



WEST BANK HURRICANE PROTECTION PROJECT ST. CHARLES PARISH, LOUISIANA



St. Charles Parish
Sam Scholle - Director of Public Works / Wastewater
100 River Oaks Drive
Destrehan, LA 70047
985-783-5102
sscholle@stcharlesgov.net



GCR Inc.
Mona Nosari - Real Estate Consultant
2021 Lakeshore Drive, Suite 500
New Orleans, LA 70122
504-304-2500 fax 504-304-2525
mnosari@gcrconsulting.com



Burk-Kleinpeter Inc.
Mike Chopin - Project Engineer
4176 Canal Street
New Orleans, LA 70119-5941
504-486-5901
mchopin@bkiusa.com

NEEDS JUSTIFICATION

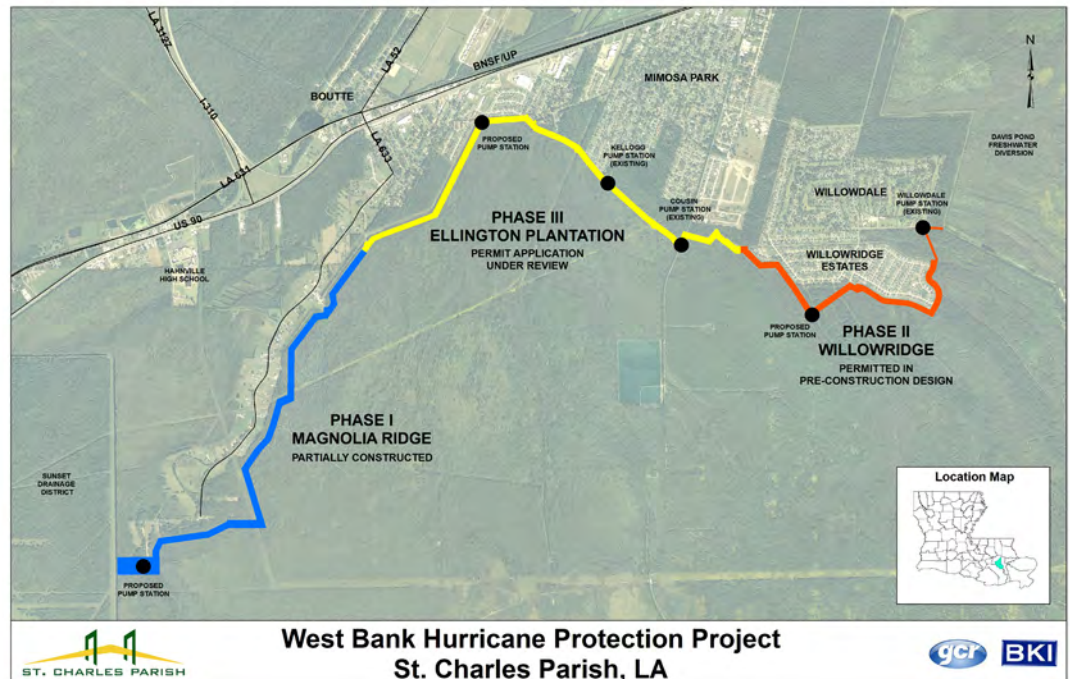
The West Bank of St. Charles Parish is currently unprotected from storm surges associated with both hurricanes and high tide conditions.

The West Bank of St. Charles Parish (west side of Mississippi River) is currently unprotected from storm surges associated with hurricanes and tropical storms. This portion of the Parish is subjected to heavy rainfall, tidal surges from the Gulf of Mexico, and hurricane-related flooding often resulting in damages to industrial, commercial, residential agricultural, and environmental facilities. The project area has been declared a federal disaster area at least 10 times since 1985 due to storm events. As recently as August 29, 2012, the President issued a disaster declaration allowing the Federal Emergency Management Agency (FEMA) to offer assistance to St. Charles Parish for impacts due to Hurricane Isaac.

Currently, levee projects exist on each side of the project area. On the east side of the project area, the West Bank and Vicinity (WBV) Hurricane Storm Damage Risk Reduction Project that protects a portion of the West Bank of the New Orleans Metropolitan Area has been substantially constructed and is scheduled for completion by 2013. Southwest of the project area is the Larose to Golden Meadow and the Morganza to the Gulf of Mexico Projects, both either existing or under construction. Completion of these projects will leave a large gap in levee protection spanning from Bayou Lafourche in Lafourche Parish to the Davis Pond Freshwater Diversion Project in St. Charles Parish. This gap, in effect, has the possibility to act as a funnel for storm surge. As storm surge is stacked up against the constructed levee projects located both to the east and west, it will follow the natural ground contours of the unprotected portion of St. Charles Parish, thereby increasing storm surge elevations in the project area and putting the community at greater risk, as was the case with St. John the Baptist Parish with Hurricane Isaac.

FUNDING REQUIREMENTS

St. Charles Parish does not have the necessary **\$150 million** in funding to construct the West Bank Hurricane Protection Project to provide 100-year level protection for the project area. However, the Parish cannot afford to leave the project area exposed to storm surge and has made a multi-million dollar investment towards levee protection. The Parish is making significant progress in providing interim protection, but ultimately a federal solution and funding is required.



ALTERNATIVE OPTIONS FOR ST. CHARLES PARISH HURRICANE PROTECTION

The No Action alternative is not an option. In 100 years, we will no longer exist.

- **INCLUDE ST. CHARLES PARISH IN THE AUTHORIZED WEST BANK AND VICINITY PROJECT**

St. Charles Parish was included in a supplement study resolution that resulted in the authorized West Bank and Vicinity Project (WBV) extending into the eastern portion of the Parish. Adding St. Charles Parish (West Bank Hurricane Protection Project) would be no different from other areas added to the WBV, such as Lake Cataouatche and Harvey Canal (East). The Corps of Engineers has authorized funding available for the WBV that could be utilized to extend protection to the West Bank of St. Charles Parish.

- **OBTAIN SECTION 404(B)(1) PERMITS FROM THE CORPS - PURSUE LOCAL PROJECT**

Continue to apply for the necessary Corps permits for construction of our own local (interim) protection, recognizing that a federally authorized project is still needed.

- **PURSUE THE PROJECT UNDER SECTION 211 FEASIBILITY STUDY**

Under Section 211 of the Water Resources Development Act, the Corps will require St. Charles Parish to study alternative alignments. A Section 211 Feasibility Study will expedite the planning, design and construction processes in St. Charles Parish, but fail to develop a regional solution. Locals view this approach as compatible with the multiple lines of defense strategy that is being advocated by both the Corps and the State of Louisiana, but recognize that a federal solution is required.

- **NO ACTION**

The No Action alternative is not an option. In 100 years, we will no longer exist. We need expedited action, not delays.

WATER RESOURCES DEVELOPMENT ACT – AUTHORIZATION REQUEST

The Coastal Protection Restoration Authority (CPRA) of Louisiana has submitted an authorization request to the Louisiana Congressional Delegation, which if authorized, would allow a waiver of the economic justification under the National Environmental Policy Act and accomplish one of the following:

- *Construction of the West Bank Hurricane Protection Project, St. Charles Parish, as a modification to the authorized West Bank and Vicinity Project.*
- *Construction of the West Bank Hurricane Protection Project, St. Charles Parish as a stand-alone project.*

LOUISIANA COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST

The St. Charles Parish West Bank Hurricane Protection Project alignment is included in Louisiana's Comprehensive Master Plan for a Sustainable Coast adopted by the Louisiana Legislature on May 22, 2012. The plan serves as a guiding document for the state to implement coastal restoration and levee protection measures.

The St. Charles Parish, West Bank Hurricane Protection Project is included in the State's Master Plan as part of a regional solution designed to provide protection to the west banks of St. Charles, St. John the Baptist and St. James Parishes and Lafourche Parish east of Bayou Lafourche. The entire alignment consists of approximately fifty miles of earthen levees and has a total cost of nearly \$800 million. The nine miles of levee to be constructed in St. Charles Parish will be a significant achievement in implementing the project. Per the findings of the Master Plan, the completion of the project would result in St. Charles Parish being spared between two and three billion dollars in damages from a 50-year storm event. The savings increase even further for a 100-year storm event.

NEW ORLEANS AREA HURRICANE P

After Katrina, Congress gave the Army Corps of Engineers \$14.6 billion to repair and improve levees in New Orleans. About \$10 billion later, the 130-mile system of levees, walls and gates designed to withstand a storm surge is essentially complete. The corps says the city now is safe from flooding in a storm of hitting in any year, and the levee system also is designed to significantly reduce flooding from drainage improvements designed to deal with heavy rainfall, however, are still under construction.

St. Charles Parish levee

Project: The levee that was unfinished during Katrina was raised and strengthened, giving the east bank of the parish its first real protection.

Notable feature: The new levee blocks off a potential back door for surge to flow from the lake through the LaBranche Wetlands to the river and then east into Jefferson Parish.

Left to be done: Armoring.



New Orleans drainage canals

Project: Temporary gates and pumps block Lake Pontchartrain storm surge from invading the city.

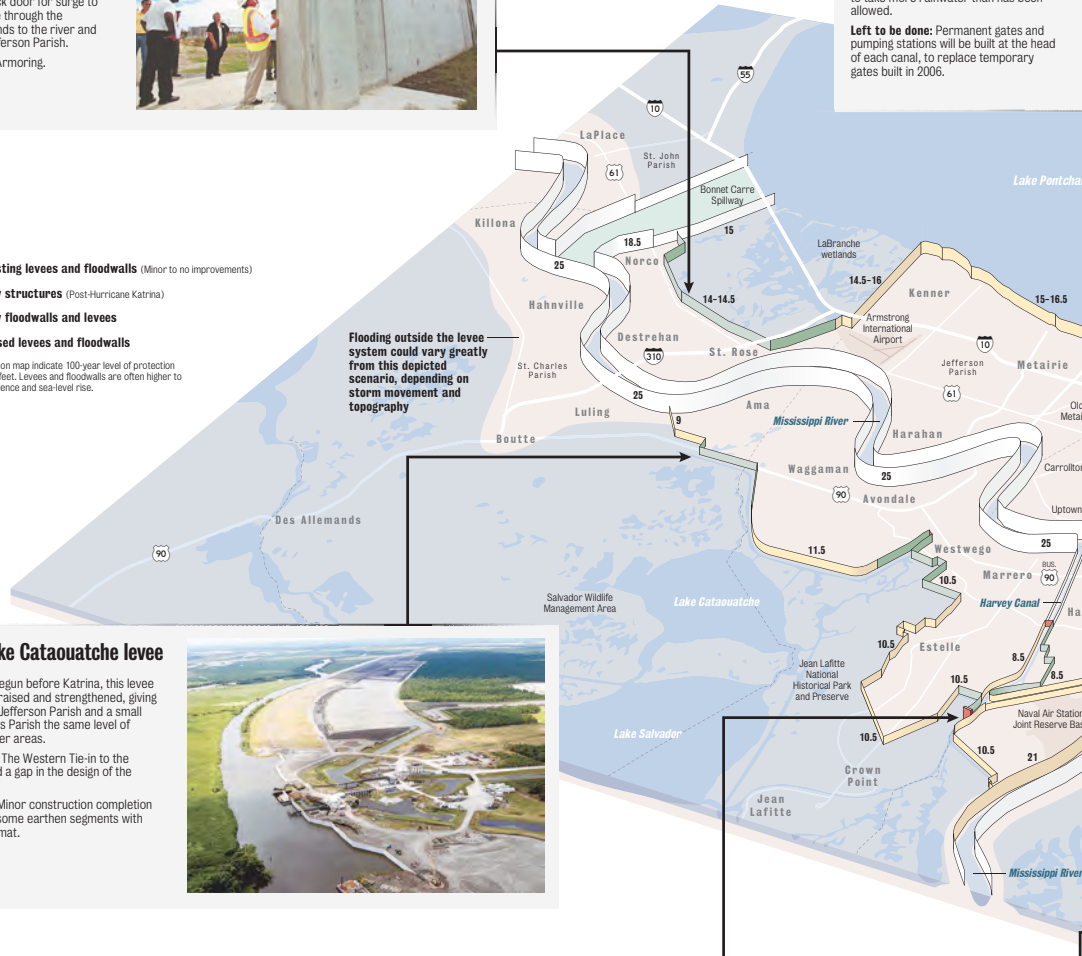
Notable feature: The Katrina-weakened walls of the 17th Street Canal have been strengthened by injecting concrete into their foundations. That will allow the canal to take more rainwater than has been allowed.

Left to be done: Permanent gates and pumping stations will be built at the head of each canal, to replace temporary gates built in 2006.

MAP KEY:

- Existing levees and floodwalls (Minor to no improvements)
- New structures (Post-Hurricane Katrina)
- New floodwalls and levees
- Raised levees and floodwalls

Note: Numbers on map indicate 100-year level of protection requirement in feet. Levees and floodwalls are often higher to allow for subsidence and sea-level rise.



River to Lake Cataouatche levee

Project: Barely begun before Katrina, this levee was redesigned, raised and strengthened, giving the west bank of Jefferson Parish and a small part of St. Charles Parish the same level of protection as other areas.

Notable feature: The Western Tie-in to the Mississippi closed a gap in the design of the original levee.

Left to be done: Minor construction completion and armoring of some earthen segments with grass and fabric mat.



West Closure Complex

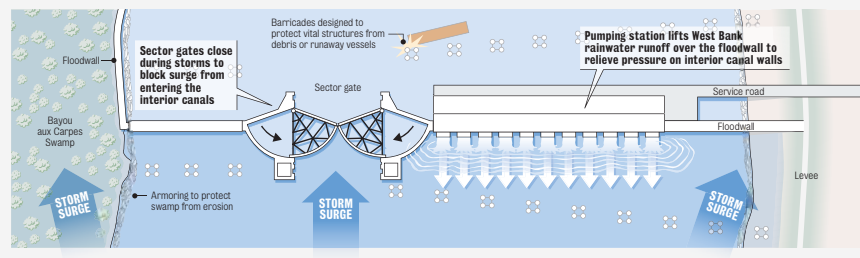
Project: Giant gates, protecting up to 16 feet, would seal off much of West Jefferson and Algiers from surge from the marsh to the south. And huge pumps will dump West Bank rainwater runoff from the reinforced Harvey and Algiers canals over the gates. The project cost \$1 billion.

Notable feature: 11 pumps can fill an Olympic swimming pool in four seconds, making it the largest drainage pump station in the world.

Left to be done: Minor construction not affecting the project's protection capability.



HOW IT WORKS:



St. Bernard levee floodwall

Project: The dirt levees that failed in Katrina were scraped away and rebuilt. Seven miles of new floodwall were built.

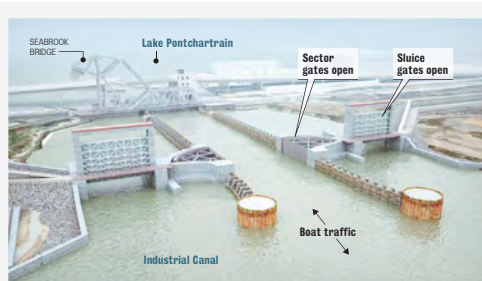
Notable feature: Heavy clay was brought in from the Gulf of Mexico to double the height of the walls. The walls are seven feet higher than the original.

Left to be done: Armoring the land side with a combination of grass and fabric mat.



PROTECTION

hurricane and flood protection
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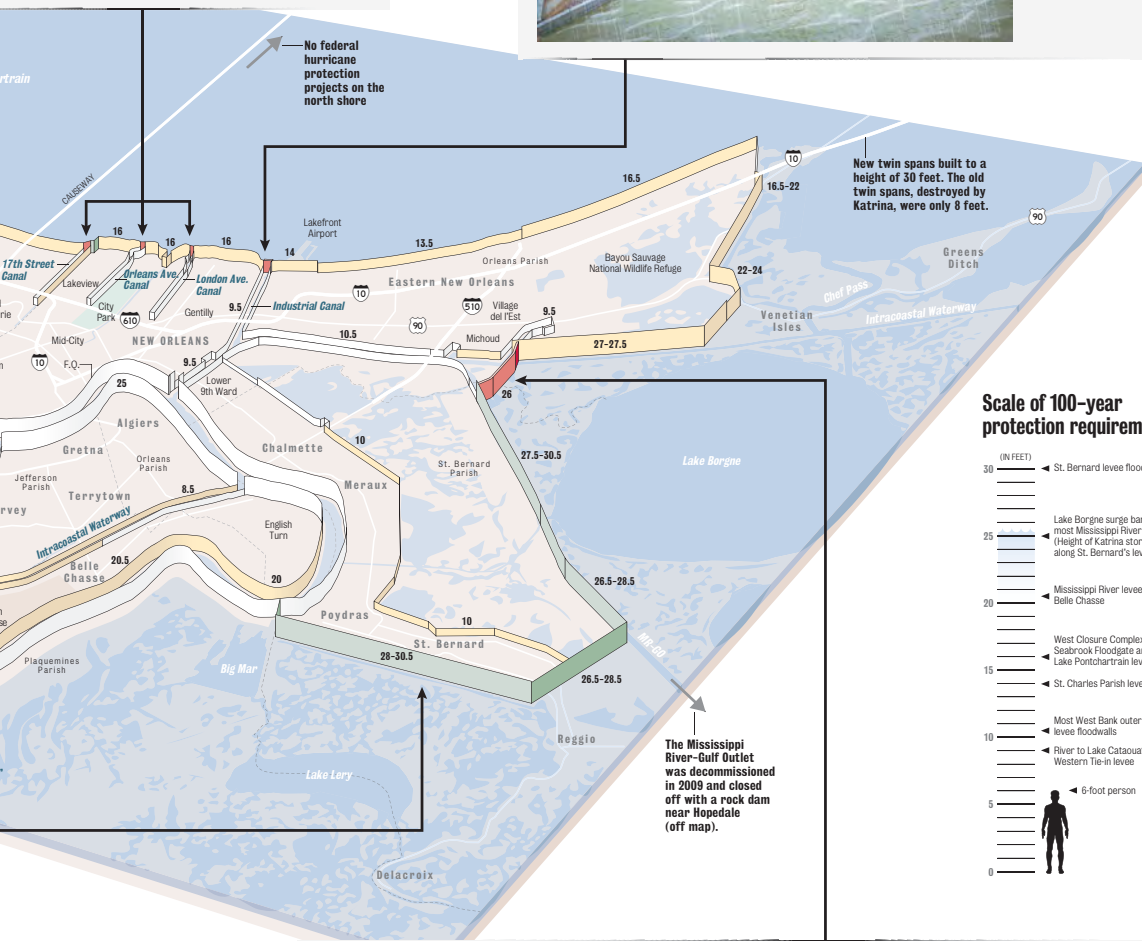
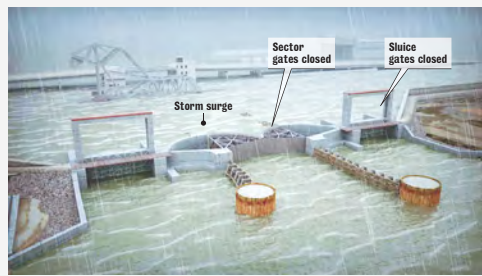
Seabrook Floodgate

Project: Block Lake Pontchartrain water, up to 16 feet, from flowing into the Industrial Canal, as happened during Hurricane Katrina.

Notable feature: When the gates close, the Industrial Canal can store water that overtops the Lake Borgne surge barrier during hurricanes.

Left to be done: Minor work remains, but the gate already provides 100-year protection.

◀ HOW IT WORKS



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 Katrina, saving St. Bernard Parish,
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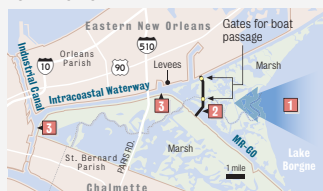
Lake Borgne surge barrier

Project: A nearly two-mile-long, 26-foot-high wall was constructed to block the deadly surge from Lake Borgne that ravaged the Lower 9th Ward. Two gates used for barges and fishing boats are open unless a storm threatens. The project cost \$1.1 billion.

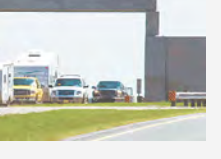
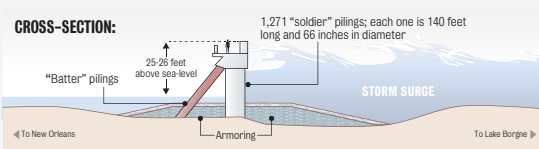
Notable feature: The barrier is designed to be a few feet lower than the new levees on both sides, allowing some surge water to be stored in the Gulf Intracoastal Waterway and Industrial Canal for a few hours until a storm passes.

Left to be done: A new bridge will be built to provide access to the wall segment between Bayou Dupre and Bayou Bienvenue.

HOW IT WORKS:



- 1 Storm surge advances inland through Lake Borgne.
- 2 Surge barrier blocks the wall of water.
- 3 Interior waterways act as catch basin if the barrier is overtopped.



AT RISK: ECONOMIC VALUE

This report presents the findings of an economic survey performed by the St. Charles Parish Department of Economic Development. The survey was performed to determine the value of the heavy-industrial and residential properties located on the West Bank of St. Charles. The survey also reveals the economic value generated by the West Bank heavy-industrial facilities. The findings of this survey are depicted below and will assist St. Charles Parish in its efforts to quantify its economic vulnerability due to the lack of a West Bank Hurricane Protection Levee System.

SURVEY SCOPE

The geographic boundaries of the survey area include all of the industrial and residential properties on the West Bank of St. Charles except those located in an area bounded by the Davis Pond Freshwater Diversion Project, the St. Charles/Jefferson Parish Line, US Hwy. 90 and the Mississippi River. This area comprises the Town of Ama and is excluded from the survey area because of the protection provided by the Western Tie-In Phase of the West Bank and Vicinity Project.

Total value of unprotected properties, heavy-industrial & residential, on the West Bank of St. Charles (WBSC)	\$10.5 Billion*
Heavy-industrial property value	\$9.08 Billion
Residential property value	\$1.5 Billion
Total employment @ WBSC heavy-industrial facilities (incl. direct employees & f/t contractors permanently on-site)	4,120
Annual payroll generated @ WBSC heavy-industrial facilities	\$346.35 Million
Total number of employees residing in the unprotected area	2,786
Annual payroll of employees residing in the unprotected area	\$245.21 Million
Total local taxes paid by WBSC heavy-industrial facilities, 2011 (Ad Valorem & Sales/Use)	\$69.3 Million
Total Louisiana Sales/Use Taxes paid by WBSC heavy-industrial, 2011	\$10.58 Million

*Figure does not include the value of commercial properties and public assets owned by the St. Charles Parish Council, Public School System, Sheriff's Office, Hospital, and Fire District.

NATIONAL IMPLICATIONS

The analysis also revealed a strong connectivity between the St. Charles facilities and the national economy. There is now clear evidence that an extended shutdown of local facilities, due to production-area flooding or due to the inability of its workers to access production units, will negatively effect economies outside of St. Charles Parish and Louisiana. The most alarming affirmation of this interstate linkage came from a Monsanto representative describing the national consequences resulting from a shut-down of their Luling Plant:

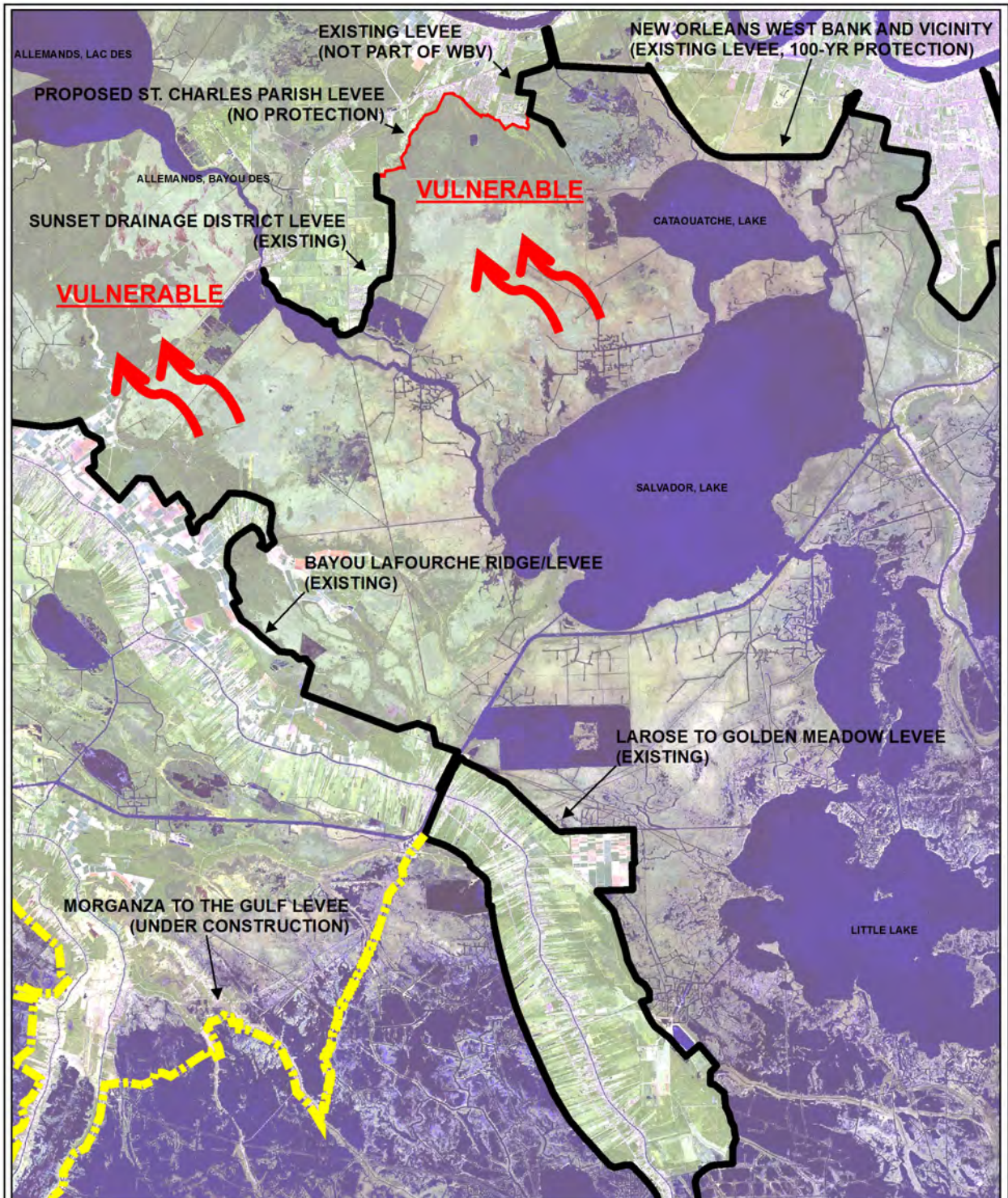
"US farmers would be impacted significantly the next spring if Monsanto Luling were down during Sept – November. The Luling Plant is the largest site among all producers, globally, responsible for glyphosate production, the leading herbicide in the world."

METHODOLOGY

The industrial data collected by St. Charles Parish Department of Economic Development & Tourism focused on ten (10) industrial facilities located on the West Bank. The St. Charles industrial facilities are Dow St. Charles Operations, Entergy Waterford 1, 2, & 3, Occidental Chemical Company, Monsanto, Chevron Paradis Plant, Praxair, Air Products, Air Liquide, Koch Nitrogen and Galata Chemicals. Three (3) heavy-industrial facilities on the East Bank of St. Charles Parish, Norco Manufacturing Complex, Valero Refining, and International Matex Tank Terminal, were also surveyed for employee and payroll data. A variety of methods were used to ascertain the data including direct, personal interviews of local company officials, as well as email and telephone interviews. Data collected by the St. Charles Parish Assessor's Office was also used in this report.

Residential property valuations were acquired using data provided in the 2006-2010 American Community Survey performed by the U.S. Census Bureau, the National Flood Insurance Program, and the St. Charles Parish Assessor's Office.




US farmers would be impacted significantly the next spring if Monsanto Luling were down during Sept – November.



St. Charles Parish West Bank Levee System

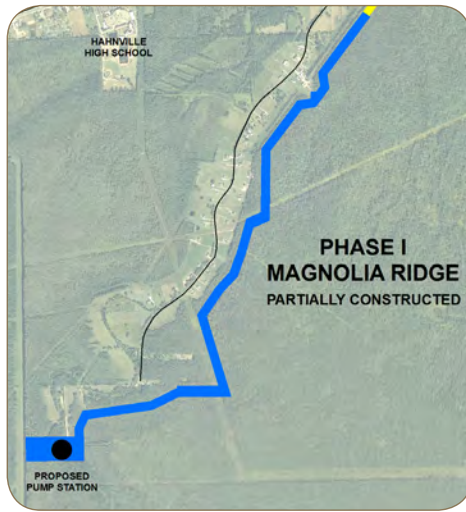


Legend

-  West Bank Hurricane Protection Levee
-  Existing Levees
-  Morganza to the Gulf Levee

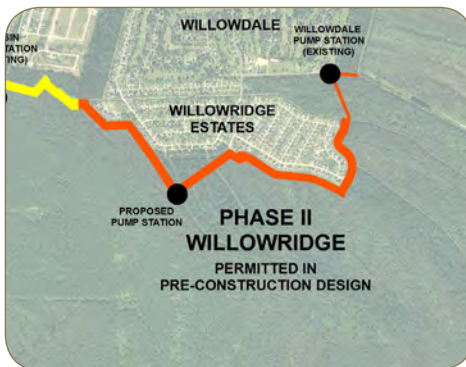
CURRENT STATUS OF THE ST. CHARLES PROJECT

In an effort to provide interim protection, St. Charles Parish has taken the initiative to begin the construction of a levee for the West Bank of the Parish. The St. Charles West Bank Hurricane Protection Levee consists of three (3) phases and has an estimated total project cost of \$150 million. The following is a breakdown of the phases and their current status:



PHASE I: MAGNOLIA RIDGE

The earthen levee portion of this phase is partially constructed including a first lift. A second lift, tidal interchange structures and a major pumping station remain to be completed and are currently unfunded. A new Section 404 permit application has been submitted to the U.S. Army Corps of Engineers to complete the remaining work. All right of way and real estate has been acquired for this phase of the project.



PHASE II: WILLOWRIDGE

The Section 10 and 404 permits for construction of the Willowridge phase were obtained in May 2011. Since that time, the Parish has obtained the necessary levee rights-of-way and is preparing to advertise for construction. The first phase of construction is anticipated to be bid in the first quarter of 2013, with a subsequent advertisement taking place in the second quarter of 2013 for the drainage pumping station. The initial construction phase includes earthen levees and drainage canals. The second phase of construction will include a drainage pumping station and water detention pond to store storm water runoff.



PHASE III: ELLINGTON PLANTATION

The permit application for this phase went to public notice on October 23, 2010 and is currently under review by the various agencies. The Parish is currently negotiating the compensatory wetland mitigation requirements with the EPA and the Corps of Engineers. After the mitigation agreement is finalized, the Section 10 and 404 permits for this phase of the levee will be released by the regulatory agencies. A permit decision is anticipated in the next 60 days. The Ellington phase includes earthen levees, drainage canals, tidal exchange structures, concrete t-walls, and a drainage pumping station. Real estate acquisition work for this phase is currently ongoing and anticipated to be completed in approximately 12 months.



HURRICANE ISAAC: A NEAR MISS

St. Charles Parish was fortunate not to take a direct hit and face the full brunt of Hurricane Isaac. Hurricane Isaac produced tropical storm force winds for a 57-hour period in St. Charles Parish. A storm of similar strength on a tract 50 miles west would have caused wide spread devastation on the West Bank of the Parish such as what was witnessed in St. John the Baptist and Plaquemines Parishes. In this near miss, 464 structures including 24 businesses and 440 residential properties were reported damaged to the Emergency Operations Center. Major streets were flooded and impassible due to tidal surge.

St. Charles Parish endured between twelve (12") and fifteen (15") inches of rain between August 29, 2012, and August 31, 2012, overwhelming the drainage infrastructure and requiring emergency action and dedication by the Public Works Department. Storm surge elevations reached +3.6 feet in the unprotected areas of the West Bank and up to +4.28 feet in Bayou Des Allemands. The East Bank experienced surge of over +6 feet from Lake Pontchartrain, which is partially included in the New Orleans Area Flood Protection System. Montz, which is on the East Bank and outside of the federal protection, was heavily damaged by the same floodwaters that severely devastated St. John the Baptist Parish.

ECONOMIC IMPACTS

- ***Petroleum refineries located in St. Charles Parish with the capacity to produce 493,500 barrels of petroleum products per calendar day were shut down.***
 - ***Business interruption losses for industrial facilities are reported to be at least \$30M.***
 - ***In a catastrophic event, Monsanto's Round-Up plant in Luling, the nation's largest, would be shut down for an extended period of time, severely impacting U.S. farmers and the agriculture industry.***
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Flooding across US Hwy 61



Willowridge Subdivision Street Flooding



Evangeline Road, Montz, LA



Willowridge Subdivision Street Flooding



Hwy. 90 at the Diversion



HESCO Baskets along Bayou Des Allemands