

Flood Mitigation Planning

Bayou des Allemands

St. Charles Parish, Louisiana



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Credits

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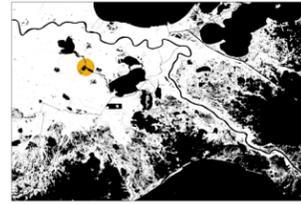


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COMMUNITY AT THE WATER'S EDGE

The community of des Allemands, which lies along the banks of Bayou des Allemands, suffered significant storm surge flooding from Lac des Allemands and Lake Salvador during Hurricane Ike in September of 2008. The Bayou currently has no flood control structures (pumps, weirs, etc.).

Background

During tropical storm events in the region Des Allemands and adjacent St. Charles Parish are subject to flooding. The Parish Department of public works places temporary protection (such as Haskell baskets, ect.) however there is the need for a long-term, more permanent solution. Several solutions have been suggested and evaluated by the Parish, all costly and beyond their financial means at this time. Additionally, the USACE is considering a regional solution (The Donaldsonville to the Gulf) however, construction is projected sometime in the future. So the Parish is considering the feasibility of an effective short-term solution. Several alternatives have been proposed and and evaluated. The following pages summarize the various alternative flood mitigation measures and recommends a solution that is feasible for the Parish to implement.

'Catfish Capital of the Universe'

Bayou des Allemands is located in southern Louisiana in the Barataria Basin in St. Charles Parish about 25 miles southwest of the city of New Orleans. The area is primarily freshwater wetlands. Des Allemands was settled in 1721 by German immigrants to Louisiana under the control of John Law and the *Company of the Indies*. 'Des Allemands' means *of the Germans* in French. Des Allemands is a community very much connected to the Bayou evidenced by the way many waterfront residents extend personal property into the Bayou in the forms of docks, piers, camps, and homes.

FRESHWATER WETLANDS

The area surrounding Lac des Allemands to Lake Salvador provides an extremely fertile habitat for catfish, bass, crappie, and panfish. The web of bayous, canals, and cypress swamps provides a habitat of stumps, brush, fallen trees, and grass mats needed to produce ample numbers of these species. The cypress tree-lined bayous and tupelo wetlands in the area provide the habitat for diverse wildlife viewing of otters, raccoons, blue herons, egrets, frogs, alligators, and bald eagles. Residents to this region rely on the livelihood of these unique habitats.

Context

The community of des Allemands lies southeast of Lac des Allemands. The lake is fed by numerous bayous in the Barataria Basin including Grand Bayou and Bayou Chevreuil. The Basin is cross-crossed by bayous, access canals, drainage canals, and navigation channels, including the Intracoastal Waterway and the Barataria Waterway. Most of the Basin is at sea level. Lake waters flow southeast into Bayou des Allemands, then on to Lake Salvador and eventually to the Gulf of Mexico. Bayou des Allemands provides a public boat launch for access to Lac des Allemands and Lake Salvador.

A Gap in Storm Protection

There is a need for a quarter mile flood control structure bridging the existing levee to the railroad embankment.

Project Objective

- There is a need for flood protection along Bayou des Allemands in St. Charles Parish.
- Currently, there is limited funding for major construction.
- Time frame: Something needs to be done now to provide storm flood protection until the Donaldsonville to the Gulf project is constructed.
- Various alternatives are being considered.
- Based on research and discussion with Parish staff, a recommendation has been developed as part of this presentation.



LOCATION

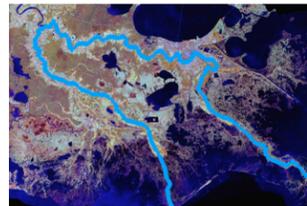
The study area is located in southeast Louisiana and includes portions of the Parishes of Ascension, Assumption, St. James, St. John the Baptist, Lafourche, St. Charles, Jefferson, Orleans, and Plaquemines. The area consists of an approximately 2,423 square mile, low-lying area of land and water known as the Barataria Basin or estuary. The basin boundaries include the developed natural levees on the east bank of Bayou Lafourche and the west bank Mississippi River levees on the east that extend southeast to Barataria Bay.

Scope

The scope is to study various alternatives that will provide flood protection from tidal, hurricane surges, and heavy rainfall events. Determine the adequacy of the existing interior drainage systems and evaluate whether additional pumping capacity is required. Analyze recreational, cultural, and environmental needs.

The project is currently in its feasibility study phase, during which various alternatives to reducing storm surge are being examined, the adequacy of the existing drainage system is being assessed, and cultural, environmental, and recreational issues are being identified. The next major steps will be a feasibility report (based on the results of the study) and an environmental impact statement (EIS). The EIS will be made available to the public for review and comment. When a hurricane levee alignment is proposed, public meetings will be scheduled throughout the study area to inform the public.

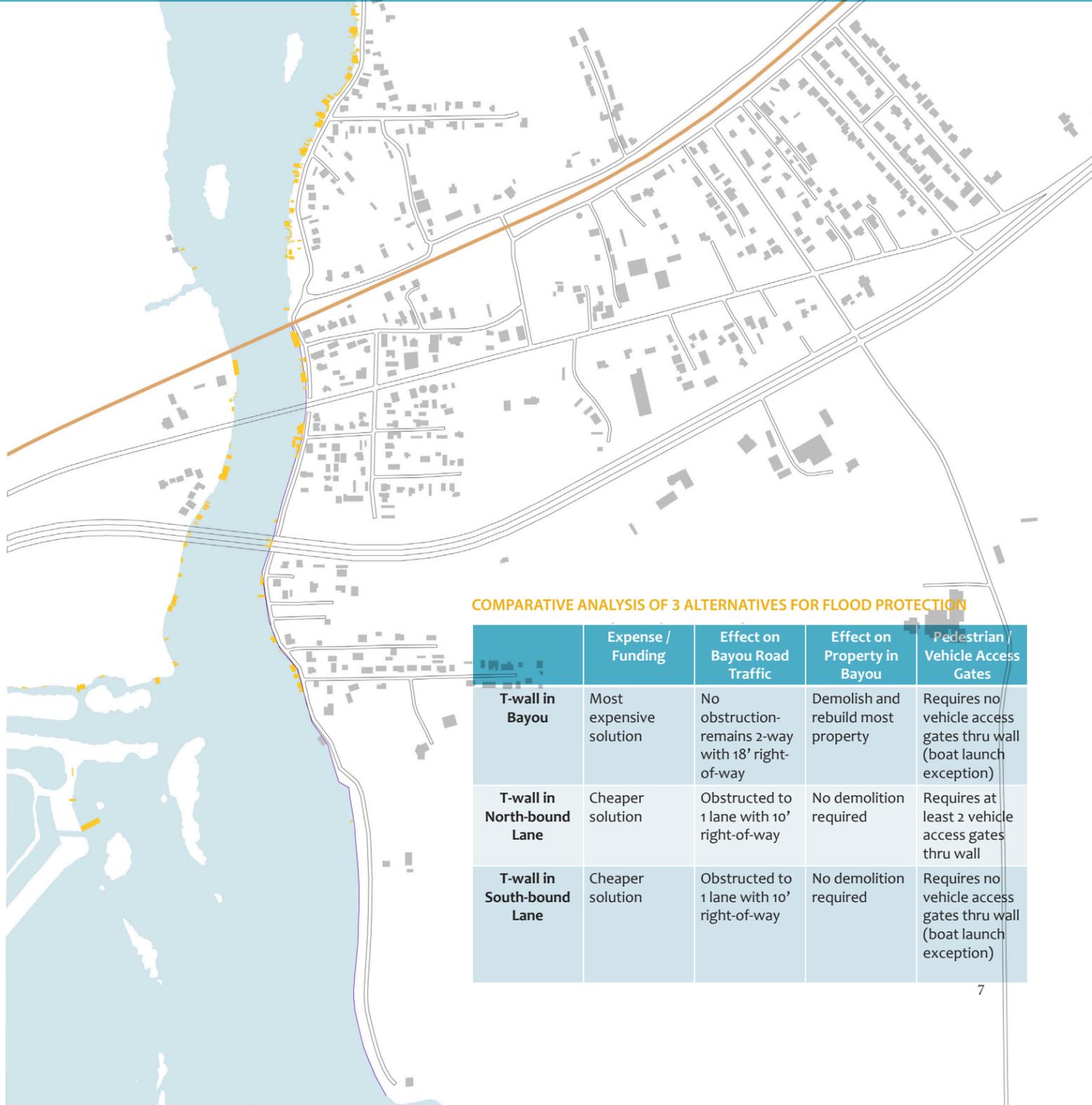
For more information, please visit:
<http://www.mvn.usace.army.mil/pd/projectsList/home.asp?projectID=1>



Figures : clockwise from left

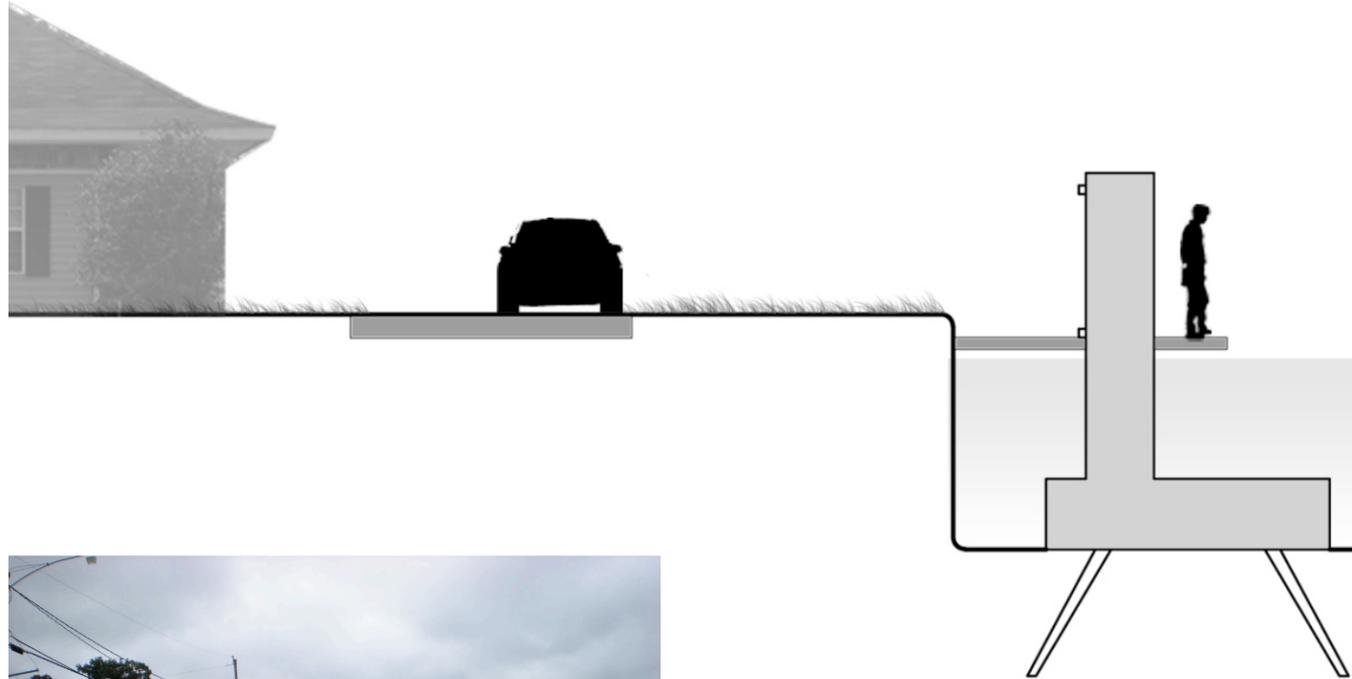
Figure 1 shows the possible hurricane levee alignments of Donaldsonville to the Gulf.
 Figure 2 shows the Barataria Basin boundaries in blue.
 Figure 3 highlights Highway 90 in red. The roadway foundation acts as a man-made levee in many areas within the Basin.

3 Alternatives for Flood Protection



COMPARATIVE ANALYSIS OF 3 ALTERNATIVES FOR FLOOD PROTECTION

	Expense / Funding	Effect on Bayou Road Traffic	Effect on Property in Bayou	Pedestrian / Vehicle Access Gates
T-wall in Bayou	Most expensive solution	No obstruction-remains 2-way with 18' right-of-way	Demolish and rebuild most property	Requires no vehicle access gates thru wall (boat launch exception)
T-wall in North-bound Lane	Cheaper solution	Obstructed to 1 lane with 10' right-of-way	No demolition required	Requires at least 2 vehicle access gates thru wall
T-wall in South-bound Lane	Cheaper solution	Obstructed to 1 lane with 10' right-of-way	No demolition required	Requires no vehicle access gates thru wall (boat launch exception)



Alternative 1: T-wall in the Bayou

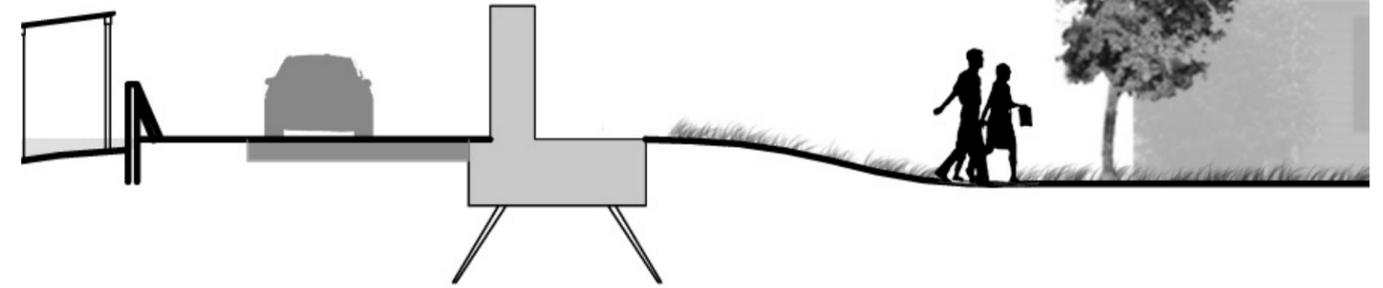
Alternative 1 calls for leaving the parallel road in place and building a T-wall in the bayou immediately adjacent to the wood bulkhead. The T-wall would be constructed to an elevation of +8.0 feet and be approximately 4,670 feet long. This alternative recommends 12 pedestrian flood gates and 1 vehicular flood gate through the T-wall. Wharves would be constructed parallel to the T-wall on the bayou side and 9 structures / buildings over the water would be demolished and replaced.



BEFORE T-WALL IN THE BAYOU



AFTER T-WALL IN THE BAYOU



Alternative 2: T-wall in the North-bound lane of Up the Bayou Road

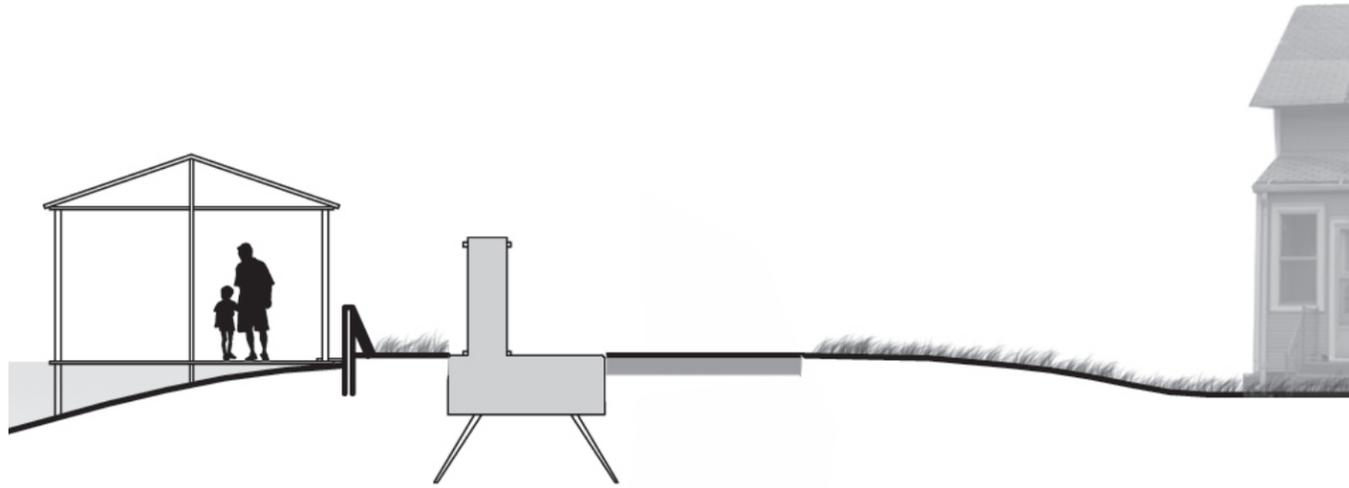
Alternative 2 calls for building a T-wall in the North bound lane of Up the Bayou Road from the railroad embankment to just south of Schaubhut Lane. From that point south, a levee would be constructed to the pump station with an elevation of +8.0 feet. The T-wall would be constructed to an elevation of +8.0 feet and be approximately 2,470 feet long. The new levee would be approximately 2,200 feet long. This alternative recommends 11 pedestrian flood gates and 1 vehicular flood gate through the T-wall. The South bound lane of Up the Bayou Road would be maintained on the bayou side of the T-wall. Parallel to the new levee, the road would be relocated as a crushed stone road with parallel drainage ditch.



BEFORE T-WALL IN NORTH-BOUND LANE



AFTER T-WALL IN NORTH-BOUND LANE



BEFORE T-WALL IN SOUTH-BOUND LANE



AFTER T-WALL IN SOUTH-BOUND LANE

Alternative 3: T-wall in the South-bound lane of Up the Bayou Road

Alternative 3 calls for building a T-wall in the South bound lane of Up the Bayou Road from the railroad embankment to just south of Schaubhut Lane. From that point south, a levee would be constructed to the pump station with an elevation of +8.0 feet. The T-wall would be constructed to an elevation of +8.0 feet and be approximately 2,470 feet long. The new levee would be approximately 2,200 feet long. This alternative recommends 6 pedestrian flood gates and 1 vehicular flood gate through the T-wall. The North bound lane of Up the Bayou Road would be maintained on the community side of the T-wall. Parallel to the new levee, the road would be relocated as a crushed stone road with parallel drainage ditch.

The distinguishing factor between this alternative and alternative 2 is the decreased number of access gates as a result of having the road on the community side of the T-wall. The idea is that the gates are now placed at intervals where they may be shared by multiple users instead of placing a gate at every property in the bayou.

Bank Stabilization



SIDEBAR LEFT HEADLINE

A work session reviewing the three alternatives together with other work-in-progress of the LSU team was held in January 2010 at the Parish Department of Public Works. During the discussion a fourth alternative identified that seemed feasible given the uncertainty of current flood mitigation planning and Parish resources. This alternative is termed "Bank Stabilization", an approach that puts in place during the onset of storm seasons temporary flood protection overlaid on a compacted earthen base. This alternative is within the means of the Parish to implement.

A Fourth Alternative

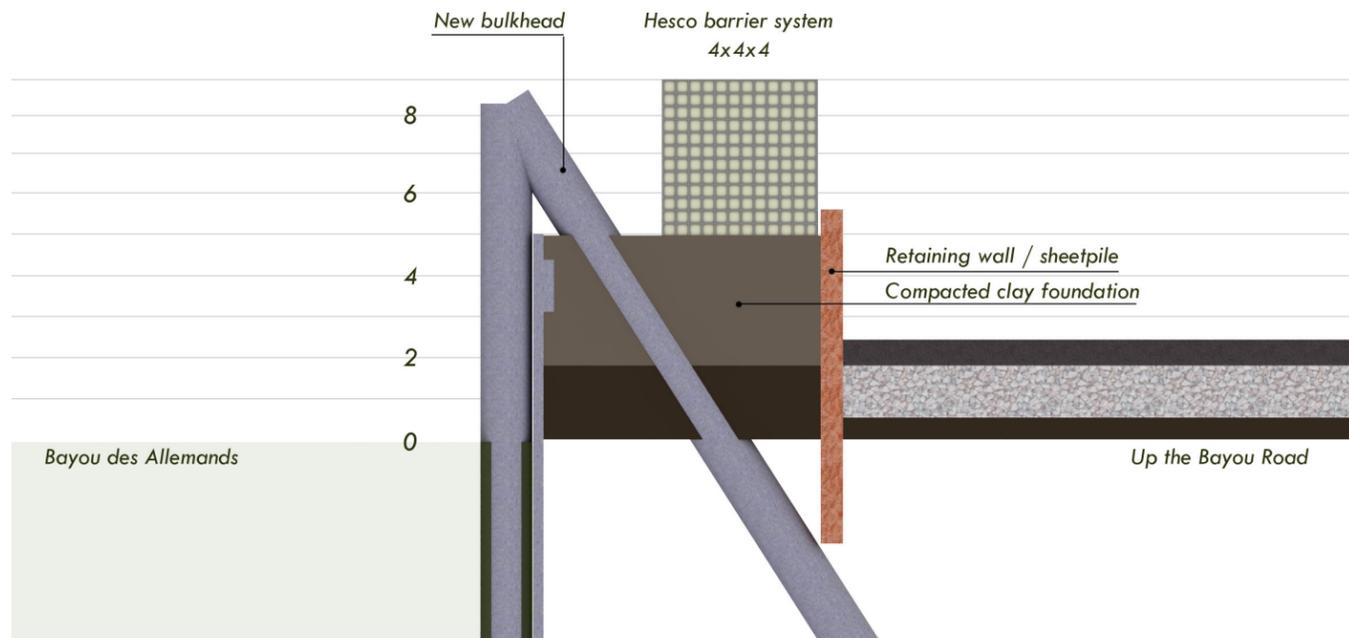
With Donaldsonville to the Gulf proposed, and limited funding for the flood protection alternatives presently considered to protect Des Allemands, something still needs to be done to provide protection for the Bayou des Allemands community and St. Charles Parish.

The fourth alternative is termed "Bank Stabilization", an approach that puts in place during the onset of storm seasons temporary flood protection overlaid on a compacted earthen base. This alternative is within the means of the Parish to implement. Perhaps equally important is the consideration that this structure will not become obsolete once Donaldsonville to the Gulf is actualized. It has a life that will be extended as its function transitions over time. From a structural primary flood defense system, to a secondary flood defense system with Donaldsonville to the Gulf, to a potential for recreation and trail system along the waterfront.



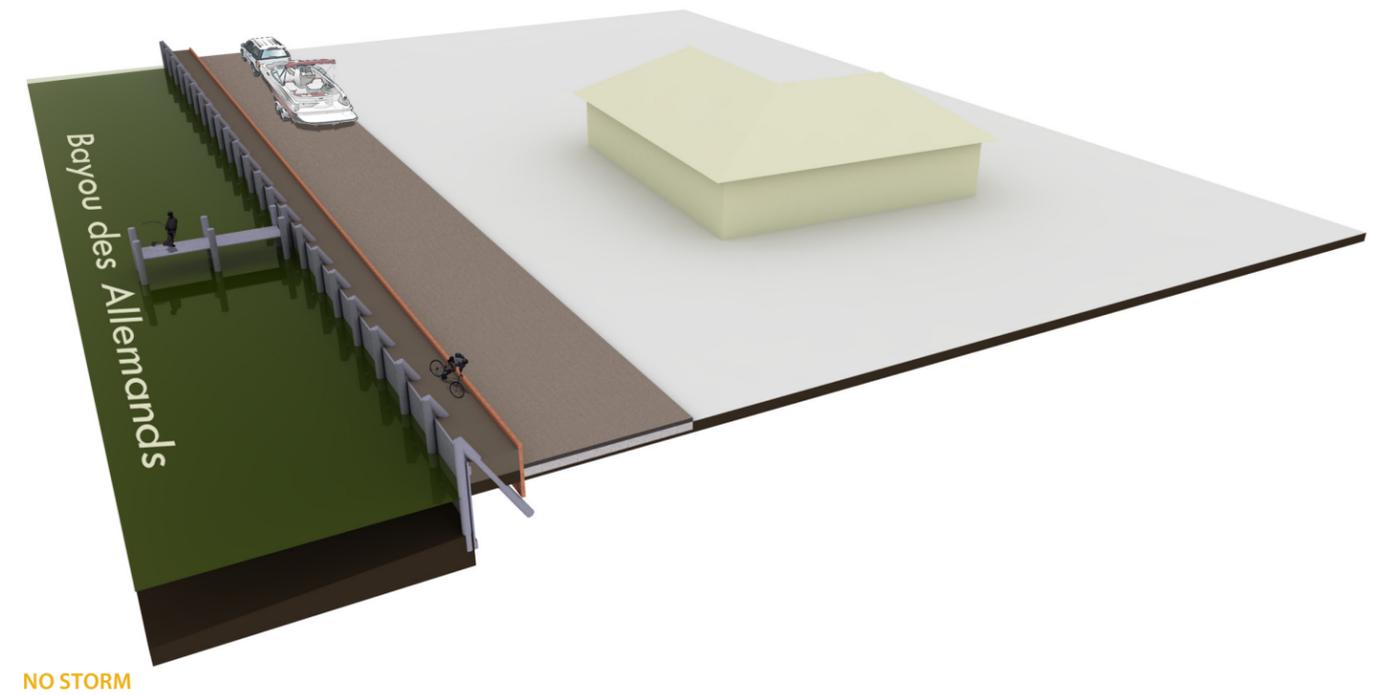
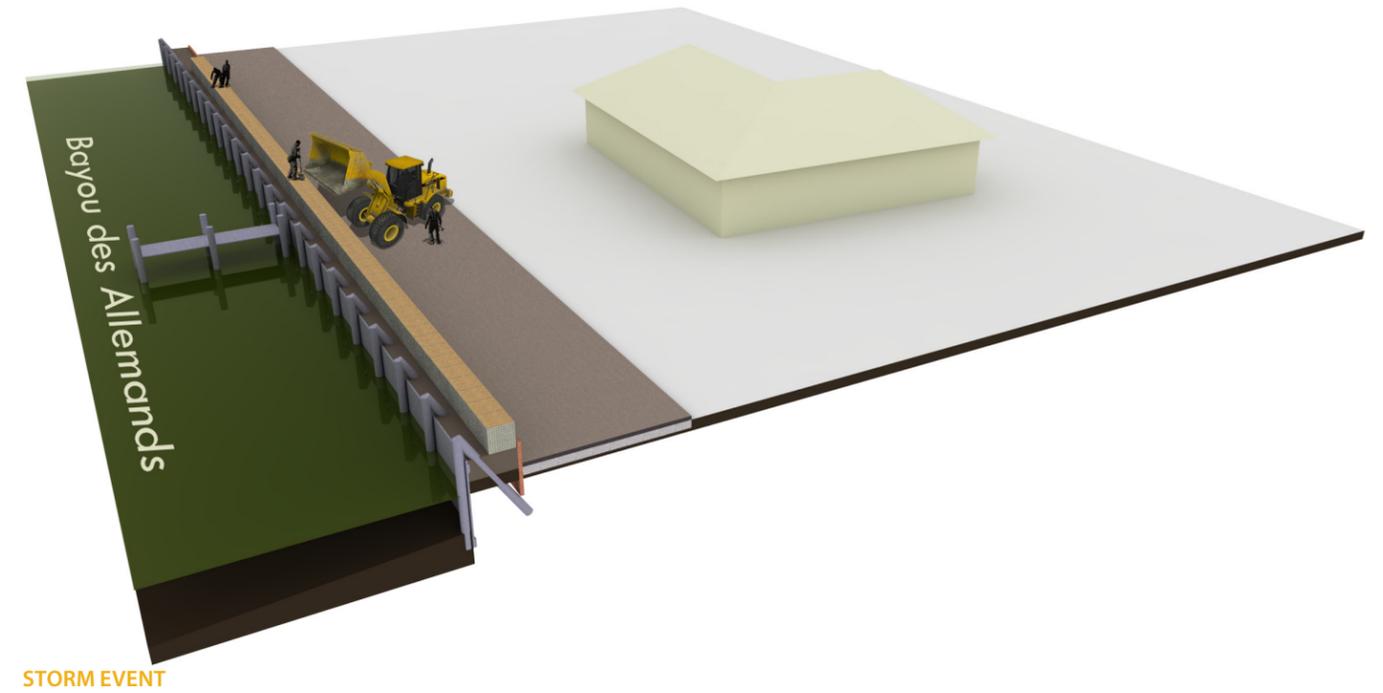
Sidebar Right Headline

In addition to the existing bulkhead that will need replacing soon, an earthen levee exists as a foundation where the Parish Department of Public Works can place Hesco Baskets on top for increased storm protection when threatened. Residents have learned to accommodate this 'barrier' with resourceful methods of maintaining access to the water's edge. The fourth alternative expands on and explores this resourcefulness.



Bank Stabilization

- Preserves the scenic waterway and cultural significance of Bayou des Allemands.
- Allows for the community to continue living and fishing along the Bayou as before.
- Provides a proper foundation for flood barrier installation during storm events.
- Creates a potential for recreation and trail system along the waterfront.



Louisiana Natural and Scenic Rivers System



HISTORIC AND SCENIC RIVER

Historic and scenic river[™] means a river, stream, or bayou or segment thereof which because of its unique historical status and scenic character requires protection and preservation of its aesthetic, scenic, recreation, fish, wildlife, ecological, archaeological, geological, botanical, and other natural and physical features.

Purpose (RS 56:1856)

A. The Legislature of Louisiana hereby finds that there exist in Louisiana many unique and diverse free-flowing rivers, streams, and bayous which should be preserved, protected, and enhanced for the present and future benefit of Louisiana citizens. In order to assist in fulfilling its duties to protect, conserve, and replenish the natural resources of this state in accordance with Louisiana Constitution Article IX, Section 1, the legislature does hereby establish the Louisiana Natural and Scenic Rivers System.

B.(1) This system shall be administered for the purposes of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regime of certain free-flowing streams or segments thereof.

(2) This system shall further be administered for the purpose of preserving aesthetic, scenic, recreational, fish, wildlife, ecological, archaeological, geological, botanical, and other natural and physical features and resources found along these streams or segments thereof.

In Other Words...

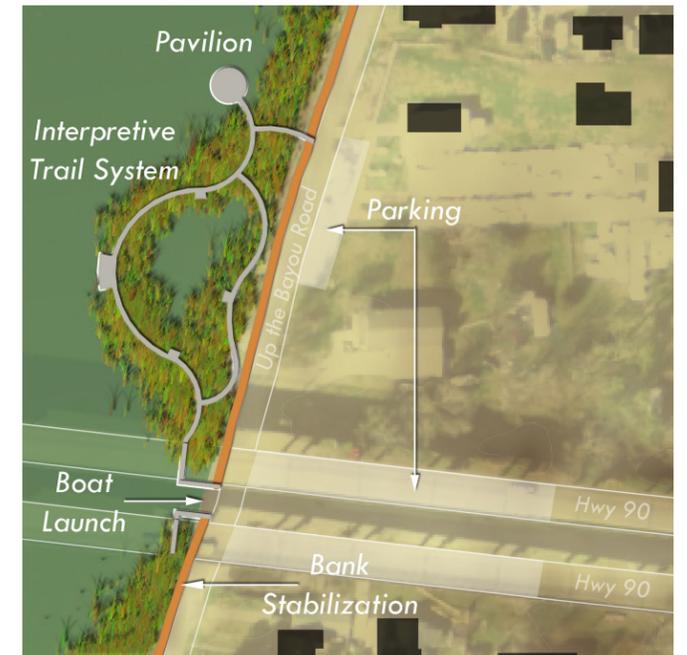
In other words, Bayou des Allemands is designated as being part of this natural and scenic river system.



BANK STABILIZATION COULD BE IMPLEMENTED IN PHASES.



Existing Public Boat Launch



TRAIL SYSTEM AND REBUILT WETLANDS TO STABILIZE BANK.

Phasing and Potential Recreation

The Bayou and its setting possess natural and recreational values of outstanding quality. It will provide present and future benefits to Louisiana citizens through preserving, protecting, and enhancing its wilderness qualities, scenic beauties, and ecological regimes and its aesthetic, scenic, recreational, fish, wildlife, ecological, archaeological, geological, botanical, and other natural and physical features and resources found along Bayou des Allemands and adjacent lands.

Because of these unique attributes, there exists the potential for expanding on current recreational uses, such as the existing boat launch. It is recommended that rebuilt wetlands along the bank and an interpretive trail system may further educate users about the area and promote non-structural solutions for flood protection. The wetlands further stabilize the bank and enhance the integrity and life of the structure.

References

Flood Mitigation Planning
Bayou des Allemands
St. Charles Parish, Louisiana



Topographic Survey 1890



Topographic Survey 1955

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