Speculative Investment in the Mississippi Delta of the Future

Introduction
This report analyzes future scenarios of Southern Louisiana based on the events surrounding Hurricane Katrina and the possibility of future natural disasters. More specifically, will natural events cause the Atchafalaya Basin to be a viable development option for ports and other development?

This presentation is structured as a report to a fictional development company that is interested in rebuilding the delta region after Hurricane Katrina and other possible future disasters.

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Is New Orleans a good investment?

- Real estate assets and general economic importance
- Social Infrastructure: home to excellent educational, medical, health, & research institutions.
- Tourism: historic districts, culture, music, Mardi Gras, etc.
- Extremely powerful political coalitions
- Petrochemical and other energy-related industries and existing infrastructure.
- Well-established port facilities serving world markets
- New Orleans’ strategic location near the mouth of the Mississippi River and along major transportation routes are reasons for the region’s economic importance.

South Louisiana’s Extensive Navigable Waterway Network

Data Sources: urban areas: USGS National Atlas; states and counties: U.S. Census Bureau; waterway data: U.S. Army Corps of Engineers Navigation Data Center
Is New Orleans a good investment?

Rebuilding Proposals and Real Estate Opportunities

Despite New Orleans’ unfortunate geography, attempts at protecting the city continue:

Protection Proposals:
- Perimeter levees
- Internal levees
- Pumping & floodgates
- Restoration of coastal wetlands
- Estimated Cost = $9.5 Billion

Regional Transit Development: Connection of New Orleans to its region with commuter rail.

Real Estate Opportunities:
- Baker Bill: a federal redevelopment proposal in the works (estimated cost - $700 million). Redeveloped land to be auctioned to *private developers* for rebuilding and resale.
- $200 billion redevelopment effort: high returns expected, maybe even from flooded property.

![City of New Orleans - Ground Elevations Diagram](image-url)
New Orleans: The Precarious Status Quo

- New Orleans politics is notoriously unstable and unpredictable.
- Sources for reconstruction funding are potentially unreliable and are subject to bureaucracy, political whims, and other needs of the country, state, and city.
- Attempts at taming the Mississippi River, the Gulf of Mexico, and Lake Pontchartrain are becoming increasingly costly and ineffective.
- Rising water levels, loss of wetlands, and land subsidence make New Orleans vulnerable to hurricane damage and flooding, as evidenced by Katrina.

The water has nowhere to go. Left on its own, it would form a lake, ...
Every drop of rain that falls on New Orleans evaporates or is pumped out.” - John McPhee


Images: USGS Landsat Project
(http://landsat.usgs.gov/gallery/detail/412/)
What will New Orleans look like in the future? 
The case of Galveston, 1900

Data source: U.S. Census Bureau; overlay by authors.
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The Rise of Baton Rouge?
Potential population shift caused by Katrina

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Data source: U.S. Census Bureau; overlay by authors.
What forces will shape the future of New Orleans and Southern Louisiana?

Primary Players

- **Nature**: New Orleans is vulnerable not only to hurricanes from the south, but from excessive flooding from the Mississippi River.
- **U.S. Congress**: controls funding to the Army Corps of Engineers, the National Flood Insurance Program, transportation and other infrastructure, and designates National Parks, Forests, Preserves, etc.
- **Army Corps of Engineers**: builds levees, dams, and other control structures; dredges waterways for shipping.
- **Port authorities**: will new ports be publicly or privately owned? Port authorities administer port activities and work with both sectors to facilitate trade.
- **Environmental Agencies**: instrumental in protecting valuable wetlands and habitats along the coast and in the Atchafalaya Basin.
- **State government and regional planning agencies**: allocate federal and state funding, plan and build infrastructure, burden of environmental protection
- **World Economy**: in addition to significant oil production, 70 percent of the world’s grain travels through the gulf coast.
- **Major companies**: most of the Atchafalaya Basin is privately owned; will large corporations based in Louisiana (especially New Orleans) seek less vulnerable locations?
Post-Katrina Redevelopment in the New Orleans Region

- Federal aid for reconstruction of New Orleans region
- Federal regulations limit development on flood-prone land
- Stress on economically and environmentally sustainable development
- Efforts in place to redirect redevelopment efforts to Lafayette and Baton Rouge connected to ports on the Mississippi through improved transportation networks.
- Smaller regional cities such as Baton Rouge and Lafayette will see increased growth.
- In New Orleans, land along the Mississippi River has the highest elevation because it has been built up by levees.

Data source: U.S. Census Bureau; overlay by authors.
Many of the Katrina evacuees in Baton Rouge will likely stay.

Realtors predict that Baton Rouge will be the staging area for rebuilding of the Delta Region.

Baton Rouge has already asked the federal government for $11 billion in transportation improvements to meet new demand.

High demand for housing from New Orleans refugees: Being the closest major city to New Orleans, Baton Rouge experienced a real estate frenzy after Hurricane Katrina.

High demand for affordable housing: A lot of the buyers are from hard-hit areas and cannot spend much on replacement housing. There is not enough housing within the price ranges that are in demand.
Hurricanes are not the only reason why New Orleans is vulnerable to natural disasters. All of the water from the Mississippi watershed makes its way to South Louisiana, leaving the region vulnerable to flooding, especially if a primary river control structure were to fail.

**The Old River Control Structure**

- Built in 1963 to prevent the Atchafalaya from capturing the flow of the Mississippi, which it has been threatening to do for the last century.
- The Army Corps maintains a flow of 30 percent down the Atchafalaya and 70 percent down the Mississippi.
- Project cost: $86 million new in 1963.
- Continued repairs and supplement costs: $500 million.
- An auxiliary structure was built in 1986 to lessen the pressure at other sites.
Old River Control Structure

- Red River
- Old River
- Atchafalaya River
- Mississippi River
- Overbank structure
- Low Sill Control Structure
- Auxiliary Structure (built in 1983)
- Outflow Channel
- Upper Old River
- Old River Closure
- Hydroelectric Power plant
- Navigation Lock

Image courtesy of the USGS; color added by author
Flooding from the Mississippi River Watershed

The Mississippi River collects much of the water that falls on the continental United States. Consequently, large volumes of water pass through the ORCS.

In 1973, the control structure nearly failed due to the increased flow down the Mississippi (the foundation of the low sill structure was damaged and a guide wall sank into the river) because of large amounts of precipitation throughout the United States.

“in the long run the Atchafalaya will become the principal distributary of the Mississippi River and that the current main-stem will become an estuary of the Gulf of Mexico…the final outcome is simply a matter of time” - Raphael G. Kazmann and David B. Johnson


Data sources: state boundaries: U.S. Census Bureau; rivers: U.S. Army Corps of Engineers Navigation Data Center
What would happen if the ORCS failed?

- The Atchafalaya would probably capture 70 percent of the Mississippi’s flow, flooding the entire basin, and affecting:
  - Communities and businesses that would have to be relocated.
  - Oil and gas infrastructure: bridges and pipelines.
  - Fisheries and oyster reefs
  - Loss of natural gas and soaring prices of natural resources would severely affect the economy
- The people of New Orleans and Baton Rouge would no longer be able to drink the water from the Mississippi because of the increased salinity from the Gulf tide.
- The severely reduced flow of water may threaten the waterborne shipping industry along the river altogether.
Effect on Commerce and Trade – A Closer Look

The failure of the ORCS will severely affect four of the 11 largest ports in the U.S. Companies will have to look elsewhere to fill their shipping needs. Other ports along the Gulf Coast would likely see increased activity, but many may not have the ability to take on extra traffic. This creates an opportunity for port development activity in the newly-dominant Atchafalaya.

If this scenario occurs, many tough decisions will have to be made:
• Should the control structure be rebuilt?
• Should the new river be canalized or dredged? If so, how deep or wide?
• Will levees be needed?
• Where should swampland be filled for development?
Control Structure gives way

Water gets diverted from Mississippi to Atchafalaya Basin

Failure of the ORCS

Data source: U.S. Census Bureau; overlay by authors.
Failure of the ORCS

- New Orleans and Baton Rouge lose their shipping route and most of their water supply

Data source: U.S. Census Bureau; overlay by authors.
New Orleans gets partially rebuilt; Baton Rouge develops as well as some of the population stays.

Over time population moves to the Atchafalaya Region as ports and new industries develop.
The Atchafalaya Basin would become the only viable shipping route up and down the Mississippi in Louisiana—a vital link in the nation’s water transportation network. Which means…

**Investment Potential**

- New ports and port-reliant development on what is now inexpensive farmland
- Port-reliant industries, shipping companies, and commercial development
- Service businesses and housing to accommodate the increased population in existing cities and in new cities
- The optimal locations for these investments will depend on the actions of all the players involved.

The following slides are examples of what may occur if port development on the Atchafalaya becomes necessary.
Dredging a “New Mississippi”

Under pressure from port-dependent industries and investors, the Army Corps decides to dredge and channel the new Atchafalaya River much like the Mississippi.

This would lead to a spatial pattern resembling the port development along the Mississippi. Other, non-port development would likely occur in the areas near the ports, protected by the levee system of the Atchafalaya basin.
Limited Dredging & Development in the Basin

The Corps may also decide to dredge a portion of the basin but not create a confined channel or fill the land near the river for development. The dredging will only serve to provide ships a way to get up and down river, although ports could be built at strategic locations if they take a different form.

Residential and commercial development can be expected to grow in close proximity to these ports and in locations connected to the ports by highways and railroads.
Environmental Protection

Pressure from environmental groups may also persuade the Corps to let the water run its course in the basin after the flood. The river would likely take the shape of a broad, shallow wetland without a clearly-defined channel.

Under this scenario, a port could not be located along the river, as it would not be navigable by most industry. Any port development would occur along the coastline and may require slight land alterations. Aside from this and a few infrastructure improvements, the Atchafalaya Basin would be allowed to exist naturally. Progressive port technology (i.e. mobile port facilities, cranes on tracks, etc) may be required to operate port facilities in this scenario.
Investment Options and Future Research

- Conduct a detailed floodplain analysis to determine what areas will not be underwater after the ORCS fails and areas that will be the least-vulnerable to future flooding.
- Begin exploring land prices in the Atchafalaya Basin.
- Determine where new infrastructure would likely be placed.
- Study exactly what kinds of facilities in New Orleans and South Louisiana will need to be replaced.
- With so much at stake and so many uncertainties, preparations should be made based on these future possibilities. This will likely include making small and incremental investments in different areas, rather than making only one or a few “lump sum” investments.
- Identifying opportunities early and before disaster strikes is crucial to surviving disaster and achieving substantial economic gain.
- Government controls developer actions with infrastructure decisions. But ultimately, the effects of nature will determine the best investment options.