Repetitive Loss Area Analysis #6

Calcasieu Parish • Back Bay Area

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University of New Orleans
Center for Hazards Assessment, Response and Technology

www.floodhelp.uno.edu

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Repetitive Loss Area Analysis

Calcasieu Parish – Back Bay Area

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List of Abbreviations / Acronyms

ABFE – Advisory Base Flood Elevation: Three feet above the highest adjacent grade of a structure.

BFE – Base Flood Elevation: The elevation of the crest of the base flood or 100-year flood.

CHART – Center for Hazards Assessment, Response and Technology at the University of New Orleans

Corps – U. S. Army Corps of Engineers

D-FIRM – Digital Flood Insurance Rate Map

FEMA – Federal Emergency Management Agency

FIRM – Flood Insurance Rate Map

GIS – Geographic Information Systems

HMGP – Hazard Mitigation Grant Program

ICC – Increased Cost of Compliance

LRA – Louisiana Recovery Authority

NFIP – National Flood Insurance Program

RL – Repetitive Loss Property

SFHA – Special Flood Hazard Area: The base floodplain delineated on a FIRM. The SFHA is mapped as a Zone A. In coastal situations, Zone V. The SFHA may or may not encompass all of a community’s flood problems.
Repellitive Loss Area Analysis

Back Bay Area – Calcasieu Parish, Louisiana

Background

The National Flood Insurance Program (NFIP) is continually faced with the task of paying claims while trying to keep the price of flood insurance at an affordable level. It has a particular problem with repetitive loss properties, which are estimated to cost $200 million per year in flood insurance claim payments. Repetitive loss properties represent only 1 percent of all flood insurance policies, yet historically they account for nearly one-third of the claim payments (over $4.5 billion to date). Mitigation of these repetitive loss properties will reduce the overall costs to the NFIP as well as to individual homeowners.

The University of New Orleans’ Center for Hazards Assessment, Response and Technology (UNO – CHART) received a special grant from FEMA to collate data and analyze the repetitive loss areas in Louisiana. Using geographic information system (GIS) and flood insurance claims data, repetitive loss areas and properties are being prioritized for attention and analysis. In selected locations, UNO is reviewing whether flood control projects have been constructed or are planned that will stop the repetitive flooding.

UNO conducted an “area analysis” case study in the Back Bay area. An area analysis follows new FEMA guidelines to determine the suitability of the buildings for acquisition, elevation, or other retrofitting flood protection measure; and the community for drainage projects. This report summarizes the area analysis conducted for the Back Bay repetitive loss study area.

The Area: The Back Bay repetitive loss study area is in a suburban part of unincorporated Calcasieu Parish. It is a neighborhood located north of the City of Westlake, and just south of Sam Houston Jones State Park.

Calcasieu Parish is in southwestern Louisiana and borders the State of Texas. Only Cameron Parish lies between Calcasieu Parish and the Gulf of Mexico. Many waterways run through Calcasieu Parish including rivers, lakes, streams, bayous and natural drainage
waterways. Additionally, many man-made drainage waterways and shipping channels have been created. The Back Bay area lies along the West Fork Calcasieu River, which is part of a water system that eventually flows into the Gulf of Mexico.

The Back Bay study area is 100% residential. The lots are large, and small drainage bayous and ditches run behind the homes. These bayous connect to the Calcasieu River. The water is part of the culture of this neighborhood, as many residents use boats docked along the bayou to travel around the neighborhood. Festivals relating to the water are common throughout Calcasieu Parish. There are many different housing types in this area, and the ages of the houses vary. Some homes are new construction, while others are a few decades old.

The following map shows the Calcasieu Parish Police Jury Districts. Back Bay is within District 14. The study area is found within the yellow box. The map on the following page shows the boundaries of the Back Bay study area.

source: www.cppj.net
Back Bay Repetitive Loss Area Map

Legend

Analysis Area
Process: Generally, this area analysis follows a FEMA-prescribed five step process. However, the UNO-CHART Team has enhanced the five-step process by adding two important steps: a preliminary step (the area selection process) and a final step (ongoing collaboration with the neighborhood).

Preliminary Step. The area to be studied is selected through a review of the repetitive loss claims data as well as other relevant information related to particular areas throughout Region VI (e.g., interest in mitigation). This is done through a collaborative effort with local officials.

Step 1. Advise all the property owners in the repetitive loss areas that the analysis will be conducted.

Step 2. Collect data on each building and determine the cause(s) of the repetitive damage.

Step 3. Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

Step 4. Contact agencies or organizations that may have plans that could affect the cause or impacts of the flooding.

Step 5. Document the findings, including a map showing all parcels in the area.

Ongoing Collaboration with the Neighborhood. UNO-CHART establishes an ongoing collaborative partnership with the study area community. The UNO-CHART role includes providing homeowners with information concerning mitigation measures, policy issues, or other flooding related matters.

Step 1. Neighborhood Notification

The first step of the FEMA five-step process is to advise the neighborhood about the project. On May 7, 2007, the Calcasieu Parish Planning Office sent a notice to the homeowners introducing them to the project. The letter included a data sheet. Copies of the notice and data sheet appear on pages 31 and 32. The back side of the data sheet included UNO-CHART’s address and a stamp. After completing the form, the respondent could fold the form and return it by mail. Attempts were also made to notify residents of this study through direct contact with residents.

Step 2. Data Collection

The second step in the process was to collect relevant data on the problem, i.e., the properties exposed to flooding and the cause(s) of the repetitive damage. Five sources of information were used for this: flood studies, flood insurance data, drainage information,
property owners, and on-site data collection. These data were collected through coordinating with many agencies and departments. For a list of these actors, see Step 4, pages 27 and 28.

Flood Studies

The UNO-CHART team reviewed the drainage system, contacted the Parish, FEMA, and the US Army Corps of Engineers, and collected the following reports:

- Flood Insurance Rate Map, Calcasieu Parish, June 8, 1998

**Flood Insurance Rate Map (FIRM):** The map on the following page shows the portion of the Flood Insurance Rate Map (FIRM) for Calcasieu Parish that includes the Back Bay area. The FIRM shows the mapped floodplain and is used to determine flood insurance rates. The arrow points to the location of the study area on the map. The Back Bay area is located mostly in an AE flood zone, with a small portion falling in an X zone. AE zones are Special Flood Hazard Areas (SFHA), meaning that this area has a high risk of flooding. Structures in the X zone have a lower risk of flooding. SFHA’s are the mapped floodplain.

The regulatory floodplain used by FEMA for the floodplain management and insurance aspects of the National Flood Insurance Program is based on the elevation of the 100-year flood. It may be easily misconstrued that the 100-year flood happens only once in 100 years. In actuality, the 100-year flood has a 1% chance of occurring in any given year while the 10-year flood has any 10% chance of occurring in a given year. The table above gives a better understanding of this.

**The Flood Hazard Mitigation Plan:** The Calcasieu Parish Flood Hazard Mitigation Plan states that the Parish is susceptible to riverine, sheet flow (when the floodwater spreads out over a large area at a somewhat uniform depth; this usually occurs after a prolonged rainfall when the water cannot be absorbed into the ground), and tidal surge forms of flooding. Hurricanes and tropical storms are also a yearly threat, but riverine

<table>
<thead>
<tr>
<th>Period of Time</th>
<th>10 Year Flood</th>
<th>25 Year Flood</th>
<th>50 Year Flood</th>
<th>100 Year Flood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>10%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>10 years</td>
<td>65%</td>
<td>34%</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>20 years</td>
<td>88%</td>
<td>56%</td>
<td>33%</td>
<td>18%</td>
</tr>
<tr>
<td>30 years</td>
<td>96%</td>
<td>71%</td>
<td>45%</td>
<td>26%</td>
</tr>
<tr>
<td>50 years</td>
<td>99%</td>
<td>87%</td>
<td>64%</td>
<td>39%</td>
</tr>
</tbody>
</table>

For example, during the life of a 30 year mortgage, a house that is lower than the 10 year flood level has a 96% chance of being flooded.
flooding is a much more regular occurrence. This is primarily because low-lying and marshy surface areas that hinder rapid drainage exaggerate the flooding problems.

The Plan establishes hazard mitigation goals including:
1. reducing repetitive flood losses through mitigation measures;
2. encouraging development in the parish that will reduce or eliminate the impacts of potential disasters;
3. addressing drainage problems;
4. enhancing emergency response and preparedness activities.

As indicated above, repetitive loss structures are mentioned in the Plan. The Parish has identified eight Repetitive Loss Areas, Back Bay falls within Area #2. According to the Plan, flooding in Area #2 is due to riverine conditions of the Indian Bayou, which is located off of the West Fork River. There have been several mitigation measures employed in this area including acquisition, elevation, and dry floodproofing. Mitigation techniques reviewed in the Plan include retrofitting, acquisition, drainage, and early warning.

Residents interested in reviewing the Flood Hazard Mitigation Plan should contact the Calcasieu Parish Planning Division.

FIRM for Back Bay Study Area

Flood Insurance Data

The Back Bay area is mostly in flood zone AE, a SFHA. Federal agencies and mortgage lenders require flood insurance as a condition of financial aid or loans in SFHAs.
However, many people located outside of SFHAs, in X zones, buy flood insurance voluntarily because of their experiences with or knowledge about the flood hazard. UNO-CHART obtained claims data for the 12 properties that have been repeatedly flooded and have thus been listed in FEMA’s repetitive loss database.

**Privacy Act:** The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data are included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data are used for floodplain management, mitigation, or research purposes. Therefore, this report does not identify the repetitive loss properties or include claims data for any individual property. Rather, it discusses them only in summary form.

**Claims data:** As previously mentioned, the UNO-CHART team obtained claims data from FEMA Region VI for all repetitive loss properties in the Back Bay study area. In total, the homeowners for the 12 repetitive loss properties have received $756,518.72 in flood insurance payments since 1978. The average claim payment is approximately $19,000.

Summary data on the repetitive loss properties are displayed in the table below.

<table>
<thead>
<tr>
<th>Repetitive Loss Claims Summary</th>
<th>Claims</th>
<th>Claim Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Average (per property)</td>
</tr>
<tr>
<td>Repetitive Loss Properties</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Severe Repetitive Loss Properties</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>39</td>
</tr>
</tbody>
</table>

The table shows that the average claim for a repetitive loss property is larger than for a severe repetitive loss property. This is most likely because when there are fewer floods, and one produces an especially large claim, the average will be larger than the average of many smaller floods.

It is likely that the data in this section understate the flooding problem for five reasons.

1. Additional, non-repetitive, flood insurance claims data were not available.
2. NFIP records do not include claims data from before 1978, so there could have been additional losses not shown here.
3. Policy holders may not have submitted claims for smaller floods for fear of it affecting their coverage or their premium rates.
4. Only data for insured properties were reviewed. There could be other properties that have been repetitively flooded, but did not have insurance at the time or did not submit claims.

5. The losses only account for items covered by the insurance policy. Things not covered include living expenses during evacuation, swimming pools, and automobiles.

<table>
<thead>
<tr>
<th>Repetitive Loss Claims History</th>
<th>Date</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16/1980</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12/27-28/1982</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>5/18-21/1989</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6/28-7/3/1989</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4/11-13/1995</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9/2/2001</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11/30-12/14/2001</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>11/4-6/2002</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9/23-24/2005</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>10/28/2006</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

The table to the left shows the dates of the claims made by repetitive loss homeowners. The worst floods occurred in 1980, 1982, and 1989. The most claims were paid before 1990. Only two claims were made relating to Hurricane Rita. Repetitive flooding appears to have decreased over the last 18 years even though the Parish has received several Federal disaster declarations during that time. It is suspected that the major reason for this is increased efforts to mitigate. Furthermore, houses constructed following June 8, 1998 must be built to the base flood elevation. The table on page 9 demonstrates that there is a relationship between earlier claims data and flood depths. However, it is possible that homeowners are not making flood insurance claims for every flood. The data collected from Back Bay homeowners (see page 11) indicates that many residents flooded in October 2006, but the claims data suggests that not very many homeowners actually filed a flood insurance claim.

**The Drainage System**

The Back Bay area lies within drainage district # 5 of Ward 4. There are no storm drains in the Back Bay neighborhood, only drainage bayous and ditches which are located behind the houses and connect to the Calcasieu River.

**Saltwater Barrier:** A saltwater barrier located just north of Lake Charles was constructed by the U.S. Army Corps of Engineers between 1965 and 1968. The map on the next page illustrates the location of the barrier in relation to the study area. The project’s total cost was $4,197,262 and the purpose was to

Saltwater Barrier on the Calcasieu River above Lake Charles
minimize the flow of saltwater into the upper portions of the Calcasieu River. According to residents, at one time, there were rice farms located north of the barrier along the river. These farms no longer exist. This land has now become residential subdivisions.

The barrier consists of an earthen dam, a lock, and five adjustable gates. Some residents feel that the nightly closing of the locks on this saltwater barrier contributes to their flooding; and that larger floodgates or a concrete spillway located where the current dam is would lessen the depth and duration of the flooding. The maps below show the barrier including an earthen dam in the Calcasieu River, the barrier channel, and Mims Road which leads to the barrier.
Barrier – Mims Rd. leads to the barrier

Barrier Channel

Earthen Damn

Closer view of the saltwater barrier
Rainwater from many residential areas north of the barrier drain through the barrier. The depth of the barrier channel is much more shallow than the depth of the original river on both sides of the channel. This is by design because salt water is ‘heavier’ and sinks to the bottom of the river. Additionally, the openings in the barrier for water to pass through are narrow. This creates a “bottleneck” effect slowing the passage of the water and causing water north of the barrier to buildup and flood areas along the waterways.

The U.S. Army Corps of Engineers was contacted concerning any studies have been completed that evaluate the impact of the saltwater barrier on flooding north of the barrier. After several attempts, CHART was unable to find any studies conducted by the Corps to review what, if any, impact that the saltwater barrier has had on flooding in residential areas located north of the barrier, such as Back Bay. However, major repairs to the barrier were made from November 3, 1997 to March 15, 1998. The repairs involved dewatering the navigation chamber, removing the gates for sandblasting and painting, and replacing some mechanical parts.

The UNO-CHART team identified ten major flood events in accordance with the repetitive flood loss claims data. During six of these ten events, the water level at the saltwater barrier was at least at moderate flood stage. The table below details the dates and flood stages for those six flooding events.

<table>
<thead>
<tr>
<th>Date of Reading</th>
<th># Claims</th>
<th>Total Claims $$</th>
<th>Flood Stage</th>
<th>Flood Stage Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/18/1980</td>
<td>5</td>
<td>$94,880.58</td>
<td>7.45 ft</td>
<td>Moderate</td>
</tr>
<tr>
<td>12/31/1982</td>
<td>11</td>
<td>$265,093.47</td>
<td>8.95 ft</td>
<td>Major</td>
</tr>
<tr>
<td>7/3/1989</td>
<td>10</td>
<td>$198,443.19</td>
<td>9.40 ft</td>
<td>Major +</td>
</tr>
<tr>
<td>10/31/2002</td>
<td>2</td>
<td>$9,493.40</td>
<td>6.00 ft</td>
<td>Moderate</td>
</tr>
<tr>
<td>9/24/2005</td>
<td>2</td>
<td>$5,263.84</td>
<td>9.43 ft</td>
<td>Major +</td>
</tr>
<tr>
<td>10/29/2006</td>
<td>1</td>
<td>$35,839.28</td>
<td>6.35 ft</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Flood Stage = 4-6 ft.
Moderate Flood Stage = 6-8 ft.
Major Flood Stage = 8-9 ft.

**Property Owners**

As previously mentioned, the letter to Back Bay residents from Calcasieu Parish included a data sheet. Of the 75 properties to which letters were sent, 28 residents responded. The results are summarized in the table on page 13.

---

1 Flood stage data was only available for events categorized as ‘moderate’ or ‘major’.
The following general conclusions can be drawn from the resident data sheets:

Experiences
- Flooding from overflowing bayous and ditches occurs days after a heavy rain event.
- Roads become impassable, and floodwaters sometimes trap residents in their homes for days at a time.
- Residents living in the X zone portion of the neighborhood report having never flooded.
- Many homes have been elevated above the flood level, and those constructed after the date of the FIRM (June 8, 1998) are built at or above the base flood level.

Causes
- Drainage bayous and ditches are clogged from Hurricane Rita storm surge debris.
- Residents report the belief that the saltwater barrier increases their flooding.

Concerns
- Floods occur nearly every year at least in yards.
- Residents are interested in mitigation as a means of protecting their homes from flood damage.

Key points
- 75% of residents report having been flooded, 75% of residents report being interested in flood protection measures, 61% of residents report having flood insurance.
- Repetitive loss claims data does not report many flood claims after 1990, however residents report having flooded a total of 33 times since 2000.
- 64% of residents report overbank flooding as their flooding problem.
- 36% of residents report moving utilities above the flood level.
## Data Sheet Results

<table>
<thead>
<tr>
<th>Total Respondents</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. In what year did you move to the home at this address?</strong></td>
<td></td>
</tr>
<tr>
<td>1960s</td>
<td>7%</td>
</tr>
<tr>
<td>1970s</td>
<td>21%</td>
</tr>
<tr>
<td>1980s</td>
<td>18%</td>
</tr>
<tr>
<td>1990s</td>
<td>28%</td>
</tr>
<tr>
<td>2000s</td>
<td>25%</td>
</tr>
<tr>
<td><strong>2. What type of foundation does your house have?</strong></td>
<td>68% Slab</td>
</tr>
<tr>
<td>36%</td>
<td>Posts/Piles</td>
</tr>
<tr>
<td>11%</td>
<td>Crawlspace</td>
</tr>
<tr>
<td>14%</td>
<td>Combination</td>
</tr>
<tr>
<td><strong>3. If your house has a crawlspace or posts/piles foundation, please indicate how high from grade your lowest floor of living space is.</strong></td>
<td></td>
</tr>
<tr>
<td>1ft</td>
<td>7%</td>
</tr>
<tr>
<td>2ft</td>
<td>3%</td>
</tr>
<tr>
<td>3ft</td>
<td>3%</td>
</tr>
<tr>
<td>6ft</td>
<td>3%</td>
</tr>
<tr>
<td>8ft</td>
<td>3%</td>
</tr>
<tr>
<td>9ft</td>
<td>11%</td>
</tr>
<tr>
<td>10ft</td>
<td>3%</td>
</tr>
<tr>
<td>14ft</td>
<td>3%</td>
</tr>
<tr>
<td>16ft</td>
<td>3%</td>
</tr>
<tr>
<td><strong>4. Has the property ever been flooded or had a water problem?</strong></td>
<td>75% Yes 25% No</td>
</tr>
<tr>
<td><strong>5. In what years did it flood?</strong></td>
<td></td>
</tr>
<tr>
<td>1970 – 1985</td>
<td>16</td>
</tr>
<tr>
<td>1986 – 1990</td>
<td>7</td>
</tr>
<tr>
<td>1991 – 1995</td>
<td>2</td>
</tr>
<tr>
<td>1996 – 2000</td>
<td>3</td>
</tr>
<tr>
<td>2000 – present</td>
<td>33</td>
</tr>
<tr>
<td><strong>6. What was the deepest the water got?</strong></td>
<td>Yard Only</td>
</tr>
<tr>
<td>0-1ft</td>
<td>3</td>
</tr>
<tr>
<td>1-2ft</td>
<td>0</td>
</tr>
<tr>
<td>2-3ft</td>
<td>3</td>
</tr>
<tr>
<td>3-4ft</td>
<td>1</td>
</tr>
<tr>
<td>4-5ft</td>
<td>0</td>
</tr>
<tr>
<td>5-6ft</td>
<td>2</td>
</tr>
<tr>
<td>6+ft</td>
<td>1</td>
</tr>
<tr>
<td><strong>7. What was the longest time the water stayed up in the house?</strong></td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3 days</td>
</tr>
<tr>
<td>5</td>
<td>5 days</td>
</tr>
<tr>
<td>6</td>
<td>6 days</td>
</tr>
<tr>
<td>7</td>
<td>7 days</td>
</tr>
<tr>
<td><strong>8. What do you feel was the cause of your flooding?</strong></td>
<td>64% Overbank flooding</td>
</tr>
<tr>
<td>28%</td>
<td>Storm surge</td>
</tr>
<tr>
<td>25%</td>
<td>Clogged undersized drainage ditch</td>
</tr>
<tr>
<td>11%</td>
<td>Drainage from nearby properties</td>
</tr>
<tr>
<td><strong>9. Have you taken any flood protection measures on your property?</strong></td>
<td>36% Moved utilities</td>
</tr>
<tr>
<td>3%</td>
<td>Regraded yard</td>
</tr>
<tr>
<td>0</td>
<td>Installed drains</td>
</tr>
<tr>
<td>11%</td>
<td>Sandbagged</td>
</tr>
<tr>
<td>18%</td>
<td>Elevated</td>
</tr>
<tr>
<td>7%</td>
<td>Waterproofed walls</td>
</tr>
<tr>
<td>7%</td>
<td>Built a floodwall</td>
</tr>
<tr>
<td>46%</td>
<td>Did nothing</td>
</tr>
<tr>
<td><strong>10. Did any of the measures work?</strong></td>
<td>80% Yes 10% No</td>
</tr>
<tr>
<td>10%</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>11. Do you have flood insurance?</strong></td>
<td>61% Yes 39% No</td>
</tr>
<tr>
<td><strong>12. Are you interested in pursuing measures to protect your property from flooding?</strong></td>
<td>75% Yes 25% No</td>
</tr>
</tbody>
</table>
On-site Data Collection

On May 23-24, 2007, a survey crew from UNO-CHART visited every property in the study area. The following information was recorded for each property:

- Whether or not the property was occupied
- Single family or multi-family home
- Type of foundation
- Condition of foundation
- Type of structure
- Condition of structure
- Number of stories
- Estimation of the height of the first floor above grade
- Estimation of the height of the adjacent grade above street
- Presence of appurtenant structures such as garages or sheds
- A photograph of each house

The table on the following page is a summary of the data collected by the CHART surveying team.

In addition to the data presented in the table on page 15, a survey team also collected elevation data on houses throughout the neighborhood. According to this data at least 1/3 of the structures need to be protected to the base flood level through a mitigation measure. Beginning on page 16 of this report, the different mitigation alternatives appropriate for Back Bay homeowners are discussed.
### Data from Neighborhood Survey by CHART Team

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Occupancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupied</td>
<td></td>
<td>96%</td>
</tr>
<tr>
<td>Vacant</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Family</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Multi Family</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td><strong>Foundation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piles/Piers</td>
<td></td>
<td>36%</td>
</tr>
<tr>
<td>Crawlspace with adequate vents</td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>Crawlspace without adequate vents</td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>Slab</td>
<td></td>
<td>53%</td>
</tr>
<tr>
<td>Elevated Basement</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Split-Level</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td><strong>Condition of Foundation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td>97%</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood Frame</td>
<td></td>
<td>65%</td>
</tr>
<tr>
<td>Masonry</td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Combination Wood Frame-Masonry</td>
<td></td>
<td>11%</td>
</tr>
<tr>
<td><strong>Condition of Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td>93%</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td><strong>Number of Stories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>81%</td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>11%</td>
</tr>
<tr>
<td><strong>Feet above Grade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1 ft.</td>
<td></td>
<td>42%</td>
</tr>
<tr>
<td>1-2 ft.</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>2-3 ft.</td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>3-4 ft.</td>
<td></td>
<td>9%</td>
</tr>
<tr>
<td>4-5 ft.</td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>5+ ft.</td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td><strong>Grade above Street</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1 ft.</td>
<td></td>
<td>54%</td>
</tr>
<tr>
<td>1-2 ft.</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>2-3 ft.</td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>3-4 ft.</td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>4-5 ft.</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>5+ ft.</td>
<td></td>
<td>3%</td>
</tr>
</tbody>
</table>
Problem Statement

Based on the data collected from the four sources of information (flood studies, flood insurance data, the property owners, and on-site surveying), the following bullets summarize the repetitive loss problems in the Back Bay area:

- The Back Bay study area has 75 homes, 53% are on a slab foundation, 36% are on piles or piers, and the remaining 11% are divided among those on a crawlspace, elevated basement, and split level.
- The neighborhood is interlaced with drainage bayous and ditches.
- Each home in the study area backs up to a drainage bayou and/or ditch.
- The area is subject to flooding following heavy rains; however, flooding will occur as much as a week following the rain event.
- Most of the structures in the Back Bay study area lie in an AE flood zone which has a high risk of flooding, and is in the 100-year floodplain.
- The 12 RL properties in the Back Bay study area account for over $700,000 in paid flood claims since 1978.
- There have been a total of 39 flood claims resulting from the 12 RL properties. The average claim amount is over $19,000, and they ranged between $2,654 and $62,766.
- Residents report flooding aggravated by the saltwater barrier located north of Lake Charles on the Calcasieu River. The barrier was built, and is maintained, by the U.S. Army Corps of Engineers.
- Residents report clogged drainage bayous and ditches.
- Residents report maximum flooding depths ranging from 18 inches to 5 feet of water in yards for days at a time.

Step 3. Alternative Mitigation Measures

Knowing the drainage system, the flooding problem, and the types and condition of the buildings in the area leads to the third step in the area analysis procedure - a review of alternative approaches to protect properties from, or reduce, future flood damage. Property owners should look at these alternatives but understand they are not all guaranteed to provide 100% flood protection. Six approaches were analyzed:

- Acquisition of properties in the hazardous area
- Elevating the houses above the 100-year flood level
- “Reconstruction,” i.e., replacing a damaged house with a new one protected from flooding
- Constructing small levees or floodwalls around one or more houses
- Dry floodproofing
- Purchasing flood insurance coverage on the building
Each approach has its pros and cons. These six are all “nonstructural” approaches. “Nonstructural” approaches to mitigation involve modifying the building or lot so that floodwaters will not cause damage. They are implemented by the property owner and can be done on an individual property basis. All of these measures except for flood insurance require a permit.

**Calcasieu Parish Code of Ordinances:** While this section proposes different alternative mitigation approaches, there are instances when a property owner’s freedom of choice is limited. Chapter 9 of Calcasieu Parish’s Code of Ordinances prescribes minimum requirements for land use and control measures for flood-prone areas of the Parish. Section 9-3 defines *substantial improvement* as “the repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure either, (1) before the improvement or repair is started, or (2) if the structure has been damaged and is being restored, before the damage occurred. For the purpose of this definition “substantial improvement” is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not the alteration affects the external dimensions of the structure.”

Section 9-62 requires that “new construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to or above the base flood elevation.” Therefore, elevation as a mitigation measure is required by law for those buildings that were substantially damaged by Hurricane Rita or any other cause. Further, if the cost of a flood protection project (especially when combined with other home remodeling work) exceeds 50% of the value of the house, the owner will have to elevate the structure.

**Acquisition**

This measure involves buying one or more properties and clearing the site. If there is no building subject to flooding, there is no flood damage. Acquisitions are usually recommended where the flood hazard is so great or so frequent that it is not safe to leave the structure on site.

An alternative to buying and clearing the whole subdivision is buying out individual, “worst case,” structures with FEMA funds. This approach would involve purchasing and clearing the lowest or the most severe repetitive loss homes. If FEMA funds are to be used, three requirements will apply:

1. The applicant for FEMA must demonstrate that the benefits exceed the costs, using FEMA’s benefit/cost software.
2. The owner must be a willing seller.
3. The parcel must be deeded to a public agency that agrees to maintain the lot and keep it forever as open space.
**Problems:** In addition to the high cost and the difficulty in obtaining a favorable benefit/cost ratio in shallow flooding areas, acquisitions disrupt communities and neighborhoods. Some of the problems include:

- The FEMA share is 75% of the market value of the property before it was flooded. The property owner makes up the difference. In effect, the owner only receives 75% of the value of the property.
- Not everyone wants to sell their home, so a checkerboard pattern of vacant and occupied lots often remains after a buyout project, leaving “holes” in the neighborhood.
- The community must still pay for maintaining the streets, water lines and other infrastructure to serve those who remain.
- The vacant lots must be maintained by the new owner agency, even though taxes are not paid on them.

Despite these problems, Calcasieu Parish does support the use of mitigation funds for acquiring and clearing repetitive loss properties. The Parish offers a lease option to the adjacent properties’ homeowners. This option has been exercised in the study area.

**Elevation**

Raising the structure above the flood level is generally viewed as the best flood protection measure, short of removing the building from the floodplain. All damageable portions of the building and its contents are high and dry during a flood, which flows under the floor instead of into the house. Houses can either be elevated on posts/piles or on a crawlspace. If a crawlspace is used, it is important to include vents that are appropriately sized: one square inch for each square foot of the building’s footprint.

**Cost:** Most of the cost to elevate a building is in the preparation and foundation construction. The cost to elevate six feet is little more than the cost to go up two feet. Elevation is usually cost-effective for wood frame buildings on crawlspaces because it is easiest to get lifting equipment under the floor and disruption to the habitable part of the house is minimal. Elevating a slab house is much more costly and disruptive. 52% of the houses in the Back Bay study area are on a slab. The actual cost of elevating
a particular building depends on factors such as its condition, whether it is masonry or brick faced, and if additions have been added on over time.

While the cost of elevating a home on a slab can be high, there are funding programs that can help. The usual arrangement is for a FEMA grant to pay 75% of the cost while the owner pays the other 25%. In the case of elevation, this could be as high as $25,000 or more. In some cases, assistance can be provided by Increased Cost of Compliance Funds, which is discussed on page 29.

**Feasibility:** Federal funding support for an elevation project requires a study that shows that the benefits of the project exceed the cost. The applicant for funds must show that the ratio of the benefits over the costs is greater than 1.0.

Elevating a masonry home or a slab can cost up to $100,000, which means that benefit/cost ratios may be low. Looking at each property individually could result in funding for the worst case properties, i.e., those that are lowest, subject to the most frequent flooding, and in good enough condition to elevate.

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**Base Flood Elevations:** Floodplain construction regulations are designed to protect new and substantially improved buildings from the base, or 100-year flood. They do this by requiring the lowest floor to be above the base flood elevation. The base flood elevation is abbreviated as “BFE” and is measured in feet above or below sea level, depending on the location. In the Back Bay area, the BFE is between 13 and 14 feet above sea level. The ground elevation ranges between 7 ft to 17 ft. above sea level. There has been a successful elevation project in the study area.

**Reconstruction**

FEMA has recently experimented with a different approach to mitigating repetitively flooded structures. Formerly called “demo/rebuild,” “Pilot Reconstruction Grants” can
be used to demolish a floodprone house and replace it on site with a hazard resistant one that meets all current wind and flood code requirements.

Certain rules must be followed if the owner wants to qualify for Federal funds for a reconstruction project:

- Pursuing this option is only possible after a structural engineer concludes that it is not feasible to elevate the existing building.
- Funds are only available to people who owned the property before Hurricane Rita.
- The new building must be elevated to the current base flood elevation.
- The new building must not exceed more than 10% of the old building’s square footage.
- The new building must meet all flood and wind protection codes.
- There must be a deed restriction that states the owner will buy and keep a flood insurance policy.
- It must be demonstrated that the benefits exceed the costs.
- The maximum Federal grant is 75% of the cost up to $150,000. FEMA is developing a detailed list of eligible costs to ensure that disaster funds are not used to upgrade homes.

**Barriers**

Small floodwalls, levees, or berms could be constructed around one or more properties. Such barriers are not recommended for flood depths greater than three feet. Given the varying flood depths in the Back Bay area due to varying ground elevations, barriers are appropriate for some properties. The higher ground is located on the southern side of Windywood Rd. Levees and berms are most appropriate for rural settings; however the large lot sizes found in Back Bay would provide enough space for small berms in some parts of the neighborhood. Small floodwalls are another, more appropriate option for suburban neighborhoods such as Back Bay. If a floodwall or berm is built around a house, it is important to include a sump pump with a backup generator so that rainwater can be pumped to the outside of the protected space. The photos on the next page show a floodwall and sump pump.
Another concern is the permeability of the soil. Permeable soil will allow floodwaters to seep under the barrier. This is a particular problem when floodwaters stay up for a long time. There are different types of soil found in Back Bay. The area of the neighborhood bounded by the West Fork River to the north and between Hollis Rd. and Windywood Rd. to the south has loamy and clayey alluvial with outwash deposits. The area south of the Hollis Rd/ Windywood Rd. point has loamy soil with silty deposits. The map on the next page illustrates the location of the soil types. Clay is the best type of soil for building a floodwall, sand is the worst. Loamy and loamy deposits are not as bad as sand, but not preferred for levees or floodwall construction. Therefore, the soil found in the northern section of Back Bay is more appropriate for floodwalls. However, before building a floodwall, it is advised to have the soil on site tested to determine the permeability.

Barriers require:

- A method to close openings, such as the driveway in the photo above. Generally, this requires “human intervention,” meaning someone needs to be available and have enough time to take action.
- Relatively impervious soils to minimize seepage under the floodwall.
- A system to prevent sanitary sewer backup from flowing into the building.
- A system of drain tile (perforated pipes) that collects water that falls or seeps into the protected area and sends it to a collecting basin or “sump.”
- A sump pump to send the collected water outside the barrier.
- Power to operate the sump pump around the clock during a storm.
Cost: The cost of a local barrier depends on the depth of flooding and the amount of engineering put into the design. Where flooding is only inches deep and of short duration, almost any barrier of concrete or earth will work. An earthen barrier needs 6 feet of ground space for each foot in height.

The most conservative cost estimate for a floodwall is based on a two foot high engineered cantilevered concrete floodwall. A cantilevered wall has a footing to provide stability and keep the water pressure from pushing it over.

The budget shown below is for a 40’x 40’ home with a wall one foot outside the building wall. Labor accounts for about half the price in the cost estimate.

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**Floodwall Cost Estimate**

- Two foot high reinforced concrete cantilever wall, 168 feet @ $200/foot $33,600
- Internal drainage and sump pump system 5,000
- Sewer backup valve 4,500
- Generator for power outages 900

**Total** $44,000
It should be noted that smaller, non-engineered walls such as the ones in photo on page 17 have been built by their owners for less than $10,000.

The following is a cost estimate for an earthen berm.

**Berm Cost Estimate**

- Earthen berm, 3 feet high, 3:1 slope, 240 feel long $= 400 Cubic yards
- 400 cubic yards @ $62/yard, vibrated in place $24,800
- Grass cover for erosion protection $4,450
- Internal drainage and sump pump system $5,050
- Sewer backup valve $4,500
- Generator for power outages $800
- **Total** $39,600

**Feasibility:** Floodwalls are appropriate where flood depths are shallow and of relatively short duration. According to the information collected from Back Bay residents, and from elevation data, flood depths and duration vary. Some parts of the Back Bay area are susceptible to shallow flooding, while other parts experience deeper flooding.

Because neither FEMA nor the Corps of Engineers fund individual floodwalls for residential properties, no formal benefit/cost analysis is required. However, each property owner can determine how much of their own labor they want to contribute and whether the cost of a wall is worth the protection from flooding that it provides.

**Dry Floodproofing**

This measure keeps floodwaters out of a building. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags. Because it employs the building itself as part of the barrier to the passage of floodwaters, dry floodproofing is generally only recommended for buildings with slab foundations. 53% of the homes in the Back Bay target area have slab foundations. Even if the building is in sound condition, tests by the Corps of Engineers have shown that dry floodproofing should not be used for depths greater than 3 feet over the floor, water pressure on the structure can collapse the walls and/or buckle the floor. Some houses in the Back Bay area experience flooding depths of three feet or less. For these situations, dry floodproofing is appropriate. There is usually no regulatory requirement to protect buildings up to the base flood elevation because the projects are less than substantial improvements.
A floodproofing project has three components:

- Make the walls watertight. This is easiest to do for masonry or brick faced walls, which can be covered with a sealant. Wood, vinyl, or metal siding needs plastic sheeting to make them watertight. The most effective approach is to apply a sealant and plastic sheeting and then cover the job with brick facing to protect the waterproofing from punctures. There are some new commercial applications that both strengthen and waterproof walls.
- Provide closures for the openings, including doors, windows, dryer vents and weepholes.
- Account for sewer backup and other sources of water entering the building. For shallow flood levels, this can be done with a floor drain plug; although a valve system is more secure.

Not all parts of the building need to be floodproofed. It is difficult to floodproof a garage door, for example, so many owners let the garage flood and floodproof the walls between the garage and the rest of the house. Appliances, electrical outlets, and other damage-prone materials located in the garage should be elevated above the expected flood levels.

Floodproofing has the following shortcomings as a flood protection measure:

- It usually requires human intervention, i.e., someone must be home to close the openings.
- Its success depends on the building’s condition. It is very difficult to tell if there are cracks in the slab under the floor covering.
- Periodic maintenance is required to check for cracks in the walls and to ensure that the waterproofing compounds do not decompose.
- The NFIP will not offer a lower insurance rate for dry floodproofed residences.
This Baton Rouge home has thin facing brick placed over the waterproofing materials.

The same Baton Rouge home has a steel door with gaskets that seal when closed.

This dry floodproofed commercial building in Mandeville had the walls waterproofed and removable shields placed in the windows. While the measure worked for shallow flooding, the building was damaged by storm surge during Hurricane Katrina.

This Jefferson Parish home has permanent shields sealing the lower parts of the windows.

Cost: The cost for a floodproofing project can vary according to the building’s construction and condition. It can range from $5,000 to $20,000, depending on how secure the owner wants to be. Owners can do some of the work by themselves, although an experienced contractor provides greater security.

Feasibility: As with floodwalls, floodproofing is appropriate where flood depths are shallow and are of relatively short duration. It can be an effective measure for some of the structures and flood conditions found in the Back Bay target area. It can also be more attractive than a floodwall around a house.

Because neither FEMA nor the Corps of Engineers fund floodproofing projects for residential properties, there is no requirement for a formal benefit/cost analysis. However, each property owner can determine how much of their own labor they want to
contribute and whether the cost and appearance of a project is worth the protection from flooding that it provides.

**Flood Insurance**

Although not a mitigation measure that reduces property damage from a flood, a National Flood Insurance Program policy has the following advantages:

- A flood insurance policy covers surface flooding from the overflow of inland or tidal waters or from stormwater runoff.
- It is an excellent “backup” for a floodwall or elevation project where the flood is higher than the protection level.
- The repetitive, shallow, flooding is unlikely to reach conditions severe enough for a disaster declaration. Therefore, flood insurance may be the only source of assistance to help owners of damaged property pay for cleanup and repairs.
- There is usually a 30-day waiting period before the flood insurance policy goes into effect. Once in effect there is no need for human intervention.
- Coverage is available for the contents of a home as well as for the structure.
- Renters can buy contents coverage, even if the building owner does not buy coverage for the structure itself.

**Cost:** The table to the right shows the rates for a policy with $150,000 coverage on the building. Homes constructed in Calcasieu Parish before September 29, 1978 are “pre-FIRM” buildings and are eligible for the “subsidized” flood insurance premium rates.

The table shows that a post-FIRM building, such as one built or substantially improved in 1988, is subject to actuarial rates.

If a pre-FIRM house was elevated, the owner would be able to take advantage of the much lower post-FIRM rates. It should be noted that the rates are based on the elevation of the lowest floor.

**Funding**

There are several possible sources of funding for mitigation projects:

*FEMA programs:* Most of the FEMA programs provide 75% of the cost of a project. The owner is expected to fund the other 25%. Each program has different Congressional authorization and slightly different rules. For example, some are not allowed to fund reconstruction projects. The most active program currently is the Hazard Mitigation
Grant Program. Calcasieu Parish has focused on mitigating repetitive loss properties and is offering three mitigation measures: acquisition, elevation, and reconstruction. The Calcasieu Parish Division of Planning and Development manages the applications process for the Parish. Applications under Hurricane Rita funding have already been submitted.

**U. S. Army Corps of Engineers:** The U.S. Army Corps of Engineers expects to be able to offer mitigation funds to Back Bay residents through a non-structural pilot project in the Louisiana Coastal Protection and Restoration Program (LACPR). These funds can be used for elevations, acquisitions, and relocations. This source of funding differs from FEMA funding in that there is no requirement for acquired property to stay as green space, however it is encouraged. Additionally the homeowner’s portion of the project cost ranges from 0% - 35%. Funding for mitigation projects through the Corps will be available by about 2010 pending congressional approval.

**Flood insurance:** There is a special funding provision in the NFIP for insured buildings that have been substantially damaged by a flood, “Increased Cost of Compliance.” ICC coverage pays for the cost to comply with floodplain management regulations after a flood if the building has declared substantially damaged. ICC will pay up to $30,000 to help cover elevation, relocation, demolition, and (for nonresidential buildings) floodproofing. It can also be used to help pay the 25% owner’s share of a FEMA funded mitigation project.

The building’s flood insurance policy must have been in effect during the flood. This payment is in addition to the damage claim payment that would be made under the regular policy coverage, as long as the total claim does not exceed $250,000. Claims must be accompanied by a substantial or repetitive damage determination made by the local floodplain administrator. For more information, contact the Parish Planning Department. Coverage under the ICC does have limitations:

- It covers only damage caused by a flood;
- The building’s flood insurance policy must have been in effect during the flood;
- ICC payments are limited to $30,000 per structure;
- Claims must be accompanied by a substantial or repetitive damage determination made by the local floodplain administrator; and
- The Structure must be located in a SFHA.

See Appendix C, page 33, for more information on funding sources

**Step 4. Coordination**

There are many different agencies and organizations that could participate in a flood mitigation project for the Back Bay study area. The following were contacted by the UNO-CHART team:

- The Calcasieu Parish Planning Department
- The Calcasieu Parish Drainage Department
• The Calcasieu Parish GIS Department
• The U.S. Army Corps of Engineers nonstructural/floodproofing committee
• FEMA Region VI - Mitigation

Step 5. Findings

Properties in the Back Bay study area are subject to flooding due to heavy rains and poor drainage. Some parts of the study area experience deep flooding for several days at a time.

The only form of stormwater drainage for the neighborhood is a series of bayous and ditches that meander behind the homes and eventually drain into the Calcasieu River. Residents report flooding occurs up to a week following a heavy rain event.

Many homes in the Back Bay neighborhood are already elevated, one has been elevated using HMGP, and one property has been acquired through FEMA mitigation funds.

Several mitigation techniques would be helpful to residents. The following table details the advantages and disadvantages of these techniques for Back Bay.
### Summary of the Alternative Mitigation Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>100% flood protection&lt;br&gt;Calcasieu Parish agrees to take over the land and offers lease option to neighbors</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Elevation</td>
<td>More secure flood protection&lt;br&gt;Flood insurance rate reduction</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>New home is hazard resistant&lt;br&gt;Flood insurance rate reduction</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Barriers</td>
<td>Effective for shallow flooding</td>
<td>Subject to seepage if water stays up for a long time&lt;br&gt;Some parts of Back Bay area experience longer duration and deeper flooding&lt;br&gt;Certain soil types found in Back Bay are not ideal for barrier construction</td>
</tr>
<tr>
<td>Dry Floodproofing</td>
<td>Low cost&lt;br&gt;Effective for shallow flooding on slab foundations</td>
<td>Exposes homes to wall/floor damage&lt;br&gt;Subject to seepage if water stays up for a long time&lt;br&gt;Some parts of Back Bay area experience longer duration and deeper flooding</td>
</tr>
<tr>
<td>Flood Insurance</td>
<td>Always in effect&lt;br&gt;Works for all flood levels&lt;br&gt;Under ICC, can be a source of funds for buyout or elevation</td>
<td>Does not prevent flood damage (but does provide funds for repairs)</td>
</tr>
</tbody>
</table>

### Recommendations

1. Property owners should review the alternative mitigation measures discussed in this analysis and implement those that are most appropriate for their situations.

2. For local drainage problems, dry floodproofing and floodwalls, small levees or berms are the prime protection measures recommended for shallow flooding.

3. For deeper flooding for a longer duration, elevation, reconstruction, or acquisition are the recommended mitigation measures.

4. Because no mitigation measure is guaranteed, property owners should obtain and keep a flood insurance policy on their homes.

5. Calcasieu Parish should explore alternative financing methods to support alternative flood mitigation projects, such as the possibility of establishing a rebate program. While not eligible under current FEMA policies, a rebate of 25% that encourages
inexpensive measures such as yard drainage improvements and floodproofing may be more cost effective than the traditional FEMA funded approaches of acquisitions and elevation. FEMA funding programs should be flexible enough to assist the Parish to do this.

6. The Parish should investigate the effectiveness of an underground drainage project.

7. The Corps should investigate the residents’ claims of the saltwater barrier contributing to the flooding problem.

References

- Flood Insurance Data provided by FEMA, January 31, 2007
- Flood Insurance Rate Map for Calcasieu Parish, FEMA, 1998
- *Calcasieu Parish Flood Hazard Mitigation Plan*, September 2001
- *Protecting Building Utilities from Flood Damage*, FEMA-348, 2000
- [www.floodsmart.gov](http://www.floodsmart.gov)
- Calcasieu Parish Code of Ordinances
May 4, 2007

Current Resident
Westlake, LA 70669

RE: Calcasieu Parish Repetive Flooding Project

Dear Current Resident:

The Calcasieu Parish Police Jury is reviewing ways to reduce some of our repetitive flooding problems. Your property is located in a part of the Back Bay community that has tentatively been designated a target repetitive flood area.

As part of this project, a team from the University of New Orleans’ Center for Hazards Assessment, Response and Technology (CHART) is preparing an “area analysis” for the target area. Information specific to your property needs to be collected in order to determine what can be done to protect homes in the area from flooding. UNO/CHART staff will be in the area during the day in May, collecting general information from the street, such as the type of foundation and walls for each home. They will not need to go into your house, but they may need to walk around it.

This work would be greatly improved with additional data that you might be able to provide. Attached is a data sheet that we hope you will complete and return by May 21, 2007. After you fill the form out, please fold it up, tape it, and mail it to the address on the flip side. A stamp has been provided.

After the analysis is completed, some preliminary recommendations will be developed. Later in the summer, we will invite you to a meeting with us and the UNO/CHART team to review the findings.

If you have any questions about this project, please feel free to call me at (337) 721-3600 or Monica Parris at UNO/CHART at (504) 280-4016.

Thank you for your assistance in helping us to complete this project.

Sincerely,

Pam Mattingly
Assistant Planning Director

Attachment
Appendix B

Calcasieu Parish Repetitive Flooding Analysis

Flood Protection Data Sheet

Name: ____________________________________________________________

Property address: <<Address>> <<Street>>, Westlake

In what year did you move into the home at this address? ____________

What type of foundation does your house have? ☐ Slab ☐ Crawlspace (please answer #3)
☐ Posts/piles (please answer #3)

If your house has a crawlspace or post/piles foundation, please indicate how high from grade your
lowest floor of living space is. __________________________

Has the property ever been flooded or had a water problem?
☐ Yes ☐ No (if “no,” please complete items 8 − 11)

In what year(s) did it flood? ______________________________________

What was the deepest that the water got?
☐ Over first floor: _____________ deep
☐ In yard only: _____________ deep
☐ Water kept out of house or building by sandbagging or other protective measure

What was the longest time that the water stayed up in the house? ___ hours or ___ days

What do you feel was the cause of your flooding? Check all that affect your building.
☐ Overbank flooding from nearby bayou       ☐ Storm sewer backup
☐ Storm surge from nearby waterways        ☐ Sanitary sewer backup
☐ Clogged/undersized drainage ditch        ☐ Standing water next to house
☐ Drainage from nearby properties          ☐ Other: __________________________

Have you taken any flood protection measures on your property?
☐ Moved utilities/contents to a higher level     ☐ Elevated all or parts of the building
☐ Regraded yard to keep water away from building ☐ Waterproofed the outside walls
☐ Installed drains or pipes to improved drainage ☐ Built a wall to keep water away
☐ Sandbagged when water threatened              ☐ Other: __________________________

Did any of the measures checked in item 8 work? If so, which ones? If not, do you know why they
didn’t work?

Do you have Flood Insurance? ☐ Yes ☐ No

Are you interested in pursuing measures to protect the property from flooding?
☐ Yes ☐ No   If yes, please include your full mailing address
# Appendix C
## Mitigation Funding

<table>
<thead>
<tr>
<th>Who is the money for</th>
<th>Hazard Mitigation Grant Program (HMGP)</th>
<th>Flood mitigation Assistance (FMA)</th>
<th>Pre-Disaster Mitigation (PDM)</th>
<th>Repetitive Flood Claims (RFC)</th>
<th>Severe Repetitive Loss (SRL)</th>
<th>USACE Demonstration Projects</th>
<th>Increased Cost of Compliance (ICC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners of severe repetitive loss properties currently insured under the NFIP</td>
<td>Owners of severe repetitive loss properties currently insured under the NFIP</td>
<td>NFIP policy holders</td>
<td>NFIP policy holders</td>
<td>NFIP policy holders with at least one flood claim</td>
<td>Owners of severe repetitive loss properties currently insured under the NFIP</td>
<td>TBD</td>
<td>All NFIP policy holders with the ICC rider</td>
</tr>
</tbody>
</table>

| Type of projects | (1) voluntary acquisition (2) relocation of the structure (3) elevation (4) reconstruction (5) Constructing certain types of minor and localized flood control projects | (1) voluntary acquisition* (2) demolition* (3) relocation of structure* (4) elevation (5) dry flood proofing non residential structures | (1) voluntary acquisition* (2) relocation of structure* (3) structural and non structural retrofitting | (1) voluntary acquisition* (2) demolition* (3) relocation of the structure* (4) elevation (5) floodproofing (6) minor physical localized flood control projects (7) reconstruction | (1) voluntary acquisition (2) demolition* (3) relocation of the structure* (4) elevation (5) floodproofing (6) minor physical localized flood control projects (7) reconstruction | Projects that will bring a substantially damaged home into current code compliance |

| Maximum amount available per household | For elevation: no maximum; for reconstruction: $150,000 | Contact FEMA | Contact FEMA | Contact FEMA | Contact FEMA | TBD | $30,000 |
| How much the homeowner has to pay | 25% | 25% | 25% | 0% | 25% | 0% - 35% | 0% |
| How does the homeowner apply | Contact the Parish | Contact the Parish | Contact the State | Contact the State | Contact the State | Contact the Parish | Contact Flood Insurance underwriter |

*: The lot must be deed restricted as open space  
**: If the project costs more than the allotted amount, then the homeowner must pay the remainder of the total project cost.