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# SLC STATE EFFORTS TO REBUILD THE COASTLINE

*A REGIONAL RESOURCE FROM THE SLC*

by SLC Policy Analyst Anne Roberts

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**H**urricane Katrina made landfall on the Gulf Coast on August 29, 2005, damaging thousands of homes and businesses, decimating public infrastructure, and displacing hundreds of thousands of Gulf Coast residents.<sup>1</sup> The coastal communities of Southern Legislative Conference (SLC) member states Alabama, Mississippi and Louisiana were devastated. The resiliency of these coastal communities is of critical economic importance to the nation, as they provide a large portion of the nation's oil and gas supply, host key port complexes and provide vital habitats for economically important fisheries.<sup>2</sup>

In the nearly 10 years that have elapsed since this disaster, much attention has focused on the rehabilitation of the area's homes, businesses and infrastructure. However, less attention has been targeted to the reconstruction of the coastlines of Alabama, Mississippi and Louisiana. In order to maintain a sustainable Gulf Coast, investments in sound redevelopment and restoration practices, balancing the critical natural resources of the Gulf Coast with the equally vital economic drivers in the region are critical to full recovery and necessary to weakening future natural disasters. This *SLC Regional Resource* highlights projects undertaken by these states to rebuild their coastlines, focusing on the communities of Dauphin Island, Alabama; Pascagoula, Mississippi; and the metropolitan area of New Orleans, Louisiana.

## Previous Hurricane Mitigation Efforts

Though Alabama, Mississippi and Louisiana are Gulf Coast neighbors with similar resources, they have prioritized different forms of economic development and have divergent hurricane mitigation approaches. Louisiana and, specifically, the New Orleans Metropolitan Area, has long relied on a series of levees for protection from river- and hurricane-related floods. Alabama and Mississippi have emphasized structural protection - such as seawalls and elevated buildings - that do not impede oceanfront access.

Historically, Alabama and Mississippi have encouraged development that permits easy beach access. This emphasis has resulted in a hurricane mitigation policy that focuses on structural security. In Alabama, building codes require beachfront structures to be built high on pilings. Hurricane mitigation trends also include installing hard structures, such as bulkheads, seawalls, or rip-rap,<sup>A</sup> on the shoreline to protect waterfront property from erosion and storm surge.<sup>3</sup> In Mississippi, experiences with storms prior to Hurricane Katrina have resulted in modifications to building codes and land use specifications, including the early creation of a 26-mile, 10-foot high seawall designed to act as a storm barrier.<sup>4</sup>

<sup>A</sup> Rip-rap is a foundation or sustaining wall of stones or chunks of concrete amassed without order.

Despite damage caused by previous storms, coastal communities continued to rebuild on shorelines. In June of 1990, a special legislative session in Mississippi redefined “navigable waters” and allowed moored, waterborne casinos on the Gulf Coast.<sup>5</sup> By the late 1990s, large-scale casinos dominated the coastline in Mississippi’s Harrison County, demonstrating the prioritizing of structural storm protection over storm management techniques.<sup>6</sup>

In Louisiana, the area most often affected by major hurricanes is in the eastern New Orleans Metropolitan Area – including areas in the lower Ninth Ward, St. Bernard Parish and areas north of the Mississippi River Gulf Outlet (MRGO). In 1965, the U.S. Army Corps of Engineers had submitted a plan to Congress to protect New Orleans and the surrounding area by constructing massive hurricane protection levees. Almost immediately following the plan submission, and shortly before Hurricane Betsy, a category 4 hurricane, with winds of 120 miles per hour, struck the Gulf Coast. The plan was approved within weeks of the storm. In fact, it was approved so quickly that the U.S. Army Corps of Engineers was unable to incorporate Betsy’s meteorological measurements into their initial design.<sup>7</sup> Much of the area protected by this levee system was undeveloped wetlands.

In the decades following hurricanes Betsy and Camille (1969), the city of New Orleans approved a succession of new subdivisions in the eastern part of the city.<sup>8</sup> Between 1965 and 1984, developers constructed more than 22,000 residences in the area.<sup>9</sup> By building subdivisions in previously undeveloped wetlands resistant to storms, the city placed the area at greater risk of flood damage.<sup>10</sup> Additionally, by building levees and draining wetlands, the hurricane protection system established a false sense of security.

While levees and structural protections are important components of hurricane hazard mitigation, they are most effective when coupled with natural forms of mitigation. Post-mortems on the impact of hurricane flooding have long recognized the critical relationship between coastal wetlands and community protection.<sup>11</sup> In the wake of Hurricane Katrina, many coastal communities have turned to coastal and wetland restoration as an additional mitigation measure.

## Dauphin Island, Alabama

Dauphin Island is a barrier island located three miles south of Mobile Bay. Though small, the Island is of tremendous economic importance to the Mobile Bay area and the entire state of Alabama. The Island buffers the Bay area from hurricanes and protects the ecological health of the Mobile Bay estuary, a fishery so important it has been dubbed the “fertile crescent” by many prominent marine biologists. As Mobile’s first line of defense, the Island was battered by Hurricane Katrina. The storm severely impacted the fishing industry, levelled seaside houses, flattened sand dunes, peeled pavement off roads and destroyed vegetation that once helped hold the Island together.<sup>12</sup> The storm also created a 1.5-mile-wide gap on the west end of the Island, nearly splitting the main body of the Island in half. This gap came to be known as the “Katrina Cut.”

To date, Dauphin Island has not initiated any coastal restoration projects as a direct result of Hurricane Katrina. However, some coastal restoration projects have been undertaken as a result of the 2010 BP Deepwater Horizon oil spill.<sup>B</sup> Concerned that oil from the spill would pass through the Katrina Cut and contaminate oyster beds and estuaries in the Mississippi Sound and Portersville Bay, the state of Alabama authorized the design and construction of a berm<sup>C</sup> to fill the gap. A private engineering firm was contracted to build an 8,400 foot-long, sand-filled, rock-rubble berm. This remediation project was permitted and approved by the U.S. Army Corps of Engineers in just eight days.<sup>13</sup> The project involved the placement of approximately 150,000 tons of Grade A stone, 95,000 cubic yards of hydraulically excavated and placed sand, and 110,000 tons of armor stone.<sup>14</sup> The top of the sand core sits five feet above sea level with a three-foot-thick armor layer on top of the sand. The top of the berm is approximately 20 feet wide at an elevation of eight feet above sea level. The berm’s bottom width varies according to water depth and is 84 feet at its widest point. The project,

<sup>B</sup> The BP Deepwater Horizon oil spill began on April 20, 2010. The initial explosion killed 11 workers and injured 17. During a period of approximately 87 days, an estimated 200 million gallons of crude oil spilled into the Gulf of Mexico, making it the largest oil spill in U.S. history. The spill impacted approximately 16,000 miles of coastline, spanning Texas, Louisiana, Mississippi, Alabama and Florida.

<sup>C</sup> An artificial ridge or embankment.



Aerial image of the "Katrina Cut" (imagery courtesy of Google Maps)

initially estimated to cost \$13 million, was completed at a cost of \$17 million.<sup>15</sup> The project was funded by BP. By the end of 2014, sand captured by this berm has created a new beach. For the first time since 2005, beachgoers were finally able to walk the entire length of the Island.<sup>16</sup>

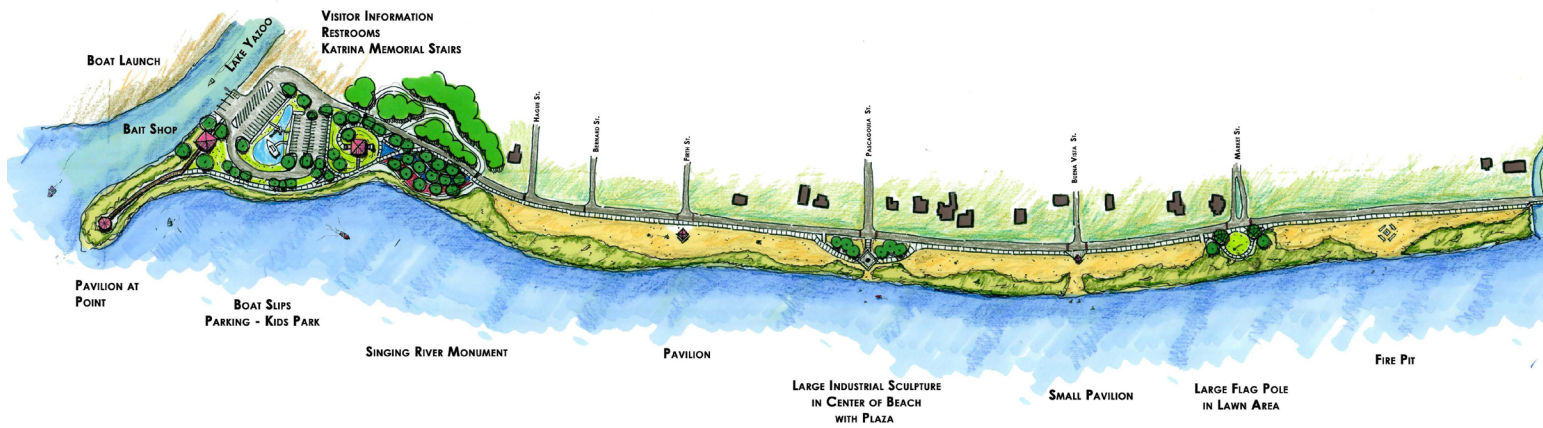
Additionally, Dauphin Island has proposed to undertake two additional coastal restoration projects with funds from the Coastal Impact Assistance Program (CIAP), a federal program established as part of the Energy Policy Act of 2005. This program was created to authorize funds to Outer Continental Shelf (OCS) oil and gas producing states to mitigate the impacts of OCS oil and gas production. The two proposed restoration projects are a move toward protecting the Island by stabilizing its natural ecosystem. By re-creating the Island's natural environment, officials hope that the coastline will be more resilient against future storms.<sup>17</sup>

The first proposed project intends to restore the coastline of the east end of the Island. The "East End" project currently is in its second year of permitting and is supported by the Alabama Historical Commission, the state agency charged with safeguarding Alabama's historic buildings and sites. It is projected to cost approximately \$5 million. The mayor of Dauphin Island, Jeff Collier, hopes the project will begin as early as summer 2015. The plan includes relocating sand from a source four to five miles offshore to nourish the coastline; constructing dunes to prevent sand relocation; planting indigenous grasses to further anchor the sand; and relocating existing offshore jetties to create additional protection.<sup>18</sup>

The second proposed project aims to nourish the coastline on the West End of the Island. This project currently is unfunded and estimated to cost approximately \$50 million. It is being developed in partnership with the State Lands Division of the Alabama Department of Conservation and Natural Resources, and the U.S. Army Corps of Engineers. These three entities plan to place a greater volume of sand on the West End of the beach and construct taller sand dunes.<sup>19</sup> Mayor Collier estimates that this project will take approximately six months to complete. The significantly higher cost of this proposed project is a reflection of the massive amount of sand needed to augment the coastline.

Strengthening the resilience of the Island is of critical importance to the Mobile Bay estuary and the Port of Mobile. According to Scott Douglas, a coastal engineering expert at the University of South Alabama in Mobile, if not restored, the barrier island is at risk of complete elimination during the next major hurricane. The loss of Dauphin Island would leave the Mobile Bay and the Port of Mobile vulnerable to direct hits by future storms.<sup>20</sup> The Port of Mobile supports 127,591 direct and indirect jobs; a more than \$506 million in direct and indirect tax impact; and has an overall economic value of \$18.7 billion.<sup>21</sup> Furthermore, major economic drivers such as Airbus, Austal and ThyssenKrupp are located near the Port and would be directly in harm's way. In order to protect economic interests such as these, a stable and well-supported Dauphin Island is essential and, therefore, an investment in the resilience of Dauphin Island is an investment in the future of Alabama's economy.





## A PRELIMINARY MASTER PLAN FOR THE PASCAGOULA BEACHFRONT PROMENADE CITY OF PASCAGOULA, MISSISSIPPI

### Pascagoula, Mississippi

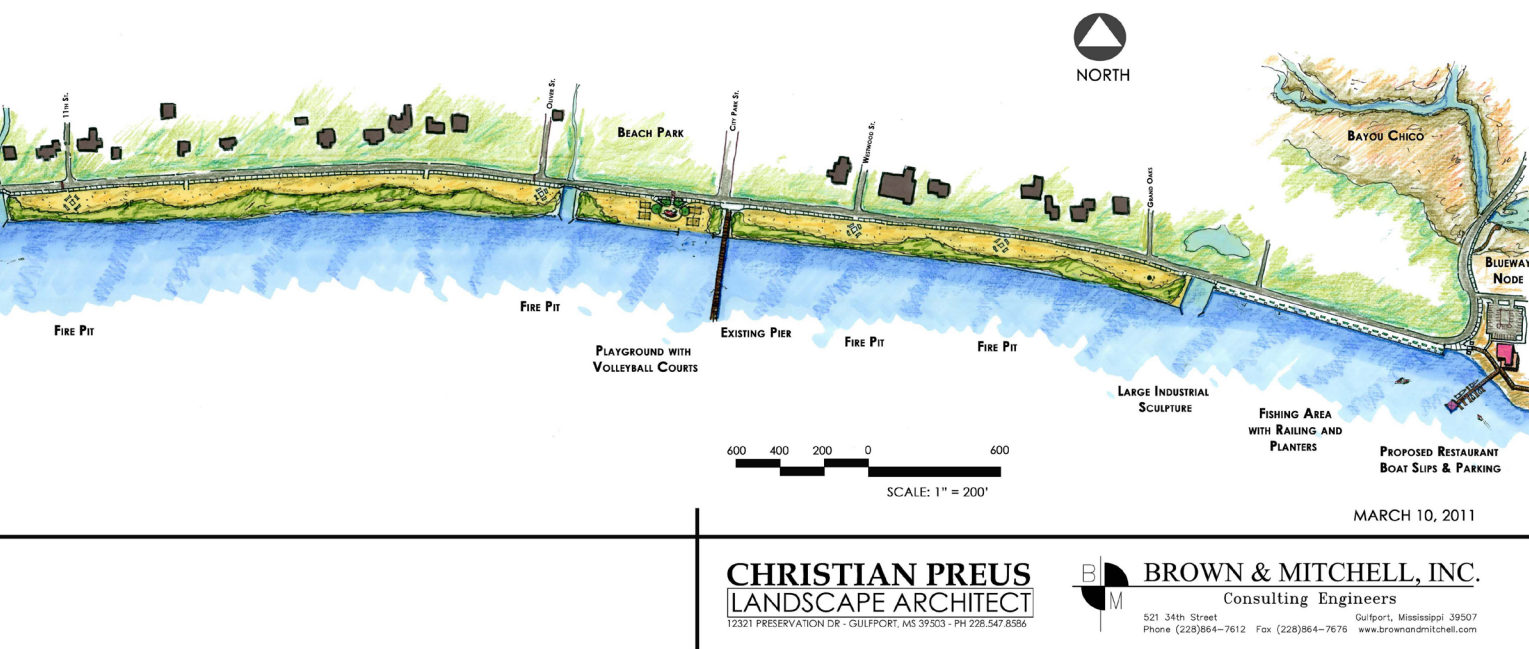
Pascagoula is one of Mississippi's largest cities and serves as the County Seat of Jackson County. While its residential population is 24,000, the city's thriving industries result in a daytime population approximately twice that size. Shipbuilding is a major industry in Pascagoula. Huntington Ingalls Shipbuilding constructs ships and ship sections for the U.S. Navy and Coast Guard. As the state's largest industrial employer, it maintains 10,380 workers in Pascagoula.<sup>22</sup> Other top industries include Chevron Refinery, Signal International, VT Halter Marine, Knights Marine, Mississippi Phosphates and First Chemical. Collectively, these six companies employ an additional 7,150 workers.<sup>23</sup> Their products are of vital importance to both the state and regional economy.

Pascagoula's hurricane mitigation features are both natural and man-made. The city is buffered by a string of barrier islands about seven miles offshore. These islands provide important natural protection to Pascagoula's coastline by slowing incoming storm surges. Prior to Hurricane Katrina, the city's coastline featured a sea wall that ran the length of the two-mile coast. Rather than a natural beach, the city opted to construct a mile-long artificial beach, also surrounded by a seawall.

In the wake of Katrina's devastation, the U.S. Army Corps of Engineers conducted a sweeping survey of damage incurred by Mississippi's coastal cities, with an eye toward resilient reconstruction. During this survey, the U.S. Army Corps of Engineers observed that, with one exception,<sup>D</sup> all oceanfront homes located behind the artificial beach were still standing. Many of them lost the first floor or incurred significant flooding, but were not wholly destroyed. All other oceanfront homes, with one exception, were swept from their foundations. This contrast provided powerful visual evidence of the effectiveness of beaches in mitigating damage to oceanfront structures.

Through a series of public meetings, the U.S. Army Corps of Engineers solicited restoration project ideas from the community. The city of Pascagoula proposed an expansion and restoration of the beach. In 2008, the U.S. Army Corps of Engineers entered into an agreement with the state to undertake the beach restoration project through the Department of Marine Resources, a state agency dedicated to enhancing, protecting and conserving the marine interests of Mississippi.

<sup>D</sup> The structure referred to here was hit by a barge carried by the storm surge.



Ultimately, Pascagoula's beach restoration comprised three phases. The first phase of the restoration expanded the beach. In this phase, the Pascagoula River was dredged to nourish 7,500 feet of beach. Collectively, 290,000 cubic yards of sand material were utilized. The use of dredged material was a creative and cost-effective approach to beach restoration, which in many cases requires importing sand from other areas. Additionally, this phase included the extension of 14 culverts, the addition of access ramps and repairs to an outer seawall. This restoration phase spanned from August 2009 to May 2010 and cost \$12.3 million.<sup>24</sup>

Phase two of the beach restoration added an additional 15,000 cubic yards of sand to the existing beach. To prevent the displacement of sand, 362,500 indigenous sea grasses were planted. Sand fencing was built at the inland perimeter of the beach to restrict deracination as the grasses took root. At the shoreline, 16,500 tons of rip-rap were placed to impede erosion caused by common weather events. This phase spanned from September 2010 to April 2011 and cost \$4 million.<sup>25</sup>

Phase three, the final phase of Pascagoula's beach restoration, includes the addition of 37,000 plants, consisting of sea oats, blue stem and beach morning glory. An additional 57,000 feet of fencing were erected to protect these

plants as they matured. Phase three spanned from November 2011 to April 2012 and cost \$100,000.<sup>26</sup>

Throughout the restoration process, the city, county, state and federal government collaboratively worked to ensure a stronger and more resilient coastline. The beach was constructed by the federal government (the U.S. Army Corps of Engineers) in partnership with the state (through the Mississippi Department of Marine Resources). The state will transfer ownership and responsibility of the beach to the city. The city has entered into an agreement with Jackson County to provide maintenance of the beach, as the county manages several other county beaches. It is expected that the 150 feet of wave break provided by this collective expansion and restoration will mitigate damage to oceanfront structures during future major storm events.

The benefits of this restoration project extend beyond reducing damage; the community and its economy also have improved. The newly constructed beach has drawn new recreational activity. As community beach use continues to grow, plans are being developed to enhance other activities along the waterfront by adding public access at the east end of the beach, providing pier access to the water, and creating a site for a public-private partnership to develop a restaurant site - potentially with retail and entertainment space associated - providing an addition-

al community destination point.<sup>27</sup> Funding to undertake this development project already has been secured from the Mississippi Department of Transportation, Tidelands Trust Fund,<sup>E</sup> and the U.S. Department of Housing and Urban Development's Economic Development Initiative Grants.<sup>28</sup> This project will create long-term jobs, develop a site that has been vacant since Hurricane Katrina and attract more visitors to Pascagoula's beach.

## New Orleans Metropolitan Area, Louisiana

The New Orleans Metropolitan Area<sup>F</sup> is the primary driver of Louisiana's economy, generating between 25 percent and 40 percent of the state's tax revenue. The Port of New Orleans is the nation's fifth busiest port. It also is a major cruise ship terminal with more than 700,000 people transiting through it each year. In 2004, the year prior to Katrina, the Port of Fourchon, located approximately 53 miles south of New Orleans, handled about 20 million tons of cargo.<sup>29</sup> As the second largest seafood producer in the nation, approximately 35 percent of the United States' oysters and 35 percent of its crabs come from coastal Louisiana.<sup>30</sup>

The devastation caused by Hurricane Katrina took a significant toll on the state's economy. Following the Hurricane, Louisiana's gross state product decreased from 4.5 percent of the U.S. gross product in 2004 to -1.5 percent in 2005.<sup>31</sup> Additionally, state tax collections dropped by 42 percent between the second and third quarters of 2005, from \$2.6 billion to \$1.5 billion, respectively.<sup>32</sup> Frontline losses – damage to boats, docks and other industry infrastructure – incurred by Louisiana's seafood industry exceeded \$500 million.<sup>33</sup>

The enormous size of the storm and the loss of coastal habitat contributed to the failure of several of New Orleans' hurricane protection systems. This resulted in the loss of more than 1,400 lives and major damage to neigh-

borhoods throughout the city.<sup>34</sup> The devastation of Hurricane Katrina focused attention on the importance of restoring the coastal deltaic system.

In addition to strengthening the structural protection of the New Orleans Metropolitan Area through the construction and reinforcement of levees, the state and the U.S. Army Corps of Engineers are working to revive the wetlands and natural protections of the New Orleans Metropolitan Area. The U.S. Army Corps of Engineers has identified 15 near-term restoration projects in the Louisiana Coastal Area. These projects are intended to provide relief from coastal land loss and supplement large-scale, long-term restoration programs and studies that will restore natural features and ecosystem processes. Several restoration techniques are employed in these projects, including river diversions, marsh creation and barrier island restoration. Among these projects are: the Mississippi River Gulf Outlet (MRGO) ecosystem restoration; a small diversion at Hope Canal;<sup>G</sup> restoration of the Barataria Basin Barrier Shoreline; the Small Bayou Lafource reintroduction;<sup>H</sup> a medium diversion at Myrtle Grove, the restoration of Terrebonne Basin's barrier shoreline; a project to convey the Atchafalaya River water to the Northern Terrebonne Marshes; a small diversion of the Convent/Blind River; a modification of the Amite River Diversion Canal; a medium diversion at White Ditch; Gulf shoreline restoration at Point au Fer Island; the restoration of a land bridge between Caillou Lake and the Gulf of Mexico; and a modification to the Caernarvon Diversion;<sup>I</sup> The completion of these projects will improve the sustainability of the coastal ecosystem and enable it to support and protect the environment, economy and culture of southern Louisiana.

While each of these projects will be important for the protection of the New Orleans Metropolitan Area, this

<sup>E</sup> The Tidelands Trust Fund was established in 1994 and is administered by the Mississippi Secretary of State's Office and the Department of Marine Resources. Its mission is to establish state policy balancing the divergent interests of upland private property owners and the general public over the use of public trust tidelands and submerged land in Mississippi.

<sup>F</sup> For U.S. Census purposes, the New Orleans Metropolitan Area includes seven parishes: Jefferson, Orleans, Plaquemines, St. Bernard, St. Tammany, St. Charles and St. John the Baptist.

<sup>G</sup> The feasibility study for this project was not initiated under the U.S. Army Corps of Engineers' Louisiana Coastal Area program. The state of Louisiana is pursuing this effort under a separate state program.

<sup>H</sup> Ibid.

<sup>I</sup> According to the U.S. Army Corps of Engineers, the feasibility studies for the Terrebonne Basin restoration; Atchafalaya River; Amite River Diversion Canal; Point au Fer Island; Caillou Lake; and Caernarvon Diversion have been suspended by request of the state of Louisiana's Coastal Protection and Restoration Authority in October 2012.





MRGO closure completed in July 2009 (photo courtesy of U.S. Army Corps of Engineers).

*SLC Regional Resource* focuses on two projects: the ecosystem restoration of the MRGO and the Barataria Basin Barrier Shoreline.

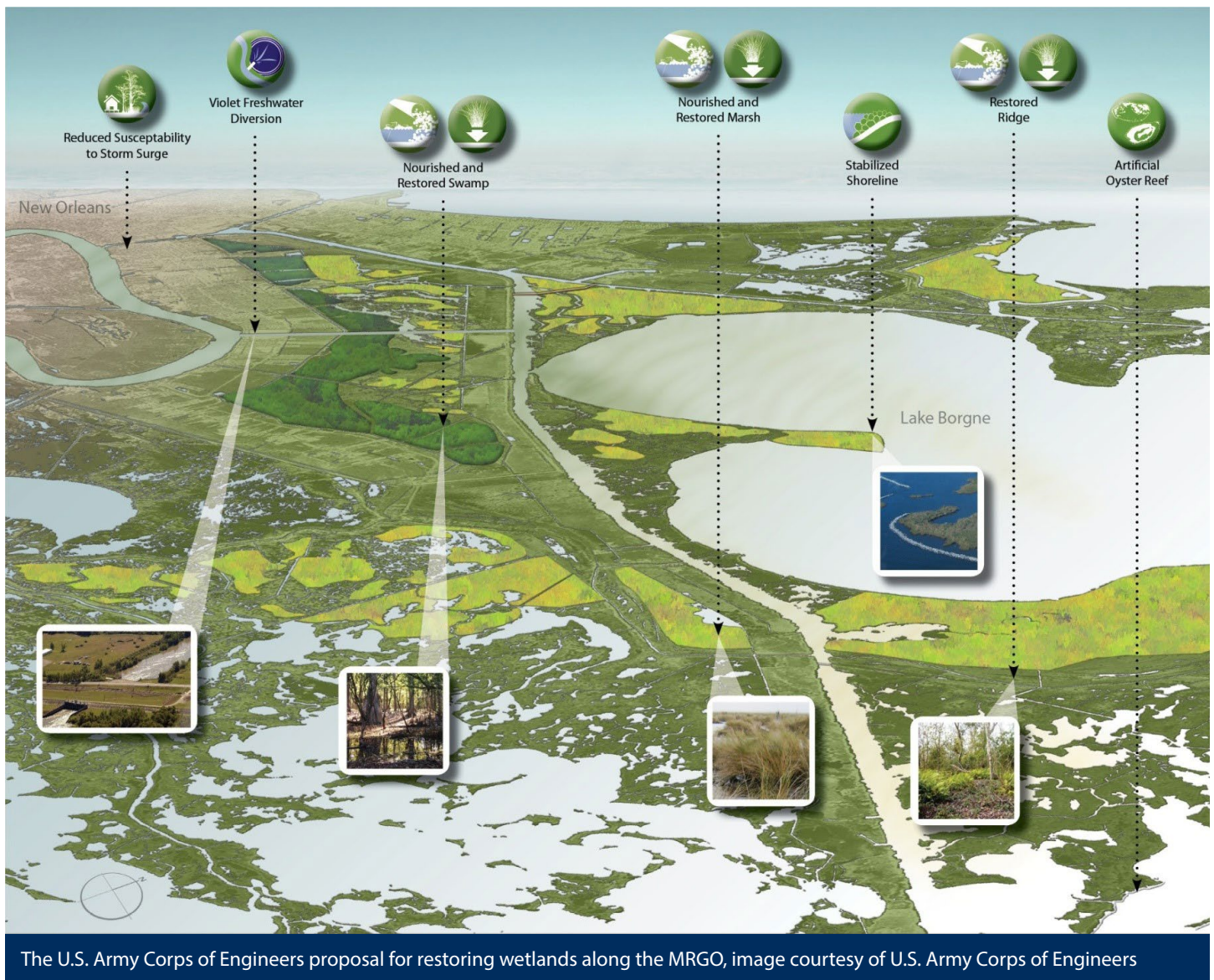
## Mississippi River Gulf Outlet

The Mississippi River Gulf Outlet (MRGO), a rarely used, 45-year-old shipping channel connecting the Gulf of Mexico to the Mississippi River, is believed to have served as a funnel for Katrina's storm surge. According to Greg Steyer, a U.S. Geological Service wetland scientist, the navigation channel and the eastern levee of the Mississippi River seem to have directed high water into the Breton Sound estuary southeast of New Orleans.<sup>35</sup> From there, the surge poured into Lake Pontchartrain and an industrial canal, where it overwhelmed levees, flooding St. Bernard Parish and the Lower Ninth Ward of New Orleans.

On June 5, 2008, the MRGO was de-authorized between the Gulf of Mexico and the Gulf Intracoastal Waterway, and a rock closure structure was approved for construction in the vicinity of Bayou La Loutre in St. Bernard Parish. Construction included the placement of approximately 352,000 tons of stone materials.<sup>36</sup> The channel was physically closed to shipping in July 2009.

The MRGO Ecosystem Restoration Plan was developed by the U.S. Army Corps of Engineers and is designed to restore and conserve estuarine habitat areas affected by the MRGO navigation channel. A feasibility study of the project, funded by the federal government, was completed on September 28, 2012. Implementation of the plan requires the signing of a cost-share agreement with the U.S. Army Corps of Engineers non-federal sponsors, the state of Louisiana and the state of Mississippi and, finally, the appropriation of funds by the Congress.





The U.S. Army Corps of Engineers held meetings in January and February of 2011 to allow for public review and comments. Following a review and response to the significant number of public comments, the development team drafted a final report.

The project components outlined in this report will produce almost 38,000 Annual Average Habitat Units<sup>J</sup> while restoring and protecting approximately 57,472 acres of habitat. The plan, which is projected to cost \$3 billion,<sup>37</sup> includes oyster reef restoration; marsh creation,

<sup>J</sup>Habitat Units represent a numerical combination of habitat quality (Habitat Suitability Index) and habitat quantity (acres) within a given area at a given point in time. Average Annual Habitat Units represent the average number of Habitat Units within any given year over the project life for a given area.

restoration and nourishment; ridge restoration; swamp restoration; and swamp nourishment.

Because of the critical importance of this project, the U.S. Army Corps of Engineers took an unusual step to execute a full study despite the absence of an identified sponsor willing to share the cost of implementation at a 65 percent federal and 35 percent non-federal ratio.<sup>38</sup> Section 103 of the federal Water Resources Development Act of 1986, as amended, requires all coastal restoration projects to have a willing, non-federal cost-share sponsor prior to implementing the project.<sup>39</sup> However, the state of Louisiana contends that language included in federal legislation deauthorizing the MRGO required that the U.S. Army Corps of Engineers complete a study of how to restore the area and complete any projects at full federal expense.<sup>40</sup>



While the state agreed to forward its share of costs for the project until the issue was resolved, the U.S. Army Corps of Engineers declined to move forward. In October of 2014, the state of Louisiana sued the U.S. Army Corps of Engineers to force it to pay the full \$3 billion cost of restoring wetlands damaged during the maintenance and operation of the MRGO.<sup>41</sup>

## Barataria Basin Barrier Shoreline

The Barataria Basin Barrier Shoreline is the regional segment of the Gulf Coast of Louisiana, situated between the west bank of the Mississippi River at the active delta<sup>K</sup> and the eastern shore of Terrebonne Bay. The project being undertaken at the shoreline consists of two areas: the Caminada Headland, located at the southern end of Lafourche and Jefferson Parishes, and Shell Island, which is part of the Plaquemines Parish barrier island chain.

The restoration project intends to restore the physical function of the headland and barrier island, and to restore critical habitat form and function and long-term sustainability of the barrier shoreline. The initial reconstruction of the barrier shorelines will restore or create 2,849 acres of beach, dune and marsh habitats. On the Caminada Headland, approximately 880 acres of beach and dunes and 1,186 acres of marsh will be restored or created. Shell Island will be restored to its pre-Hurricane Bob (1979) configuration, which would create or restore 317 acres of beach and dune, and 466 acres of marsh.<sup>42</sup>

The Final Integrated Construction Report and Environmental Impact Statement for the Barataria Basin Barrier Shoreline Restoration project completed public, state and agency review in April 2012. The Chief of Engineers' Report was signed in June 2012, and a Record of Decision was signed in March 2013.<sup>43</sup>

The plan calls for the re-nourishment of the Caminada Headland and Shell Island, sustaining the benefits created by the initial construction. On the Caminada Headland, a minimum of 3.9 million cubic yards of material will be returned every 10 years.<sup>44</sup> The Shell Island project will include two re-nourishment cycles, in years 20 and 40.

<sup>K</sup> An active delta refers to portions of a delta that are still active and have water channeling through it carrying sediment. Conversely, an abandoned (or inactive) delta refers to portions of a delta that once were active but currently have reduced or no fluvial activity.

Work on the Caminada Headland has been divided into two phases, with contracts for both phases awarded to a private firm. Combined, the two phases will restore 13 miles of beach and 792 acres of beach and dune habitat, a slight departure from estimates included in U.S. Army Corps of Engineers' initial plan.<sup>45</sup> Phase one of the Caminada Headland beach and dune restoration project will create approximately 303 acres of beach and dune along a six-mile stretch of coast, raising the elevation to 4.5 feet.<sup>46</sup> The sediment used to create this acreage is being excavated from Ship Shoal, an underwater remnant of a barrier island that existed between 7,000 and 8,000 years ago. The state won federal approval to use this sand resource, which is in federal waters, in 2012. Sediment from Ship Shoal will be pumped into a barge capable of carrying up to 3,500 cubic yards of sand from the Shoal to Belle Pass, just south of Fourchon. At Belle Pass, the sediment will be sucked into a pipe that deposits it onto the beach, where it will be molded and shaped by a team of bulldozers. Next, native vegetation will be planted before construction is completed by early 2015. This phase is funded by approximately \$30 million from past state surpluses and approximately \$40 million from the CIAP, the same federal funding source that Dauphin Island plans to tap for coastal restoration efforts.<sup>47</sup> Table 1 provides a breakdown of probable construction costs for phase 1 of the Caminada Headland beach and dune restoration project.

The second phase of the Caminada Headland project will create 489 acres of beach and dune habitat and will restore an additional seven miles of beach.<sup>48</sup> Cumulatively, the two phases will require more than 8 million cubic yards of sand to be dredged from Ship Shoal. Funding for phase two of the project comes from the Gulf Environmental Benefit Fund, established by the National Fish and Wildlife Foundation with fines paid by BP and Transocean. The Foundation has awarded \$144.5 million in funding for the second restoration phase. Construction is expected to begin in 2015 and is estimated to last between 14 and 18 months.<sup>49</sup>

Investing in the restoration of the wetlands and coastline of the New Orleans Metropolitan Area provides critical protection during major storm events by absorbing storm surge and slowing strong winds. In combination with the levees already in place, these projects would further strengthen the area's defenses, limiting the impact of future hurricanes.

Conclusion

Alabama, Mississippi and Louisiana are important hubs of oil production, water commerce, agriculture, fishing and tourism. By implementing natural hazard mitigation techniques that complement existing structural protections, these states can protect themselves against major storm events such as hurricanes, thereby reducing the physical and economic impact on coastal communities. Often, these natural mitigation measures are less costly than recovering uninsured losses and are seen as prudent economic decisions for coastal states. As demonstrated by Pascagoula’s coastal restoration efforts, states that engage in natural restoration and hurricane mitigation also might expect increased community appreciation for its natural resources and new economic opportunities.

Natural mitigation measures also can protect vital economic interests. The restoration of the Caminada Headlands, part of the Barataria Basin Barrier Shoreline, will strengthen the defenses of Port Fourchon. The Port services 90 percent of the platforms and rigs in the Gulf of Mexico, and protecting it provides invaluable economic security for the New Orleans Metropolitan Area.

As punitive funds from criminal and civil penalties imposed after the BP Deepwater Horizon oil spill are made available, it is likely that all three states will continue to invest in coastline reconstruction. A Gulf Coast that is more resilient, sustainable and economically viable is a likely outcome as a result of these natural restoration and hurricane mitigation projects.



Table 1	Probable Construction Costs for Phase 1 of the Caminada Headland Beach and Dune Restoration Project				
	Pump-out Area	Construction	Administration	Subtotal	Opinion of Probable Cost
	Lower Belle Pass	\$51,157,000	\$828,000	\$51,985,000	\$57,184,000
	Upper Belle Pass	\$61,704,000	\$951,000	\$62,655,000	\$68,912,000
	Pass Fourchon	\$58,898,000	\$994,000	\$59,892,000	\$65,882,000
	Offshore West	\$58,603,000	\$994,000	\$59,597,000	\$65,557,000
	Offshore East	\$64,126,000	\$991,000	\$65,117,000	\$71,629,000

Source: Coastal Protection and Restoration Authority of Louisiana



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Southern Office of  
**The Council of State Governments**  
P.O. Box 98129  
Atlanta, Georgia 30359  
[www.slcatlanta.org](http://www.slcatlanta.org)



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# SOUTHERN LEGISLATIVE CONFERENCE

## THE SOUTHERN OFFICE OF THE COUNCIL OF STATE GOVERNMENTS

### REGIONAL VIEW NATIONAL REACH

**T**his report was prepared by Policy Analyst Anne Roberts for the Energy & Environment Committee of the Southern Legislative Conference (SLC) of The Council of State Governments (CSG) under the chairmanship of Representative William E. “Bill” Sandifer III of South Carolina. This report reflects the body of policy research made available to appointed and elected officials by the Southern Office.

The Southern Office of The Council of State Governments, located in Atlanta, Georgia, fosters and encourages intergovernmental cooperation among its 15 member states. In large measure, this is achieved through the ongoing work of the standing committees of its Southern Legislative Conference and supporting groups. Through member outreach in state capitols, policy research, international member delegations, staff exchange programs,

meetings and fly-ins, staff support state policymakers and legislative staff in their work to build a stronger region.

Founded in 1947, the SLC is a member-driven organization and the largest of four regional legislative groups operating under CSG and comprises the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia.

The SLC’s six standing committees provide a forum which allows policymakers to share knowledge in their area of expertise with colleagues from across the South. By working together within the SLC and participating on its committees, Southern state legislative leaders are able to speak in a distinctive, unified voice while addressing issues that affect their states and the entire region.