate the manner in which the Old River Control Structure is operated in Louisiana. Similarly, the manner in which the Bonnet Carre' Spillway and Morganza Floodway are operated has become outdated and does not accurately reflect current and projected environmental conditions throughout the Mississippi River Basin.

It is proposed that an additional study be conducted as a supplement to the ongoing USACE Old River Control Structure study. The proposed study would address a number of related water management and fisheries issues in southeast Louisiana and should include a suite of recommended best practices and interventions regarding the following specific challenges in southeast Louisiana:

- Water management throughout the Mississippi River Basin in the United States and Canada;

- Operational management of the Bonnet Carre' Spillway and Morganza Floodway;

- Ongoing and future impacts of natural and planned freshwater diversions from the Mississippi River into southeastern Louisiana waterways; and

- Long-term sustainability of the eastern oyster, blue crab, brown and white shrimp, commercially and recreationally significant finfish, and bottlenose dolphin.

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Appendix D:
Environmental Justice and Social Vulnerability Considerations

Environmental Justice and Social Vulnerability Considerations

St. Bernard Parish is located in a dynamic and fragile coastal environment that may experience severe, permanent adverse impacts due to proposed largescale sediment diversions. St. Bernard Parish Government is particularly concerned with potential adverse impacts on the economy, population, housing and property values, tax revenues, public services, and community cohesion throughout the parish. Such adverse impacts would likely be more pronounced in communities located outside of the Hurricane and Storm Damage Risk Reduction System (HSDRRS). Those communities are natural resource-dependent and more likely to experience economic hardships due to changes in salinity and water quality. Communities located outside of the HSDRRS will also likely experience an increased risk of flooding due to tidal and storm surge events. Low-income (45% of the parish), impoverished (21.3% of the parish), and racial/ethnic minority (27.3% of the parish) residents are likely to be disproportionately impacted by the entire range of potential adverse effects associated with largescale sediment diversions (US Census Bureau, 2021; Environmental Protection Agency, 2022a).

Louisiana's Working Coast

In the Coastal Protection and Restoration Authority's (CPRA) most recent iteration of *Louisiana's Comprehensive Master Plan for a Sustainable Coast* (State Master Plan), the agency highlights St. Bernard Parish's critical role on Louisiana's *working coast*. The plan specifically references the economic significance of commercial fishing, oil and gas, and shipping in Louisiana. GNO, Inc. (2022) has since identified St. Bernard Parish as a critical hub in each of these sectors. In addition to being core components of the state and local economy, commercial and recreational fishing are culturally significant in the parish. St. Bernard Parish is home to many historic fishing communities and the last permanent settlement of the *Islenos*, descendants of Canary Islanders who first arrived in the area approximately 250 years ago. Unfortunately, hazards (natural and anthropogenic) and environmental degradation constantly threaten the sustainability of St. Bernard Parish's vast economic and cultural resources.

Risk Profile

St. Bernard Parish is the second largest parish in Louisiana based on total area and more than 80% of the parish is water (GNO, Inc., 2022). According to CRPA (2017), 94% of the parish is included in a Special Flood Hazard Area (SFHA). CPRA identifies St. Bernard Parish as one of the most vulnerable coastal communities in Louisiana and projects that the parish may lose 72% (237 square miles) of its remaining coastal wetlands over the next 50 years (CPRA, 2017). The Federal Emergency Management Agency (2022) National Risk Index indicates that St. Bernard Parish's overall level of risk is above the national and state averages. According to St. Bernard Parish Government's (2020) most recent hazard mitigation plan, there have been 14 significant flood events in the parish since 1989 and the annual probability of future occurrence is 47%.

Environmental Justice Considerations

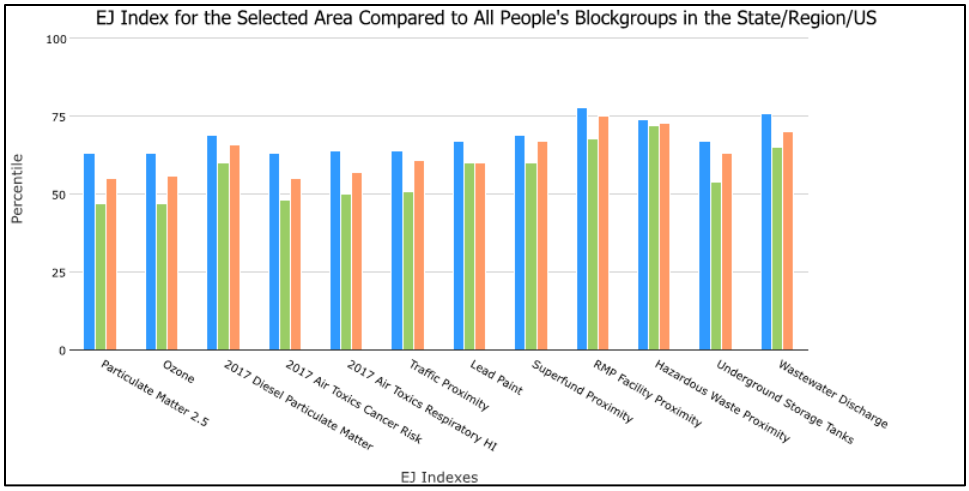
The Environmental Protection Agency (2022b) defines *environmental justice* as:

> The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice considerations are particularly important in natural resource-dependent *fishing communities* as defined in the Magnuson-Stevens Fishery Conservation and Management Act: "geographic areas encompassing a specific locale where residents are […] substantially dependent or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs" (Shaw & Conway, 2007, p. 12). Such communities rely heavily upon favorable environmental laws, regulations, and policies, but are typically unable to effectively influence environmental policy (Shaw & Conway, 2007). This phenomenon makes places like St. Bernard Parish more vulnerable to the adverse environmental impacts associated with largescale public infrastructure projects and industrial activities. Over the past 65 years, the parish has been adversely impacted by many projects and activities that have caused drastic environmental degradation, the loss of life and/or property, and litigation.

Event	Impacts	Legal Response
Oil and Gas Exploration (1978-ongoing)	Coastal land loss and increased vulnerability	SBPG v. ARCO et al. (ongoing)
MRGO Construction (1956-1968)	Coastal land loss and increased vulnerability	See below re: Betsy and Katrina
MRGO and Levee Failures (Hurricane Betsy, 1965)	Loss of life and property	Graci v. US (dismissed in 1977)
Caernarvon Freshwater Diversion (1991-ongoing)	Loss of property	Various lawsuits (1994-2005)
MRGO and Levee Failures (Hurricane Katrina, 2005)	Loss of life and property	SBPG v. US (dismissed in 2018)
Murphy Oil Spill (2005)	Loss of property	Murphy Oil Spill Settlement (2007)
Deepwater Horizon Explosion and Oil Spill (2010)	Loss of property	BP Oil Spill Settlement (2015)

According to the Environmental Protection Agency (2022a) *EJ Screen* tool (see chart below), St. Bernard Parish residents are also disproportionately exposed to a wide range of environmental hazards other than flooding.



State Percentile
Regional Percentile
US Percentile

Social Vulnerability Considerations

Vulnerability has been defined as "the characteristics of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from" adverse impacts (Wisner et al., 2004, p. 11). *Physical* vulnerability includes many of the place-based factors described above in the Risk Profile, including proximity to hazard sources and the likelihood of experiencing impacts to life and property. *Social* vulnerability factors include race, class, gender, political influence, and access to critical resources (Cutter, Boruff, & Shirley, 2003). The table below highlights some of the critical social vulnerability factors in St. Bernard Parish based on area demographics (US Census Bureau, 2021; Environmental Protection Agency, 2022a).

Attribute	St. Bernard Parish
Racial/Ethnic Minorities	27.3%
Female Persons	51.0%
Persons 65 Years and Over	12.0%
Disabled Persons Under Age 65	14.0%**
Median Household Income	$47,873*
Per Capita Income	$22,999*
Low Income	45%**
Persons in Poverty	21.3%**

* Below state average
** Above state average

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