BAYOU BIENVENUE WETLAND TRIANGLE ASSESSMENT

Overview of the history of the Bayou Bienvenue Wetland Triangle in the Lower 9th Ward, community vision for restoration, physical conditions of the area, and accounting of restoration initiatives

Prepared by the National Wildlife Federation

September 2025
Cover Photo: John Taylor

Bayou Bienvenue Wetland Triangle
Restoration Assessment

Acronyms

BBWT	Bayou Bienvenue Wetland Triangle
CIAP	Coastal Impact Assistance Program
CPRA	Coastal Protection and Restoration Authority
CRMS	Coastwide Reference Monitoring System
CSED	Lower Ninth Ward Center for Sustainable Engagement and Development
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
CWRC	Central Wetlands Reforestation Collective
CWU	Central Wetlands Unit
EPA	Environmental Protection Agency
GIWW	Gulf Intracoastal Waterway
HSDRRS	Hurricane & Storm Damage Risk Reduction System
IHNC	Inner Harbor Navigation Canal
MRGO	Mississippi River Gulf Outlet
NMFS	National Marine Fisheries Service
SWBNO	Sewerage & Water Board of New Orleans
USACE	United States Army Corps of Engineers
WRDA	Water Resources Development Act

Introduction: The Importance of Bayou Bienvenue Wetland Triangle

"Welcome to the Bayou Bienvenue Wetland Triangle. It is the only part of the Central Wetlands system that is located in the Lower 9th Ward. What is now open water used to be an old–growth swamp that was filled with cypress trees, water lilies, and freshwater wildlife such as fish, alligators, otters, birds, and crawfish. Since the completion of the Mississippi River Gulf Outlet (MRGO) shipping channel in the 1960s, salt water has intruded into the wetland area, causing the cypress trees to die off and changing the wildlife species from freshwater to saltwater.

For the community of the Lower 9th Ward, the swamp was a place to fish, catch turtles for soups, go crawfishing, and explore as a kid. Many wild foods were harvested from the bayou as was the cypress wood for building materials in the community.

FIGURE 1 LOCAL BBWT EXPERT, JOHN TAYLOR

There is an ongoing effort to restore the wetlands to their natural state, so that future generations will have a place to go that is still wild in the middle of a city. Restoring this swamp would bring back an incredible resource which would be accessible to all people, including Lower Nine residents, citizens of Louisiana, and visitors." **– John Taylor (1947-2023), lifelong resident of the Lower 9th Ward** (pictured above)

The Bayou Bienvenue Wetland Triangle (BBWT) is a remnant of a once great Mississippi River Delta swamp located in Orleans Parish, Louisiana. The BBWT represents 400 acres of nearly 30,000 acres of wetlands known as the Central Wetlands Unit. The Central Wetlands spans across large areas of the parishes of Orleans and St. Bernard (Figure 2). As recently as the 1960s, a freshwater cypress-tupelo swamp extended from New Orleans eastward to Lake Borgne. But more than a century of levee and canal construction converted this freshwater swamp into an open-water brackish marsh, with only cypress "ghosts" (dead cypress tree trunks) and the memories of some of the areas older residents' remaining.

FIGURE 2 BAYOU BIENVENUE WETLAND TRIANGLE (MARKED IN YELLOW) IS 400 ACRES OF THE NEARLY 30,000 ACRES CENTRAL WETLANDS UNIT THAT SPANS ORLEANS AND ST. BERNARD PARISHES. BBWT IS THE ORLEANS PARISH SIDE OF THE CENTRAL WETLANDS.

A portion of the Lower 9th Ward was built on the drained bottom of the cypress-tupelo swamp. What remained "back of town" (closest to the wetland triangle) was a vital resource for the community, providing fish, game, wood, and recreation. As man-made environmental change occurred in the area, this natural resource was lost. Notably, the Mississippi River Gulf Outlet (MRGO), a nearby shipping channel completed in the 1960s, brought salt water into the freshwater wetlands, killing the trees, eroding the land, and destroying tens of thousands of acres of protective wetlands that buffered communities like the Lower 9th Ward.

Wetlands, especially forested wetlands, can act as "horizontal levees" – reducing the height and speed of storm surges and sheltering man-made levees from waves[1]. During Hurricane Katrina in 2005, the levees along the MRGO were decimated by storm surge, leading to catastrophic flooding of the nearby communities.

[1] Burns, R. "Nature-based solutions extend the lifespan of a regional levee system under climate change," (2025).

Despite having higher elevation than much of New Orleans, the Lower 9th Ward experienced the deepest, most catastrophic flooding in the metro area. According to a 2009 report, this extensive flooding was attributed in part to the MRGO[2].

In the wake of Hurricane Katrina, two structures (a surge barrier and a rock dam) closed the MRGO channel and helped reduce saltwater intrusion into the area. Closing the MRGO was the first step toward restoration. But after more than two decades, many neighborhoods, like those of the Lower 9th Ward, still await the full restoration of their communities. This restoration is critical for a more holistic recovery from Hurricane Katrina.

Restoration plans for the ecosystem impacted by the MRGO include restoring the Bayou Bienvenue Wetland Triangle. Thanks to advocacy from residents who fished and played here as children, Bayou Bienvenue has become a focus of national interest, a representative of the regional crisis, and a beacon of hope for solutions[3]. Less than five miles from downtown New Orleans, this special place has served as a classroom, a laboratory, a gathering place, and a window to the threatened landscape.

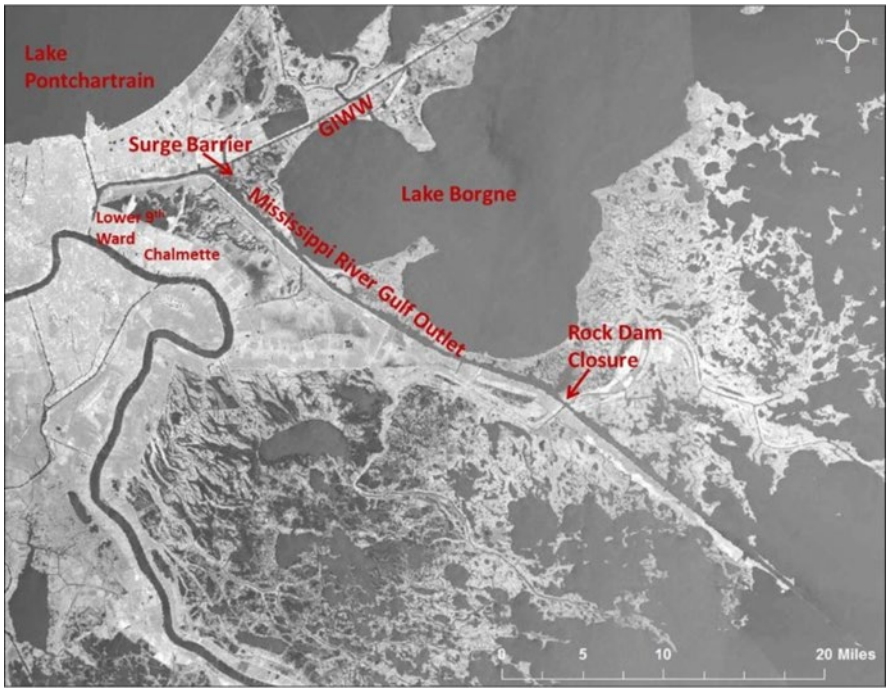

FIGURE 3 MAP OF MRGO AND NOTABLE FEATURES, SOURCE: DIANE JONES ALLEN

Historical and Social Context to Inform Future Efforts

Before the arrival of the French in the late 1600s, archaeological evidence shows that hunters and gatherers inhabited the BBWT area for over a thousand years. Bayou Bienvenue got its name during initial French occupation. By the early1800s, New Orleans was the center of the North American

[2] van Heerden, I. "How a Navigation Channel Contributed to Most of the Flooding of New Orleans During Hurricane Katrina." (2009)
[3] Wiltse, A. "Sustaining the Nine." https://www.nola.com/gambit/news/sustaining-the-nine/article_24c1337a-4f4b-5608-b4a4-5a13e6391f90.html, 2007.

slave trade. During this time Bayou Bienvenue became the home of Maroons, formerly enslaved people who liberated themselves[4]. The Maroons lived a communal life in the swampy waters and marsh of the bayou. They exchanged knowledge with the Indigenous Chitimacha tribe, learning basketry and pottery from the indigenous tribe[5].

FIGURE 4 MAP OF NEW ORLEANS SHOWING BAYOU BIENVENUE, 1815 (CREDIT LIBRARY OF CONGRESS)

Bayou Bienvenue has played important roles in US and global history. Notably, Bayou Bienvenue was the pathway famously used by British soldiers in 1815 when they approached New Orleans (and then retreated) in the War of 1812[6]. The British ships were staged in Lake Borgne. This same area was also used to extensively test the "Higgins boat," an amphibious landing craft, which is credited as "the boat that won World War II," a key factor in Allied forces success at D-Day in Normandy and other crucial campaigns[7].

After the Civil War, the 9th Ward was inhabited by relatively poor residents because the swamp habitat was affordable. In the early 20th century, the City of New Orleans expanded and drained off the land near Bayou Bienvenue, beginning significant development of the Lower 9th Ward[8]. It was at this time that the Industrial Canal was constructed to connect Lake Pontchartrain to the

[4]Allen, D.J. "Living Freedom Through the Maroon Landscape." (2022)
[5] Jones, D. "Living Freedom Through the Maroon Landscape," Places, 2022.
[6] https://www.nps.gov/jela/learn/historyculture/battle-of-new-orleans.htm
[7] https://www.nationalww2museum.org/war/topics/higgins-industries
[8] Lewis, P. "New Orleans: The Making of an Urban Landscape." (2003)

Mississippi River for navigation, bisecting the area into the Upper and Lower 9th Wards. By the 1950's the MRGO was under construction. This deep draft channel funneled saltwater from the Gulf of Mexico to the freshwater swamp of Bayou Bienvenue, forever changing the triangle and surrounding area. Today, Bayou Bienvenue is known as a "ghost swamp" due to the dead cypress tree remains across the landscape. This decimation of wetlands and protection eventually correlated to a major population loss in the Lower 9th Ward. Prior to Hurricane Katrina, in 2000, the population of the Lower 9th Ward was over 14,000 people. The population was decimated after the storm and 20 years later, in 2025, the population only reached 5,000 residents[9].

Understanding of Physical Conditions and Considerations for Project Planning in a Dynamic Coastal Ecosystem

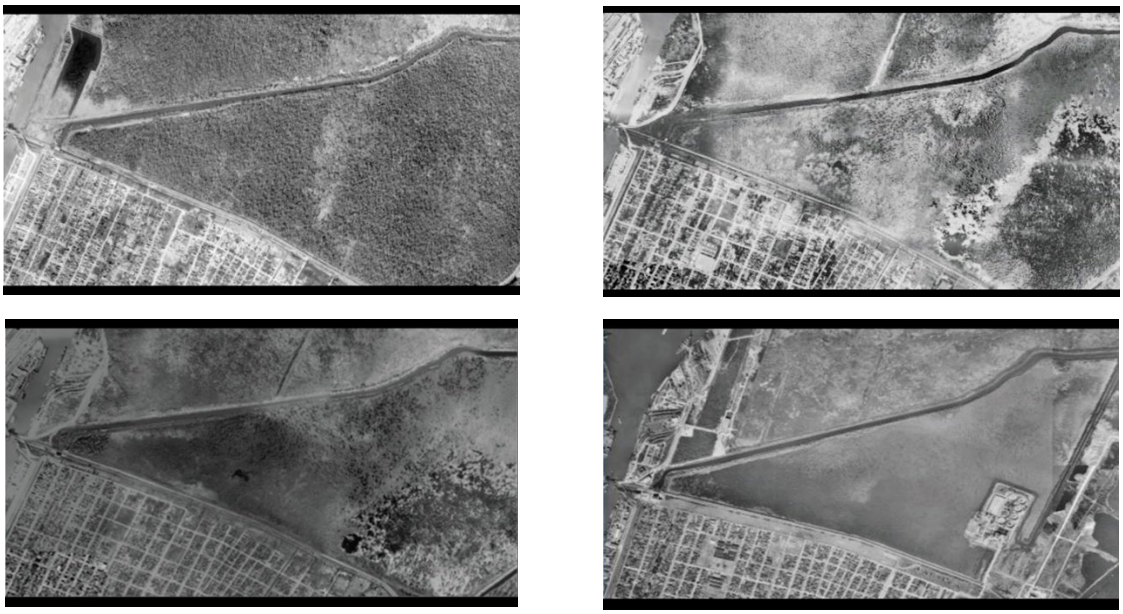

FIGURE 5 BAYOU BIENVENUE WETLAND TRIANGLE, LEFT TO RIGHT, 1933, 1952, 1960, 1976

The Bayou Bienvenue Wetland Triangle has experienced extreme condition changes over the last 75 years or so. Historically, it was a freshwater cypress-tupelo swamp, with herbs, otters, alligators and other freshwater species. The swamp was an important resource for many centuries, but with construction of the Mississippi River Gulf Outlet, the area rapidly degraded to an open water "ghost swamp" with persistent salinities above 5ppt, which is lethal to the once abundant baldcypress[10]. With the closure of the MRGO in 2009, salinities dropped across the vast ecosystem impacted by the MRGO. Today, salinities in the triangle are in the range of 0.5 ppt and we are seeing the return of species like crawfish and lilies for the first time in decades. In recent years, manatees have been

[9] https://www.datacenterresearch.org/data-resources/neighborhood-data/district-8/lower-ninth-ward/
[10] Shaffer, G. "The MRGO Navigation Project: A Massive Human-Induced Environmental, Economic, and Storm Disaster." (2009)

sighted in Bayou Bienvenue. In September 2025, a manatee was sighted in the bayou between Paris Road and the MRGO[11].

The BBWT has some tidal influence. The BBWT is connected to Lake Pontchartrain via the Seabrook floodgate on the Industrial Canal, and to the GIWW and Lake Borgne via the two gates in the HSDRRS. While there are no tidal gages in the BBWT, nearby tidal gages in the GIWW, in the INHC near the Seabrook Bridge, and near the Bayou Dupre Sector gate show diurnal tides with a typical range of less than 3 feet.

The Bayou Bienvenue Wetland Triangle Story

Developments Leading to Current Project

After the MRGO saltwater intrusion killed off the baldcypress water tupelo swamp, community interaction with the triangle waned. Without any accountability from the Federal government, the community lost a valuable resource and an important part of the history of the area. By the time Hurricane Katrina hit in 2005, most community members and the City had largely forgotten about the area. The Lower 9th Ward was one of the hardest hit communities in Katrina – with catastrophic storm surge funneling up the MRGO, breaking levees and sending a wall of water into communities[12]. Homes were wiped from their foundations by the violent flooding. Hundreds of lives were lost. Families were displaced. The Lower 9th Ward was forever changed.

Soon after the storm, recovery and rebirth were top of mind in New Orleans. The Lower 9th Ward embraced a vision of resilience and worked to come back stronger. U.S. and global leaders, celebrities, non-profits, and disaster recovery groups from across the country took an interest in the neighborhood. This interest brought innovation and resources to assist community leaders with their vision and begin the recovery. Community leaders embraced the understanding that the community was surrounded by three bodies of water: the Mississippi River, the Industrial Canal, and the Mississippi River Gulf Outlet. They sought resilience to flooding, energy efficiency, and a reduced carbon footprint. The Lower 9th Ward's efforts were remarkable and forward-thinking.

Part of the community recovery was the idea that the wetlands should be tied back into the neighborhood. This became a rallying cry. As the community planned the rebuilding of the Lower 9th Ward, reconnecting the community with the wetlands and building awareness took off as part of the vision thanks to community leaders and advocates like Pam Dashiell and Steve Ringo[13]. Pam Dashiell was the founder of the Lower 9th Ward CSED and an outspoken activist for environmental justice in the New Orleans area. Steve Ringo was a longtime Lower 9th Ward resident, environmentalist, and visionary for reconnecting the bayou to the community[14].

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[11] Miller, C. Personal Communication, September 18, 2025.
[12] Shaffer, G. "The MRGO Navigation Project: A Massive Human-Induced Environmental, Economic, and Storm Disaster." (2009)
[13] University of Wisconsin – Madison. "The Bayou Bienvenue Wetlands Triangle: Issues affecting the restoration of a former cypress-tupelo swamp." (2009)
[14] Wiltse, A. "Sustaining the Nine." https://www.nola.com/gambit/news/sustaining-the-nine/article_24c1337a-4f4b-5608-b4a4-5a13e6391f90.html, 2007.

One of the first steps toward this vision was restoring access and rebuilding awareness about the BBWT. Architects from University of Colorado who were studying the area worked with the community to design a platform to sit atop the Forty Arpent levee and overlook the wetlands. After many meetings with the local levee district and the Corps of Engineers, the platform was built in early 2008 with funds from the university and private foundations[15]. A community effort, the platform was built with support from residents and community-based organizations. The platform is located at the intersection of Florida Avenue and Fats Domino Avenue in the Lower 9th Ward.

A fire destroyed part of the platform in 2009, but only a few days went by before neighborhood leaders, community-based organizations, and academics studying the triangle had it repaired to the structure standing on the levee today.

The platform quickly became a major destination, not just for Lower 9th Ward residents who fish there and take in the view of the cypress "ghost" swamp, but for residents throughout New Orleans, political leaders, and busloads of visitors from around the world. Just five miles from the French Quarter, the platform provided a critical portal to the coast and was a vivid reminder of what is happening to the Mississippi River Delta and how it impacts the people who live there. Educational signage was placed at the platform in 2013 to allow for frequent visitors to learn more about the area and how to support restoration efforts.

FIGURE 6 STUDENTS, COMMUNITY LEADERS, STATE OFFICIALS, AND MEDIA AT ONE OF THE MANY GATHERINGS HELD AT THE BAYOU BIENVENUE WETLAND TRIANGLE PLATFORM, 2013

Today, access to the platform has been cut off from visitors due to development of the Sankofa Wetland Park and Nature Trail in the median between the Forty Arpent levee and Florida Avenue. There is strong community desire to restore access as demonstrated by long-standing community

[15] www.RestoretheBayou.org (2013)

support of the reconnection to the BBWT, recent community shows of support, and other communications with decision-makers[16].

Complementing the community vision and reconnection to the wetlands, restoration efforts in and around the BBWT have been steadfast since Hurricane Katrina. Unfortunately, substantial restoration has yet to be attained. In 2007, Congress mandated that the Army Corps close the MRGO and develop a plan for restoration. The Army Corps' MRGO Ecosystem Restoration Plan includes restoration of the BBWT and recreational features. The Louisiana Coastal Master Plan includes restoration of the BBWT. Several Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) projects have been proposed in the triangle to create and restore marsh and improve hydrology. Attempts to lower salinity through wastewater assimilation have been tested. Demo projects like floating islands have been built. Community plantings have happened along the edges of the bayou for years. All of these plans and projects reflect BBWT because of community engagement and support. Yet, none of the larger scale projects for the triangle have fully come to fruition. These restoration and community engagement efforts are detailed in this assessment.

Physical History and Current Conditions of the Area

Long-term monitoring data is limited over time in the Bayou Bienvenue Wetland Triangle is limited. The Coastwide Reference Monitoring System (CRMS), a monitoring system designed and provided by the U.S. Geological Society (USGS) and the Louisiana Coastal Protection and Restoration Authority (CPRA), has three stations (CRMS3639, CRMS3641, CRMS3664) in the Central Wetlands Unit, all along Bayou Dupre in St. Bernard Parish. These stations give us some sense of the shifting conditions, including salinity, water level, belowground biomass, and dominant vegetation in the area, but are not directly indicative of conditions in the BBWT. These stations indicate that there has been a roughly 6.1 centimeter (2.4 inches) increase in marsh elevation in the area since 2009. Vegetation surveys at the sites do vary but indicate generally marsh classification shifting from consistently brackish marsh to intermediate marsh in recent years[17]. The most recent and significant salinity and elevation monitoring in the BBWT occurred via a Coastal Wetlands Planning, Protection and Restoration (CWPPRA) scoping process conducted in 2014. This effort, led by EPA, and the Pontchartrain Conservancy, conducted research that same year for a Central Wetlands restoration assessment.

The opening of the Mississippi River Gulf Outlet in the 1960s marked a dramatic shift in the physical conditions in the BBWT, quickly killing the cypress-tupelo swamp due to saltwater intrusion brought by the MRGO (Table 1)[18]. Closure of the MRGO in 2009 with a permeable rock dam across Bayou la Loutre in St. Bernard Parish marked another dramatic shift in physical conditions that exceeded the predictions of the Army Corps. Salinities dropped not just in the BBWT, but throughout the Pontchartrain Basin as far north as Manchac[19] (see Figure 7). The decrease in surface water salinity was found to be slowly reducing soil salinity, readying the area for restoration

[16] Moore, A. Personal Communications, 2023-2025.
[17] Coastal Protection and Restoration Authority (CPRA) of Louisiana. 2025. Coastwide Reference Monitoring System-Wetlands Monitoring Data. Retrieved from Coastal Information Management System (CIMS) database. http://cims.coastal.louisiana.gov. Accessed 15 September 2025.
[18] Shaffer, G. "The MRGO Navigation Project: A Massive Human-Induced Environmental, Economic, and Storm Disaster." (2009)
[19] Lopez. J, et al., "MRGO: The Road to Recovery." (2020)

efforts. There have not been any additional surface water and soil salinity measurements taken in the BBWT since 2015. However, between 2015 and 2024, the average surface water salinity measured at the CRMS sites was less than 3 ppt and soil salinity has likely decreased as well[20]. 2022 monitoring by Comite Resources indicated soil salinity decrease across the BBWT[21].

Soil conditions in the BBWT are likely similar to those found at nearby CRMS sites. At all three stations, the Natural Resources Conservation Service Soil Type is described as Lafitte Muck, a very poorly drained, moderately rapidly permeable organic soil in the Gulf Coastal Marsh. Bulk density of the soils at CRMS3639 and CRMS3641 are low, (less 0.2 g cm^{-3}) and organic content is high (greater than 35%). At CRMS3664 the bulk density of the soils is somewhat higher (0.49 g cm^{-3}), and the soil organic content is less than 20% [22]. The low bulk density and higher organic content of the soils that are likely found in the BBWT may provide restoration challenges. In addition, the tree stumps that remain from when the area was a swamp forest, along with other debris that may have been deposited in the area by hurricanes may provide additional restoration challenges.

Table 1. Physical Conditions of BBWT Over Time

Time Period	**BBWT Conditions**		
	Habitat	**Salinity**	**Water Depth**
1935	Baldcypress-Tupelo Swamp	0-1 ppt	No known data
1956 (MRGO completed 1968)	Baldcypress-Tupelo Swamp	0-1 ppt	No known data
1978	Open Water	No known data	No known data
2008	Open Water	Up to 11 ppt	2-3 ft
2014 (MRGO closed 2009)	Open Water	0.5-1 ppt (soil salinity 4-8 ppt)	2-3 ft
2022	Open Water	0.7-1.3ppt (soil salinity 0.4-2.4ppt)	2-3 ft

Sources: CRMS, USACE, Pontchartrain Conservancy, University of Wisconsin – Madison, Comite Resources

[20] Coastal Protection and Restoration Authority (CPRA) of Louisiana. 2025. Coastwide Reference Monitoring System-Wetlands Monitoring Data. Retrieved from Coastal Information Management System (CIMS) database. http://cims.coastal.louisiana.gov. Accessed 15 September 2025.
[21] Lane, R. Sankofa Wetland Park 2022 Monitoring Report. 2023.
[22] Coastal Protection and Restoration Authority (CPRA) of Louisiana. 2025. Coastwide Reference Monitoring System-Wetlands Monitoring Data. Retrieved from Coastal Information Management System (CIMS) database. http://cims.coastal.louisiana.gov. Accessed 15 September 2025.

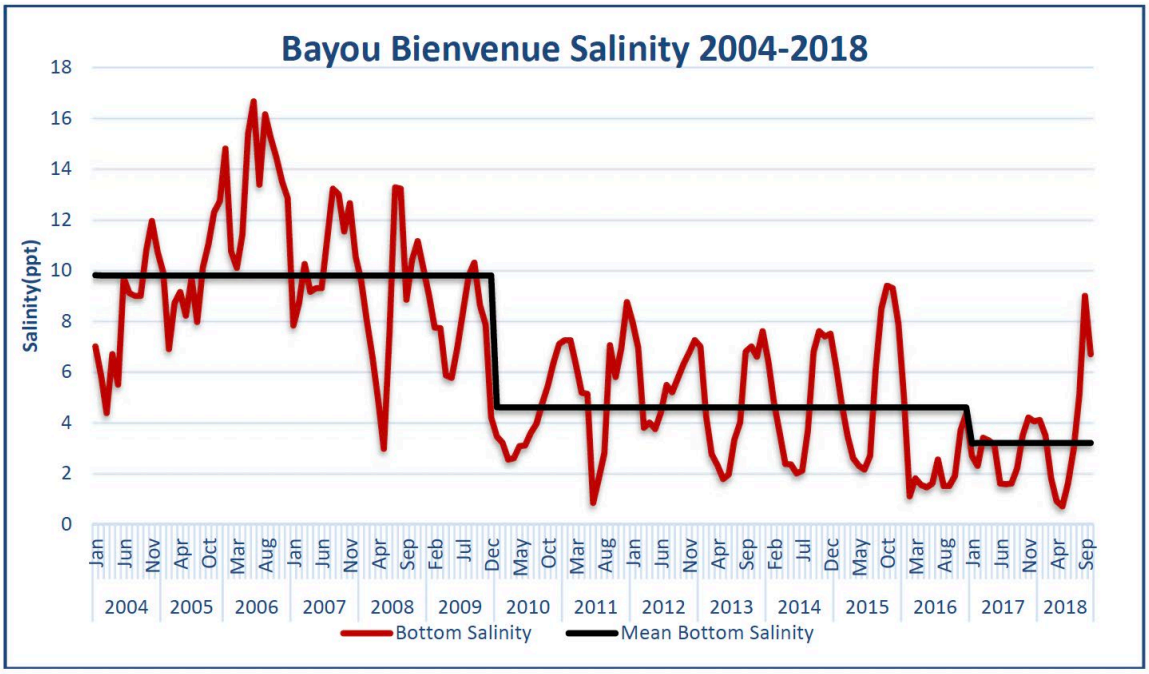

FIGURE 7 BAYOU BIENVENUE SALINITY 2004-2018, SOURCE: LOPEZ, J. ET AL.

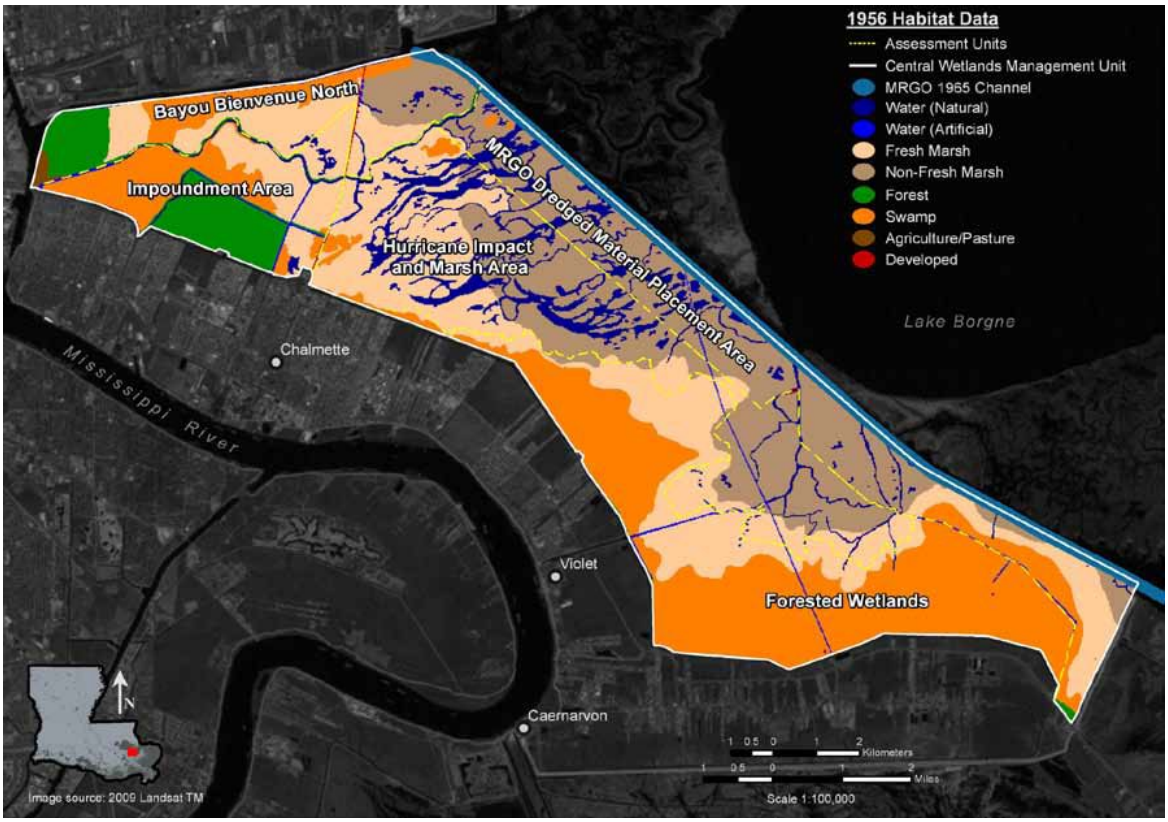

FIGURE 8 MRGO CENTRAL WETLANDS ASSESSMENT 1956 HABITAT, SOURCE: USACE

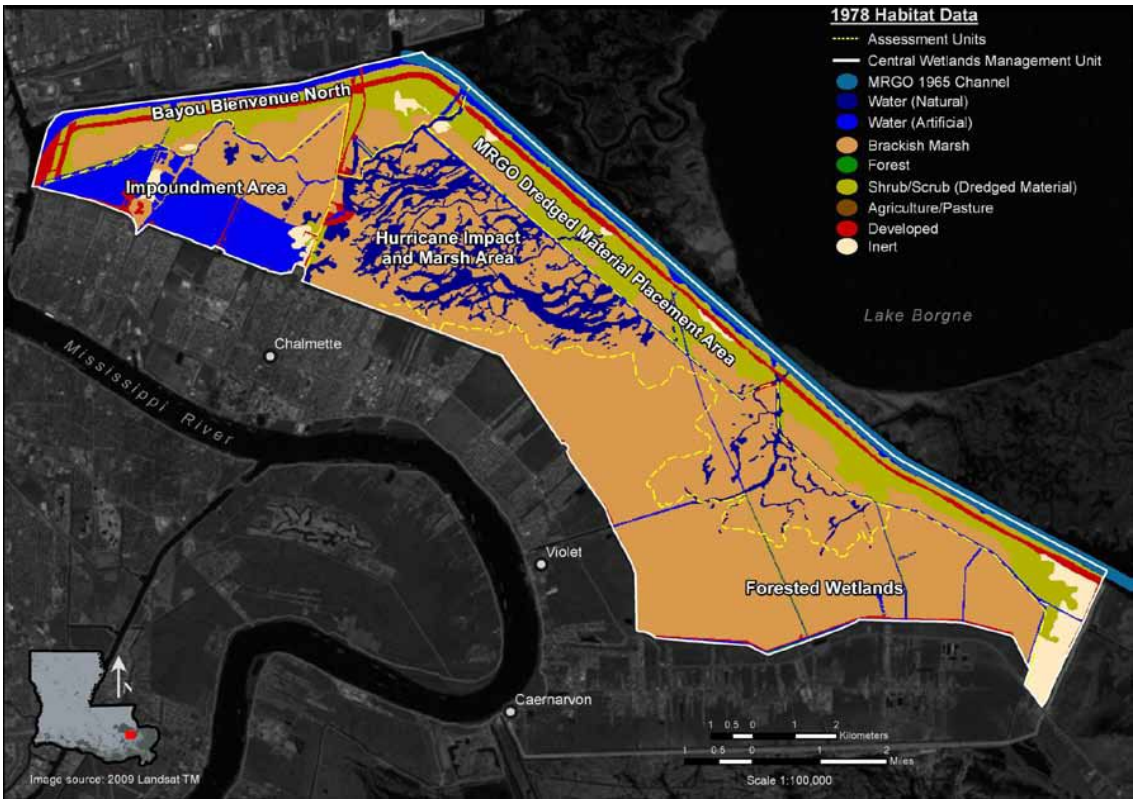

FIGURE 9 MRGO CENTRAL WETLANDS ASSESSMENT 1978 HABITAT, SOURCE: USACE

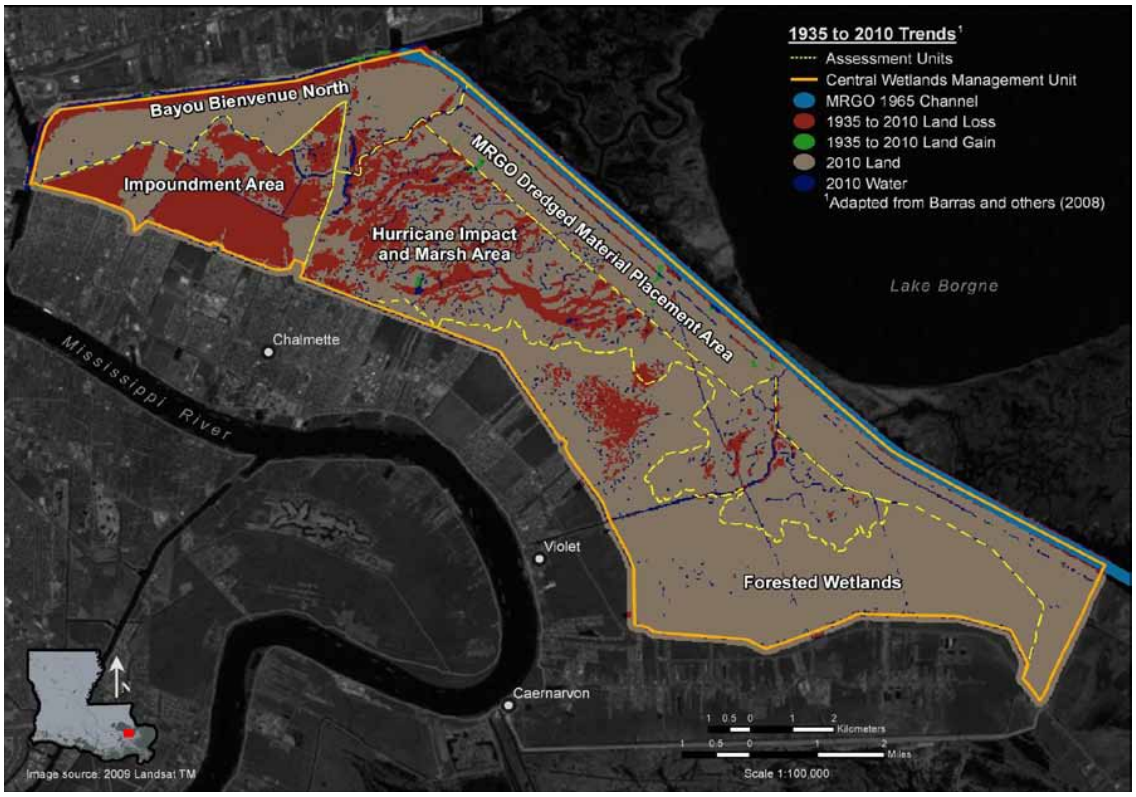

FIGURE 10 MRGO CENTRAL WETLANDS ASSESSMENT 1935 TO 2010 TRENDS, SOURCE: USACE

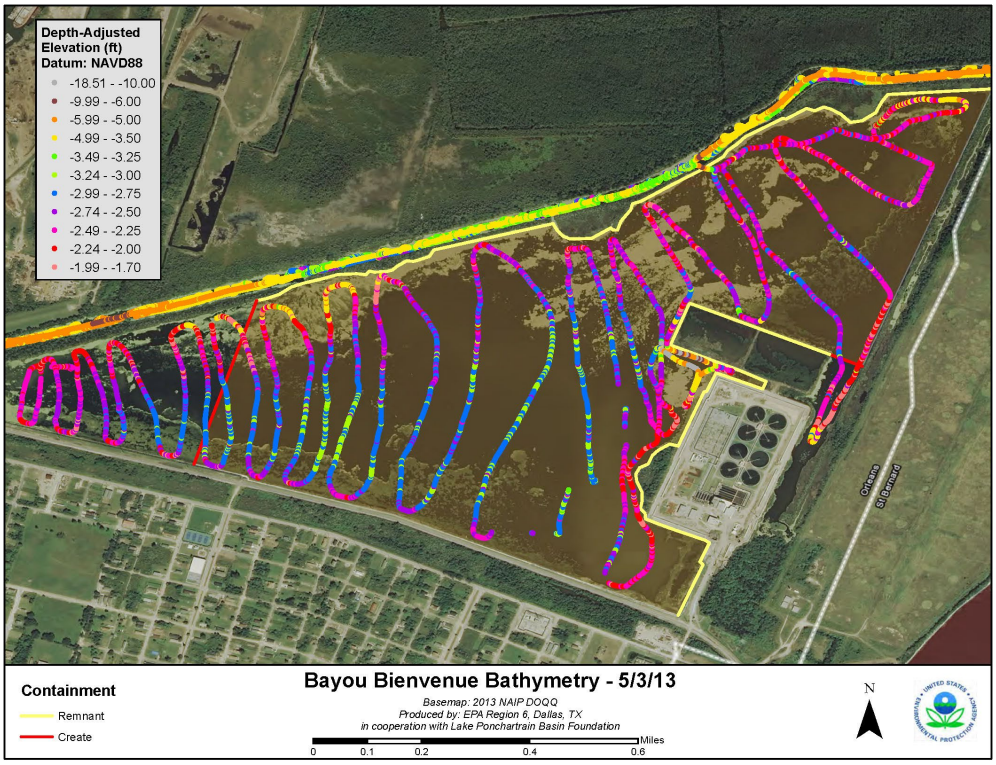

FIGURE 11 BAYOU BIENVENUE BATHYMETRY 2013, SOURCE: EPA

Resource constraints

Land ownership

The BBWT is a "paper subdivision" with nearly 200 landowners, including individuals, private companies, and public agencies[23] (see Figure 12). The City of New Orleans owns the rights-of-way. The majority of owners are individuals and many lots are in various stages of tax delinquency. Oftentimes, lot owners are unaware that they own the lots. Private companies have many of the more recent land purchases in BBWT. Acquiring land for restoration purposes is possible with sufficient funds for title research and acquisition[24]. Options for acquiring land rights may include conservation or use easements in addition to purchasing title.

[23] University of Wisconsin – Madison. "The Bayou Bienvenue Wetlands Triangle: Issues affecting the restoration of a former cypress-tupelo swamp." (2009)
[24] Nurturing the Lower 9. 64Parishes.org. (2018)

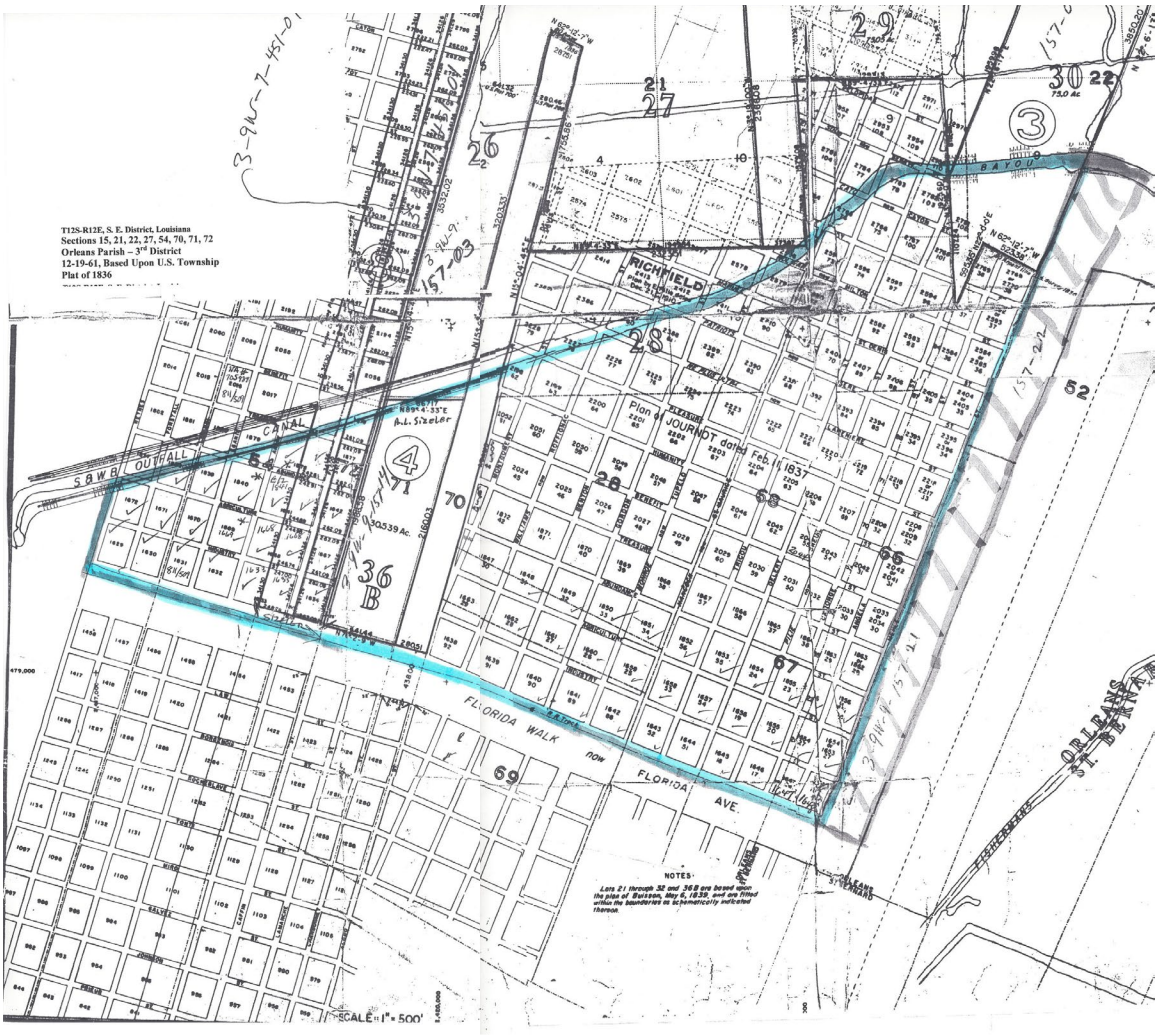

FIGURE 12 BAYOU BIENVENUE WETLAND TRIANGLE LOTS

Sediment availability

There are a few options for sediment sources in BBWT. In-situ borrow (building-up elevation from sediment dredged within the BBWT) for plantings and creating channels (potentially for small boats and kayaks). The Mississippi River is another primary source of sediment. Several proposals have recommended dredging and piping sediment from the Mississippi River, notably the CWPPRA 2014 proposal (PPL24, EPA), which scoped the option and recommended a pipeline location. Beneficial Use of Dredge Material is another option that has often been explored from the IHNC/Port of New Orleans maintenance dredging. Another option that's been suggested is dredging and hauling river sediment deposited in the Bonnet Carré spillway after openings.

Access

After Katrina, the primary access point for the public was the Bayou Bienvenue platform overlook at the foot of Fats Domino Avenue at Florida Avenue. Thousands of people - dignitaries, students, international scholars, locals, national media, federal officials – used this site after Katrina. This access is now cut off due to the Sankofa Wetlands Park project. The other main access point is at the Sewerage and Water Board water treatment plant, which runs adjacent to the Crescent Acres

Landfill (closed in 1992) that forms the eastern boundary of the triangle. This access point is private and requires permission for gate opening.

Data Gaps

While CRMS stations located near the Violet Canal provide some insight into the water levels, surface water salinity, dominant vegetation types, and surface elevation, there has been limited data collection in the BBWT. The last data collection that could be found for the BBWT was in 2013/2014 and was conducted by the Pontchartrain Conservancy and EPA. Data gaps in the BBWT include present-day soil salinity, water level, surface water salinity, rates of surface accretion, and geotechnical properties of soils (shear strength, compressibility, permeability, and density). This information could provide important context to refine restoration and evaluate potential restoration action and likelihood of success.

Restoration Projects

Even before Hurricane Katrina, restoration projects were proposed for BBWT. In the 1990s, the National Marine Fisheries Service proposed a diversion and marsh terrace project in the triangle through the CWPPRA program. It made the priority project list but was later deauthorized because soil conditions were deemed too poor for terrace construction.[25]

Since Hurricane Katrina, many projects have been proposed in BBWT, but little restoration work has come to fruition for various reasons, mostly involving lack of funding or prioritization. Many projects impacted by the MRGO outside of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) have advanced to construction, presumably because of the projects protecting the HSDRRS itself. With BBWT behind the HSDRRS, competitive funding has been difficult to secure.

[25] Louisiana Coastal Wetlands Conservation and Restoration Task Force. “18th Priority Projects Report.” (2009)

FIGURE 13 EPA PREPARES TO PADDLE BAYOU BIENVENUE WETLAND TRIANGLE FOR CWPPRA SCOPING, 2010

Notable project proposals and concepts are detailed in Table 2. One promising project in the triangle was a 2014 CWPPRA proposal, which also advanced through scoping but did not make it to construction, which is determined by a vote amongst several local and federal government entities. However, this scoping effort provided valuable data post-MRGO closure in the BBWT. Other efforts include looking at the area as a potential mitigation site, urban waters grant efforts, a potential diversion from a lock, beneficial use of dredged material from the river side IHNC forebay maintenance dredging near St. Claude, an underground SWBNO tunnel in L9 for routing a dredged pipe for marsh creation, demo projects, an SWBNO terracing project, and incorporating restoration into the 2012 MRGO Ecosystem Restoration Plan[26] and Louisiana Coastal Master Plans since 2012[27].

Currently in its third year of implementation, the Central Wetlands Reforestation Collective (CWRC) has had a broad impact on the Central Wetlands Unit through reforestation, advocacy, and engagement. By the end of the 4-year project, CWRC will have planted 60,000 native plants in the Central Wetlands Unit and engaged over 2,000 volunteers in an effort to restore the degraded marsh habitat back to its historic ecosystem of a Cypress Tupelo Swamp. In Bayou Bienvenue specifically, CWRC has planted 7,250 native trees and 14,200 plugs of native grasses and pollinator plants since 2023. Through the engagement of over 1000 local and national volunteers, the plantings have been a point of education and advocacy for the BBWT, the Central Wetlands Unit, and broader issues of wetland loss and the importance of our natural ecosystems. CWRC is made of the Coalition to Restore Coastal Louisiana, Pontchartrain Conservancy, Common Ground Relief, The Center for Sustainable Engagement and Development, and The Joseph and Arlene Meraux Foundation and funded by CPRA and NOAA.

[26] U.S. Army Corps of Engineers. "Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Plan." (2012)
[27] State of Louisiana. "Louisiana's Comprehensive Master Plan for a Sustainable Coast." (2012)

Table 2. Key Projects - Proposed, Planned, Ongoing, Implemented

Project	Status	Summary	Timeline	Lead	Challenges	Links
Bayou Bienvenue Pump Station Diversion and Terracing	Deauthorized (2002)	Construction calls for managing stormwater discharged from three pumping stations. By diverting freshwater into natural marshes and through a system of planted marsh terraces to be created by the project, wetland growth will be promoted, salinity spikes will be reduced and general environmental conditions will be improved.	1999 approved	NMFS - CWPPRA	Poor soil conditions for terrace construction	CWPPRA site Feasibility Study
Bayou Bienvenue Marsh Creation	Proposed/Not chosen	Sediment from the Mississippi River will be hydraulically dredged and pumped via pipeline to create/nourish approximately 351 acres of wetlands. To help stabilize the new marsh platform, approximately half of the project area (176 ac) will be planted after construction.	2014	EPA-CWPPRA	Not selected after scoping	Project Map
Floating Islands	Various implemented	Create floating islands of marsh grass, anchored in BBWT, to allow vegetation to grow and eventually root into the soils of BBWT. This avoids land rights issues by using rights of way owned by the government.	2009	Univ. of Wisconsin, City of New Orleans	As of 2025 all islands have died off	2009 launch media
Central Wetlands Wastewater Assimilation Project	Implemented (incomplete)	14 acres demonstration project – two containment cells constructed adjacent to the Sewerage and Water Board site in BBWT to receive wastewater discharge to control salinity. Cells have been planted with cypress tupelo trees, but no wastewater has been discharged because salinity levels have gone low enough on their own to sustain the trees.	2007-present	CIAP/ SWBNO	No wastewater discharge to date. Slow progress.	Project description and map Presentation
MRGO Ecosystem Restoration Plan	Planned, Ongoing	400 acres of cypress restoration in the Bienvenue Triangle. Approximately 2.6 million cubic yards of silty sand material to be obtained from the Mississippi River between river miles 84.45R and 83R.	2012-present	USACE	Implementation delayed. Funding and land rights.	MRGO Feasibility Study
Central Wetlands Marsh Creation	Planned, Ongoing	Creation of marsh within a footprint of approximately 3,800 acres in Central Wetlands near Bayou Bienvenue to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	2012-present	CPRA	Not currently advancing. No project manager.	Project factsheet
Central Wetlands Reforestation Collective	Ongoing	Planting over 33,000 native trees and 30,000 plugs of marsh grass across the Central Wetlands Unit, including BBWT.	2019-present	CRWC		CWRC site (Figure 14)

Post-Katrina Community Engagement and Vision

Projects

After Hurricane Katrina in 2005, the community rallied around reconnecting to the wetlands. With the BBWT platform overlook being built a few years after the storm, the community raised the visibility of the story of wetland loss and increased vulnerability of the community. The platform told a powerful story. Looking in one direction, you saw the BBWT, a 400-acre ghost swamp and its remnants of a once mighty cypress-tupelo swamp. Turning 180 degrees, you saw the widespread devastation of a community – lots with only foundations left, overgrowth, and destroyed roadways. In many ways, it was a display of cause and effect. It told the story not just of the BBWT, but of coastal Louisiana.

This awareness about what had happened to put the community at such great risk quickly turned into action. The issue of the Mississippi River Gulf Outlet and the need for closure and restoration was widely understood throughout the Lower 9th Ward and the entire Greater New Orleans area[28]. It was the topic at neighborhood meetings. Several community-based organizations formed with wetland restoration and resilience as key drivers. One of those organizations was the Lower 9th Ward Center for Sustainable Engagement and Development (CSED), founded by community members Charles Allen and Pam Dashiell. Pam was also a founder of the MRGO Must Go Coalition, formed in 2006 to join resources and networks and prompt action to see the MRGO closed and impacted wetlands restored. MRGO Must GO is an informal group of 19 organizations spanning community to national reach that still advocates for restoration today.

It wasn't just the community and non-profits engaging in the recovery of the area. Many academics studied what happened[29]. Why did the levees break? What role did MRGO play in the catastrophic devastation of communities like the Lower 9th Ward? Attorneys got involved. Community members sued the Federal government[30]. Congress acted. In the Water Resources and Development Act of 2007, Congress called on the Army Corps to close the MRGO channel and develop a plan for restoration. At the same time, borne from the lessons of the harrowing 2005 hurricane season, the State of Louisiana decided to prioritize restoration and formed a coastal protection and restoration agency to do just that. One of their tasks was developing a coastal master plan every five years (now every six years) to strategically guide their coastal efforts.

During the 1970s, the Army Corps worked to locate a new ship and barge lock along the Mississippi River to join with the MRGO shipping channel. By 1990, the new lock location search had moved away from St Bernard Parish to Orleans Parish and adjacent to the Inner Harbor Navigation Canal Lock in use since 1923. Within a year, the search had moved away from the river and further into the IHNC to what the EPA had earlier identified as a toxic zone. It became a toxic struggle, with the community objecting to disturbing the toxins in the canal bottom for a new ship lock. The Corps sampled the sediment in the canal that was to be excavated, reporting safe results. The community

[28] Bayou Sundance. https://youtu.be/AEyFX_4Q2Es?si=N0rBhVEfdKLA4FSp (2012)
[29] Shaffer, G. "The MRGO Navigation Project: A Massive Human-Induced Environmental, Economic, and Storm Disaster." (2009)
[30] Court: Army Corps Not Liable for Katrina Floods. Morning Edition. www.NPR.org (2012)

then hired their own independent scientist who showed very different results and subsequently, the community sued the Corps in 2000. At the time of Hurricane Katrina, the lawsuit was still being decided, eventually siding with the community. In 2008, as part of a new design for the lock project, the Corps released a Confined Disposal Facility Conceptual Design Report that proposed placing toxic dredged sediment from the lock expansion along Bayou Bienvenue adjacent to the BBWT[31]. This was ultimately an unsuccessful proposal due to many variables, including the area being part of an ongoing Army Corps Ecosystem Restoration study[32]. The project was then suspended in 2011. In 2015, a small amount of funds were allocated to review the project, resulting in a draft General Reevaluation Report in 2017, which was reintroduced to the community by the Corps in May 2025. The footprint of this project is still in the contaminated area. A new project concept was presented from the Army Corps. It did not ultimately advance. In late 2024, another IHNC lock expansion study was initiated by the Corps, again to great pushback from the Lower 9th Ward community[33].

The Army Corps' Mississippi River Gulf Outlet Ecosystem Restoration Plan and the State's Coastal Master Plan represented major opportunities to plan and advance restoration in the BBWT. The Lower 9th Ward community was a leader in engagement with the Army Corps throughout the multi-year planning process, requesting several community meetings, formal public hearings, and hosting field trips for federal officials in the Lower 9th Ward. This resulted in a recreational plan being developed by the Army Corps for BBWT and the triangle being slated for restoration in the Corps' final plan in 2012[34].

The 2012 Louisiana Coastal Master Plan was a milestone for Louisiana restoration because, for the first time, the state ran models and took public feedback to prioritize a funding capped Coastal Master Plan. Organized by MRGO Must Go, the majority of the public comments submitted for the 2012 Coastal Master Plan explicitly called for inclusion of the BBWT in the plan[35]. This was a very important moment for the triangle, because consistency with the Coastal Master Plan guides all coastal resources in Louisiana. Because of the public support and the importance of restoration in the triangle, which can be more sustainable and resilient to sea level rise due to the impounded nature of the area, the BBWT has been included in every coastal master plan since 2012. The community has hosted the Louisiana Governor's Advisory Council, taking them on tours of the community and showing restoration needs. Today, a Lower 9th Ward leader sits on that council.

Other project proposals have moved ahead, with a 2014 CWPPRA proposal being a standout. The $34 million project proposed using a pipeline to pump sediment dredged from the Mississippi River to restore 276 acres of wetlands and the bank line of Bayou Bienvenue. The EPA put the project forward and worked with community leaders to shape the plan. They kayaked BBWT with

[31] U.S. Army Corps of Engineers. Confined Disposal Facility Conceptual Design Report Appendix E. (2008)

[32] Water Protection Network Public Comments, https://waterprotectionnetwork.org/wp-content/uploads/2015/09/DraftEIS_Comments_ConservationGroups_-Industrial_Lock_1-26-09.pdf (2009)

[33] Lubben, Alex. (2024, Dec. 23). Plan to replace New Orleans' Industrial Canal lock being revived. Neighbors are pushing back. *Times Picayune*.

[34] U.S. Army Corps of Engineers. "Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Plan." (2012)

[35] State of Louisiana. Appendices G4, G5. "Louisiana's Comprehensive Master Plan for a Sustainable Coast." (2012)

community leaders and collected samples. Several local organizations formally supported the project.

After the Deepwater Horizon oil spill in 2010, billions of dollars in restoration funding went to the federal Restore Council to administer funds for restoration. The Lower 9th Ward Community hosted the head of the Council, talking about the need for restoration to protect the community and taking him on a field trip to the platform.

Of all of these planning efforts, none have yet resulted in project implementation. The 2014 CWPPRA proposal made it to the final round of consideration, competing with projects across the coast, and it was ultimately not chosen. The Army Corps' MRGO projects were stalled for over a decade due to a state and federal dispute about who must pay for MRGO Ecosystem Restoration. Congress once again acted in WRDA 2022 to clarify that the cost of construction for implementation of the Army Corps' MRGO Ecosystem Restoration Project is 100% federal[36]. Today, southeast Louisiana communities are still awaiting plan implementation. BBWT is slated for a later implementation phase in the Louisiana Coastal Master Plan and has no assigned project manager.

Finally, many planting projects have been implemented by community members over the years since Hurricane Katrina. These planting efforts are important not only from an ecological restoration perspective, but they are also critical to growing the understanding about what is happening to the habitat surrounding communities and what needs to be done to restore it. As more plantings happen and organizations work together to share knowledge, the survival rate of plants increases. With salinity conditions lower due to closure of the MRGO, the area is more ready than it has been in decades to sustain vegetation, and it is responding well to community-driven efforts.

[36] CPRA Applauds Passage of the Water Resources Development Act of 2022. www.coastal.la.gov. (2022)

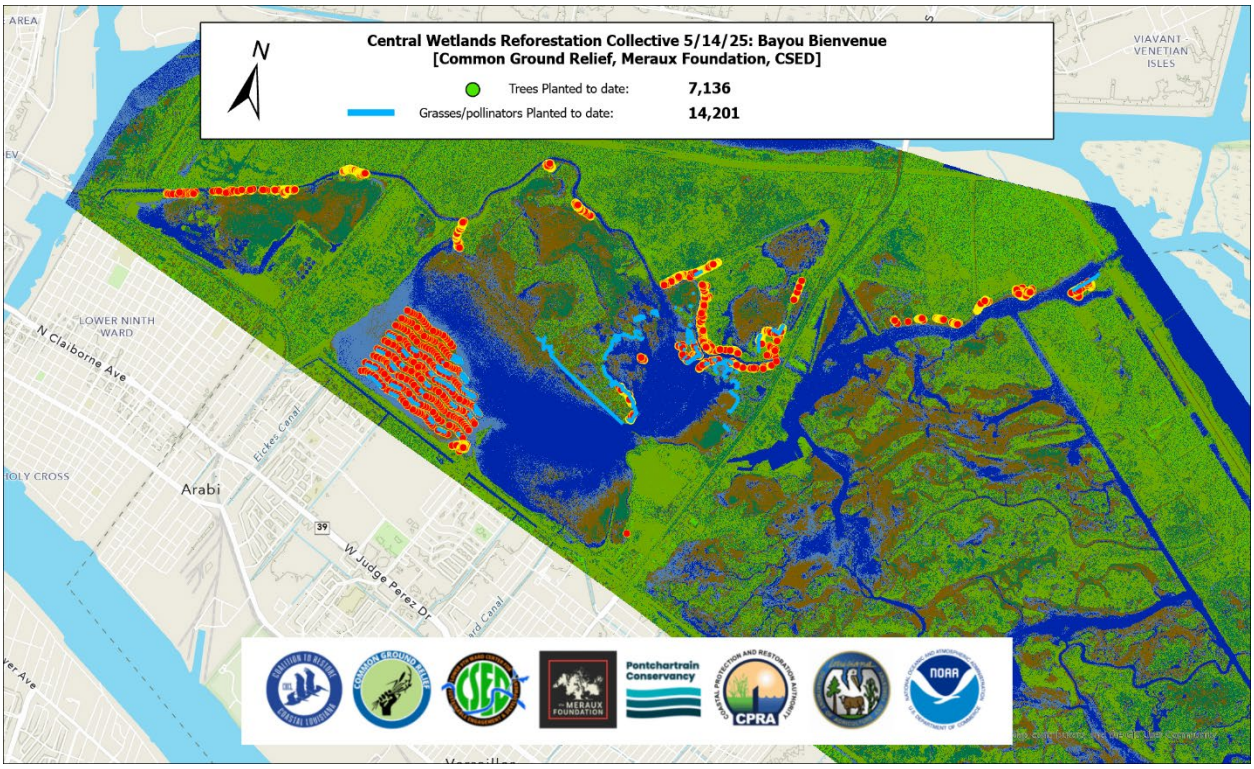

FIGURE 14 CENTRAL WETLANDS REFORESTATION COLLECTIVE, PLANTINGS BY COMMON GROUND RELIEF, MERAUX FOUNDATION, CSED, 2025

Vision

The vision for restoring BBWT is not one singular idea, of course. Fortunately, over the years, perspectives of many community stakeholders have been recorded. We've heard from elders who know the BBWT better than anything else on Earth, local children, Federal agencies, and fishermen who experience the system differently further down the watershed. Some stakeholders want the BBWT back to what it was, as much as possible[37]. That would be a cypress-tupelo swamp, teaming with wildlife and beauty. Some simply want a functioning ecosystem that is healthy, respecting the change that has occurred to the area even if it's unjust and unfair. Agency plans have tended to conclude that a little of both are possible. After Katrina, the Army Corps worked with the community, joining many conversations about the future of BBWT. They often spoke with the community about pumping in sediment to construct what would initially look like a moonscape, but would eventually be home to cypress and tupelo trees. Recreational access was also a major part of the plan, with sketches proposed in their restoration plan submitted to Congress[38].

[37] What to Do with Bayou Bienvenue. https://www.wwno.org/tags/bayou-bienvenue NPR. (2014)
[38] U.S. Army Corps of Engineers. "Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Plan." (2012)

FIGURE 15 USACE MRGO ECOSYSTEM RESTORATION PLAN, LOWER 9TH WARD BIENVENUE TRIANGLE RECREATION FEATURE, SOURCE: USACE

The themes that permeate throughout most stakeholder visions are as follows:

Wetland/Marsh Restoration – Most visions include significant restoration of the marsh back to the cypress swamp or otherwise healthy marsh that has restored hydrology to lower and stabilize water and soil salinity and allow some tidal flow.

Ecosystem Services – Absorption of heavy rainfall flooding events, wildlife and plant habitat (biodiversity), recreational access, and educational space are the services desired from restoration.

Community Engagement/Ownership – Community ownership and engagement have been at the heart of the restoration efforts around BBWT. The efforts have been largely led by the community, with outside assistance helping to advance plans and projects for BBWT. The platform, for instance, was considered a communal, public space with no outright ownership. In the restoration efforts, it is important that the community remains at the forefront of the planning process and is also involved in the actual implementation, operations, and monitoring of the area both as primary stakeholders but also as economic beneficiaries. Any work that can be done locally or involve the community to have a paid role in restoration efforts should be considered.

Education and Recreation Opportunities – The BBWT has been embraced as both a place to fish, birdwatch, kayak, and simply relax in a natural setting. Enhancing this access with a boardwalk to dock, proper access and upkeep are important to the future of the area. Likewise, academia, school-age scholars, non-profits, and other researchers have also frequented BBWT over the years

as an education and research area. This educational aspect can continue to enhance community STEM education opportunities and be a site for more advanced research efforts as well. The education and recreation aspects of restoration are critical to the inclusivity and long-term success of any efforts to restore BBWT.

At both the project kickoff meeting in June 2025 and the CSED Intern meeting in July 2025, local leaders and stakeholders (both adult and youth stakeholders) discussed:

1. priorities and opportunities related to recreation (past uses and opportunities for the future),
2. specific plants and animals that existed in the BBWT in the past and ones that exist currently/the relationships between plants/animals and the BBWT as it has evolved, and
3. potential impacts of restoration on businesses and the economy (both positive and negative).

Ideas for recreation opportunities included walking and/or biking trails, fishing, kayaking, birdwatching, outdoor seating, and educational opportunities. Stakeholders also discussed the need to prioritize public access to Bayou Bienvenue in order to make any of these recreation opportunities a reality, noted the importance or coordinating efforts with St. Bernard Parish's plans for installing bike trails, and highlighted opportunities for wildlife and other research in and around Bayou Bienvenue.

Conversations around restoration included the idea that restoration in Bayou Bienvenue will not only bring back habitat but also draw in more visitors to the area. Stakeholders noted that with such rapid ecosystem change within the last few years, there is a heightened need to address invasive species like water hyacinth.

Acknowledging significant overlap in priorities between future recreation and economic impacts, stakeholders discussed economic opportunities like kayak tours and other types of ecotourism that could bring economic opportunities to the communities surrounding Bayou Bienvenue, but also noted potential negative impacts like increased traffic and issues with parking, construction impacts, and gentrification risks.

Key Takeaways to Consider as Planning Proceeds

As we move forward with project planning in the Bayou Bienvenue Wetland Triangle, the community vision and values, clearly expressed over decades of engagement, must be at the forefront of the restoration efforts. Without community support, engagement, and ownership, the long-term success of any project will be in jeopardy. Likewise, the dynamic physical conditions and extensive past planning efforts remain relevant for future projects. Understanding how the landscape has changed and why, as well as the reasons for many failed attempts at a major project in the area, is essential for planning purposes.

Range of Future Conditions

The full range of future conditions that may impact the BBWT remains uncertain. Rising sea levels will increase salinity in the area over time, but how much or how fast sea level rise will rise remains uncertain. Over the next 30 years, subsidence will likely dominate the relative sea level rise signal, but as global sea level rise accelerates (due to human-driven climate change) that will eventually

overtake subsidence as the major driver of relative sea level rise. The region is also currently experiencing land loss due to natural and manmade factors, and the resulting change in landscape in the area near the BBWT may increase the amount and frequency of saline water from the Gulf in the area. Changes in rainfall can also be expected and may lead to higher intensity rainfall events followed by drought conditions, causing salinity to shift between fresher and more saline conditions. Finally, storm frequency and intensity may also increase. While the BBWT is enclosed by levees, more intense storms could lead to levee overtopping, pushing higher salinity water into the BBWT.

Nearby Relevant Projects

Several projects have been recently completed or are under construction in the areas surrounding Bayou Bienvenue Wetland Triangle.

Ducks Unlimited marsh terraces are being built in the adjacent cell to BBWT in the Central Wetlands Unit. Their first project, **Meraux Foundation Terraces**, went to construction in 2022 and completed in the fall of 2023 with a project dedication[39]. This project enhanced 200 acres via the construction of ~29,000 linear feet of earthen terraces. The project also includes a planting component that happened after construction, but most vegetation was volunteer. The project was funded via a North American Wetlands Conservation Act grant. Additional financial supporters include National Wildlife Federation, James M. Cox Foundation, St. Bernard Parish Government, Meraux Foundation, Delacroix Corporation, Yamaha Marine, and other DU donors. CPRA was also a partner on this project due to in-kind match contributions to the NAWCA grant.

Ducks Unlimited is beginning a phase II project alongside the Meraux Foundation Terraces in 2025. **Forty Arpent Canal Central Wetlands Enhancement II** construction will consist of earthen terraces (linear marsh islands) near Chalmette, Louisiana to enhance approximately 700 acres of brackish marsh. This work is also located on the adjacent Central Wetlands cell to BBWT on property owned by the Meraux Foundation, Mid-South Land Corp, and Viking Land Holdings, LLC and is a continuation of the above-mentioned marsh terracing project. Approximately 50,000 linear feet of earthen terraces will be constructed in shallow open water and planted with appropriate marsh vegetation. The objective of Tract 1 is to create emergent marsh, enhance water quality for submerged aquatic vegetation, and create edge habitat in open water that was historically a freshwater wetland.

The Louisiana Coastal Protection and Restoration Authority (CPRA) has completed several large-scale projects that are relatively near BBWT. The **Golden Triangle Marsh Creation project** is a $54million, approximately 600 acres marsh creation project in the Golden Triangle[40]. The project lies near the mouth of Bayou Bienvenue and is just outside of the **IHNC Surge Barrier** (completed in 2013 for over $1billion as part of the HSDRRS system and closure across the top of the MRGO)[41].

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[39] Spotlighting Coastal Protections. https://www.ducks.org/newsroom/spotlighting-coastal-protections Ducks Unlimited. (2023)

[40] Golden Triangle Marsh Creation. https://cims.coastal.louisiana.gov/outreach/projects/ProjectView?projID=PO-0163 Coastal Protection and Restoration Authority. (2025)

[41] IHNC-Lake Borgne Surge Barrier. https://www.floodauthority.org/wp-content/uploads/2018/04/Info-Sheet-IHNC-Surge-Barrier.pdf The Flood Protection Authority.

The Golden Triangle project was completed in 2024. Complementary marsh creation projects to Golden Triangle along Bayou Bienvenue have been proposed through CWPPRA but have not advanced.

CPRA is currently in engineering and design on the **Central Wetlands Hydrologic Restoration Project**, funded by the National Fish and Wildlife Foundation at $10 million. This project will design the hydrologic restoration of approximately 15,898 acres of coastal wetlands by gapping spoil banks and creating approximately 8 acres of marsh or swamp habitat. The project will also entail planting of thousands of native plants by volunteers engaged through local non-governmental organizations. The outcome of the design phase of this project will be the completion of a bid package acquisition of land rights and completion of permitting. The next steps for this project would be implementation, primarily cutting open gaps, maintaining the gaps, and mitigating any wetland impacts. CPRA is the anticipated lead in project execution moving forward.

The **Central Wetlands Reforestation Collective** (CWRC) is transforming the Central Wetlands Unit through reforestation, advocacy, and engagement. Over four years (culminating in 2026), CWRC will have planted 60,000 native plants in the Central Wetlands Unit and engaged over 2,000 volunteers in an effort to restore the degraded marsh habitat back to its historic ecosystem of a Cypress Tupelo Swamp. In Bayou Bienvenue specifically, CWRC has already planted 7,250 native trees and 14,200 plugs of native grasses and pollinator plants since 2023. Through the engagement of over 1000 local and national volunteers, the plantings have been a point of education and advocacy for the BBWT, the Central Wetlands Unit, and broader issues of wetland loss and the importance of our natural ecosystems. CWRC is made of the Coalition to Restore Coastal Louisiana, Pontchartrain Conservancy, Common Ground Relief, The Center for Sustainable Engagement and Development, and The Joseph and Arlene Meraux Foundation and funded by CPRA and NOAA.

Finally, the replacement of the **Inner Harbor Navigation Canal (IHNC) Lock** and expansion of the lock have been proposed by the Army Corps of Engineers since the 1980s. This project runs just north of BBWT and has seen various iterations, lawsuits from the community (which were successful) and various proposed impacts on BBWT. Notably, after Hurricane Katrina, the IHNC project proposed to use the area adjacent to BBWT as a containment area for toxic sediment dredged from the IHNC. This proposal version was beaten back by the Lower 9th Ward community and allies. In 2025, a new IHNC lock replacement and expansion project has resurfaced, with less direct impacts on BBWT, but still with heavy impacts to the Lower 9th Ward community and strong, organized opposition.[42]

Future uncertainties

Project Coordination

As project planning proceeds in the BBWT, ongoing projects and planning processes in the BBWT area and adjacent areas must be considered. Coordination in both public engagement and resource sharing to ensure the most efficient use of time and capacity for all stakeholders and

[42] U.S. Army Corps of Engineers. "Supplemental Draft Integrated General Reevaluation Report and Supplemental Environmental Impact Statement" (2025)

project teams will be critical. Data sharing can be coordinated through bi-annual Central Wetlands stakeholder meetings (ad hoc meetings and coordinated presentations have been occurring since 2023) and regular communication as needed. This coordination will help leverage capacity and lead to the strongest outcomes.

Major planning processes to consider include the Army Corps of Engineers Mississippi River Gulf Outlet Ecosystem Restoration Plan, which had been stalled for over a decade, but is now beginning planning and design in the vicinity of BBWT. The Corps' plan also includes restoration of BBWT and other areas of the Central Wetlands. The Louisiana Coastal Protection and Restoration Authority's Central Wetlands Hydrologic Restoration Project and complementary planting projects like the Central Wetlands Reforestation Collective will directly impact BBWT and must be planned in coordination to find synergies and leverage resources. Likewise, adjacent projects such as Ducks Unlimited Marsh Terraces will help indicate project best practices, conditions, and lessons learned that can be applied to BBWT efforts.

Funding

Public engagement and engineering and design for a BBWT restoration project has secured funding through grants from the National Oceanic and Atmospheric Administration and the National Fish and Wildlife Foundation. Past 60% engineering and design, funds will be needed to complete the design phase and project implementation. Potential fund sources include the Army Corps of Engineers as they implement the MRGO Ecosystem Restoration Plan and Louisiana CPRA as they implement the Coastal Master Plan. CPRA can use GOMESA (offshore energy revenue) funds toward BBWT. Funding options include federal grants from the National Fish and Wildlife Foundation, U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration.

Resource Library (forthcoming)