

Roberta Grove – Senator Circle

Repetitive Loss Area Analysis Update

Houma, LA

April 2016

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The University of New Orleans

Center for Hazards Assessment, Response and Technology

(UNO-CHART)

floodhelp.uno.edu



University of New Orleans

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Terminology

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

1% chance flood: The flood having a one percent (1%) chance of being equaled or exceeded in any given year, is known as the “100-year” or “1% chance” flood.

100-year flood: The flood that has one percent (1%) chance of being equaled or exceeded each year. The effective risk for the 100-year flood is 26% over a 30 year mortgage.

Base Flood: The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program are protected to the same degree (“1% chance” or “100-year”) against flooding. The National Flood Insurance Program (NFIP) and other agencies use the base flood to require flood insurance and regulate development.

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

Digital Flood Insurance Rate Map (DFIRM): All new FIRMs are prepared as a GIS based map of a community’s flood hazards. All new maps are based upon this digital platform and communities may use these maps instead of paper maps for regulatory purposes.

FEMA: Federal Emergency Management Agency

FIRM: The Flood Insurance Rate Map is the official map which identifies hazard areas and flood risk zones in the community.

Freeboard: A factor of safety usually expressed in feet above the Base Flood Elevation (BFE) for purposes of floodplain management.

Geographic Information Systems (GIS): integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information in the form of maps, globes, reports, and charts.

Hazard Mitigation: Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event (floods, fires, earthquakes, etc.), such as elevation or floodproofing.

ICC: Increased Cost of Compliance, a \$30,000 rider on flood insurance policies for policy holders located in the special flood hazard area that can be used to bring the structure into compliance in the event that it is substantially damaged by a flood.

NFIP: The National Flood Insurance Program is FEMA’s flood insurance coverage and floodplain management program.

Repetitive Loss Area Analysis (RLAA): An approach that identifies repetitive loss areas, evaluates mitigation approaches, and determines the most appropriate alternatives to reduce future losses.

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

Severe repetitive loss property (SRL)²: A residential repetitive loss property that within a ten year period has had either four or more NFIP claim payments, more than ten days apart, of more than \$5,000 each and the cumulative amount of claims exceeds \$20,000, or within a ten year period two separate claims (building payments only) more than ten days apart, that cumulatively exceed the building's market value.

Special Flood Hazard Area (SFHA): The base floodplain delineated on a Flood Insurance Rate Map that a community must regulate under the requirements of the National Flood Insurance Program. The SFHA is mapped as a Zone A or AE (see definition). In coastal situations, Zone V (see definition) is also a part of the SFHA. The SFHA is included in a community's regulatory floodplain.

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 before the improvement or repair is started.

UNO-CHART: The University of New Orleans' Center for Hazards Assessment, Response and Technology, an applied social science research center with an expertise in repetitive loss area analyses.

Zone A: The Special Flood Hazard Area (except coastal V Zones) shown on a community's Flood Insurance Rate Map. There are seven types of Zone As:

A: SFHA where no base flood elevation is provided.

A#: Numbered A Zones (e.g., A7 or A14), SFHA where an older FIRM shows a base flood elevation in relation to a national datum.

AE: SFHA where base flood elevations are provided. AE-Zone delineations are used on newer FIRMs instead of A# Zones.

AO: SFHA with sheet flow, ponding, or shallow flooding. Base flood depths (feet above grade) are provided.

AH: Shallow flooding SFHA. Base flood elevations in relation to a national datum are provided.

AR: A temporary designation for an area where a flood control system that no longer provides protection from the base flood is expected to be improved, so it will provide protection to the base flood again in the future. This zone is considered part of the Special Flood Hazard Area or "regulatory floodplain," but properties in this zone do not receive the "in SFHA" CRS premium discount (see Table 14).

A99: A mapped floodplain that will be protected by a federal flood protection system where construction has reached specified statutory milestones. This zone is considered part of the Special

¹ NFIP/FEMA website 3/26/14

² NFIP/FEMA website 3/26/14

Flood Hazard Area or “regulatory floodplain,” but properties in this zone do not receive the “in SFHA” CRS premium discount (see Table 14).

Zone B: Area of moderate flood hazard, usually depicted on older Flood Insurance Rate Maps as between the limits of the base and 500-year floods of the primary source of flooding. B Zones may have local, shallow flooding problems. B Zones are also used to designate areas protected by levees and base floodplains of little hazard, such as those with average depths of less than 1 foot.

Zone C: Area of minimal flood hazard, usually depicted on older Flood Insurance Rate Maps as above the 500-year flood level of the primary source of flooding. C Zones may have local, shallow flooding problems that do not meet the criteria to be mapped as a Special Flood Hazard Area, especially ponding and local drainage problems.

Zone D: Area of undetermined but possible flood hazard.

Zone V: The Special Flood Hazard Area subject to coastal high hazard flooding. There are three types of V Zones: V, V#, and VE, and they correspond to the A-Zone designations.

Zone X: Newer Flood Insurance Rate Maps show Zones B and C (see above) as Zone X. The shaded Zone X corresponds to a Zone B and the unshaded Zone X corresponds to a Zone C.

Acknowledgements

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Repetitive Loss Area Analysis Update Results

Terrebonne Parish – Roberta Grove and Senator Circle Neighborhoods

Purpose

This document serves as an addendum to the original Repetitive Loss Area Analysis completed in the Roberta Grove and Senator Circle neighborhoods in June 2013. This report documents the progress made by the residents in the Roberta Grove and Senator Circle study areas in mitigating their repetitive flood loss, as well as the progress made by the parish, state and the federal government in protecting citizens from repetitive flood hazards.

Background

The University of New Orleans’ Center for Hazards Assessment, Response, and Technology (UNO-CHART) receives funding from FEMA to collect data and analyze the repetitive loss areas in Louisiana. A Repetitive Loss Area Analysis was conducted for the Roberta Grove and Senator Circle neighborhoods in Terrebonne Parish, LA, in June 2013. A copy of the final report can be found online at floodhelp.uno.edu under the “Repetitive Loss Area Analyses & Other Reports” heading.

UNO-CHART has been funded by FEMA Region VI to conduct updates on previous repetitive loss area analyses. This document will detail the progress of flood mitigation projects overseen by various agencies, as well as the improvements and refurbishments made to properties by the residents themselves in the Robert Grove and Senator Circle study areas.

The Area: The study area is comprised of the Senator Circle and Roberta Grove neighborhoods (see Figure 1). The Roberta Grove neighborhood is bounded to the north by Bayou Terrebonne and East Main Street, to the south by Bayou Chauvin, to the west by Senator Circle, and to the east by North Boundary Road. Senator Circle is bounded to the north by Camellia Avenue, to the south by Bayou Chauvin, to the west by East Street and to the east by Roberta Grove. Roberta Grove and Senator Circle are located in Houma, the most populated area of Terrebonne Parish, south of the Intracoastal Waterway and north of the parish’s “fingers” that stretch into the Gulf of Mexico.

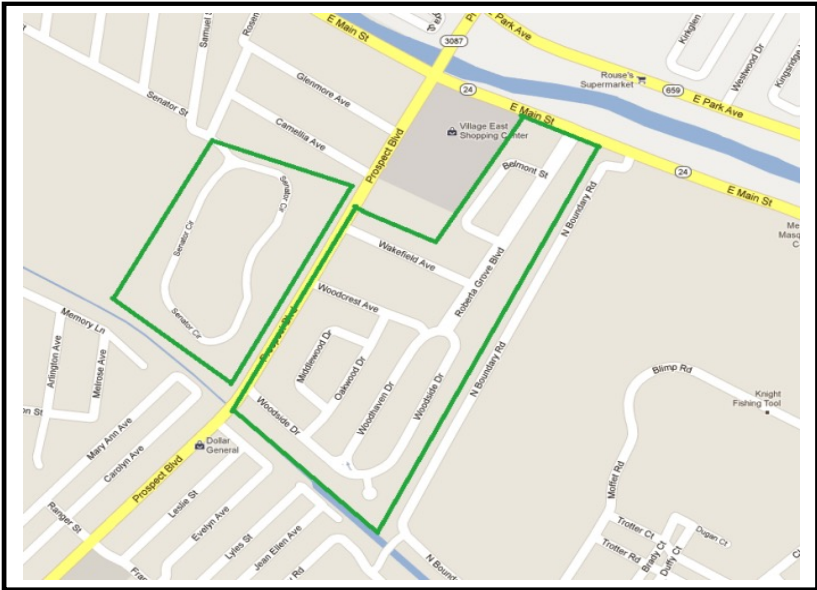


Figure 1 - Roberta Grove and Senator Circle Study Areas

There are 110 buildings located in the Roberta Grove area. Of the 110 residential buildings, 59 (53.6%) are on FEMA's repetitive loss list, and six³ (5.5%) of those are considered to be a severe repetitive loss property. The Senator Circle neighborhood in Houma is a public-housing complex. There are 217 units⁴ and 119 buildings in the circle. A total of 50 of the buildings (42.0%) are on FEMA's repetitive loss list, and none are considered to be severe repetitive loss properties.⁵

The original area analysis followed a FEMA prescribed 5 step process, and this area analysis update follows a similar approach:

Step 1: Advise all property owners in the repetitive loss study area 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 on the flooding.

Step 5: Document the findings and process.

More information about the original Roberta Grove Senator Circle Repetitive Loss Area Analysis, including the process, methodology, and the final report, can be found on UNO-CHART's website: floodhelp.uno.edu.

Step 1 – Neighborhood Notification

This consisted of multiple steps, including a meeting with the Terrebonne Parish Consolidated Government, another with the Department of Engineering, a letter and data sheet sent to Roberta Grove residents, and a follow up with the Houma-Terrebonne Housing Authority. The purpose of the meetings was not only to inform the office of UNO-CHART's intentions to reenter the neighborhood and compile this report, but also to ask for any additional information that the parish could provide to UNO-CHART for the purposes of the update. The Terrebonne Parish Consolidated Government Department of Planning and Zoning assisted UNO-CHART in creating a letter and homeowner's data sheet that was mailed to 136 homes in the Roberta Grove area, however the total number of mailed homes does not match the total number of buildings in Roberta Grove, as some of these have since been removed or are vacant. Thirteen letters (9.6%) were returned with resident responses, and 27 were returned as either a vacant address or undeliverable. The letter and data sheet were not sent to the Senator Circle study area, as the area is comprised of properties owned by the Houma-Terrebonne Housing Authority. A copy of the letter can be found in Appendix A, and a copy of the data sheet can be found in Appendix B. UNO-CHART also contacted the Houma-Terrebonne Housing Authority to discuss any completed or planned mitigation measures in Senator Circle.

³ Six of the RL properties qualify for severe repetitive loss status under FEMA's definition, but only three of the properties are listed as an SRL property by FEMA. FEMA is currently updating their classification.

⁴ Each building has at least one unit; most buildings are duplex units.

⁵ Six properties qualify for SRL status in the Senator Circle neighborhood, but are still listed as RL by FEMA. FEMA is currently updating their classification.

Step 2 – Data Collected

UNO-CHART reviewed and collected data from multiple sources, in order to understand the current flood risk in the area, any mitigation completed since the original report, and the extent of flooding in the area since the original report. The team consulted the following sources:

- Fieldwork and property owner data collection
- Flood insurance data, FIRM and preliminary DFIRM
- Rain and flood events, and rain gauges in the area
- Mitigation completed in the study areas
- Building permits
- Drainage improvements
- Terrebonne Parish Code of Ordinances
- Terrebonne Parish 2014 Hazard Mitigation Plan Update
- Terrebonne Parish Comprehensive Master Plan Vision 2030 (2013)
- Terrebonne Levee and Conservation District and Army Corps of Engineers Projects

Fieldwork: On October 27, 2015 a team from UNO-CHART conducted fieldwork in the Roberta Grove and Senator Circle study areas. This consisted of taking photographs of each property in the study area, and noting mitigation measures homeowners and/or renters had implemented. This was done with the aim of comparing the fieldwork photos to the original fieldwork from 2013 to indicate any changes in the mitigation measures used in the neighborhood. There was visible evidence of mitigation actions, as a total of 6 homes were acquired and demolished since the initial analysis, and three homes were elevated since the analysis. Additionally, many houses in the neighborhood are elevated.

Property Owner Data Collection: The project team mailed a letter to the property owners in the Roberta Grove study area introducing residents to the update process on December 4, 2015. Accompanying the letters was a data sheet that homeowners were asked to complete, which included questions about flooding and mitigation measures. Homeowners were also asked whether or not they remembered the initial study in 2013; 7 (58.3%) recalled the informational meeting held in 2013, 2 (15.4%) of the respondents said they had attended the meeting, and 2 (15.4%) responded that they read the final draft of the report (see Table 1).

Table 1 - Roberta Grove Initial Meeting Response, 2015

	Do you recall the initial meeting?	%	Did you attend the meeting?	%	Have you read the report	%
Yes	7	58.3%	2	15.4%	2	15.4%
No	6	46.2%	11	84.6%	11	91.7%
No Answer	0	0.0%	0	0.0%	0	0.0%
Total	13	100.0%	13	100.0%	13	100.0%

Flood insurance data: UNO-CHART reviewed recent flood insurance claims data to assess any flood events that may have affected the study area since 2013. 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 claim 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 information for any individual property. There has only been one insurance claim in the study area since the original report.

FIRM: The effective FEMA Flood Insurance Rate Map (FIRM) states that the study area is completely within the floodplain and is located in the AE Zone, with a base flood elevation of 8 or 9. Zone AE is a high risk flood zone, located in a special flood hazard area (SFHA). It should also be noted that the BFE is above mean sea level (MSL), not above ground level. The ground elevation in both areas varies between 4.9 feet and 5.2 feet above MSL. The only way to have an accurate reading of the ground elevation is to have a licensed land surveyor, architect, or engineer complete an elevation certificate. See Figure 2 for an illustration of the difference between sea level and base flood elevation.

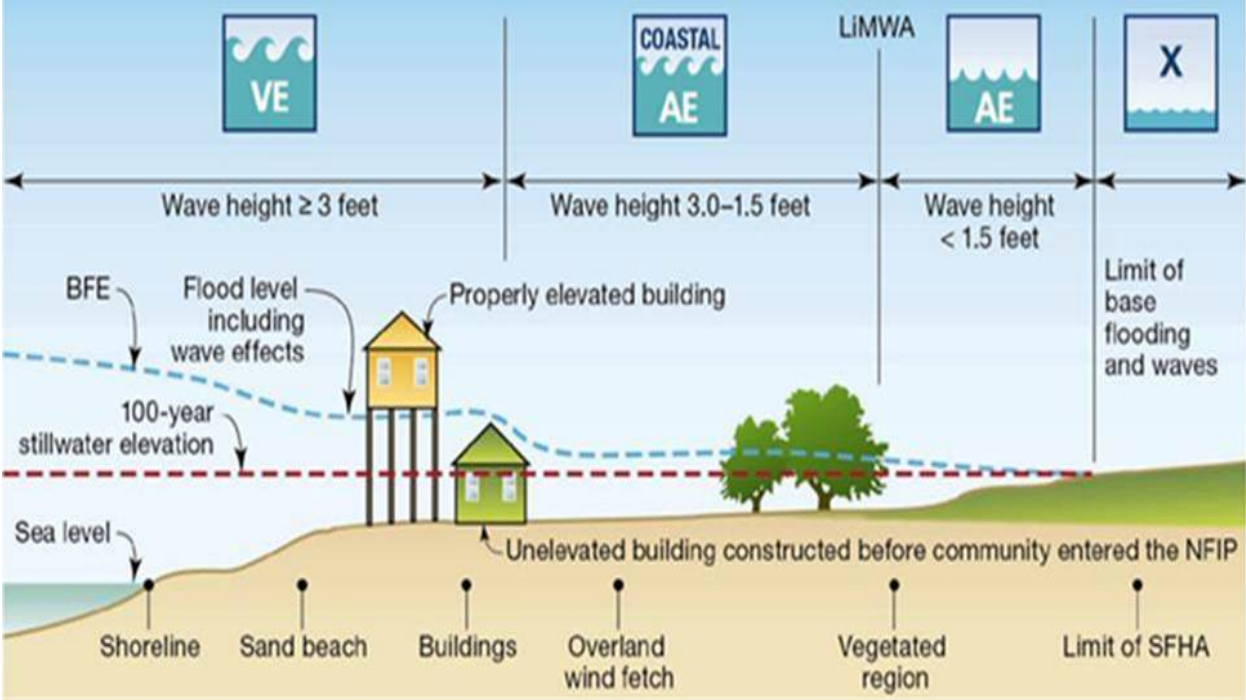


Figure 2 - Illustration of Sea Level and BFE, <http://floodelevationsurveyors.com/flood-zones.html>

DFIRM: As part of the FEMA Map Modernization Program, FEMA has been charged with updating and developing Digital Flood Insurance Rate Maps (DFIRMs).

The first DFIRMs for Louisiana were released beginning in 2008; some parishes saw little to no change, while some of the coastal parishes saw dramatic changes. At this time, the effective FIRM for the City of Houma is still May 1981 and May 1985 for the rest of Terrebonne Parish. Terrebonne Parish has not yet adopted the proposed DFIRM, as the parish is participating in the LAMP (Analysis and Mapping Procedures for Non-Accredited Levees) process and expects to have more accurate maps around 2017. The Planning Department requires the best available data using the DFIRM, plus one foot of freeboard in order to better mitigate flood hazards.

Rain and flood events: Since the area analysis concluded in June 2013, there has only been one new insurance claim. Although there has been only one claim, there have been severe weather events in the area since the initial analysis. There were severe storms and flooding in the parish in 2013, so much so

that a federal disaster was declared. In addition, there were three thunderstorm/wind events between 6/13 and 11/15 in Houma⁶, and a heavy rain event related to Hurricane Patricia in 2015. Although there has not been a hurricane in the area since the initial analysis, there have been severe rain events similar to those that occurred before the initial study, and a claim was made. The improved drainage and elevated homes in the area seems to have reduced claims in the area.

Rain gauges in the area: Heavy rain events measured by the Houma and Thibodaux gauges list significant rainfall totals of 3.06 up to 7.76 inches in the parish from 1/1/13 to 12/31/15 (see Table 2). Hurricane Ike resulted in 8 inches of rainfall in the area, Hurricane Rita resulted in 6 inches, and Hurricane Isaac resulted in 7.52 inches of rain. The improved drainage and elevated homes in the area seem to have reduced flooding in the area, despite similar significant rain events.

Table 2 – Significant Rain Events in Houma Area, 2005-2015

Event	Total Inches	Source
Hurricane Katrina 2005	10-12	NCDC
Hurricane Rita 2005	6	NCDC
Hurricane Ike 2008	8	NCDC
Hurricane Gustav 2008	9	NCDC
Hurricane Isaac 2012	7.52	Houma gauge
1/9/13 Rain Event	7.76	Houma gauge
4/4/13 Rain Event	3.06	Thibodaux gauge
5/11/13 Rain Event	6.67	Houma gauge
11/5/13 Rain Event	4.29	Thibodaux gauge
1/23/15 Rain Event	3.38	Thibodaux gauge
4/15/15 Rain Event	3.86	Thibodaux gauge
10/26/15	5.95	Thibodaux gauge

Table 3 - Claims Made During Significant Rain Event in Houma, (2005-2013)

Event	# of claims	Claims Total
Hurricanes Katrina and Rita 2005*	135	2,067,554
Hurricanes Ike and Gustav	213	3,380,001
Hurricane Isaac 2012	2	38,540
2013 Rain Event	1	30,000

* Table 3 does not differentiate between Hurricanes Katrina and Rita in 2005 as well as Hurricanes Ike and Gustav, as these storms occurred several weeks apart and the date of the claim for each event is indeterminable.

Although it has not rained as much in recent years as it did in 2005 and 2008, it is still significant that there have been so few claims in a repetitive loss and severe repetitive loss area. As shown in Table 3, there were only 2 claims in 2012, although that is when Hurricane Isaac occurred, resulting in 8 inches of

⁶ National Climatic Data Center, Storms Events Database, <http://www.ncdc.noaa.gov>

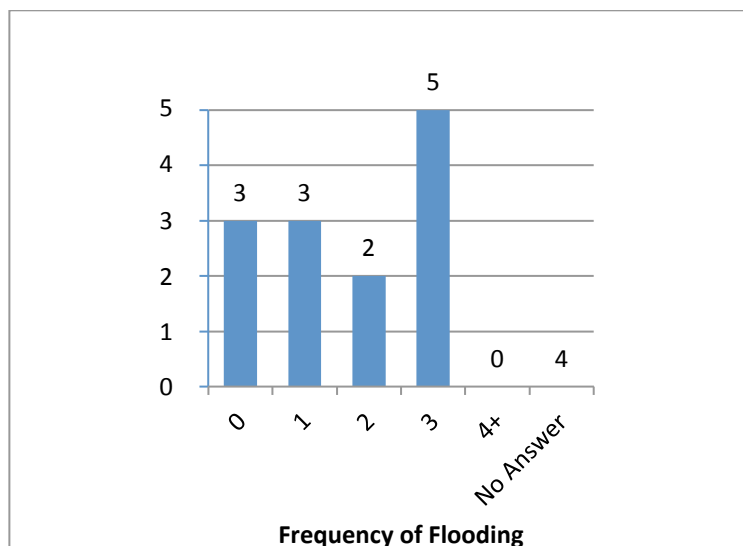
rainfall. In addition, there was only 1 claim in 2013, although there were 4 major rain events during that year – one totaling 7.76 inches, which was more than Hurricane Rita, and almost as much as Hurricane Ike. In fact, of the twelve respondents returned completed data sheets, none of them reported flooding since June 2013. A total of 10 respondents (76.9%) reported that their house had flooded at least once, with 5 respondents (38.5%) reporting their homes had flooded at least 3 times, 2 respondents (15.4%) reporting their home had flooded 2 times, 3 respondents (23.1%) reporting their home had flooded once, and 3 respondents (23.1%) reported no flooding in the actual home.

Table 4 - House Flooding by Respondents, 2015*

How Many times has your house flooded?	Frequency	%
0	3	23.1%
1	3	23.1%
2	2	15.4%
3	5	38.5%
4+	0	0.0%
No Answer	0	0.0%
Total	13	100.0%

*This question was not included in the 2013 datasheets

Figure 3 - Frequency of Flooding by Respondents, 2015*



*This question was not included in the 2013 datasheets

In 2015, respondents were also asked the highest flood depths they had experienced, as well as how long the water stayed in their home or yard. A total of 7 respondents (53.9%) reported flooding in the home with depths of a foot or more, while 3 respondents (23.1%) reported flooding in their yard with depths between six inches and a foot. Therefore, a majority of the respondents experienced floodwaters deeper than a foot, making elevation an appropriate mitigation measure for the area. A total of 8 respondents (61.5%) did not provide a time period for how long water stayed in their homes or yards. A total of 2 respondents (15.4%) reported water that stayed in their home for three days or more, while 1

respondent (7.7%) reported water that stayed in their home for 2 days, and 1 respondent (7.7%) reported the flood waters lasted between six to twelve hours.

Table 5- Flood Water Depths Reported by Respondents, 2013

What was the deepest the water ever got?	Frequency	%
0-2 feet; yard only	6	31.6%
Over First Floor	9	47.4%
No Response	4	21.1%
Total	19	100.0%

Figure 4- Flood Water Depths Reported by Respondents, 2013

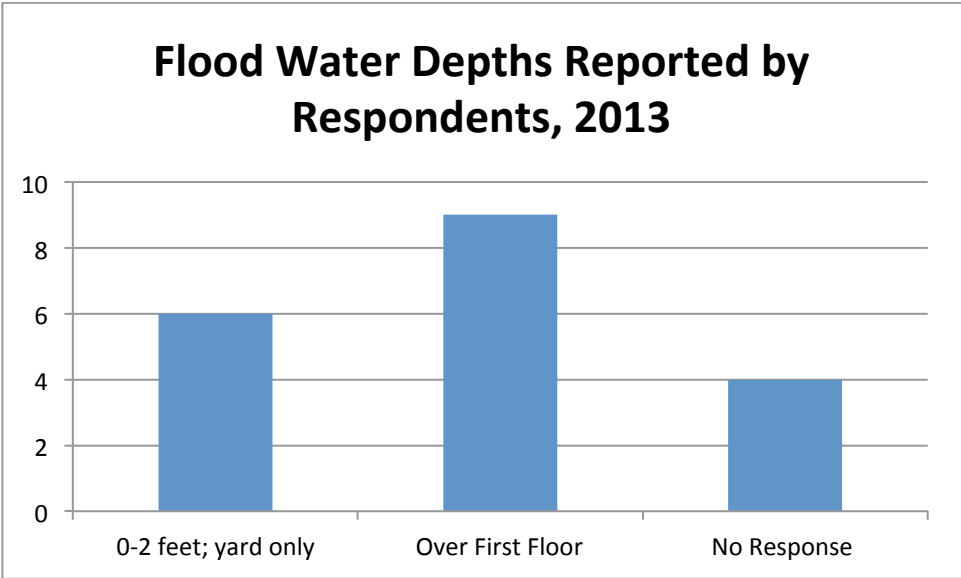
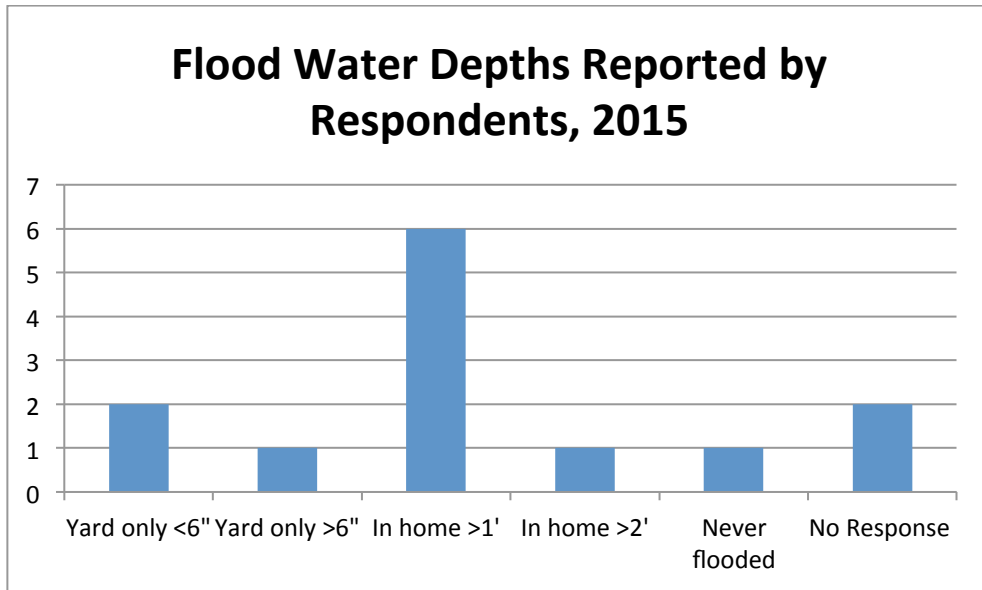


Table 6- Flood Water Depths Reported by Respondents, 2015

What was the deepest the water ever got?	Frequency	%
Yard only <6"	2	15.4%
Yard only >6"	1	7.7%
In home >1'	6	46.2%
In home >2'	1	7.7%
Never flooded	1	7.7%
No Response	2	15.4%
Total	13	100.0%

Figure 5 - Flood Water Depths Reported by Respondents, 2015



In 2013, 6 respondents reported water in their yard only, while 9 respondents reported water over their first floor. In 2015, a little over half of all respondents (61.5%) reported flood depths of at least a foot or greater. The rain gauges in the area only measured rain depths that produced a foot or more precipitation during Hurricane Katrina in 2005. These higher flood depths reported by residents may indicate that the flooding issues in the neighborhood do not come from heavy rainfall alone. Respondents were asked what they felt was the cause of their flooding and these responses can be found in Table 10 on Page 27.

Table 7- Flood Water Duration Reported by Respondents, 2013

What was the longest time the water stayed in the home?	Frequency	%
2 days	2	12.5%
5 days	2	12.5%
7 days	4	25.0%
Weeks	1	6.3%
Never Flooded	1	6.3%
No response	6	37.5%
Total	16	100.0%

In 2013, 2 respondents (12.5%) said water stayed in their home for 2 days, 2 respondents (12.5%) said water stayed in their home for 5 days, 4 respondents (25.0%) said water stayed in their home for 7 days, and 1 respondent (6.25%) said water stayed in their home for weeks. Only 1 respondent reported that their home never flooded (6.25%).

Table 8 - Flood Water Duration Reported by Respondents, 2015

What was the longest time the water stayed in the home?	Frequency	%
0-6 Hours	0	0.0%
6-12 Hours	1	7.7%
1 day	1	7.7%
2 days	1	7.7%
3 days	0	0.0%
3+ days	2	15.4%
No response	8	61.5%
Total	13	100.0%

In 2015, 2 respondents (15.4%) reported water stayed in their home for over three days, 1 respondent (7.7%) reported water in their home for 1 day, and 1 respondent (7.7%) reported water in their home for 6-12 hours. From 2013 to 2015, the amount of time water remained in respondents' homes lessened.

Table 9 - Year of Flood Water Duration Reported by Respondents, 2013

In what year did the water stay in the house the longest?	Frequency	%
Hurricane Ike	6	40.0%
Hurricane Gustav, Rita	2	13.3%
Never Flooded	1	6.6%
No response	6	40.0%
Total	15	100.0%

Table 10 - Year of Flood Water Duration Reported by Respondents, 2015

In what year did the water stay the longest in your house?	Frequency	%
September 2008-Ike	3	23.1%
June 2005	2	15.4%
No Specification	8	61.5%
Total	13	100.0%

In 2013, a total of 6 respondents (40.0%) reported that water stayed in their home longest in Hurricane Ike, 2 respondents (13.3%) reported water stayed in their home longest during Hurricanes Gustav and Rita, 1 respondent (6.6%) reported they never flooded, and 6 respondents (40.0%) did not report what year the water was in their home. In 2015, a total of 3 respondents (23.1%) reported that the longest the water stayed in their home occurred in 2008, during Hurricane Ike, and 2 respondents (15.4%)

reported that the longest the water stayed in their home occurred in June of 2005. The day with the most rainfall in June totaled 2.83 inches. This is not the most rain the area has received from a rain event or storm, but it is a large amount for one day (see Table 1). The respondents did not report any water in their homes between 2013 and 2015.

Mitigation in the area: Since the initial June 2013 analysis, there have been three elevations in Roberta Grove: a home that was in the process of elevation has been completed, one home has been elevated, and another is in the process of elevating. According to the Terrebonne Parish Hazard Mitigation office, both of the recently elevated homes utilized Hazard Mitigation Grant Program funds for the elevation. Additionally, the parish has mitigated, or is in the process of mitigating, 37 repetitive loss properties and 2 severe repetitive loss properties in Roberta Grove over the past ten years. Therefore, the parish reports that homeowners have mitigated or are mitigating approximately 66.1% of the repetitive and severe repetitive loss properties in the neighborhood through federally funded programs administered by the parish. Further, an additional six properties have been mitigated through various programs increasing the total reported mitigation efforts in the neighborhood through the parish.

Table 11 - Mitigated Repetitive Loss Properties in Roberta Grove

Total RL	Total RL Claims	Total RL Claims (\$)	Total Mitigated RLs	Total Mitigated SRLs
59	175	\$7,500,316	37	2

Building Permits: There have been a number of applications for and issuances of building permits in the study area since the original analysis was completed. Between June 2013 and April 2016, there have been 12 permits issued for a range of purposes within the study area; 6 of which were issued for the purpose of demolition, constituting 50.0% of permit requests. The full list of permits issued in Roberta Grove from 2013 to 2016 is contained in Table 12.

Table 12 - Permits Issued in Roberta Grove, 2013-2016

Demolition of Residence	6
Solar Panels	2
Carport	1
Elevation	2
General Repair	1
Total	12

Terrebonne Parish Flood Damage Related Ordinances: Chapter 9 of the Terrebonne Parish Code of Ordinances details flood prevention measures.

The purpose of the ordinance is to protect life and property in the parish from flood conditions, reduce flood losses, reduce the cost of flooding, appoint a floodplain manager, inform potential homeowners if

their property is in the flood area, and require compliance with floodplain regulations for new construction and substantial improvement of buildings.⁷

The parish also appointed a floodplain manager, who was also in place before 2013, whose duties include permit application review, analysis of flood maps and the special flood hazard area, and analysis of base flood elevation data, in order to ensure proper floodplain management (Sec. 9-31).⁸

The parish further requires all residential construction to be built at or above base flood elevation, and at least 18 inches above the centerline of the street or nearest manhole cover if no elevation data is available⁹. The parish also requires adequate drainage in AH and AO zones. In addition, backflow prevention devices are required to be installed in each individual unit of new construction.

Since local ordinances determine the threshold at which substantial damage and /or repetitive claims are reached, adopting language that would lower these thresholds would benefit the homeowners of repetitive loss properties. Currently, per Section 9-56 of the Code of Ordinances, substantial damage/improvement refers to restoration/reconstruction that equals or exceeds 50 percent of the market value of the structure. Additionally, the parish has a cumulative substantial damage requirement, wherein any repairs or changes made over a 10 year period cannot equal or exceed 50% of the market value of the structure. This is an important mitigation measure, as a series of small floods over a 10 year period could result in the mitigation of many buildings in the parish.

This code was in effect during the original report as well. However, the parish amended Article 3 of the Flood Damage Prevention section on April 9, 2014 and Article 2 of the Flood Damage Prevention ordinance on April 23, 2014. The parish amended Article 3 of the Flood Damage Prevention section to alter the cost of permits and the permitting department. The parish amended Article 2 of the Flood Damage Prevention section to reduce the substantial damage/improvement period to 10 years. This amendment helps to bring more structures into compliance with floodplain regulations.

Residents interested in flood loss related ordinances should contact the Terrebonne Parish floodplain manager. The information can be found at http://www.tpcg.org/index.php?f=flood_plain.

Terrebonne Parish Hazard Mitigation Plan Update 2014: The hazard mitigation plan was updated in 2014, and the plan was approved and adopted by the City Council and FEMA in April 2015. Of the 1,326,748 acres of land in the parish, 5.6% of the parish is urbanized and the other 94.6% of the parish contains forest, wetlands, or water. An estimated 90% of the parish is located in the Special Flood Hazard Area.¹⁰

The study areas are vulnerable to all of the hazards listed in the hazard mitigation plan, and flooding in particular is an issue. The parish identifies flooding as the “most prevalent and the most frequent hazard to the parish.”¹¹ The flooding that takes place in the parish occurs from multiples sources and can be divided into four categories, to include riverine, backwater, storm water, and storm surge. The parish chose to categorize the flooding issues in order to pin point which areas of the parish are prone to each hazard. Riverine flooding refers to primarily high water related to rivers and bayous, stormwater refers

⁷ www.municode.com/library/la/terrebonne_parish/codes/code_of_ordinances?nodeId=PTIIPACO_CH9FLDAPR_ARTIIIIFLHARE_S9-56GEST

⁸ www.municode.com/library/la/terrebonne_parish/codes/code_of_ordinances?nodeId=PTIIPACO_CH9FLDAPR_ARTIIIIFLHARE_S9-56GEST

⁹ Terrebonne Parish Code of Ordinances Chapter 23 – Sewers and Sewage Disposal

¹⁰ http://www.tpcg.org/files/flooding/HMPU_Approved_2014.pdf

¹¹ http://www.tpcg.org/files/flooding/HMPU_Approved_2014.pdf p. 30

to rainfall, storm surge occurs during tropical storms and hurricanes and includes coastal flooding, and back water flooding results from riverine flooding and surge. Roberta Grove and Senator Circle have experienced both stormwater and storm surge flooding issues.

The hazard mitigation plan includes the first Roberta Grove Senator Circle area analysis as an attachment, and consulted the recommendations made in the analysis when updating the hazard mitigation plan.¹² The plan also mentions that when it rains, Prospect Boulevard often floods. The flooding occurs close to the bridge, which is nearby the two study areas.¹³

Terrebonne Parish Comprehensive Master Plan Vision 2030: The issue of flooding is addressed throughout the current draft of Terrebonne Parish's Comprehensive Master Plan Vision 2030 plan¹⁴. The plan was completed in 2012 and adopted in 2013. The purpose of the plan is to address the storms and flooding in the parish in 2005 and 2008, and the subsequent land loss and relocation that occurred in much of the parish. The goal of the plan is to help the parish have a more sustainable future in light of the hazards it faces. Chapter 7 of the plan addresses environmental issues and hazard mitigation that pertain to flooding. In Chapter 1 of the Master Plan, the parish emphasizes that one document alone cannot address community resiliency, and therefore the parish includes hazard mitigation strategies in the Master Plan, the Code of Ordinances, and the Hazard Mitigation Plan.

Terrebonne Levee and Conservation District and Army Corps of Engineers Projects: In addition to the numerous levees constructed and maintained by the parish, the Army Corps of Engineers, in partnership with the Louisiana Department of Transportation and Development and the Terrebonne Levee and Conservation District, will implement the Morganza to the Gulf project¹⁵. The Morganza to the Gulf project includes levees, floodgates, water control structures, and a large lock complex¹⁶. This project will help to protect Terrebonne and Lafourche parishes from storm surge. The project does not have federal funding as of this report, but the Corps and levee district have begun construction of pieces of the system using state and local funds.

Problem statement:

This problem statement reflects the same language as the original analysis, with edits made to the number of buildings, flood and claims data. Based on the data collected, the following summarizes the flooding problem in the Roberta Grove and Senator Circle neighborhoods:

- Structures in both neighborhoods of the study area fall within a high-risk AE Special Flood Hazard Area;
- Flooding is caused by heavy rains, storm surge, and backwater flooding, and further aggravated by three problems:
 - Bayou Chauvin's limited capacity to carry water out of the areas due to being undersized, clogged with debris, and shallowness in some areas;
 - Bayou Terrebonne overflowing into the areas;
 - Slab on grade housing
- The East Houma Surge Levee should add a level of protection from surge waters being funneled up from Lake Boudreaux;

¹² http://www.tpcg.org/files/flooding/HMPU_Approved_2014.pdf p. 15-16Aspen

¹³ http://www.tpcg.org/files/flooding/HMPU_Approved_2014.pdf p. 48

¹⁴ <http://www.tpcg.org/index.php?f=vision2030&p=plan2030>

¹⁵ <http://www.tlcd.org/morganza.aspx>

¹⁶ <http://www.mvn.usace.army.mil/Portals/56/docs/PD/Projects/MTG/117.pdf>

- There are 327 homes and apartments subject to flooding in Roberta Grove and Senator Circle. A total of 109 of the insured buildings qualify as repetitive loss and severe repetitive loss properties; 103 of those qualify as repetitive loss properties, and 6 qualify as severe repetitive loss properties.
- These 109 repetitive loss properties have made 362 flood insurance claims for a total of **\$9,986,729** since 1978.

Table 13- Study Area Claims

Total Homes and Apartments	Total Flooded RL Properties	Total Claims	Total Claims (\$)
327	109	409	\$14,455,302

- One claim was made by a repetitive loss property in 2013 totaling **\$30,000** and is included in the \$9,986,729 total; however, no additional claims have been made since 2013.
- There is an additional **\$4,468,578** in all flood insurance claims, some of which meet the severe repetitive flood loss criteria, but are not on FEMA’s repetitive loss list. This is problematic because:
 - It further clouds the true extent of the flooding issues in the areas;
 - Some of the repetitive loss properties in both areas may actually be severe repetitive loss (SRL) properties;
 - Being designated as a SRL property triggers a certain mitigation funding mechanism only available to SRL properties.

Step 3 – Mitigation Measures Reviewed

The original area analysis reviewed the following mitigation measures for the Roberta Grove and Senator Circle study areas:

1. Elevating the houses above the 100-year flood level
2. Barriers to floodwaters
3. Dry floodproofing
4. Utility protection
5. Drainage improvements
6. Drainage maintenance
7. Maintaining flood insurance coverage on the building
8. Green infrastructure (*New mitigation measure, not included in original analysis*)

Knowing the flooding history, and types and condition of the buildings in the area leads to the third step in the area analysis procedure – a review of alternative mitigation approaches to protect properties from, or reduce, future flood damage. Property owners should look at these alternatives but understand they are not guaranteed to provide protection at different levels of flooding. It should be noted that the residents in Senator Circle are limited to what mitigation measures they can implement, as they are renters. This applies to renters in Roberta Grove as well. Eight approaches were reviewed.

1. Elevating the houses above the 100-year flood level

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 be elevated on fill, posts/piles, or a crawlspace. 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 floodwater. Since the initial analysis, there have been three elevations in Roberta Grove: a home that was in the process of elevation has been completed, one home has been elevated and another is in the process of elevating.



Figure 6 - Elevated Homes in Roberta Grove

Funding for these elevations came from Hazard Mitigation Grant Program funds. Several other grant programs exist and are available to homeowners in Terrebonne Parish. In the survey mailed out to residents, respondents were asked if they had participated in any grant programs and were given multiple programs to choose from. A total of 7 respondents (70.0%) reported participating in at least one mitigation grant program. Respondents reported participating in the Terrebonne Parish Hazard Mitigation Grant Program (HMGP) (30.0%), the Terrebonne Parish Flood Mitigation Assistance Program (FMA) (40.0%), the Terrebonne Parish Pre-Disaster Mitigation Program (PDM) (10.0%), State HMGP through State Community Development Office/Road Home (10.0%), and the Increased Cost of Compliance (ICC) coverage provided by a Flood Insurance Policy (10.0%). Some respondents noted that they participated in more than one grant program.

Table 14 - Grant Program Participation by Respondents, 2015

Have you participated in/ are you participating in any of the following mitigation grant programs?	Frequency	%
Terrebonne Parish Hazard Mitigation Grant Program (HMGP)	3	30.0%
Terrebonne Parish Severe Repetitive Loss Program (SRL)	0	0.0%
Terrebonne Parish Flood Mitigation Assistance Program (FMA)	4	40.0%
Terrebonne Parish Pre-Disaster Mitigation Program (PDM)	1	10.0%
State HMGP through State Community Development Office/Road Home	1	10.0%
Increased Cost of Compliance (ICC) coverage provided by your Flood Insurance Policy	1	10.0%
Total	10	100.0%

Table 15 - Flood Mitigation Measures, 2015

Have you considered implementing a flood mitigation measure?	Frequency	%
Elevation	9	69.2%
Reconstruction	0	0.0%
Wet Floodproofing	0	0.0%
Dry Floodproofing	0	0.0%
Acquisition	0	0.0%
Green Infrastructure	0	0.0%
Other:	0	0.0%

Responses from the data sheets mailed to the neighborhood showed residents have the most interest in elevation as a mitigation strategy, with 9 (69.2%) of respondents listing elevation as a mitigation measure that they have implemented, or are considering. Five of the respondents (41.7%) have had their homes elevated, or are in the process of elevating their home. One respondent who elevated commented that due to recent health issues, a lift would now be needed to enter the house, and this would cause a further financial burden.

Some of the elevations that have taken place in the neighborhood were done with the help of grant programs. Respondents were asked if they had participated in any grants programs, and 53.8% reported participating in at least one grant program. Elevations are by far the most popular form of mitigation in the Roberta Grove neighborhood, and can be the most effective form of mitigation, as elevating a home does not require any additional human intervention after implementation, and protects against higher flood levels than other mitigation measures. However, the definition of repetitive loss used by FEMA's FMA program is similar to the definition of substantial damage, which limits the properties that can receive mitigation funding to those who are 50% damaged.

Elevation is a popular mitigation measure for the area, as a total of 9 respondents reported using or considering elevation as a flood mitigation measure. It is also a program that homeowners have been able to make use of grant funds to participate in. In addition, 3 homes in Roberta Grove have been elevated since the initial analysis. Therefore, elevation has been and will most likely continue to be a successful mitigation measure in Roberta Grove.

2. Barriers to floodwaters

Small floodwalls, levees, or berms constructed around one or more properties are more dependable if flood depths are less than 3 feet and floodwaters rise and fall quickly. Homes that typically receive 3 feet of floodwater or less, or where the water does not stay up for a considerable amount of time, can benefit from small floodwalls, levees or berms. Levees and berms are more suitable for larger lots, and small floodwalls that are located close to the house are appropriate for suburban style neighborhoods with front and side yard space. Given the suburban setting in both study areas, floodwalls are more appropriate than levees and berms that take up space in the smaller lots. However, the residents in the Senator Circle study area are not allowed to make structural changes to their properties as they are renters, and the Houma-Terrebonne Housing Authority is waiting for mitigation funding to implement any changes.

In the Roberta Grove neighborhood, respondents did not report any types of barriers or floodwalls as a mitigation strategy implemented or considered, and the project team did not see any of these measures during the fieldwork. However, due to the shallow flood depths reported (69.3% had flooding at our below 2 feet), these mitigation measures could be utilized in the Roberta Grove Neighborhood. The initial repetitive loss analysis, as well as the update, will continue to educate residents about the use of barriers as a flood mitigation measure.

3. Dry floodproofing

This measure keeps floodwaters out of a building by modifying the structure. Walls are coated with waterproofing compounds or plastic sheeting. Openings (e.g., doors, windows, and vents) are closed either permanently, or temporarily, with removable shields or sandbags.

A floodproofing project has three components:

- The walls are made watertight. This is easiest to do for masonry or brick faced walls. The brick or stucco walls can be covered with a waterproof sealant and bricked or stuccoes 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, such as removable shields or sandbags, for the openings; including doors, windows, dryer vents, and weep holes.
- 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 or standpipe; although a valve system is more secure.

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.
- Success of dry floodproofing 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 are no government financial assistance programs available for the dry floodproofing of residential buildings; therefore the homeowner must pay the entire cost of the project.
- The NFIP will not offer a lower insurance rate for dry floodproofed residences.

The project team did not see any evidence of dry floodproofing in Roberta Grove or Senator Circle in the follow up fieldwork. Data sheets returned by residents in the neighborhood also did not include reports of any types of dry floodproofing as a mitigation strategy. While these measures may not be as effective due to human intervention, the protection measure can be cheaper than a measure such as elevation. A total of 3 out of the 13 respondents reported flooding less than a foot, and floodproofing would be an effective measure for that type of shallow flooding. The initial repetitive loss analysis, as well as the update, will continue to educate residents about the use of floodproofing as a flood mitigation measure.

4. Utility protection

Damage to utilities can prevent a residence that remains structurally sound after a flood from being reoccupied. Retrofitting utilities includes raising them above the flood level and building small walls around furnaces and water heaters to protect from shallow flooding. This measure applies to several different utilities that can be adversely affected by floodwaters such as:

- Heating, Ventilation, and Air Conditioning (HVAC) systems
- Fuel meters and pipes
- Electrical service boxes, wiring and fixtures
- Sewage systems
- Water systems

In the most recent survey administered in 2015, a total of 4 respondents (33.3%) reported moving utilities or contents to a higher level as a flood protection measure. One respondent reported elevating an electrical generator to avoid damages by flood. In the original survey sent out in 2013, 1 respondent (6.7%) reported that they had moved utilities or contents to a higher level as a flood protection measure, and 3 respondents (20.0%) reported elevating the whole home. Therefore, more respondents elevated utilities since 2013.

While this measure does not protect the entire property, elevating several utilities such as an HVAC unit, or electrical service box, can still save homeowners money, especially when homeowners do not carry flood insurance. In the Roberta Grove neighborhood, 84.6% of respondents reported carrying active flood insurance policies and elevating utilities can decrease the claim amount of a flood insurance claim. The initial repetitive loss analysis, as well as the update, will continue to educate residents about the use of utility protection as a flood mitigation measure.

5. Drainage improvements

The initial analysis reported the parish's intention to improve drainage in Bayou Chauvin. In 2014, the parish dredged Bayou Chauvin from the Roberta Grove Outfall Canal to the Woodlawn Pump Station in order to widen and deepen the bayou. The concrete section was cleaned and the rest of the bayou was dredged. This included lowering the bottom of the canal, flattening the bottom and making it uniform. The parish also removed 2-3 feet of the channel at the downstream end of the pump station. In addition, the banks of the bayou were cleaned, and it was widened in sections.

The parish is also currently working on improving the pump station in the area. This includes increasing the storage area for water just upstream of the pump station. The parish purchased and is currently excavating a 40 acre tract for a retention pond south of Woodlawn Ranch Road, in order to reduce water levels during rain events.

These drainage improvements were part of a capital improvement project planned in the past, and will help to lessen repetitive flood loss in the study areas.

6. Drainage maintenance

Roberta Grove - Senator Circle's drainage system covers a fairly large area and includes stream channels, backyard, swales, ditches and bayous. The system may not be able to perform to its capacity if trash and debris are allowed to clog storm sewer inlets or the sewer lines. A regular program of drainage system inspections can catch problems in the system before they turn into major obstructions. Therefore, Terrebonne Parish and City of Houma have a drainage maintenance program. They have divided the drainage system into two separate systems: gravity drainage and forced drainage.

The gravity drainage system includes all the canals, roadside and lateral ditches, culverts and catch basins in the area. Gravity Drainage staff inspect and maintain drainage system components on public property and along state highways. Drainage ditches, canals, etc. on private property are the responsibility of the property owner, however, the parish has the authority to perform required maintenance when it is not accomplished by the owner or is an emergency. Gravity drainage staff will also perform required maintenance on drainage components along state highways when it is not provided in a timely manner by the State of Louisiana Department of Transportation. The forced drainage staff maintains all of the pumps stations, canals and laterals within the forced drainage area.

Most of Roberta Grove and Senator Circle are located in the Woodlawn Pump Station forced drainage area. However, certain parts of it could also be categorized under gravity drainage system; especially around Bayou Chauvin and the ditch near the Roberta Grove subdivision.

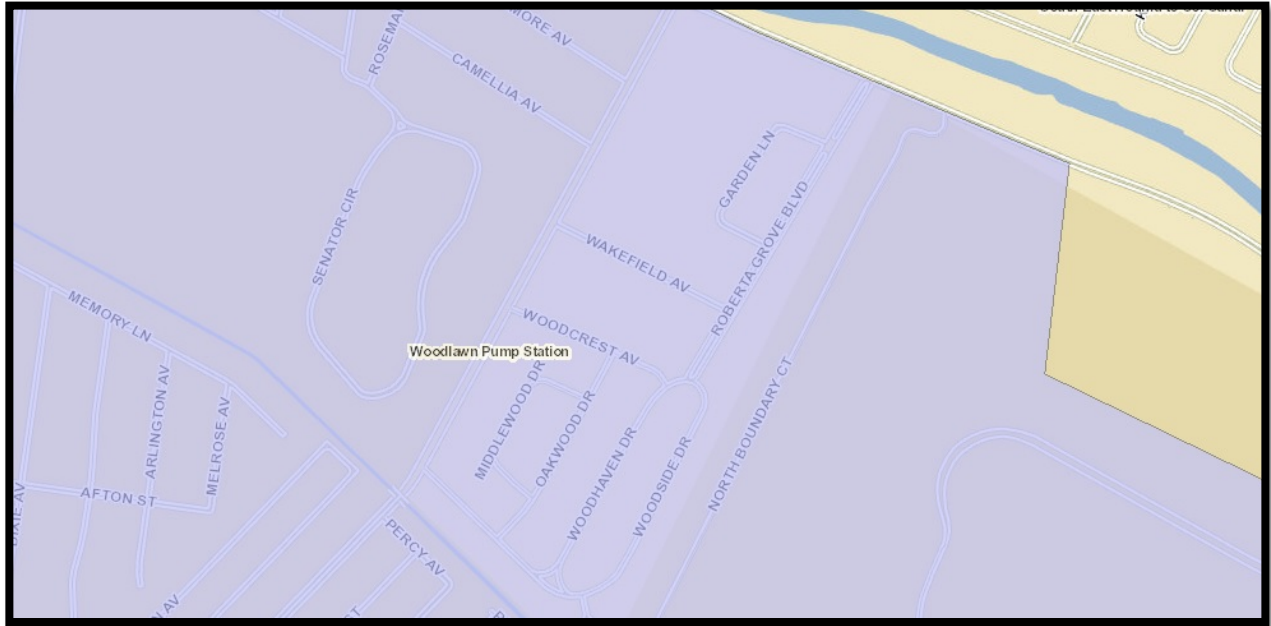


Figure 7 - Roberta Grove and Senator Circle Drainage Area

Inspection and Maintenance:

Bayou Chauvin has an extensive maintenance program and undergoes aquatic application to control vegetation in the water four times a year, if needed. The Westside access and embankment slope of Bayou Chauvin is controlled for vegetation once a month, either through grass cutting or herbicide application. The Roberta Grove Outfall Structure is cleaned of vegetation and debris when needed. In addition, Woodlawn Pump Station has automatic trash rakes to remove debris during pump operations.

Terrebonne Parish's drainage maintenance program is so comprehensive that it exceeds the national standard level of effort set by the Community Rating System. More details on the Community Rating System are located on page 31-32.

Drainage data sheet responses:

Respondents were asked what they felt was the cause of their flooding. A total of 6 respondents (50.0%) reported storm sewer backup as the cause, 5 (41.7%) reported drainage from nearby properties as the cause, 4 (33.3%) reported clogged/ undersize drainage ditch as the cause, and 4 (33.3%) reported low elevation as the cause. Details about the residents' other responses can be found in Table 10. Respondents were allowed to list "other" as a category, and one respondent reported hurricanes in particular as the cause of flooding.

Table 16 - Cause of Flooding, 2013

What do you feel was the cause of your flooding?	Frequency	%
Storm surge	11	73%
Overbank flooding	9	60%
Clogged/ undersized drainage ditch/ canal	7	47%
Drainage from nearby properties	5	33%
Storm sewer backup	2	13%
Standing water	2	13%
No Answer/ Not Sure	2	13%
Other	1	7%

Table 17 - Cause of Flooding, 2015

What do you feel was the cause of your flooding?	Frequency	%
Storm sewer backup	6	50.0%
Drainage from nearby properties	5	41.7%
Clogged/ undersize drainage ditch	4	33.3%
Low elevation	4	33.3%
Property located next to waterway	1	8.3%
Sanitary sewer backup	1	8.3%
Standing water next to house	1	8.3%
Other:	1	8.3%

In both 2013 and 2015, clogged/undersized drainage ditch was a concern. In 2013, storm surge and overbank flooding were more of a concern, while storm sewer backup was a bigger concern in 2015. This could be due to the lack of large storms in recent years, and the improved drainage in the area. Drainage from nearby properties was also an issue in both years.

Table 18 - Flood Protection Measures Taken by Respondents, 2013

Have you taken any flood protection measures on your property?	Frequency	%
Sandbagged when water threatened	5	33.3%
Elevated all parts of the building	3	20.0%
Regraded yard	1	6.7%
Installed drains	1	6.7%
Moved utilities/ contents to a higher level	1	6.7%
Other:	1	6.7%
No answer:	4	6.7%

In 2013, 5 respondents (33.3%) reported sandbagging when water threatened, 3 respondents (20%) reported elevating their home, 1 respondent (6.7%) reported regrading their yard, 1 respondent (6.7%) reported installing drains, and 1 respondent (6.7%) reported elevating their utilities.

Table 19 - Flood Protection Measures Taken by Respondents, 2015

Have you taken any flood protection measures on your property?	Frequency	%
Sandbagged when water threatened	5	41.7%
Elevated all or parts of the building	5	41.7%
Moved utilities/ contents to a higher level	4	33.3%
Regraded yard to keep water away from house	1	8.3%
Installed drains or pipes to improve drainage	0	0.0%
Waterproofed the outside walls	0	0.0%
Built a wall to keep water away	0	0.0%
Other:	0	0.0%

In 2015, when responding to flood protection measures, 5 respondents (41.7%) reported sandbagging when water threatened, 5 (41.7%) reported elevating all or parts of the building, and 4 (33.3%) reported moving utilities and or contents to a higher level.

As the 2013 and 2015 responses reveal, sandbagging and elevation remain the most popular flood protection measure in the area.

The parish’s dedication to improved drainage will continue to address the drainage issues in the area. In addition, the continued elevation of properties will address the problems associated with low elevation. Further, the residents’ mitigation measures such as sandbagging, regrading, and elevating utilities will help continue to protect from flood as well.

7. Maintaining flood insurance coverage on the building

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 or renter:

- A flood insurance policy covers surface flooding from the overflow of inland or tidal waters or from storm water runoff.
- 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 intervention¹⁷.
- 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.

Flood insurance rates are based on several factors, including what flood zone the building falls in and the age of the structure. Generally, homes in the X zone have lower flood insurance rates than those in the Special Flood Hazard Area (SFHA), because the X zone indicates a lower risk from flooding. Most of the homes in the study area fall in the AE Zone. Homes constructed before May 19, 1981 in the City of Houma 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 A flood zone and constructed or substantially improved after the date of the most current FIRM – such as one built or substantially improved in 2010 – is required to be built above the base flood elevation, 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 20 - Roberta Grove Insurance Policies

Neighborhood	Total Buildings	Active Policies	Expired	Canceled	Active RL	Expired RL	Canceled RL
Roberta Grove	110	65	25	2	28	13 ¹⁸	2
Totals	110	59.1%	22.7%	1.8%	25.5%	11.8%	1.8%

In Roberta Grove, there have been 65 policy renewals, 25 policy expirations, and 2 policy cancellations since the initial analysis. Two of the expirations are recently sold properties. Currently, 59.0% of the available housing units in the study area have flood insurance coverage. In 2015, a total of 84.6% of data sheet respondents (11) reported carrying up-to-date flood insurance coverage on their homes. During

¹⁷ There is a 30-day waiting period for a new flood insurance policy before it goes into effect.

¹⁸ Two are SRL properties, and six have been demolished.

the initial survey in 2013, 100% of data sheet respondents (15) reported carrying an active flood insurance policy. Therefore, insurance coverage in the area slightly lessened from 2013 to 2015.

Table 21 - Senator Circle Insurance Policies

Neighborhood	Total Buildings/ Units	Active Policies	Expired	Canceled	Active RL	Expired RL	Canceled RL
Senator Circle Buildings	119	30	123	0	12	36	0
Totals	119	25.2%	103.4%	0.0%	10.1%	30.3%	0.0%
Senator Circle Rental Units	217	1	70	1	0	36	0
Totals	217	0.5%	32.3%	0.5%	0.0%	16.6%	0.0%

Of the buildings in Senator Circle, there have been 30 policy renewals, 123 expirations, and zero canceled policies. Since residents of Senator Circle rent their units from the city, the renters can obtain insurance policies on contents through a flood insurance policy through their renter’s insurance. Of the rental units in Senator Circle, there has been 1 policy renewal, 70 expirations, and 1 policy cancellation. Currently, 25.2% of the 119 building units in the study area have flood insurance coverage, and 0.5% of the 217 rental units carry insurance.

A majority of homes in the Roberta Grove area have flood insurance coverage, however, 25 policies have expired, and 2 have been canceled. In Senator Circle, 25.2% of the buildings and 0.5% of the housing units have flood insurance policies. Flood insurance coverage should increase in both areas. Carrying an active flood insurance policy helps the entire community, as it allows the neighborhood to recover faster as each individual homeowner can receive financial compensation in the case of a flood.

Insurance Reform

In July 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12). BW-12 was enacted to ensure the financial viability of the National Flood Insurance Program. Major components called for the elimination of subsidies currently allocated to flood insurance policyholders around the country. As of January 2013, policyholders began to see an increase (25.0%) in flood insurance for their non-primary residences. In October 2013, businesses, severe repetitive loss properties and those properties that have experienced losses that exceed the fair market value of their homes also began to see an increase (25.0%) in their premiums. Those policyholders whose properties were not insured as of July 2012, those with newly purchased properties or those who have allowed their policies to lapse were also set to receive an immediate increase to actuarial rates with no 25.0% phase in process for these properties.

However, as Congress began to witness the unintended consequences of BW-12, the Homeowner Flood Insurance Affordability Act of 2014¹⁹ was passed. Signed into law on March 21, 2014, the Affordability Act repeals and modifies certain provisions of section 207 of BW-12, and makes additional program changes to other aspects of the NFIP. Overall, the new law reduces the recent rate increases on **some** policies, prevents **some** future rate increases, and implements a surcharge on **all** policyholders. The Act

¹⁹ <http://www.fema.gov/media-library/assets/documents/93074>

also repeals **specific** rate increases that have already gone into effect. More information on flood insurance reform can be found at <https://www.fema.gov/flood-insurance-reform>.

Grandfathering

Grandfathering applies to properties constructed in compliance with earlier Flood Insurance Rate Maps or those with continuous insurance coverage.²⁰ These properties can keep the same basics for their original insurance rates when the maps change, but the premiums still go up. Additionally, pre-FIRM subsidies will continue to follow the property during a real-estate transaction. Many details of this legislation continue to be discussed. Grandfathering will not apply to a pre-FIRM subsidized non-primary residence, business, severe repetitive loss property, or building that was substantially damaged or improved.

All of the homes in Roberta Grove were built pre-FIRM, or before the effective date of the Flood Insurance Rate Map. All of the homes in Senator Circle were built in the 1960s and 1970s, so they are pre-FIRM as well. These homes can receive subsidized rates from the NFIP, because they were built before the flood map was in place. If the homeowners keep their policies in force, they will keep that subsidized rate, despite any Flood Insurance Rate Map changes that may occur in the future. Because the parish has not yet adopted their preliminary DFIRMs, the effective flood map is still the map from 5/1/1985. Homeowners who do not have flood insurance yet may want to purchase a policy before the preliminary DFIRMs go into effect, as the base flood elevations in the parish have increased.

Any resident who wants to know more should go to: <http://www.fema.gov/flood-insurance-reform>.²¹ It is also important to talk with your flood insurance agent to make sure your policy is current and to learn more about the impending changes.

Community Rating System (CRS)

The CRS is a voluntary program that recognizes NFIP participating communities that go above and beyond the minimum requirements for floodplain management. Policy holders in participating communities are rewarded with reduced insurance premiums. CRS communities receive various credits for the floodplain management activities they implement. The more credit earned, the better the class ranking of that community. The CRS has 10 classes; a Class ranking of 10 has no flood insurance premium reduction, whereas a Class 1 carries the maximum discount.

²⁰ http://www.floods.org/ace-files/documentlibrary/FEMA/FEMA_NFIP_Grandfathering_Fact_Sheet_Insurance_Agents_2009.pdf

²¹ Also, www.floodsmart.gov

Table 22 - CRS Classes and Discounts

CRS Class	Discount ²² on SFHA premiums	Discount on non-SFHA premiums
10	0%	0%
9	5%	5%
8	10%	5%
7	15%	5%
6	20%	10%
5	25%	10%
4	30%	10%
3	35%	10%
2	40%	10%
1	45%	10%

Terrebonne Parish currently has a rating of 6 in the CRS, and receives \$1,176,676 in discounts per year. The City of Houma has a rating of 7 in the CRS, and receives \$196,863 in discounts per year. Residents can check their flood insurance declaration page to verify they are receiving this discount.

8. Green Infrastructure

Another flood mitigation measure is green infrastructure. Green infrastructure maximizes stormwater storage through porous surfaces and natural plants and systems. This allows rainwater to be stored rather than flooding streets, sidewalks and homes. It also removes some of the excess water from the local drainage system and reduces subsidence.

Neighborhood Level

Green infrastructure at the neighborhood level can be made up of bioswales, raingardens, constructed wetlands, retention ponds, detention ponds, pervious pavement and structural soils.

- Bioswales are a natural culvert that moves water from one place to another. They are planted with native grasses and plants and used for stormwater management.

²² Preferred Risk Policies do not receive a discount



Figure 8 - Bioswale, Source: EPA²³

- Rain gardens, another type of green infrastructure, are made up of plants planted in holes of sand rather than soil to allow for maximum drainage.



Figure 9 - Rain Garden, Source: The Joy of Water²⁴

- Constructed wetlands mimic natural wetlands and serve to absorb runoff from a large area.
- Retention ponds hold water permanently, while detention ponds detain water before letting it slowly drain.

²³ http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm

²⁴ http://issuu.com/waterworks1a/docs/the_joy_of_water_booklet_web



Figure 10 - Retention Pond, Source: EPA²⁵

- In addition, pervious pavement and structural soils allow for slower stormwater drainage, and reduce the burden on local drainage systems.



Figure 11 - Pervious Pavement, Source: EPA²⁶

Household Level

- French drains are another type of green infrastructure. They are a channel filled with rock to direct flow while allowing much of it to filter into the surrounding ground. They act as drains that filter water and can be installed in front, back and side yards.

²⁵ http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm

²⁶ http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm



Figure 12 - French Drain, Source: The Joy of Water²⁷

- Rain barrels allow for stormwater management at the household level. Rain barrels collect rainwater from household gutters, and store it as gray water, which can be used for gardening.

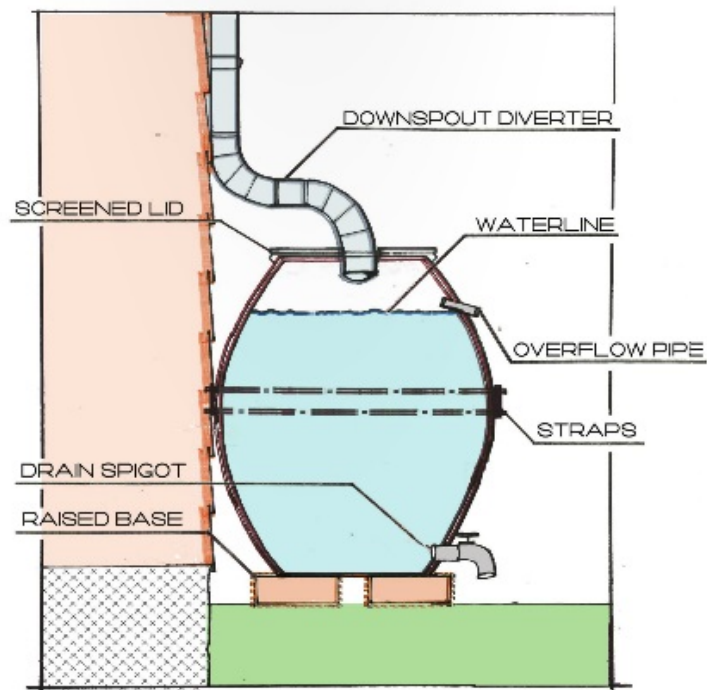


Figure 13 - Rain Barrel, Source: The Joy of Water²⁸

For more information on green infrastructure projects, view The Joy of Water booklet, located at http://issuu.com/waterworks/la/docs/the_joy_of_water_booklet_web.

²⁷ http://issuu.com/waterworks/la/docs/the_joy_of_water_booklet_web

²⁸ http://issuu.com/waterworks/la/docs/the_joy_of_water_booklet_web

Step 4 - Coordination

Various agencies assisted in the completion of this report. The following agencies and organizations were contacted by the UNO-CHART team in order to complete this analysis:

- FEMA Region VI, Mitigation Division
- FEMA Insurance Data from Web Data Exchange
- Terrebonne Parish Consolidated Government Planning & Zoning Department
- Terrebonne Parish Consolidated Government Floodplain Management
- Terrebonne Parish Consolidated Government Permits
- Terrebonne Parish Consolidated Government Planning Commission
- Terrebonne Parish Consolidated Government Recovery Assistance & Mitigation Planning
- Terrebonne Parish Consolidated Government Zoning
- Terrebonne Parish Consolidated Government Public Works Department
- Terrebonne Parish Consolidated Government Engineering
- Terrebonne Parish Consolidated Government Gravity Drainage
- Terrebonne Parish Consolidated Government Forced Drainage
- Houma-Terrebonne Housing Authority
- Terrebonne Levee and Conservation District
- The Army Corps of Engineers

Recommendations

In the original area analysis, the project team made recommendations for Terrebonne Parish, the Houma-Terrebonne Housing Authority, and the residents of Roberta Grove and Senator Circle. The tables below summarize the status of the recommendations.

Table 23 - Status of Recommendations for Terrebonne Parish

Recommendations for Terrebonne Parish	Status
Adopt this Area Analysis according to the process detailed in the 2013 CRS Coordinator's Manual.	Complete
Encourage the owner of repetitive flood loss structures to pursue mitigation measures.	Ongoing
Continue to assist interested property owners in applying for mitigation grants.	Ongoing
Improve the drainage out of Bayou Chauvin.	Complete
Institute a ditch maintenance program that encourages homeowners to frequently clear their ditches of debris to ensure open flow for stormwater.	Started
Assist the Houma-Terrebonne Housing Authority in mitigating the Senator Circle properties.	Started
Continue to participate in Community Rating System (CRS) and increase the Parish's Class.	Ongoing
Continue the CRS credited public information activities, such as outreach projects, website, and flood protection assistance, that help residents learn about and implement retrofitting measures.	Ongoing
As the floodplain management ordinance is being revised, include provisions to provide higher flood protection levels and measures to trigger substantial improvements determinations after repetitive flooding.	Complete

- The parish adopted the area analysis as suggested, and continues to encourage owners of repetitive flood loss structures to pursue mitigation measures through helping them to apply for mitigation grants.
- In addition, the parish has improved the drainage capacity of Bayou Chauvin.
- The parish has not begun an official program to encourage homeowners to clear their ditches and catch basins of debris, but two parish crews conduct ditch maintenance regularly. In addition, the parish has educational videos on their website that encourage residents to report problems, and include instructions on how to report problems on the website.
- The parish is waiting for FEMA to designate Severe Repetitive Loss properties in Senator Circle so that the area will be better positioned to apply for mitigation funds.
- Additionally, the parish continues to participate in the Community Rating System and remains a class 6, and continues Community Rating System outreach projects.
- Finally, the parish revised the floodplain management ordinance to include higher flood protection levels through substantial damage. Currently, per Section 9-56 of the Code of Ordinances, substantial damage/improvement refers to restoration/reconstruction that equals or exceeds 50 percent of the market value of the structure.
- Further, the parish has a cumulative substantial damage requirement, wherein any repairs or changes made over a 10-year period cannot equal or exceed 50% of the market value of the structure without the proposed scope of work also including elevation to the design flood elevation.

Table 24 - Status of Recommendations for the Houma-Terrebonne Housing Authority

Recommendations for the Houma-Terrebonne Housing Authority	Status
Make sure residents in Senator Circle are aware of the flood threat and what they can do to protect their belongings.	Ongoing
Make sure residents in Senator Circle are aware of the availability of flood insurance for rental property.	Ongoing
Review the ability of residents in Senator Circle to make structural changes to their apartments for flood protection purposes.	Complete
Work with the Parish to identify structures eligible for mitigation.	Ongoing

The initial area analysis and informational meetings served to inform the residents in Senator Circle about the threat of flood and how to protect their belongings, and informed the residents that flood insurance for rental property is available. Residents are not able to make structural changes to their properties for flood protection purposes, but the Housing Authority can implement mitigation measures if funding is made available. The Housing Authority is waiting for FEMA to designate Severe Repetitive Loss properties in Senator Circle so that the area will be in a better position to apply to receive mitigation funds. FEMA is currently working on reclassifying these properties.

Table 25 - Status of Recommendations for the Residents of Roberta Grove and Senator Circle

Recommendations for the residents of Roberta Grove and Senator Circle	Status
Review the mitigation measures listed in this report and implement those that are appropriate.	Ongoing
Stay up to date with what Terrebonne Parish is doing in regards to flood protection, available online at: www.tpcg.org .	Ongoing
Purchase or maintain flood insurance policies on the home (if a homeowner) and/or on the contents (homeowner and renters).	Ongoing
Read through the Louisiana Homeowner’s Handbook to Prepare for Natural Hazards for more information on appropriate mitigation measures, available online at: www.lsu.edu/sglegal/pubs/handbook.htm .	Ongoing
Keep informed about the changes being made to the NFIP by the implementation of the Biggert-Waters Flood Insurance Reform and Modernization Act of 2012 and the Homeowners Flood Insurance Affordability Act of 2014, available online at: www.fema.gov/flood-insurance-reform or www.floodsmart.gov .	Ongoing

The initial area analysis, informational meetings, and analysis update serve to inform the residents about mitigation measures available to them, the flood protection information on Terrebonne Parish’s website, the importance of purchasing flood insurance, the availability of information in the Louisiana Homeowner’s Handbook, and the changes being made to the NFIP.

Elevation is the most popular mitigation method in Roberta Grove. As the properties in Senator Circle are reclassified, the buildings will be eligible for mitigation funding for elevation and other mitigation measures as well. The residents of Roberta Grove and Senator Circle could also consider the use of barriers or floodwalls as well as floodproofing. These methods have not been used in the area as of yet. Residents in the Roberta Grove area have found the elevation of utilities to be a successful flood protection measures, and a way to reduce flood insurance claims. The parish’s drainage improvements, as well as the residents’ use of elevation, sandbagging, and regrading have helped to protect against flood as well. Flood insurance coverage in Roberta Grove and Senator Circle has room for expansion, as it is the best way to receive financial compensation after a flood.

The parish continues to work with residents on flood protection measures, and the initial analysis and update provide information about effective measures as well. The ongoing use of mitigation measures will help residents in Roberta Grove and Senator Circle to reduce flooding in the future.

Conclusion

Ultimately, this update of the original area analysis shows improvement in multiple areas. Although the area has not experienced as much rainfall as it did in 2005 and 2008, it is still significant that there have been so few claims in a repetitive loss and severe repetitive loss area. Respondents did not report any water in their homes between 2013 and 2015. The improved drainage and elevation of some homes in the area seem to have reduced claims in the area, despite similar significant rain events. Since the initial June 2013 analysis, there have been three elevations in Roberta Grove. Elevation has been and will most likely continue to be a successful mitigation measure in Roberta Grove. In addition, more respondents reported elevating utilities since 2013. However, flood insurance coverage in the area slightly decreased from 2013 to 2015, so coverage needs to increase in both areas. The parish’s amendment to the flood

damage related ordinances helps to bring more structures into compliance with floodplain regulations. Dredging and cleaning of Bayou Chauvin has improved drainage in the area, and the parish is also currently working on improving a pump station in the area. The proposed retention pond on Woodlawn Ranch Road will help with future stormwater flooding during heavy rains. Further, the Morganza to the Gulf project will further help to protect the parish from storm surge.

Appendix A: Resident Letter

UNO Center for Hazards Assessment, Response and Technology
Milneburg Hall, Suite 102
2000 Lakeshore Drive
New Orleans, LA 70148



December 4, 2015

Roberta Grove Resident
Houma, LA 70363

Dear Roberta Grove Resident:

As you may recall, in 2013 The University of New Orleans Center for Hazards Assessment, Response and Technology (UNO-CHART) completed a Repetitive Loss Area Analysis for your neighborhood which included an informational meeting on January 17, 2013. This area analysis explored and addressed the problem of repeated flood loss in Roberta Grove. If you did not get an opportunity to review this report, please find it online at:

http://floodhelp.uno.edu/uploads/Roberta%20Grove-%20Senator%20Circle%20RLAA/RG-SC%20June25th_final.pdf.

UNO-CHART is now conducting a follow-up analysis in Roberta Grove to assess the flood mitigation progress of the neighborhood since the release of the area analysis. Please take a few minutes to complete the attached data sheet and mail it to UNO-CHART using the enclosed envelope.

The information you provide will help UNO-CHART improve future analyses to help reduce flood losses in Louisiana. Thank you for your time and consideration in this matter. Please feel free to contact Tara Lambeth at (504) 280-5760 or tlambet1@uno.edu with any questions or concerns.

Thank you for your participation!

Sincerely,

Monica Teets Farris, Ph.D.
Director, UNO-CHART

Appendix B: Resident Data Sheet

Name: _____

Property Address: _____



Information about You:

1. In what year did you move into this house? _____
2. Do you recall the Roberta Grove repetitive flooding area analysis completed in June 2013?
 Yes No
 - a. Did you attend the public meeting conducted by UNO CHART on January 17, 2013 detailing the repetitive flood loss report?
 Yes No
 - b. Did you get an opportunity to view the final report?
 Yes NoTo view the final report online, please visit: floodhelp.uno.edu and click on Repetitive Loss Area Analyses and Other Reports

Information about Your House:

3. How many times has the house flooded? _____
4. Has your home flooded since June 2013? Yes No
If yes, when did the flood(s) occur? _____
5. What type of foundation does your house have?
 Slab Crawlspace
 Piles or Piers Mixed
 Other: _____
6. Do you currently have flood insurance? Yes No a. If yes, how long have you carried this policy? _____

Information about Flooding History

7. What was the deepest the water ever got?
 Over first floor: _____ deep, in _____ (month/year).
 Over second floor: _____ deep, in _____ (month/year).
 In yard only: _____ deep, in _____ (month/year).
 Water was kept out of the house by sandbagging or other protective measures
 - a. What is the longest time the water stayed in the home? _____
 - b. When was this? _____
8. What do you feel was the cause of your flooding? Check **all** that affect your home:
 Storm sewer backup Sanitary sewer backup
 Clogged/undersize drainage ditch Standing water next to house
 Property located next to waterway Drainage from nearby properties
 Low elevation Other: _____

9. Do you expect your house to flood again?
 Yes No
 - a. Why or why not?

****~please turn over the sheet to complete the questionnaire~****

Information about Flood Protection Measures:

*****Please note that answering these questions does not obligate you to participate in any program, nor does answering them indicate that you will be specially considered for any funding should it become available. These questions are simply a way to measure knowledge and experience with mitigation measures*****

10. Have you taken any flood protection measures on your property?

- | | |
|--|--|
| <input type="checkbox"/> Moved utilities/contents to a higher level | <input type="checkbox"/> Elevated all or parts of the building |
| <input type="checkbox"/> Regraded yard to keep water away from house | <input type="checkbox"/> Waterproofed the outside walls |
| <input type="checkbox"/> Installed drains or pipes to improve drainage | <input type="checkbox"/> Built a wall to keep water away |
| <input type="checkbox"/> Sandbagged when water threatened | <input type="checkbox"/> Other: _____ |

11. If so, in what year did you take the measure(s)? _____

12. Did any of the measures checked in item 10 work? If so, which ones? If not, do you know why they did not work?

13. Have you participated in/are you participating in any of the following mitigation grant programs?

- Terrebonne Parish Hazard Mitigation Grant Program (HMGP)
- Terrebonne Parish Severe Repetitive Loss Program (SRL)
- Terrebonne Parish Flood Mitigation Assistance Program (FMA)
- Terrebonne Parish Pre-Disaster Mitigation Program (PDM)
- State HMGP through State Community Development Office/Road Home
- Increased Cost of Compliance (ICC) coverage provided by your Flood Insurance Policy

14. Have you considered implementing a flood mitigation measure?

- | | | |
|--|---|---------------------------------------|
| <input type="checkbox"/> Elevation | <input type="checkbox"/> Dry Floodproofing | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Reconstruction | <input type="checkbox"/> Acquisition | |
| <input type="checkbox"/> Wet Floodproofing | <input type="checkbox"/> Green Infrastructure | |

15. If so, what are difficulties you have come across when trying to implement a flood mitigation measure?

16. Would you like additional information on flood protection measures?

- Yes No

If you would like information on flood protection measures, please include your email address or full mailing address. You may also want to visit floodhelp.uno.edu.

~Thank you for your participation!~