Repetitive Loss Area Analysis #8
DRAFT

City of New Orleans
Hollygrove Neighborhood

June 18, 2009
University of New Orleans
Center for Hazards Assessment, Response and Technology

www.floodhelp.uno.edu

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Acknowledgments:

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Terminology

Area Analysis: An approach to identify repetitive flood loss areas, evaluate mitigation approaches, and determine the most appropriate alternatives to reduce future repetitive flood losses.

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

Base Flood Elevation (BFE): 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

FEMA: Federal Emergency Management Agency

FIRM: Flood Insurance Rate Map

GIS: Geographic Information Systems

Hazard Mitigation: Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.

ICC: Increased Cost of Compliance

NFIP: National Flood Insurance Program

Repetitive Flood Loss (RL): An NFIP-insured property where two or more claim payments of more than $1,000 have been paid within a 10-year period since 1978.

Severe Repetitive Flood Loss Properties (SRL): As defined by the Flood Insurance Reform Act of 2004, 1-4 family residences that have had four or more claims of more than $5,000 or two claims that cumulatively exceed the reported building’s value. The Act creates new funding mechanisms to help mitigate flood damage for these properties.

Special Flood Hazard Area (SFHA): The base floodplain delineated on a FIRM. The SFHA is mapped as a Zone A. The SHFA may or may not encompass all of a community’s flood problems.

Substantial Improvement: The repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50% 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.
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Repetitive Loss Area Analysis

Hollygrove Neighborhood – New Orleans, Louisiana

Flooding is a problem far too familiar to many neighborhoods across the United States, and enduring the consequences over and over again can be quite frustrating. When the waters rise, life is disrupted, belongings are ruined, and hard-earned money is spent.

This report has been created in collaboration with the City of New Orleans Office of Recovery Development and Administration and the homeowners in a repetitively flooded area, Hollygrove, who have continually suffered the personal losses and stresses associated with living in a flood prone area. The goal of this report is to help reduce the residents’ risk by providing a broader understanding of the specific flood problems in their neighborhood, as well as some potential solutions to repetitive flooding. The availability of possible funding sources for certain mitigation options is also discussed.

Not all mitigation measures are appropriate for all homes; however, the homes upon which this study focuses are quite homogeneous and are representative of other homes in the neighborhood.

It is understood that there are many stresses associated with repetitive flooding including worry about how high the water may rise, the loss of personal belongings, the possibility of mold, and whether or not the neighbors will return after the next event. Adding to this worry is the uncertainty related to potential solutions such as:

- Should I elevate and if so, how high?
- Should I pursue a buyout offer?
- How much will mitigation projects cost?
- What will my neighborhood look like if I am the only one to mitigate, or the only one not to mitigate?
- Is there a solution that might work for my entire neighborhood?

These questions are common and this report attempts to answer them according to the specific situation faced by homeowners in Hollygrove. Informed homeowners make more informed decisions and can become even stronger advocates for policy change at the neighborhood, city, state, and even federal levels. Overall, it is hoped that by gaining a better understanding of the flooding issues, neighborhoods can become safer and homeowners better able to confront the hazard of flooding.

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 repeatedly flooded areas in Louisiana. FEMA collects flood insurance claims data and categorizes the most frequently flooded properties as repetitive loss properties. UNO-CHART has accessed these data and used them as an indicator of repeatedly flooded neighborhoods. Using a geographic information system (GIS) and flood insurance claims data, repeatedly flooded areas are being prioritized for attention and analysis. In selected locations UNO-CHART is reviewing whether or not flood control projects are planned or have been constructed that will stop the repeated flooding.

UNO-CHART selected the Hollygrove neighborhood for an “area analysis” case study because of the repeated flooding, as evidenced by the large number of repetitive loss properties, and the high degree of neighborhood involvement and interest in addressing the flooding problems. An area analysis follows such new FEMA guidelines to determine the suitability of the buildings for elevation, or other retrofitting flood protection measures; and the community for drainage projects. This report summarizes the area analysis conducted for the Hollygrove repetitive loss study area.

**The Area:** The Hollygrove repetitive loss study area is in an urban neighborhood in New Orleans. It is located between the Uptown and Mid-City areas, near the Orleans Parish/Jefferson Parish line; bordered by the Palmetto Canal, S. Claiborne Ave., The Monticello Canal (Orleans/Jefferson Parish Line), and Cambronne St. Figure 1-1 illustrates the Hollygrove neighborhood and the analysis area.

New Orleans is located near the Gulf of Mexico and is surrounded by water on three sides: Lake Pontchartrain to the North, the Mississippi River to the South, and Lake Borgne to the East. There is also an intricate network of canals and bayous, which connect to Lake Pontchartrain and the Mississippi River, throughout the city. Residents rely on an elaborate pumping system which consists of 21 pumping stations and 15 underpass pumping stations to prevent flooding. Sixty-nine percent of the structures in Orleans parish, or 95,197 structures, lie within the 100-year floodplain.

The Hollygrove case study focuses on a sample portion of the neighborhood. The study area is a five-block stretch of Stroelitz St. beginning at Joliet St. through Hollygrove St. This area of Hollygrove has the highest concentration of repetitive loss properties.
Figure 1-1: Hollygrove Neighborhood and 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 area selection step and an ongoing collaborative relationship with the neighborhood. During the area selection process information about the area is reviewed including the repetitive flood loss claims data as well as other relevant information about the neighborhood such as the flooding history, and the interest of the residents in learning more about flood mitigation. This is done through a collaborative effort with local officials and residents. Once a neighborhood is selected, a smaller subset of properties within the neighborhood is selected as the analysis area based on the previously stated criteria, although the goal is to engage the entire neighborhood. The ongoing collaborative relationship is offered to the selected community. UNO-CHART will continually be available to provide homeowners with information concerning mitigation measures, policy issues, or other flooding related matters as requested; and a ‘follow-up’ with the community will be conducted after a period of time has passed.
**Selecting the Area:** Potential analysis areas are discussed and reviewed based on certain criteria in collaboration with local officials and residents.

**Step 1:** Advise all the property owners in the repeatedly flooded area that the analysis will be conducted.

**Step 2:** Collect data on the analysis area and each building in the identified study area within the neighborhood to determine the cause(s) of the repetitive damage.

**Step 3:** Review alternative mitigation 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 information gathered from agencies and organizations, and relevant maps of the analysis area.

**Ongoing Collaboration with the Neighborhood:** UNO-CHART offers an ongoing relationship with the community to provide information about flooding issues as needed, and a “follow-up” visit will be conducted after a period of time as passed.

**Preliminary Step: Select the Area**

In November 2007, after a careful review of the repeatedly flooded properties in the City of New Orleans, the UNO-CHART Team met with local officials and Hollygrove residents to discuss potential areas for analysis. The Hollygrove neighborhood was chosen because the area has a flooding problem, active neighborhood organizations, and the residents’ interest and commitment to finding a solution to the flooding problems.

**Step 1: Neighborhood Notification**

The first step of the FEMA five-step process is to advise the neighborhood about the project. On March 19, 2008 the City of New Orleans Office of Recovery and Development Administration sent a notice to the homeowners introducing them to the project. The letter also included a data sheet aimed at gathering information from the homeowners about their properties and flood experience. Copies of the notice and data sheet appear in Appendices A and B. 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 leave it for the post office letter carrier to pick up.
Step 2: Data Collection

The second step in the area analysis process is the collection of relevant data on the problem (i.e., the properties exposed to flooding and cause(s) of the repetitive damage.) These data were collected through coordinating with many agencies and departments, neighborhood residents and conducting fieldwork. (For a list of these stakeholders, see Step 4 of this report.) There were five primary sources of information:

I. Community Plans/Studies
II. Flood Insurance Data
III. Drainage Information
IV. Flooding Experiences of Property Owners
V. On-site Data Collection

I. Community Plans/Studies

The UNO-CHART Team has collected and reviewed the following reports:

A. Orleans Parish Hazard Mitigation Plan, December 2005
C. City of New Orleans Code of Ordinances, July 2008

A. Orleans Parish Hazard Mitigation Plan: The Orleans Parish Hazard Mitigation Plan covers flooding in Section 3 (Risk Assessment) under the ‘Floods’ and ‘Levee Failure’ Categories. Section 5 (Mitigation Actions and Plan) identifies several activities focused on flood prevention. The Plan, while not mentioning Hollygrove specifically, notes that sixty-nine percent (69%) of New Orleans’ structures fall within the 100-year floodplain, and offers a brief explanation of New Orleans flooding problem. In summary, New Orleans is flat and low, and ranks second in the nation for repeated flooding.

The plan lists four broad mitigation goals that are intended to assist communities in developing community-level goals over time. These goals include identifying and pursuing preventative measures, enhancing public awareness and understanding of preparedness, ensuring first responders and their facilities remain operational, and the promotion of regional cooperation between parishes with regard to mitigation measures.

B. Unified New Orleans Plan (UNOP): There are two UNOP plans that are relevant to Hollygrove residents: the City-wide Plan and the Planning District 3 Plan.

The City-wide version of the UNOP is less detailed as it covers a much larger area than the District 3 Plan. The concern about flooding in Hollygrove is mentioned once in the text of the UNOP city-wide plan, in section 4.1.5 titled flood protection projects. The Plan calls for a planned study, called Orleans/Jefferson Flood Protection to equalize levee protection on both sides of the Monticello Canal. Drainage problems associated with the Monticello Canal are discussed later in this report.

The District 3 Plan includes more detailed information about the Hollygrove neighborhood. This Plan offers insight to how residents would like to see their
neighborhood recover following Hurricane Katrina. Flood protection initiatives desired by residents include:

- heightening the Monticello Canal wall on the Orleans Parish side,
- adding floodwalls along the Palmetto Canal,
- improving pumping capacities and storm drainage,
- rebuilding homes so that they are flood resistant and energy efficient,
- Closing the Mississippi River Gulf Outlet (MRGO).

Addressing flooding at a regional scale was proposed as the most critical component to any recovery scenario, and is also recognized by the UNOP City-wide Plan.

C. Code of Ordinances: City ordinances are written to protect homeowners. The City of New Orleans’ Code of Ordinances prescribes minimum elevation requirements for all areas of the city. The ordinances state that for new construction or substantially improved structures, the lowest floor shall meet the higher of either the advisory base flood elevations (ABFE) or the existing base flood elevation (BFE).

Substantially improved structures are those which have undergone repair or renovations that meet or exceed fifty percent (50%) of the total market value of the structure. Therefore, elevation as a mitigation measure is required by law for those buildings that were substantially damaged by Hurricanes Katrina or Rita or any other cause. Advisory base flood elevations and base flood elevations are discussed in more detail in the next section of this report.

II. Flood Insurance Data

A. Flood Insurance Rate Map, March 1, 1984: A Flood Insurance Rate Map (FIRM), published by FEMA, shows potential flood risk according to zones of severity and is used in setting flood insurance rates. The Hollygrove neighborhood analysis area falls within an “A” flood zone, which means that the area is at a high risk of flooding.

Figure 2-1 on the following page shows the portion of the Flood Insurance Rate Map (FIRM) for the City of New Orleans that includes the Hollygrove neighborhood. The arrow points to the location of the study area on the map.

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 a 10% chance of occurring in a given year.
On August 25, 2006 the City of New Orleans adopted Advisory Base Flood Elevations (ABFEs)\(^1\) that FEMA strongly recommended after the flooding associated with Hurricane Katrina.

The ABFE is the higher elevation of
   1) 3 feet above the ground, or
   2) the existing BFE as shown on the FIRM

In Hollygrove the existing BFE of .5 feet above sea level may be higher than three feet above the ground, depending on what the ground elevation is in a specific location. It is important to remember when calculating height above ground that the ground elevation in the study area is estimated to be between three and four feet below sea level\(^2\). Only a licensed surveyor can determine the ground elevation at a specific location so that the required lowest floor elevation can be established.

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\(^1\) Louisiana Coastal Law – Number 87- October 2006, pg. 3
\(^2\) According to elevation data collected by UNO-CHART
B. Claims Data: 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.

The UNO-CHART Team obtained claims data from FEMA Region VI for all repetitive flood loss properties in the Hollygrove study area. There are 35 repetitive loss properties within the 57 property study area. Sixty-one percent (61%) of the properties in the study area qualify as repetitive loss. As described in Table 2-1 the homeowners for the 35 repetitive loss properties have received $4,521,958.95 in flood insurance payments since 1978. The most costly flood event was on August, 29, 2005, Hurricane Katrina. Table 2-1 illustrates that the claims total of the 35 repetitive loss properties for Hurricane Katrina ($2,127,216.85) was nearly the same as the combined claims total of the same 35 properties for every flood event prior to Katrina since 1978 ($2,394,742.10).

It is likely that the data in this section understate the flooding problem for four reasons, including:

1. NFIP records do not include claims data prior to 1978, so there could have been additional losses not shown here.
2. Policy holders may not have submitted claims for smaller floods for fear of it affecting their coverage or their premium rates.
3. Only data for insured properties were reviewed. There could be other properties that have been repeatedly flooded, but did not have insurance at the time of the flood or did not submit claims.
4. 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>Date of Event</th>
<th>Number of Claims</th>
<th>Claims Totals per Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-May-78</td>
<td>9</td>
<td>$58,918.78</td>
</tr>
<tr>
<td>13-Apr-80</td>
<td>25</td>
<td>$174,163.12</td>
</tr>
<tr>
<td>10-Jun-81</td>
<td>8</td>
<td>$51,355.86</td>
</tr>
<tr>
<td>24-Apr-82</td>
<td>6</td>
<td>$24,914.67</td>
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<tr>
<td>06-Apr-83</td>
<td>31</td>
<td>$358,855.88</td>
</tr>
<tr>
<td>01-Apr-88</td>
<td>19</td>
<td>$94,422.18</td>
</tr>
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<td>07-Nov-89</td>
<td>2</td>
<td>$13,710.65</td>
</tr>
<tr>
<td>13-May-90</td>
<td>4</td>
<td>$25,026.00</td>
</tr>
<tr>
<td>10-Jun-91</td>
<td>27</td>
<td>$277,448.62</td>
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<td>16-Feb-92</td>
<td>2</td>
<td>$17,975.88</td>
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<tr>
<td>09-May-94</td>
<td>2</td>
<td>$1,902.97</td>
</tr>
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<td>08-May-95</td>
<td>28</td>
<td>$665,353.10</td>
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<td>11-Sep-98</td>
<td>25</td>
<td>$420,112.64</td>
</tr>
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<td>10-Jun-01</td>
<td>1</td>
<td>$2,354.65</td>
</tr>
<tr>
<td>25-Sep-02</td>
<td>18</td>
<td>$208,227.10</td>
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<tr>
<td>29-Aug-05</td>
<td>24</td>
<td>$2,127,216.85</td>
</tr>
</tbody>
</table>

Claims total prior to Hurricane Katrina: $2,394,742.10

Claims total: $4,521,958.95

Table 2-1: Claims totals per flood event
III. Drainage Information

A. Flooding Problem: Flooding is the greatest threat to New Orleans, and is addressed in many city- and community-level plans. The Orleans Parish Hazard Mitigation Plan cites the flat topography and the low elevation of the land. Additionally, the levee system prevents rain water from draining naturally; hence the City relies on an elaborate pumping system for drainage. Hollygrove relies on the Pritchard Street and Oleander Street pumping stations for the removal of storm water, which is then pumped into the Monticello Canal. The maximum capacity for the City’s pumping system is one inch during the first hour of rainfall, and half of one inch for every hour thereafter, assuming that all drain catches are clear of debris. A heavy rainstorm can overload the pumping capacity.

In addition to the City’s general flooding issues, the Hollygrove neighborhood has its own set of flooding issues. There are four main sources of flooding in the Hollygrove analysis area:

1. The land is low; the neighborhood sits on average four feet below sea level.

2. The floodwall on the Orleans Parish side of the Monticello Canal is substantially lower than the floodwall on the Jefferson Parish side of the canal. Figure 2-2 illustrates this height difference.

3. Storm water in the Monticello Canal becomes constricted at Airline Highway and the Monticello Canal, and at the railroad trestle bridge and the Monticello Canal. During normal conditions, as shown in Figure 2-2, water easily flows through the culverts. However, during heavy rain events the water in the canal rises, backs up and sometimes overflows the Orleans Parish-side floodwall

4. Debris is often found in the Monticello Canal, as shown in Figure 2-3, a sign of poor maintenance.

The map in Figure 2-4 illustrates the current drainage system in Hollygrove.
B. Flood Control Projects: Several drainage projects have occurred over the years in an effort to reduce flooding in Hollygrove. These individual improvements are part of a larger SELA (Southeast Louisiana Urban Flood Control) Project, which was authorized by Congress in 1996 following the flood event of May, 1995.

The plan for Drainage Sub-area OE10C, where Hollygrove lies, consists of:
• installing new canals under Forshey Street and the abandoned railroad right of way
• replacing a portion of the Dublin Canal
• installing a new canal under Eagle Street
• installing a new drainage pumping station on Pritchard Place

Table 2-2 shows that these projects were all completed by the end of 2004.

<table>
<thead>
<tr>
<th>Project</th>
<th>Project Start Date</th>
<th>Completion Date</th>
</tr>
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<tbody>
<tr>
<td>Pritchard Pumping Station</td>
<td>April 2001</td>
<td>May 2005</td>
</tr>
<tr>
<td>Railroad ROW and Eagle St. culverts</td>
<td>August 2000</td>
<td>December 2004</td>
</tr>
<tr>
<td>Forshey St. and Dublin St. culverts</td>
<td>July 2000</td>
<td>August 2004</td>
</tr>
</tbody>
</table>

According to the Corps report, Hollygrove should have seen about a 1.2 foot decrease in the 100-year flood elevation from storm water flooding due to the SELA projects. In addition, as demonstrated in Table 2-3 no flood claims were filed by owners of the repetitive flood loss properties in the Hollygrove analysis area since September 2002, when the partially completed SELA projects could begin to show drainage improvements, until Hurricane Katrina, even though heavy rain events were recorded at the two gauges near Hollygrove. The lack of claims filed indicates that the SELA projects helped to reduce flooding in Hollygrove during regular storm events. It is important to note that these projects will not provide protection in the event of a levee break.

The U. S Army Corps of Engineers formed a team of experts called the Interagency Performance Evaluation Task Force (IPET) to review how the New Orleans Hurricane Protection System performed during Hurricane Katrina. The IPET report describes what happened during Hurricane

Table 2-3: Hollygrove Rain Gauge Data and Claims Data

<table>
<thead>
<tr>
<th>Date</th>
<th>Water Plant (Inches/24 hours)</th>
<th>P.S. 6 (Inches/24 hours)</th>
<th># RL Claims</th>
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<td>5.81</td>
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<td>4/13/1980</td>
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<td>4/30/1982</td>
<td>6</td>
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<td>4/7/1983</td>
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<td>4/23/1983</td>
<td>4.16</td>
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<td>4/2/1988</td>
<td>8.58</td>
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</tbody>
</table>
Katrina and the following flood. A set of IPET maps were also released detailing the flood risk for three categories of rain events and three levels of levee protection. Table 2-4 illustrates for the study area what the Corps believes to be the pre-Katrina flood depth, current flood risk, and projected flood risk once 100-year levees are completed, for 50-year, 100-year, and 500-year rain events. The Corps projects that 100-year levees will be completed in 2011.

As shown in Table 2-4 little benefit for a 50-year rain event is projected. However, for 100-year and 500-year rain events flood depths in Hollygrove are expected to have decreased from what the pre-Katrina risk was to the current risk level, and are anticipated to decrease even more once the 100-year levees are completed. The data presented in Table 2-4 are only applicable to rain events, not in the event of levee failure.

<table>
<thead>
<tr>
<th>Severity of event</th>
<th>Pre-Katrina flood depth</th>
<th>Current flood depth</th>
<th>Flood depth with 100-year levees</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-year event</td>
<td>2-4 ft., corners deeper</td>
<td>2-4 ft., corners deeper</td>
<td>2-4 ft., corners deeper</td>
</tr>
<tr>
<td>100-year event</td>
<td>6-8 ft.</td>
<td>4-6 ft., corners deeper</td>
<td>2-4 ft., corners deeper</td>
</tr>
<tr>
<td>500-year event</td>
<td>8+ ft.</td>
<td>8+ ft.</td>
<td>4-6 ft., corners deeper</td>
</tr>
</tbody>
</table>

There are two planned drainage projects that would impact the Hollygrove neighborhood.

An additional SELA project that would affect the drainage in Hollygrove is scheduled to begin during the summer of 2010. This project was approved with other Post Authorization Changes (PACs) which were authorized by Congress with the original authorization for the SELA project in 1996. The project involves increasing the size of the box culvert under Claiborne Ave. from Lowerline St. to Monticello Ave. Rainwater collected in the new box culvert will drain by gravity flow into the Monticello Canal. This project will increase the rate of flow into the Monticello Canal, causing the flow level in the Monticello Canal to rise approximately one foot. The New Orleans Sewerage and Water Board would like to enlarge the Monticello Canal.

There is another project under consideration which could increase the amount of water flowing through Hollygrove canals. Currently, there is a large pump that was installed in Pump Station 1 as a part of a previous SELA project. This pump is not being used because the Palmetto Canal is not large enough to handle the amount of water that it would discharge. Therefore, there is a plan for increasing the size of the Palmetto Canal so that this large pump can be used. Once the large pump is in use, there will be an increased amount of water discharging into the 17th Street Canal via the Palmetto Canal.

C. Pump to the River: A recent initiative spearheaded by an organization of citizens known as “Pump to the River Jefferson/Orleans” calls for a portion of the rainwater
runoff in Jefferson Parish which is currently pumped into the 17th Street Canal to be pumped instead directly into the Mississippi River. The theory is that by pumping rainwater from Hoey’s Basin in Jefferson Parish directly into the Mississippi River, flooding will be reduced in both Jefferson and Orleans Parishes. Reducing the amount of water in the 17th Street Canal increases the canal’s capacity for flows from several areas of New Orleans, including Hollygrove. Figure 2-5 illustrates the predicted area to be protected. The shaded area is expected to benefit from Pump to the River. This initiative has gained the support of the New Orleans City Council, Jefferson Parish Council, New Orleans Sewerage and Water Board, Jefferson Department of Drainage, both U.S. Senators Landrieu and Vitter, and Representatives Cao and Scalise.

In August of 2007, the Army Corps of Engineers presented three options to Congress and local officials for reducing the 17th Street Canal’s vulnerability to storm surge. The locally preferred proposal recommended by the Sewerage and Water Board of New Orleans, Jefferson Parish, and other officials is referred to as Option 2a by the Corps of Engineers. Option 2a combines Option 2 (removal of existing Pump Station 6 to be replaced with a new, more efficient, pumping station at Lake Pontchartrain) and adds pumps that will collect and discharge rain water from Hoey’s Basin in Jefferson Parish into the Mississippi River allowing more room in the 17th Street Canal for rain water from Orleans Parish.

Option 2a includes the following:

1) To deepen the 17th Street Canal to move rainwater to the Lake.

2) Build a closure and new pumping station at the lake end of the 17th Street Canal to replace Pump Station 6 and prevent lake water from entering the canal.

3) Reduce the burden on the 17th Street Canal system by diverting flows from Hoey’s Basin to the Mississippi River via a new pumping station and discharge tubes.
The “Pump to the River” project, although it would be located in Jefferson Parish, would help the drainage in Hollygrove. This option is expected to remove 1600 cubic feet per second of water from the 17th Street Canal, making it easier for water to flow from the Monticello Canal into the 17th Street Canal. Given the expected drainage projects described beginning on page 10 of this report that would increase the flow of water into the Monticello Canal and the 17th Street Canal (via the large pump located at Pump Station 1 and the Palmetto Canal), the Pump to the River plan could offset and even improve the drainage of the Monticello Canal into the 17th Street Canal, thus reducing the flood risk in Hollygrove. Additionally, the Pump to the River plan calls for Hoey’s Gate to remain in place so that it can be opened in times of excess rainfall (such as tropical events) to relieve a portion of the Monticello Canal. There should be defined rules and regulations stating under what conditions the gate will be opened. Although the Pump to the River project would benefit Hollygrove, more complete flood protection would be reached if the undersized culverts located at Airline Hwy. and the railroad trestle were replaced with bridges allowing water to flow freely under Airline Hwy.

Option 1 entails putting a new pump station at the Lake, and leaving P.S. 6 in place. These two pump stations would work concurrently or in series. Local drainage officials
do not support Option 1, partly because it requires two pump stations along the 17th Street Canal channel, rather than one. Officials fear that in an effort to maintain the safe water level in the 17th Street Canal (so that the canal floodwalls are not put at risk of breaking as they did following Hurricane Katrina) during heavy rain events or tropical events, pumping at P.S. 6 may be slowed or even halted. Doing so would slow down or prevent the pumping of the water in the Monticello Canal into the 17th Street Canal. The backed up water in the Monticello Canal may then overflow the canal walls/sides and flood Hollygrove.

The Corps contends that the drainage infrastructure involved in Option 2a is not considered part of the hurricane protection system, and therefore they have no authority to sanction Option 2a. Pump to the River Jefferson/Orleans members disagree. The group argues that removing rainwater while floodgates are closed falls under the definition of storm surge/hurricane protection as defined in the Corps’ Purpose and Need statement: “Protect City of New Orleans and Jefferson Parish from storm surge-induced flooding through the 17th Street, Orleans Ave., and London Ave., Canals, while not impeding the ability of the area’s internal drainage system to remove storm water.” The IPET investigation specifically names pumping rain water as a critical component of the Hurricane Risk Reduction System in Volume 1 of the IPET report. Also, former Jefferson Parish Councilwoman Jennifer Sneed requested that UNO-CHART conduct an analysis of repetitive flood loss data in Hoey’s Basin. The August 2007 report states that since local drainage improvements were completed in the area, none of the 164 repetitive flood loss properties in Hoey’s Basin flooded except during tropical events. These data indicate that while the drainage improvements were effective in protecting Hoey’s Basin residents from rain events, they did not protect against tropical events. Therefore, a larger drainage solution (such as Pump to the River) may help protect the area from flooding during tropical events.

In December 2008, the Corps completed a cost analysis for Option 2a. In March 2009, the cost analysis was released. The Corps estimated that Option 1 would cost $800 million; Option 2, $3.4 billion, and Option 2a, $3.5 billion. Some local experts believe that the cost estimate for Option 1 is underestimated, and Options 2 and 2a are inflated. In reaction to the release of the cost estimates, the New Orleans Sewerage and Water Board, Jefferson Parish Drainage Department and the State Coastal Protection and Restoration Authority requested that an independent, peer reviewed analysis of the Corps cost estimates and plans for the New Orleans outfall canals, including Pump to the River, be performed.

**D. Hoey’s Bypass:** Another project called Hoey’s Bypass contends to accomplish the same goal as PTR: to reduce flooding in Hoey’s Basin and Orleans Parish, including Hollygrove. In Jefferson Parish, this project would place a new culvert along side the Geisenheimer Canal between the Monticello Canal and Woodvine pipe. Also, the Hoey’s Canal discharge point would move from its current location on the Monticello Canal to a location still in the canal, south of Airline Highway. In doing so, the water from Hoey’s

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3 Statement made in a Corps presentation made at an October 22, 2008 meeting about the Individual Environmental Report 5.
Basin in Jefferson Parish would be directed into the Monticello Canal behind the small culvert, subsequently raising the water level in the Monticello Canal. To prevent the Monticello Canal water from overflowing into Hollygrove, the project calls for enlarging the Monticello Canal, upgrading Pumping Station 6, and replacing the small culverts with bridges that will allow the larger amount of water to flow freely under airline Highway and into the 17th Street Canal. This project would work in tandem with the planned large pump to be placed at the confluence of the 17th Street Canal and Lake Pontchartrain.


IV. Property Owners

As previously mentioned, the letter to the residents living in the Hollygrove analysis area from the City of New Orleans included a data sheet. Of the 57 properties to which letters were sent, 31 (54%) were returned as “undeliverable”. On April 19, UNO-CHART team members hand delivered data sheets to homes in the analysis area that 1) were not returned “undeliverable” and 2) had not yet responded to the first letter from the City. A total of 21 houses received a second data sheet. In total, 11 residents responded, equaling a response rate of 19.3%. According to the returned data sheets homeowners have consistently moved into the neighborhood since the 1970s. However, most people moved to the neighborhood in either the 1970s or 1990s. The vast majority of the homes are on a slab foundation and all homeowners reported having flooded. Hurricane Katrina left up to nine feet of floodwater in houses for two weeks. The Monticello Canal is most frequently cited as the source of the flooding. A majority of respondents, 91%, have flood insurance and are interested in learning more about flood mitigation measures. The results are summarized in Appendix C.

V. On-Site Data Collection

A. Elevation Data: A team from UNO-CHART collected elevation data for the houses in the Hollygrove analysis area in the spring of 2007. According to the City of New Orleans Code of Ordinances the lowest floor elevation (LFE) must be at least the same height as the base flood elevation (BFE) for new structures and structures that are substantially damaged or substantially improved. If the lowest floor is elevated above the BFE, Flood Insurance costs will decrease.

In Hollygrove the average elevation for the homes in the analysis area is 3.86 feet below sea level; with the highest elevated home at 2.21 feet below sea level, and the lowest home 4.59 feet below sea level. The ABFE in the Hollygrove analysis area is one-half of one foot (.5) above sea level, or three feet above the highest existing adjacent grade (HEAG). According to the UNO-CHART elevations, 100% of the structures in the

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4 Elevation data collected by the UNO-CHART team is not considered ‘official’. The only way to know the official elevation for your home is to hire a licensed surveyor to complete an Elevation Certificate.
analysis area are below this current advisory base flood protection elevation. This information is summarized in Table 2-5:

The ground elevation in Hollygrove is roughly four feet below sea level (higher in some areas, lower in others), so in order to meet the existing BFE, structures would have to be raised approximately 4.5 ft. above the ground. This, of course, is only an approximation and an elevation certificate is required for determining exactly how high a house must be raised to meet the City’s requirement.

<table>
<thead>
<tr>
<th>Range</th>
<th>Average</th>
<th>Most Frequent</th>
<th>ABFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>Lowest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2.21</td>
<td>-4.59</td>
<td>-3.86</td>
<td>The higher of .5 ft. above sea level or 3 ft above HEAG</td>
</tr>
</tbody>
</table>

Table 2-5: Summary elevation data for Hollygrove analysis area

B. Windshield data: On March 28, 2008, a team from UNO-CHART along with two neighborhood residents visited Hollygrove and collected information about each property in the analysis area. 5 Forty-two percent (42%) of the houses were occupied, 48% of the houses were vacant, and 10% of the homes had been demolished. Most of the houses were one-story, masonry structures on a slab foundation; and a large majority of the houses and their foundations were in good condition. About half (46%) of the houses were only elevated about one foot above the street and less than one foot above grade. Nearly one quarter of the houses (26%) had some type of garage or shed. The data collected by the UNO-CHART Team and Hollygrove residents is presented in Appendix D.

Hollygrove is the first area in which UNO-CHART invited neighborhood residents to join the Research Team in the field. The fieldwork was enhanced by having residents side by side with the Team while data about each home were collected. These residents were able to answer specific questions about whether or not homes were vacant, where the floodwaters collect in the street, and the depth that floodwaters usually reach for any given rain event. Additionally, they showed the UNO-CHART Team what neighbors believe to be the source of Hollygrove’s flooding, the obvious height differential of the floodwall on the Orleans Parish side of the Monticello Canal versus the Jefferson Parish side of the canal. Figure 2-3 illustrates this height difference.

Problem Statement

Based on the data collected from the five sources of information (flood studies, flood insurance data, community data, the property owners, and on-site data-collection), the following bullets summarize the repeated flooding problems in the Hollygrove area:

5 You will notice that data for only 50 structures were recorded. This is because several structures were multi-family buildings.
Regular rainfall flooding
- A heavy rainfall will induce flooding.
- Drainage problems persist throughout the area
  - The Orleans Parish-side floodwall along the Monticello Canal is at least 5 feet lower on the Orleans Parish side than on the Jefferson Parish side. The canal walls are overgrown and the canal is strewn with debris that blocks the flow of water, such as grocery baskets.
  - A culvert located at Airline Highway and the Monticello Canal, in Jefferson Parish, causes water to backup and overflow the lower Orleans Parish side floodwall. This culvert has been slated for replacement with a bridge by Jefferson Parish for 10 years, but the financing has yet to be allocated in the State capital outlay budget.
- All structures in the study fall within an A3 flood zone, which is an area that has a high risk of flooding, and is located in the 100-year floodplain.
- There are 35 repetitive loss properties and 32 severe repetitive flood loss properties (as defined by FEMA), which indicates that the neighborhood has a history of flooding.

Levee break flooding (Katrina)
- Residents report maximum flood depths of nine feet for two weeks.
- The neighborhood was under nine feet of water due to Katrina and 48% of the structures in the study remain vacant at the time of this report. The Katrina flood claims made by the repetitive loss properties located within the study area totaled $2,127,216.85.

Step 3: 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 protection at different levels of flooding. Six approaches were reviewed:

- Drainage Projects
- 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
- Maintaining flood insurance coverage on the building
I. Drainage Projects

There are two sources of drainage related flooding problems in Hollygrove, and four drainage projects that could help alleviate the flooding in Hollygrove. The two sources of drainage related flooding are:

A. Storm water backing up into the streets and ponding in the low spots.
B. Storm water overflowing the Monticello and Palmetto Canals into the neighborhood

The three drainage projects that could help are:

A. The Pump to the River initiative
B. Hoey’s Bypass
C. Adding floodwalls and heightening the existing floodwalls along the Palmetto and Monticello Canals.

The first drainage problem, storm water backing up in the streets and ponding, would be addressed by both the Pump to the River initiative, and the Hoey’s Bypass project. Pump to the River calls for storm water from Hoey’s Basin in Jefferson Parish to be pumped directly into the Mississippi River, rather than into the 17th Street Canal with most of Orleans Parish’s storm water. As a result, the capacity for Orleans Parish’s storm water in the 17th Street Canal will be increased, which will also increase the speed at which storm water can be pumped from the streets. The U.S. Army Corps of Engineers and Congress are currently reviewing the possibility of implementing Pump to the River. The Hoey’s Bypass project would increase the speed at which water in the 17th Street Canal and the Monticello Canal are pumped into Lake Pontchartrain, subsequently increasing the speed at which rainwater is pumped from the streets.

The second drainage problem is the result of undersized culverts under Airline Highway and the nearby railroad trestle along the Monticello Canal, and the low floodwall along the Orleans Parish side of the Monticello Canal. The Hoey’s Bypass project would address this problem by increasing the amount of water that can be held in the Monticello Canal, the amount of water that can flow under Airline Highway, and how fast water can enter the 17th Street Canal from the Monticello canal via D.P.S. 6 and then into Lake Pontchartrain. Increasing the height of the floodwall will allow more water to remain in the canal during heavy rain events without overtopping the wall and flooding the neighborhood. There is no plan for increasing the height of the Orleans Parish floodwall or building a floodwall where one is non-existent on the Monticello Canal. However, in March of 2009 the Louisiana Department of Transportation and Development placed road barriers along the stretch of the Monticello Canal where no floodwall exists. These barriers are not water-tight and will not prevent water from overflowing the canal. Currently, neighborhood residents are investigating the possibility of adding temporary, water-filled dams that can be installed when heavy rains threaten the area to the concrete road barriers.
Both of these projects accomplish the same goal, reducing flooding in Hoey’s Basin and in Orleans Parish including Hollygrove. The Pump to the River project has broad support from Jefferson Parish officials, the New Orleans City Council, and a group of residents called Pump to the River Jefferson Orleans. The Pump to the River project must go through a long approval process because federal funds would be used in construction. The Hoey’s Bypass project, however may not take as long before construction could begin because local and state funds would be used.

II. 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 building instead of into the house. Houses can either be elevated on fill, posts/piles, or a chainwall. A house elevated on fill requires adding a specific type of dirt to a lot and building the house on top of the added dirt. A house elevated on posts/piles is either built or raised on a foundation of piers that are driven into the earth and rise high enough above the ground to elevate the house above the flow of flood water. A house elevated on a chainwall is built or raised on a continuous wall-like foundation that elevates the house above the flood level. If a chainwall is used, it is important to include vents or openings in the chainwall that are appropriately sized: one square inch for each square foot of the building’s footprint. Figures 3-1 and 3-2 show elevated houses in Hollygrove.

A. 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 posts/piles 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. Forty-eight percent (48%) of the houses in the Hollygrove 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, the homeowner’s portion 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, or state funds.

**B. Feasibility:** Federal funding support for an elevation project requires a study that shows that the benefits of the project exceed the cost of the elevation. Project benefits include savings in insurance claims paid on the structure.

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.

**III. Reconstruction**

FEMA has recently experimented with a different approach to mitigating repetitively flooded structures in this region because of limited space and the need to re-use lots. Formerly called “demo/rebuild,” “Pilot Reconstruction Grants” can be used to demolish a flood prone 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 due to a cracked slab, structural problems, or poor condition of the structure.
- The new building must be elevated to the current Base Flood Elevation.
- The new building can only be 10% larger than the existing structure.
- 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 permanently.
- It must be demonstrated that the benefits of the project (saved money from fewer flood insurance claims to pay) exceed the costs to demolish and rebuild the house.
- The maximum federal grant is 75% of the cost up to $150,000.
IV. Barriers to Floodwaters

Small floodwalls, levees, or berms could be constructed around one or more properties if flood depths are less than three feet. Small floodwalls are appropriate for most homes in Hollygrove given the non-Katrina flood depths reported by residents on the returned data sheets and the limited space between houses. While levees and berms are more suitable for larger lots, small floodwalls that are located close to the house are appropriate for suburban style neighborhoods with front and side yard space such as Hollygrove. If a floodwall 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. An engineer should be consulted before beginning a floodwall project, and residents should contact the City of New Orleans Department of Safety and Permits to inquire about a permit. Figures 3-3 and 3-4 show an example of a floodwall and sump pump.

Soil permeability is a flooding concern. Permeable soil will allow floodwaters to seep under the barrier. This is a particular problem when floodwaters stay up for a long time. As seen on the soils map in Figure 3-5, there are two types of soil found in Hollygrove: fresh organic and mineral deltaic deposits, and sandy and loamy alluvial. The map on the next page illustrates the location of the soil types. Neither of the soil types found in Hollygrove are ideal for preventing long duration flooding with the construction of small floodwalls. If floodwaters stay for an extended period of time permeable soil will allow water to seep under the floodwall and into the protected area. If a homeowner is interested in constructing a small floodwall, it is advised to consider historical flood durations and to have the soil on site tested to determine the permeability.

Homeowners who are interested in constructing a barrier to protect their house should consider the following requirements:

Figure 3-3: This home is surrounded by a floodwall, but the garage door must be sandbagged when the area floods. The wall doubles as a planter box to reduce the visual impact of a flood protection structure.

Figure 3-4: Rain water and seepage under this floodwall collect in the basin, or sump, and is pumped over the wall by a sump pump.
A method to close openings, such as the driveway in the photo in Figure 3-3. 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.

![Soils map for the study area](image)

**Figure 3-5: Soils map for the study area**

**A. 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.

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 in Table 3-1 is for a 40’x 40’ home with a wall one foot outside the building wall. Labor accounts for about half of the price in the cost estimate.
Table 3-1: Floodwall Cost Estimate

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Foot high reinforced concrete cantilever wall, 168 feet @ $200/foot</td>
<td>$33,600</td>
</tr>
<tr>
<td>Internal drainage and sump pump system</td>
<td>5,000</td>
</tr>
<tr>
<td>Sewer backup valve</td>
<td>4,500</td>
</tr>
<tr>
<td>Generator for power outages</td>
<td>900</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$44,000</strong></td>
</tr>
</tbody>
</table>

It should be noted that smaller, non-engineered walls such as the ones in the photo on page 22 have been built by their owners for less than $10,000.

FEMA does not fund individual floodwalls for residential properties; therefore, the homeowner must pay 100% of the cost for a floodwall. However, each property owner can determine how much of their own labor they want to contribute and whether the cost of the wall is worth the protection from flooding that it provides.

V. Dry Floodproofing

This measure keeps floodwaters out of a building by steps taken to protect the building directly. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed either permanently, or temporarily with removable shields or sandbags.

A floodproofing project has three components:

- Make the walls watertight. This is easiest to do for masonry or brick faced walls such as those found in the study area. The brick or stucco walls can be covered with a waterproof sealant and bricked or stuccoed over with a veneer to camouflage the sealant. Houses with wood, vinyl, or metal siding need to be wrapped with plastic sheeting to make walls watertight, and then covered with a veneer to camouflage and protect the plastic sheeting.
- Provide closures for the openings; including doors, windows, dryer vents and weep holes; such as removable shields or sandbags.
- Account for sewer backup and other sources of water entering the building. For shallow flood levels, this can be done with a floor drain; although a valve system is more secure.

As seen in Figure 3-6, dry floodproofing employs the building itself as part of the barrier to the passage of floodwaters, and therefore this technique is only recommended for buildings with slab foundations that are not cracked. The solid slab foundation prevents floodwaters from entering a...
building from below. Also, 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, because water pressure on the structure can collapse the walls and/or buckle the floor. Dry floodproofing is a mitigation technique that is appropriate for Hollygrove; according to the returned data sheets flood depths have not exceeded 3 feet, except for major events such as Hurricane Katrina.

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. Examples of floodproofed houses can be seen in Figures 3-7 through 3-10.

Dry 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, which may not be readily evident. 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.
- There is no government financial assistance programs available for dry floodproofing, therefore the entire cost of the project must be paid by the homeowner.
- The NFIP will not offer a lower insurance rate for dry floodproofed residences.
A. 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. Each property owner can determine how much of their own labor they can contribute and whether the cost and appearance of a project is worth the protection from flooding that it may provide.

B. 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 many of the structures and flood conditions found in Hollygrove. It can also be more attractive than a floodwall around a house.
VI. Flood Insurance

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

- A flood insurance policy covers surface flooding from the overflow of inland or tidal waters or from storm water runoff.
- 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.
- Once in effect there is no need for human intervention\(^6\).
- 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.

A. Cost: Flood insurance rates are based on several factors including what flood zone the building falls in and the age of the structure. An ‘X’ zone is the 500-year floodplain and an ‘A’ or ‘AE’ flood zone is the 100-year floodplain. Generally, homes in the X zone have lower flood insurance rates than those in the AE zone, because the X zone is supposed to indicate a lower risk from flooding. All homes in the study area are in an AE zone. New Orleans homes constructed before December 31, 1974 are “pre-FIRM” buildings, which means that they were built before the date of the first FIRM for the community, and are thus eligible for the “subsidized” flood insurance premium rates. A building that is located in the ‘AE’ flood zone and constructed or substantially improved after the date of the most current FIRM - such as one built or substantially improved in 2008, is supposed to have been built above the flood level and is therefore subject to rates based on the actual risk rather than a subsidized rate. Rates on pre-FIRM buildings are subsidized because the flood risk was unknown at the time of construction.

Table 3-2 shows the rates for a policy with $150,000 coverage on the building. For example, a house built in 1975 that meets the BFE with a $150,000 building/$60,000 contents policy will cost the homeowner approximately $1,100 annually to insure. \(^6\) There is a 30-day waiting period for a new flood insurance policy before it goes into effect.

---

Table 3-2: Example NFIP Flood Insurance Premiums

<table>
<thead>
<tr>
<th>Policy/Building Exposure</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-FIRM (“subsidized”) rate (AE zone)</td>
<td>$1,605</td>
</tr>
<tr>
<td>Post-FIRM (actuarial) rates (AE zone)</td>
<td></td>
</tr>
<tr>
<td>2 feet above BFE</td>
<td>$425</td>
</tr>
<tr>
<td>1 foot above BFE</td>
<td>$601</td>
</tr>
<tr>
<td>At BFE</td>
<td>$1083</td>
</tr>
<tr>
<td>1 foot below BFE</td>
<td>$3,877</td>
</tr>
<tr>
<td>X Zone</td>
<td>$931</td>
</tr>
</tbody>
</table>

Annual premium is for $150,000 in building coverage and $60,000 in contents coverage for a one-story house with no basement and a $500 deductible. May 1, 2007, Flood Insurance Agent’s Manual
B. Community Rating System (CRS): The Community Rating System is a “voluntary incentive program that recognizes and encourages community floodplain activities that exceed the minimum National Flood Insurance Program (NFIP) requirements.” (www.FEMA.gov) Participating communities are rewarded with reduced insurance premiums. The City of New Orleans participates in the CRS and is currently rated as a Class 8, which means that properties in the AE zone receive a 10% reduction in their insurance premiums. These reductions are not reflected in the example premiums in the table. If the community pursues additional floodplain management activities that exceed the requirements of the NFIP, such as adopting stricter local development regulations, all New Orleans homeowners could be eligible for even further decreased flood insurance rates.

See the Table 3-3 for a summary of the mitigation measures presented in this report.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage Improvements</td>
<td>Little disruption of neighborhood</td>
<td>Dependent on free flowing canals</td>
</tr>
<tr>
<td></td>
<td>Protects yards</td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td>More secure flood protection</td>
<td>High cost</td>
</tr>
<tr>
<td></td>
<td>Flood insurance rate reduction</td>
<td>Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Floodwalls</td>
<td>Effective for shallow flooding</td>
<td>Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil types require substantial foundation to floodwall</td>
</tr>
<tr>
<td>Dry Floodproofing</td>
<td>Low cost</td>
<td>Exposes homes to wall/floor damage</td>
</tr>
<tr>
<td></td>
<td>Effective for shallow flooding on slab foundations</td>
<td>Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>New home is hazard resistant</td>
<td>High Cost</td>
</tr>
<tr>
<td></td>
<td>Flood insurance rate reduction</td>
<td>Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Flood Insurance</td>
<td>Always in effect</td>
<td>Does not prevent flood damage (but does provide funds for repairs)</td>
</tr>
<tr>
<td></td>
<td>Works for all flood levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Under ICC, can be a source of funds for elevation</td>
<td></td>
</tr>
</tbody>
</table>
VII. Funding

There are several possible sources of funding for mitigation projects:

A. 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 do not fund reconstruction projects as described above. The most active program currently is the Hazard Mitigation Grant Program (HMPG). Orleans Parish uses the HMPG for elevation and reconstruction projects. The City of New Orleans Office of Recovery and Development Administration manages the applications process for the City.

B. Flood insurance: There is a special funding provision in the National Flood Insurance Program (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 been 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 insurance agent who wrote your flood insurance policy. Coverage under the ICC does have limitations:

- It covers only damage caused by a flood, as opposed to wind damage
- 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
- The Structure must be located in a SFHA

C. Road Home Program: The Road Home program is offering $30,000 for elevation projects. Details on this elevation incentive are as follows:

- All eligible Road Home applicants who indicate interest in elevation may receive up to $30,000 for site-built or modular homes, or up to $20,000 for mobile homes, in exchange for a personal obligation to elevate within three years.
- The total amount of Road Home funding per applicant, including damage compensation, and elevation funding, cannot exceed $150,000.
- Those who sold their homes are not eligible for the elevation grant
**D. Rebates:** A rebate is a grant in which the costs are shared by the homeowner and another source, such as the local government, usually given to a property owner after a project has been completed. Many communities favor it because the owner handles all the design details, contracting, and payment before the community makes a final commitment. The owner ensures that the project meets all of the program’s criteria, has the project constructed, and then goes to the community for the rebate after the completed project passes inspection.

Rebates are more successful where the cost of the project is relatively small, e.g., under $5,000, because the owner is more likely to be able to afford to finance the bulk of the cost; the rebate acts more as an incentive, rather than as needed financial support.

More information on rebates can be found in the Corps of Engineers’ report *Local Flood Proofing Programs* found at www.nwo.usace.army.mil/nfpc/other.html.

**Step 4: Coordination**

Coordinating with relevant agencies, offices, and organizations is an important step in the analysis process. This step helps to open lines of communication among those interested in flood protection in Hollygrove.

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

- City of New Orleans Office of Recovery and Development Administration
- City of New Orleans GIS Department
- Trinity Christian Community
- Pump to the River Jefferson/Orleans
- Carrollton-Hollygrove CDC
- FEMA Mitigation Region VI – Mitigation
- Jefferson Parish Drainage Department
- New Orleans Sewerage and Water Board
- U.S. Army Corps of Engineers, New Orleans Office
- New Orleans Councilmember Shelley Midura

**Step 5: Findings**

UNO-CHART’s findings for the Hollygrove Repetitive Flood Loss Analysis Area can be broken into two categories:

**A. Drainage Issues:** Properties in the Hollygrove study area are subject to flooding due to the combination of heavy rains and drainage problems. There are several drainage issues that necessitate attention. The Monticello Canal is a source of flooding in
Hollygrove for three reasons. First, the floodwall on the Orleans Parish side of the canal is much lower than on the Jefferson Parish side of the canal. As a result, the level of protection is much greater for Jefferson Parish than for Orleans Parish. Second, the culvert under Airline Highway along the Monticello Canal is undersized and acts as a constriction; it backs up water in the Monticello Canal South of Airline Highway causing the canal to overflow its banks and flood houses in the Hollygrove neighborhood, which are typically low to the ground. Third, the Monticello Canal is strewn with debris, causing further drainage blockages, and water to overflow the canal. Both the Pump to the River initiative and the Hoey’s Bypass project would address flooding in Hollygrove and in Hoey’s Basin. Increasing the height of the floodwall on the Orleans Parish side of the Monticello Canal to equal the height of the Jefferson Parish side floodwall would help protect Hollygrove during times of high water in the canal.

B. Mitigation Measures: Several mitigation techniques would be helpful in reducing flood damage in Hollygrove. Area drainage improvements would protect the entire neighborhood from flooding, rather than only individual houses.

Elevation, dry floodproofing, and floodwalls are all measures that can be implemented on a house by house basis. Elevating a house above the flood hazard offers secure flood protection. Elevation is costly, especially for slab houses, however various funding sources are available for Hollygrove homeowners. Dry floodproofing is another appropriate measure for the slab houses in Hollygrove. Dry floodproofing has the lowest cost of the three options (elevation, dry floodproofing, and floodwalls), but a dry floodproofed house is susceptible to seepage during longer duration floods. Small personal floodwalls are effective for shallow flooding, however, the soil types in the study area would require significant foundation work for a fully functioning floodwall; and if floodwaters stay up for a long period of time, the floodwall could be subject to seepage. Neither small floodwalls nor dry floodproofing will protect a Hollygrove home from the Hurricane Katrina-type of flooding, but they will protect a home from persistent rain fall flooding. Flood Insurance is always in effect and works for all flood levels. It will not prevent flood damage, but it will provide funds for repairs. The City of New Orleans could explore alternative financing methods to support alternative flood mitigation projects, such as the possibility of establishing a rebate program.
Report References

FEMA Region VI Repetitive Loss data

City of New Orleans Code of Ordinances

City of New Orleans Hazard Mitigation Plan

Unified New Orleans Plan (City-wide and District 3)

Flood Insurance Rate Map


Protecting Building Utilities from Flood Damage, FEMA-348, 2000

Reducing Damage from Localized Flooding – A Guide for Communities. FEMA-511, 2005

Pump to the River website (March – April 2008)

SWB SELA website (July 2008)
Appendix A

MAYOR'S OFFICE OF RECOVERY & DEVELOPMENT ADMINISTRATION

CITY OF NEW ORLEANS

C. RAY NAGIN
MAYOR

DR. EDWARD BLAKELY
EXECUTIVE DIRECTOR

March 13, 2008

Hollygrove Resident
8809 Stroelitz St.
New Orleans, LA 70118

RE: Hollygrove Repetitive Flooding Project

Dear Hollygrove Resident:

The City of New Orleans Office of Recovery and Development Administration is reviewing ways to reduce some of our repetitive flooding problems. One opportunity we have identified is to partner with The University of New Orleans' Center for Hazards Assessment, Response and Technology (UNO-CHART) to conduct a flood risk assessment in Hollygrove. CHART has already been visiting with neighborhood leaders about this possibility.

As part of this project, a team from UNO-CHART is preparing a “local area analysis” for this study area. The approach which they take includes collecting some data specific to your property. UNO-CHART staff will be in your area during the day between March 24th and March 28th collecting general information from the street, such as the type of foundation and approximate height of the house above the street. They will also photograph each property in the study area.

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 March 28, 2008. After you fill the form out, please fold it, 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. You will be invited to a meeting with us and the UNO/CHART team to review the findings. The meeting time and location will be advertised once the analysis is near completion.
If you have any questions about this project, please feel free to call Dr. Earthea Nance, Director of Infrastructure and Environmental Planning for the City of New Orleans at (504) 658-8400; Mike Centineo, Floodplain Manager for the City of New Orleans at (504) 658-7130; or Sarah Stack at UNO/CHART, at (504) 280-5760.

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

Sincerely,

Dr. Earthea Nance,
Office of Recovery and Development Administration

Mike Centineo
Office of Safety and Permits

K. Lavon Wright
Target Area Manager
Carrollton at I-10
Appendix B – Data sheet

Hollygrove Repetitive Flooding Analysis
Flood Protection Data Sheet

Name: ____________________________

Property address: ____________________, New Orleans, LA

1. In what year did you move into the home at this address? ________________

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

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

4. Has the property ever been flooded or had a water problem?
   □ Yes  □ No (if “no,” please skip to question 5)

5. In what year(s) did it flood? ________________________

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

7. What was the longest time that the water ever stayed in the house? ___ hours or ___ days

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

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

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

11. Do you have Flood insurance?  □ Yes  □ No

12. Are you interested in pursuing measures to protect the property from flooding?
    □ Yes  □ No  If yes, please refer to our website (www.floodhelp.uno.edu) for useful
    information.

～ Please return this data sheet by March 28, 2008 ～
## Appendix C: Data Sheet Results

<table>
<thead>
<tr>
<th></th>
<th>Total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td><strong>In What year did you move to the home at this address?</strong></td>
<td></td>
</tr>
<tr>
<td>1970s</td>
<td>36%</td>
</tr>
<tr>
<td>1980s</td>
<td>18%</td>
</tr>
<tr>
<td>1990s</td>
<td>27%</td>
</tr>
<tr>
<td>2000s</td>
<td>18%</td>
</tr>
<tr>
<td><strong>What type of foundation does your house have?</strong></td>
<td></td>
</tr>
<tr>
<td>Slab</td>
<td>91%</td>
</tr>
<tr>
<td>Posts/Piles</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Has the property ever been flooded or have a water problem?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>1978</td>
<td>9%</td>
</tr>
<tr>
<td>1989</td>
<td>9%</td>
</tr>
<tr>
<td>1995</td>
<td>27%</td>
</tr>
<tr>
<td>1998</td>
<td>27%</td>
</tr>
<tr>
<td>2002</td>
<td>18%</td>
</tr>
<tr>
<td>2005</td>
<td>81%</td>
</tr>
<tr>
<td><strong>In what year(s) did it flood?</strong></td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>9%</td>
</tr>
<tr>
<td>1989</td>
<td>9%</td>
</tr>
<tr>
<td>1995</td>
<td>27%</td>
</tr>
<tr>
<td>1998</td>
<td>27%</td>
</tr>
<tr>
<td>2002</td>
<td>18%</td>
</tr>
<tr>
<td>2005</td>
<td>81%</td>
</tr>
<tr>
<td><strong>What was the deepest that the water ever got?</strong></td>
<td>3 inches – 9 feet</td>
</tr>
<tr>
<td>18% drainage from nearby properties</td>
<td></td>
</tr>
<tr>
<td>81% overbank flooding from nearby canal</td>
<td></td>
</tr>
<tr>
<td>36% storm sewer backup</td>
<td></td>
</tr>
<tr>
<td>45% storm surge from nearby waterways</td>
<td></td>
</tr>
<tr>
<td>9% sanitary sewer backup</td>
<td></td>
</tr>
<tr>
<td>63% clogged/undersized drainage canal</td>
<td></td>
</tr>
<tr>
<td>27% standing water next to house</td>
<td></td>
</tr>
<tr>
<td><strong>Have you taken any flood protection measures on your property?</strong></td>
<td></td>
</tr>
<tr>
<td>Moved utilities/contents to a higher level</td>
<td>36%</td>
</tr>
<tr>
<td>Regarded yard to keep water away from building</td>
<td>18%</td>
</tr>
<tr>
<td>Installed drains or pipes to improve drainage</td>
<td>9%</td>
</tr>
<tr>
<td>Sandbagged when water threatened</td>
<td>55%</td>
</tr>
<tr>
<td>Elevated all or parts of the building</td>
<td>9%</td>
</tr>
<tr>
<td>Waterproofed the outside walls</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Do you have flood insurance?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91%</td>
</tr>
<tr>
<td>No</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Are you interested in learning more about mitigation?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91%</td>
</tr>
<tr>
<td>No</td>
<td>9%</td>
</tr>
</tbody>
</table>
## Appendix D: Windshield Data

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Structures</td>
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<td>Occupied</td>
<td>21</td>
</tr>
<tr>
<td>Vacant</td>
<td>24</td>
</tr>
<tr>
<td>Foundation type</td>
<td></td>
</tr>
<tr>
<td>Slab</td>
<td>24</td>
</tr>
<tr>
<td>Piers</td>
<td>3</td>
</tr>
<tr>
<td>Chainwall/Cinderblock</td>
<td>17</td>
</tr>
<tr>
<td>Foundation Condition</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>42</td>
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<tr>
<td>Fair</td>
<td>3</td>
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<tr>
<td>Structure Type</td>
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<td>Masonry</td>
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<tr>
<td>Brick Faced</td>
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<td>Wood Frame</td>
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<td>Structure Condition</td>
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<tr>
<td>Good</td>
<td>39</td>
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<tr>
<td>Fair</td>
<td>6</td>
</tr>
<tr>
<td>Number of Stories</td>
<td></td>
</tr>
<tr>
<td>1 Story Home</td>
<td>42</td>
</tr>
<tr>
<td>2 Story Home</td>
<td>3</td>
</tr>
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<td>Elevated Above Street</td>
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</tr>
<tr>
<td>0 Feet</td>
<td>16</td>
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<tr>
<td>1 Foot</td>
<td>23</td>
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<tr>
<td>2 Feet</td>
<td>6</td>
</tr>
<tr>
<td>Elevated Above street</td>
<td></td>
</tr>
<tr>
<td>0 - 1 Feet</td>
<td>30</td>
</tr>
<tr>
<td>1 - 2 Feet</td>
<td>9</td>
</tr>
<tr>
<td>2 - 3 Feet</td>
<td>3</td>
</tr>
<tr>
<td>3 - 4 Feet</td>
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<tr>
<td>4+ Feet</td>
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<tr>
<td>Appurtenant Structure</td>
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<td>shed</td>
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<td>garage</td>
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<td>other</td>
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