# ST. JAMES

## PARISH HAZARD MITIGATION UPDATE - 2016

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# ST. JAMES PARISH
# HAZARD MITIGATION PLAN UPDATE

***Prepared for:***

**St. James Parish**

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## ACKNOWLEDGMENTS

This 2016 St. James Parish Hazard Mitigation Plan Update was coordinated by the St. James Parish Hazard Mitigation Plan Update Steering Committee, in collaboration with the participating jurisdictions, as well as community stakeholders and the general public. The participating jurisdictions are made up of the following communities:

Unincorporated St. James Parish
Town of Gramercy
Town of Lutcher

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The 2016 St. James Parish Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the St. James Parish Office of Homeland Security and Emergency Preparedness: PO Box 106, Convent, LA 70723.

# Contents

# 1 Introduction

Hazard Mitigation is defined as sustained actions taken to reduce or eliminate long-term risk from hazards and their effects. Hazard Mitigation Planning is the process through which natural hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are determined, prioritized, and implemented.

In that regard, this plan (a) documents the St. James Parish Hazard Mitigation Plan Update process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make St. James Parish less vulnerable and more disaster resistant. It also includes mitigation project scoping to further identify scopes of work, estimated costs, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation activities and local policy decisions affecting future land use.

The St. James Parish Hazard Mitigation Plan is a multi-jurisdictional plan that includes the following jurisdictions which participated in the planning process:

- Unincorporated St. James Parish
- Town of Gramercy
- Town of Lutcher

The Federal Emergency Management Agency (FEMA), now under the Department of Homeland Security, has made reducing losses from natural disasters one of its primary goals. The Hazard Mitigation Plan (HMP) and subsequent implementation of recommended projects, measures, and policies is the primary means to achieving these goals. Mitigation planning and project implementation has become even more significant in a post-Katrina and Rita environment in south Louisiana.

This hazard mitigation plan is a comprehensive plan for disaster resiliency in St. James Parish. The parish is subject to natural hazards that threaten life and health and have caused extensive property damage. To better understand these hazards and their impacts on people and property, and to identify ways to reduce those impacts, the parish's Office of Homeland Security and Emergency Preparedness undertook this Natural Hazards Mitigation Plan.

"Hazard mitigation" does not mean that all hazards are stopped or prevented. It does not suggest complete elimination of the damage or disruption caused by such incidents. Natural forces are powerful and most natural hazards are well beyond our ability to control. Mitigation does not mean quick fixes. It is a long term approach to reduce hazard vulnerability. As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event.

Why this plan? Every community faces different hazards and every community has different resources and interests to bring to bear on its problems. Because there are many ways to deal with natural hazards and many agencies that can help, there is no one solution or cookbook for managing or mitigating their effects.

Planning is one of the best ways to correct these shortcomings and produce a program of activities that will best mitigate the impact of local hazards and meet other local needs. A well-prepared plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with

other goals and programs, preventing conflicts and reducing the costs of implementing each individual activity.

Mitigation activities need funding. Under the Disaster Mitigation Act of 2000 (42 USC 5165), a mitigation plan is a requirement for federal mitigation funds. Therefore, a mitigation plan will both guide the best use of mitigation funding and meet the prerequisite for obtaining such funds from FEMA. FEMA also recognizes plans through its Community Rating System, a program that reduces flood insurance premiums in participating communities. This program is further described in Chapter 3.

This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural hazards. It fulfills the federal mitigation planning requirements, qualifies for Community Rating System credit, and provides the parish and its municipalities with a blueprint for reducing the impacts of these natural hazards on people and property.

## History

St. James Parish was originally discovered by Spanish explorer Hernando de Soto in 1541. Over a century later, Rene-Robert Cavalier, Sieur de La Salle further explored the area by sailing down the Mississippi River, claiming the area for France, and naming it Louisiana after King Louis XIV.

Prior to European contact, the first inhabitants of the area were the ancestors of the Houma and Chitimacha Indian Nations. In 1799, a Jesuit priest founded a mission among the Houma and erected a chapel after announcing the Gospel to them. The Chitimacha did not want Christianity, and thus killed the Catholic priest. A member of the party escaped, however, and carried the horrific news to Governor Bienville who vowed to avenge the victims and waged a battle against the Chitimacha. The Indian tribe was defeated and forced to make peace.

Located midway between the cities of New Orleans and Baton Rouge, and bisected by the Mississippi River, St. James Parish is one of the original nineteen parishes created on March 31, 1807, by an act of the Orleans Territorial Legislature. Prior to its creation as a civil parish, St. James Parish formed a part of the *Comte d'Acadie*, or Acadia County, which was comprised of the old ecclesiastical parishes of St. James and Ascension, collectively known as *les cotes des Acadiens*, or the Acadian Coasts.

The original seat of government was in St. James on the west bank of the river. However, in 1869, it was moved to the east bank, near the Convent of the Sacred Heart, where a new courthouse was erected. This structure was destroyed by a fire in 1870 and another was built in the same location. In 1971, the present courthouse was constructed. The area is now known as Convent, and is the parish seat.


*Figure 1-1: Location of St. James Parish within the State of Louisiana*

## Location, Demography, and Economy

### Location

St. James Parish is located in southeast Louisiana, in the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 3.

St. James Parish is located within the Lake Pontchartrain Basin (east bank) and the Barataria Basin (west bank). The topography consists of flat land throughout the parish. The flooding that does occur in this parish is primarily experienced in the alluvial valley, where drainage is poor and where most of the population centers and agricultural development are located. There are two main drainage outlets for St. James Parish. The Blind River drains the east bank of the parish, and Bayou Chevreuil drains the west bank of the parish.


*Figure 1-2: Louisiana Homeland Security Regions*

Approximately 50% of the total land area of St. James Parish is located within FEMA's 100-year floodplain. The majority of the floodplain is found along the Blind River, Bayou Chevreuil, and the many canals in the parish.

*Table 1-1: St. James Parish Population*
*(Source: U.S. Census Bureau)*

| | 2010 Census | 2013 Census | (Current Yr) Estimate | Percent Change 2010 - 2013 | Percent Change 2013 - (Current Year) |
|---|---|---|---|---|---|
| Total Population | 22,102 | 21,700 | 21,638 | -1.80% | -2.10% |
| Population Density (Pop/Sq Mi) | 91.5 | ____ | ____ | ____ | ____ |
| Total Households | 7,786 | 7,786 | ____ | ____ | ____ |

While St. James Parish is faced with a variety of natural hazards and all the problems that accompany growth and decline in growth, it also has the potential to mitigate their adverse effects through current and new programs and projects.

## Economy

This area has seen growth primarily in chemical, oil, fertilizer, and gas production, storage, and refining. Sugarcane is the parish's main agricultural crop. Other production includes vegetables, beef cattle, and crawfish. Other crops of the parish include soybeans, perique tobacco, hay, oats, corn, and fruit. The table below shows the current business patterns and major employers within St. James Parish.

*Table 1-2: Business Patterns in St. James Parish*
*(Source: enstats.census.gov)*

| Business Description | Number of Employees | Number of Establishments | Annual Payroll |
|---|---|---|---|
| Retail trade | 524 | 51 | 11,410 |
| Manufacturing | 2,046 | 23 | 212,796 |
| Health care, social assistance | 540 | 26 | 19,113 |
| Transportation / warehousing | 1,222 | 48 | 76,761 |
| Construction | 144 | 20 | 5,651 |
| Administration, support, waste | 100-249 | 14 | 7,300 |
| Real estate, rental, leasing | 9 | 8 | 267 |
| Wholesale trade | 241 | 14 | 14,176 |
| Other services, except public administration | 155 | 29 | 3,063 |
| Accommodation, food services | 386 | 27 | 5,141 |
| Financial and insurance | 189 | 26 | 9,478 |
| Professional, scientific, technical services | 100-249 | 18 | 7,594 |
| Information | 0-19 | 1 | |
| Educational services | 20-99 | 4 | 933 |
| Arts, entertainment, recreation | 100-249 | 6 | |
| Management of companies and enterprises | 0-19 | 3 | |

*Table 1-3: Major Employers*
*(Source: louisianasiteselection.com)*

| Major Employers | Product/Service | Number of Employees |
|---|---|---|
| Noranda Aluminum LLC | Primary Aluminum | 500 |
| Legislative Office of the State of Louisiana | Legislative Bodies | 350 |
| Quality Marine Services, Inc. | Towing and Tugboat Services | 300 |
| Imperial Sugar Company | Cane Sugar Refining | 267 |
| First American Bank and Trust | State Commercial Banks | 204 |
| Mosaic Fetilizer LLC | Nitrogenous Fertilizers | 175 |
| Veterans of Foreign Wars of the United States | Civic and Social Associations | 150 |
| Parish of St. James | Courts | 150 |
| Zen-Noh Grain Corporation | Grain and Field Beans | 120 |

While nature has presented the parish with a variety of hazards, the parish has the human resources that can face those hazards and manage the impact they have on people and property.

This plan will discuss hazards affecting St. James Parish. Hazard Profiles (see Section Two) contain detailed information on the likelihood of occurrence, possible magnitude or intensity, areas of the parish that could be affected, and conditions that could influence the manifestation of the hazard.

## Hazard Mitigation

To fully understand hazard mitigation efforts in St. James Parish and throughout Louisiana, it is first crucial to understand how hazard mitigation relates to the broader concept of emergency management. In the early 1980s, the newly-created Federal Emergency Management Agency (FEMA) was charged with developing a structure for how the federal, state, and local governments would respond to disasters. FEMA developed the *four phases of emergency management*, an approach which can be applied to all disasters. The four phases are as follows:

- **Hazard Mitigation**—described by FEMA and the Disaster Mitigation Act of 2000 (DMA 2000) as "any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event." The goal of mitigation is to save lives and reduce property damage. Besides significantly aiding in the obviously desirous goal of saving human lives, mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities and minimize community disruption, helping communities return to usual daily living in the aftermath of disaster. Examples of mitigation involve a range of activities and actions including the following: land-use planning, adoption and enforcement of building codes, and construction projects (e.g., flood proofing homes through elevation, or acquisition or relocation away from floodplains).
- **Emergency Preparedness**—includes plans and preparations made to save lives and property and to facilitate response operations before a disaster event.
- **Disaster Response**—includes actions taken to provide emergency assistance, save lives, minimize property damage, and speed recovery immediately following a disaster.
- **Disaster Recovery**—includes actions taken to return to a normal or improved operating condition following a disaster.

*Figure 1-3* illustrates the basic relationship between these phases of emergency management. While hazard mitigation may occur both before and after a disaster event, it is significantly more effective when implemented before an event occurs. This is one of the key elements of this plan and its overall strategy: reduce risk before disaster strikes in order to minimize the need for post-disaster response and recovery.

As *Figure 1-3* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, however, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.


*Figure 1-3: The Four Phases of Emergency Management and their Relation to Future Hazard Mitigation (Source: Louisiana State Hazard Mitigation Plan 2014)*

Unfortunately, this cycle can be painful for a community. For instance, the risks of disasters that could create catastrophic incidents in Louisiana were thought to be relatively well-understood prior to 2005. However, the impact of the 2005 hurricane season on the Gulf Coast region of the United States prompted a new level of planning and engagement related to disaster response, recovery, and hazard mitigation. Hurricanes Katrina and Rita hit three weeks apart and together caused astonishing damage to human life and to property. The two storms highlighted a hurricane season that spawned 28 storms—unparalleled in American history. The 2005 hurricane season confirmed Louisiana's extreme exposure to natural disasters and both the positive effects and the concerns resulting from engineered flood-protection solutions.

The catastrophic events of 2005 had profound impacts on emergency management and hazard mitigation throughout Louisiana. As detailed later in this document, significant funding has been made available to the State of Louisiana and its parishes for the purpose of hazard mitigation planning. The storms also raised awareness of the importance of hazard mitigation among decision-makers and the general population, which has been particularly important since natural hazards will likely be increasing in frequency, magnitude, and impact in the coming years due to climate change.

## General Strategy

During the last update to the Louisiana State Hazard Mitigation Plan, the State Hazard Mitigation Team (SHMT) began a long-term effort to better integrate key components of all plans with hazard mitigation implications in Louisiana to ensure that the programs, policies, recommendations, and implementation strategies are internally consistent. As each of these documents has been adopted by various agencies within the state, the SHMT has worked to incorporate this information into the decision process.

Part of the ongoing integration process is that GOHSEP encourages the parishes and the local municipalities with independent hazard mitigation plans to utilize the same plan format and methodologies as the State Hazard Mitigation Plan in order to create continuity of information from local to state mitigation plans and programs.

The 2016 St. James Parish Hazard Mitigation Plan maintains much of the information from the 2006 and 2010 plan versions, but it now reflects the order and methodologies of the 2011 Louisiana State Hazard Mitigation Plan. The sections in the 2010 St. James Hazard Mitigation Plan were as follows:

- Section One Introduction
- Section Two Parish Profile
- Section Three Planning Process
- Section Four Risk Assessment
- Section Five Mitigation Strategy
- Section Six Plan Maintenance
- Section Seven Action Plan
- Tables
- Figures
- Appendices

This plan update now also coheres with the Plain Writing Act of 2010, which requires federal agencies to use clear communication that is accessible, consistent, understandable, and useful to the public. While the State of Louisiana and its political subdivisions are not required to meet such standards, the Act aligns with best practices in hazard mitigation. Since successful hazard mitigation relies on full implementation and cooperation at all levels of government and community, a successful hazard mitigation plan must also be easily used at all of these levels. Nevertheless, the St. James Parish Hazard Mitigation Steering Committee was not ignorant or dismissive of the successful analysis and mitigation planning executed in previous plan updates. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

## 2016 Plan Update

This 2016 plan update proceeds with the four previous goals of the St. James Parish Hazard Mitigation Plan and the addition of one new goal, for a total of five. The current goals are as follows:

- Identify and pursue preventative measures that will reduce future damages from hazards
- Enhance public awareness and understanding of disaster preparedness
- Reduce repetitive losses in the parish
- Facilitate sound development in the parish so as to reduce or eliminate the potential impact of hazards
- Maintain and continue to improve Community Rating System (CRS) ratings throughout the parish

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the Spatial Hazard Events and Losses Database for the United States (SHELDUS) was used as a data source for hazard identification because it incorporates all storm event data from the National Climatic Data Center (NCDC) Storm Events Database used in previous plans, as well as storm event data from other sources including the NOAA Storm Prediction Center, National Hurricane Center, and U.S. Fire Administration. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. Second, instead of eleven, separate sections for numerous tables, maps, and appendices, the present plan update has four sections and five appendices. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of repetition between sections from the previous plan updates.

The 2016 plan update is organized generally as follows:

- Section One Introduction
- Section Two Hazard Identification and Parish-wide Risk Assessment
- Section Three Capability Assessment
- Section Four Mitigation Strategies
- Appendix A Planning Process
- Appendix B Plan Maintenance
- Appendix C Essential Facilities
- Appendix D Plan Adoption
- Appendix E State Required Worksheets

*Table 1-4: Plan Crosswalk*

| 2010 Plan | Revised Plan (2016) |
|---|---|
| Section 1: Introduction | Section 1: Introduction |
| Section 2: Parish Profile | Section 2: Hazard Identification and Parish wide Risk Assessment |
| Section 3: The Planning Process | Appendix A: Planning Process |
| Section 4: Risk Assessment | Section 2: Hazard Identification and Parish wide Risk Assessment |
| Section 5: Hazard Mitigation Strategy | Section 4: Mitigation Strategies |
| Section 6: Plan Maintenance | Appendix B: Plan Maintenance |
| Section 7: Action Plan | Section 4: Mitigation Strategies |
| Tables, Figures, Appendices | Appendix D: Plan Adoption, Appendix E: State Required Worksheets, Appendix B: Essential Facilities |

Despite changes in this plan update, the plan remains consistent in its emphasis on the few types of hazards that pose the most risk to loss of life, injury, and property in St. James Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, St. James Parish remains at high risk of water inundation from various sources, including flooding, tornadoes, and tropical cyclone activity. All of the parish is also at high risk of damages from high winds and wind-borne debris caused by various meteorological phenomena. Other hazards threaten the parish and/or its municipalities, although not to such great degrees and not in such widespread ways. In all cases, the relative social vulnerability of areas threatened and affected plays a significant role in how governmental agencies and their partners (local, parish, state, and federal) prepare for and respond to disasters.

Mitigation efforts related to particular hazards are highly individualized by jurisdiction. Flexibility in response and planning is essential. The most important step forward to improve hazard management capability is to improve coordination and information sharing between the various levels of government regarding hazards.

# 2 Hazard Identification and Parish-Wide Risk Assessment

This section assesses the various hazard risks that St. James Parish faces in order to identify a strategy for mitigation. Having identified the categories of hazards, emergencies, disasters, and catastrophes, this section details the major climatological and natural/human-influenced hazards by (1) defining them, (2) explaining how they are measured, (3) describing their geographic extent, (4) surveying their previous occurrences, and (5) evaluating their future likelihood of occurrences.

The table below provides an overview of the hazards that had been previously profiled in the St. James Parish Hazard Mitigation plan published in 2010, as well as the hazards that were identified in the State's 2014 Hazard Mitigation Plan that were considered to be of high or medium risk for the parish by the state. Those hazards identified as high or medium risk by the state or previously identified as a risk by the parish, have been determined to provide a risk to the parish and will be profiled in this section.

*Table 2-1: Hazard Profile Summary*

| Hazard | Profiled in Last Plan | Considered Medium or High Risk in the State's HM Plan | Profiled in the 2016 Update |
|---|---|---|---|
| Subsidence/Coastal Land Loss | X | X | X |
| Drought | X | | X |
| Earthquakes | | | |
| Expansive Soils | X | | X |
| Fog | | | |
| Flooding | X | X | X |
| Extreme Heat | | | |
| Sinkholes | | X | X |
| Thunderstorms (Hail, Lightning, & Wind) | | X | X |
| Tornadoes | X | X | X |
| Tropical Cyclones | X | X | X |
| Tsunamis | | | |
| Wildfires | X | | X |
| Winter Storms | X | | X |

## Prevalent Hazards to the Community

While many of the hazards identified in *Table 2-1* occur in the parish, the determination was made to focus attention and resources on the most prevalent hazards, which include the hazards previously profiled, along with sinkholes.

The following hazards have been selected to be included in this risk assessment:

a) Coastal Land Loss/Subsidence
b) Drought
c) Expansive Soils
d) Flooding (backwater, riverine, localized stormwater event)
e) Sinkholes
f) Thunderstorms (hail, lightning, wind)
g) Tornadoes
h) Tropical Cyclones (flooding and high winds)
i) Wildfires
j) Winter Storms

For analysis purposes, the impact of the critical and prevalent hazards is summarized as follows:

- Flooding from rivers and waterways, rain storms, tropical cyclones, and hurricanes in the following forms:
  a) Riverine
  b) Stormwater
  c) Surge
  d) Backwater flooding (as the result of river flooding and surge)
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property and crop damage resulting from drought and wildfires

The potential destructive power of tropical cyclones and flooding were determined to be the most prevalent hazards to the parish. Eighteen of the nineteen Presidential Declarations that St. James Parish has received resulted from either tropical cyclones (12 declarations) or flooding (6 declarations), which validates these as the most significant hazards. Therefore, the issues of hurricanes and flooding will both serve as the main focus during the mitigation planning process. Hurricanes present risks from the potential for flooding, primarily resulting from storm surge, and high wind speeds. While storm surge is considered the hazard with the most potential destructive potential, the risk assessment will also asses non-storm surge flooding as well. Flooding can also occur from non-hurricane events, as flash floods are a common occurrence due to heavy rainfall.

Hurricanes, tropical storms, and heavy storms are fairly common occurrences, and resultant wind damage is of utmost concern. Damage from high winds can include roof damage, destruction of homes and commercial buildings, downed trees and power lines, and damage and disruption to services caused by heavy debris. A wind map for St. James Parish is included in the hurricane risk assessment.

St. James Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass through St. James Parish. High winds produced by tornadoes have the potential to destroy residential and commercial buildings, as well as create wind-borne objects from the debris produced by the destruction of the natural and human environment, such as building materials and trees.

## Previous Occurrences

*Table 2-2* summarizes federal disaster declarations for St. James Parish since 1965. Information includes names, dates, and types of disaster.

*Table 2-2: St. James Parish Major Disaster Declarations*

| Disaster Declaration Number | Date | Type of Disaster |
|---|---|---|
| 208 | 9/10/1965 | Tropical Cyclone - Hurricane Betsy |
| 315 | 10/13/1971 | Tropical Cyclone – Hurricane Edith |
| 374 | 4/27/1973 | Severe Storm, Flooding |
| 829 | 5/20/1989 | Severe Storm, Flooding |
| 904 | 5/3/1991 | Severe Storm, Flooding, and Tornadoes |
| 956 | 8/26/1992 | Tropical Cyclone – Hurricane Andrew |
| 1049 | 5/10/1995 | Severe Storm, Flood |
| 1246 | 9/23/1998 | Tropical Cyclone – Hurricane Georges/TS Frances |
| 1380 | 6/11/2001 | Tropical Cyclone – TS Allison |
| 1435 | 9/27/2002 | Tropical Cyclone – TS Isidore |
| 1437 | 10/3/2002 | Tropical Cyclone – Hurricane Lili |
| 3172 | 2/1/2003 | Loss of Space Shuttle Columbia |
| 1548 | 9/15/2004 | Tropical Cyclone – Hurricane Ivan |
| 1603 | 8/29/2005 | Tropical Cyclone – Hurricane Katrina |
| 1607 | 9/24/2005 | Tropical Cyclone – Hurricane Rita |
| 1786 | 9/2/2008 | Tropical Cyclone – Hurricane Gustav |
| 3322 | 5/6/2011 | Severe Storm, Flooding |
| 4015 | 8/18/2011 | Severe Storm, Flooding |
| 4080 | 8/29/2012 | Tropical Cyclone – Hurricane Isaac |

## Probability of Future Hazard Events

The probability of a hazard event occurring in St. James Parish is estimated on the following page. The percent chance of an event happening during any given year was calculated by posting past events and dividing by the time period. Unless otherwise indicated, the time period used to access probability followed the method used in the State of Louisiana's most current Hazard Mitigation Plan. The primary source for historical data used throughout the plan is the Spatial Hazards Events and Losses Database (SHELDUS), which provides historical hazard data from 1960 to 2014. In staying consistent with the state plan, the SHELDUS database was evaluated for the last twenty five years (1989 – 2014) in order to determine future probability of a hazard occurring. While the 25-year record used by the State was adopted for the purpose of determining the overall probability, in order to assist with determining estimated losses, unless otherwise stated, the full 54-year record was used when Hazus-MH wasn't available to determine losses. This full record was used to provide a more extensive record to determine losses. All assessed damages were adjusted for inflation in order to reflect the equivalent amount of damages with the value of the U.S. dollar today. In addition, the National Climatic Data Center (NCDC)

was also used to help identify hazard data specific to the municipalities. This was used due to it containing specific data for cities, whereas the data within SHELDUS is limited to parishes.

The following table shows the annual probability for each hazard occurring across the parish and in separate jurisdictions:

*Table 2-3: Probability of Future Hazard Reoccurrence*

| Hazard | Probability | | |
|---|---|---|---|
| | St. James Parish (Unincorporated) | Gramercy | Lutcher |
| Coastal Land Loss/Subsidence | 100% | 100% | 100% |
| Drought | 8% | 8% | 8% |
| Expansive Soils | 100% | 100% | 100% |
| Flooding | 40% | 24% | 36% |
| Sinkholes | <1% | <1% | <1% |
| Thunderstorms (Hail) | 100% | 100% | 100% |
| Thunderstorms (Lightning) | 8% | 8% | 8% |
| Thunderstorms (Wind) | 100% | 100% | 100% |
| Tornadoes | 12% | 12% | 12% |
| Tropical Cyclones | 28% | 28% | 28% |
| Wildfires | <1% | <1% | <1% |
| Winter Storms | 20% | 20% | 20% |

As shown in *Table 2-3*, thunderstorm hail, thunderstorm wind, and expansive soils for the entire planning area have the highest annual chance of occurrence in the parish (100%). Flooding events for the unincorporated areas of St. James Parish have an annual chance of occurrence at 40%. Flooding events for the incorporated areas of Lutcher and Gramercy are slightly lower at 36% and 24% respectively. Tropical cyclones have an annual chance of occurrence calculated at 28%, followed by winter storms at 20% and tornadoes at 12%. Thunderstorm hail and drought both have an annual chance of occurrence of 8%, followed by sinkholes and wildfires with less than a 1% annual chance of occurrence.

## Inventory of Assets for the Entire Parish

As part of the risk assessment, the planning team identified essential facilities throughout the parish. Several methods were used to assist in identifying all essential facilities, including field data collected by the Louisiana Governor's Office of Homeland Security and Emergency Preparedness on critical infrastructure from a previous hazard mitigation project.

Within the entire planning area, there is an estimated value of $2,072,726,000 in structures throughout the parish. The table below provides the total estimated value for each type of structure by occupancy.

*Table 2-4: Estimated Total of Potential Losses throughout St. James Parish*

| Occupancy | St. James Parish | Unincorporated St. James | Gramercy | Lutcher |
|---|---|---|---|---|
| Agricultural | $8,284,000 | $7,197,000 | $300,000 | $787,000 |
| Commercial | $193,711,000 | $115,211,000 | $27,028,000 | $51,472,000 |
| Government | $20,725,000 | $17,967,000 | $976,000 | $1,782,000 |
| Industrial | $96,116,000 | $42,453,000 | $50,315,000 | $3,348,000 |
| Religion | $39,122,000 | $26,811,000 | $4,547,000 | $7,764,000 |
| Residential | $1,706,357,000 | $1,113,912,000 | $303,162,000 | $289,283,000 |
| Education | $8,411,000 | $6,741,000 | $475,000 | $1,195,000 |
| Total | $2,072,726,000 | $1,330,292,000 | $386,803,000 | $355,631,000 |

## Essential Facilities of the Parish

The following figures show the locations and names of the essential facilities within the parish:

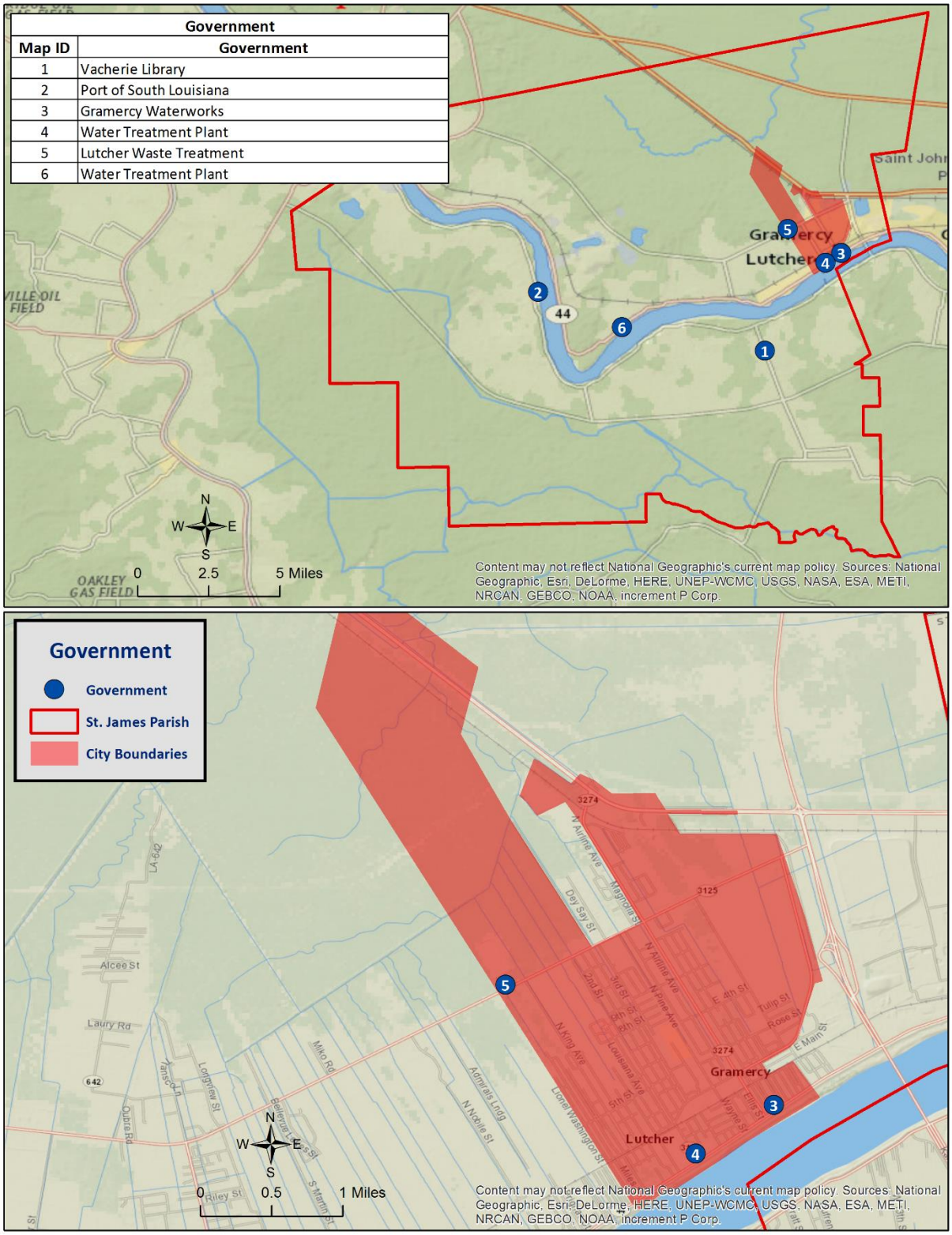
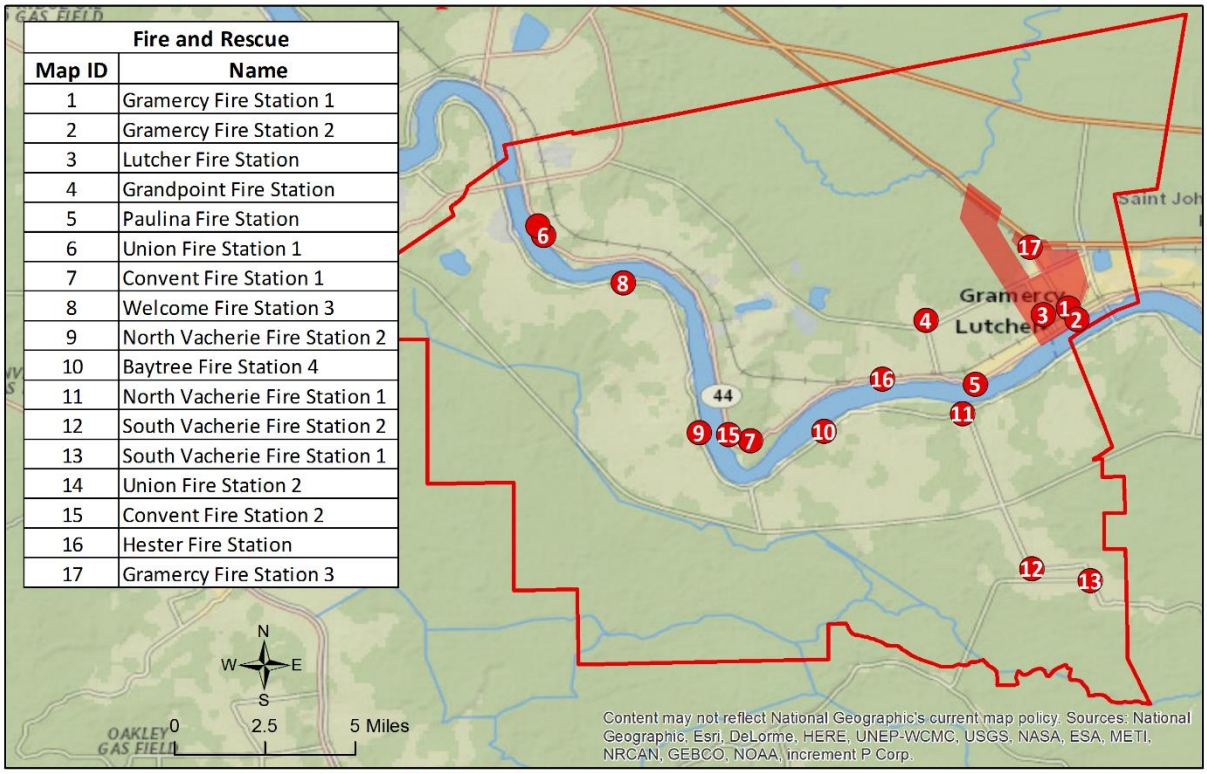



*Figure 2-1: Government Facilities throughout St. James Parish*



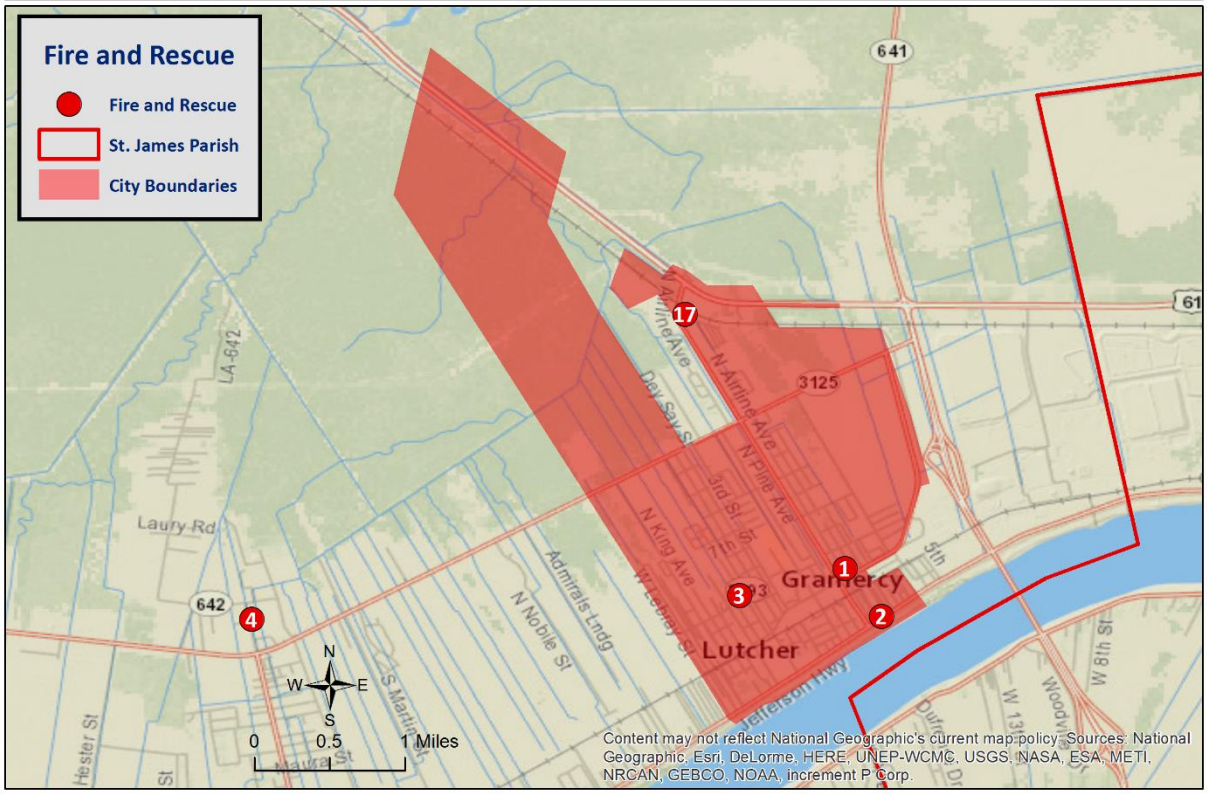




*Figure 2-2: Fire Stations throughout St. James Parish*

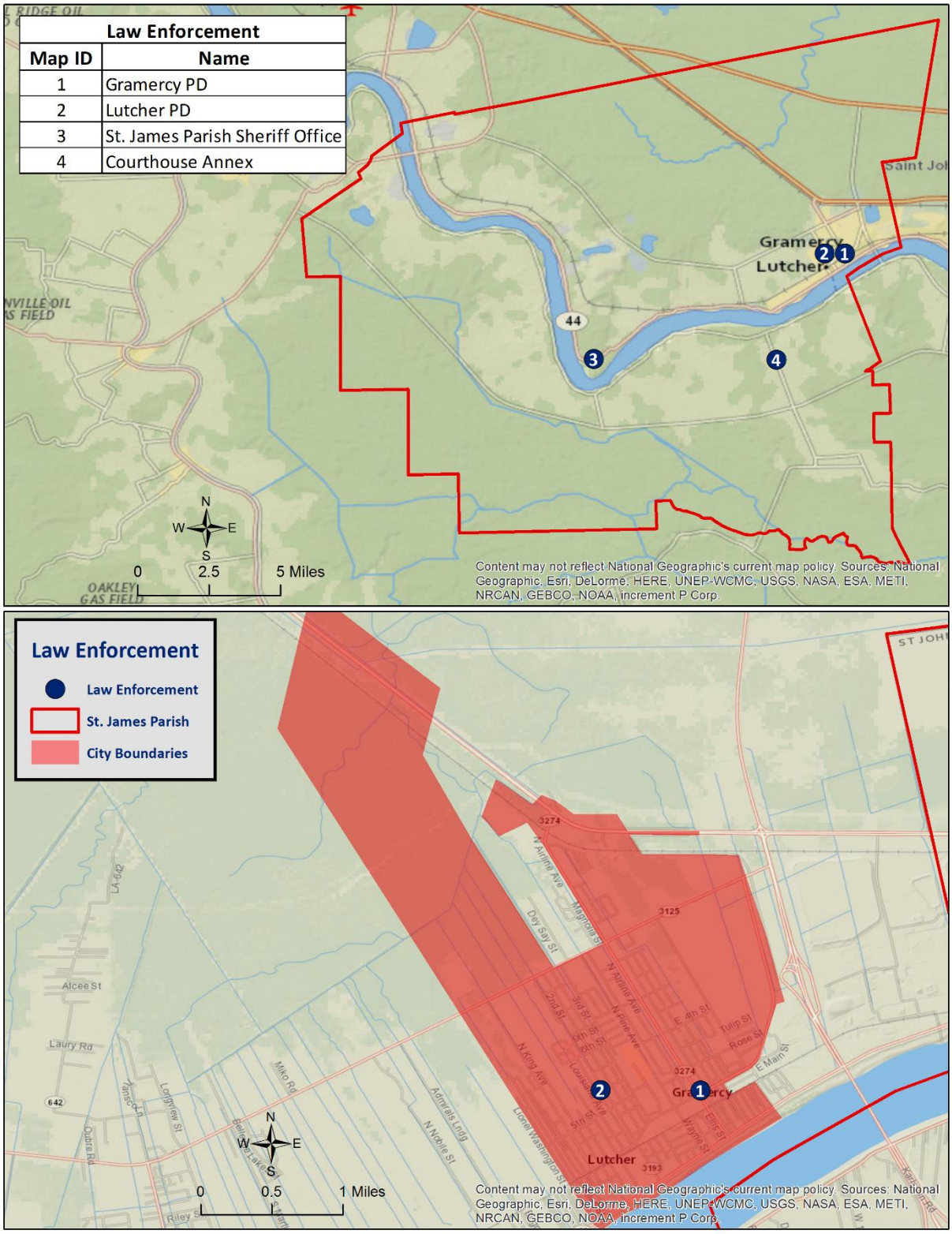



*Figure 2-3: Law Enforcement Facilities in St. James Parish*

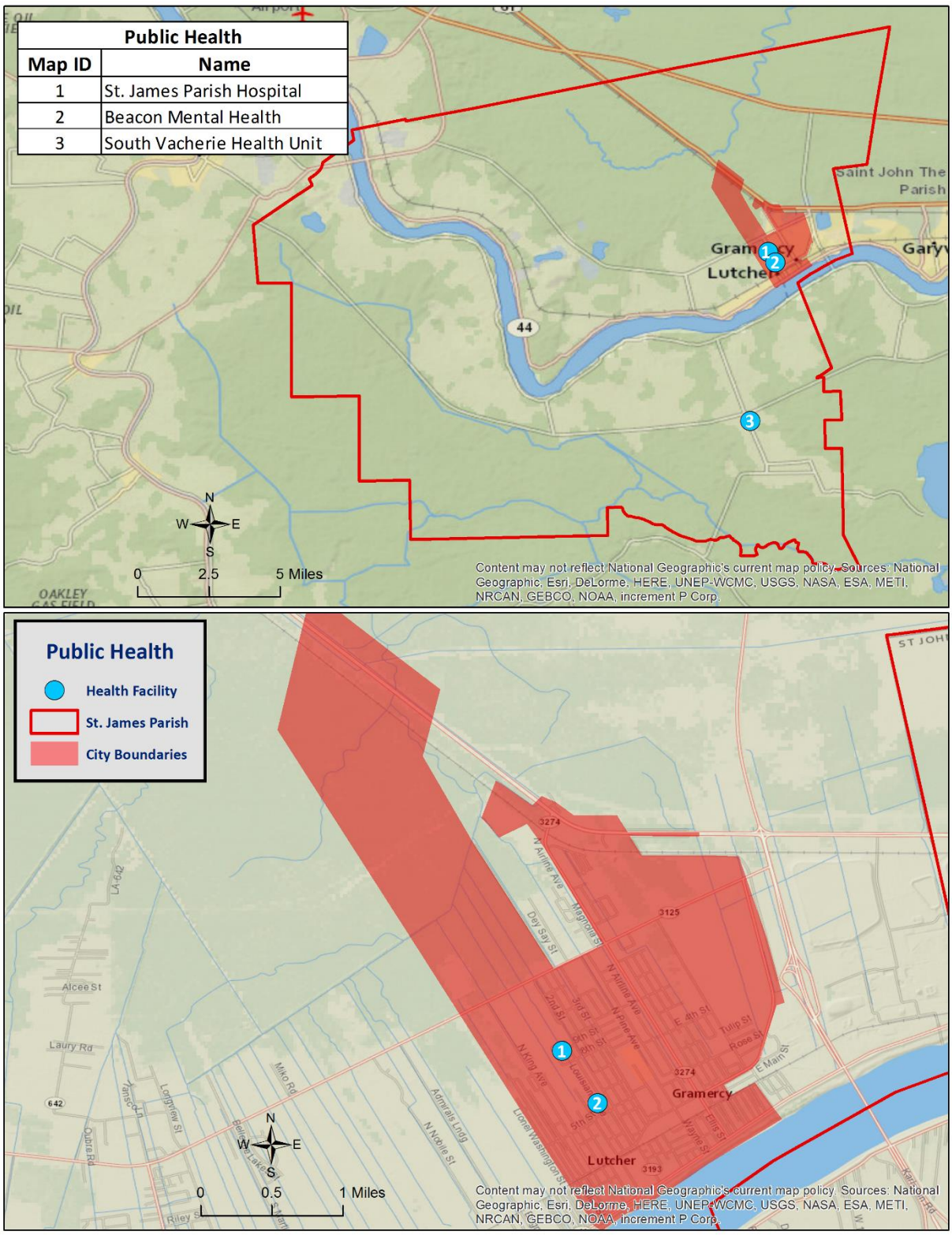
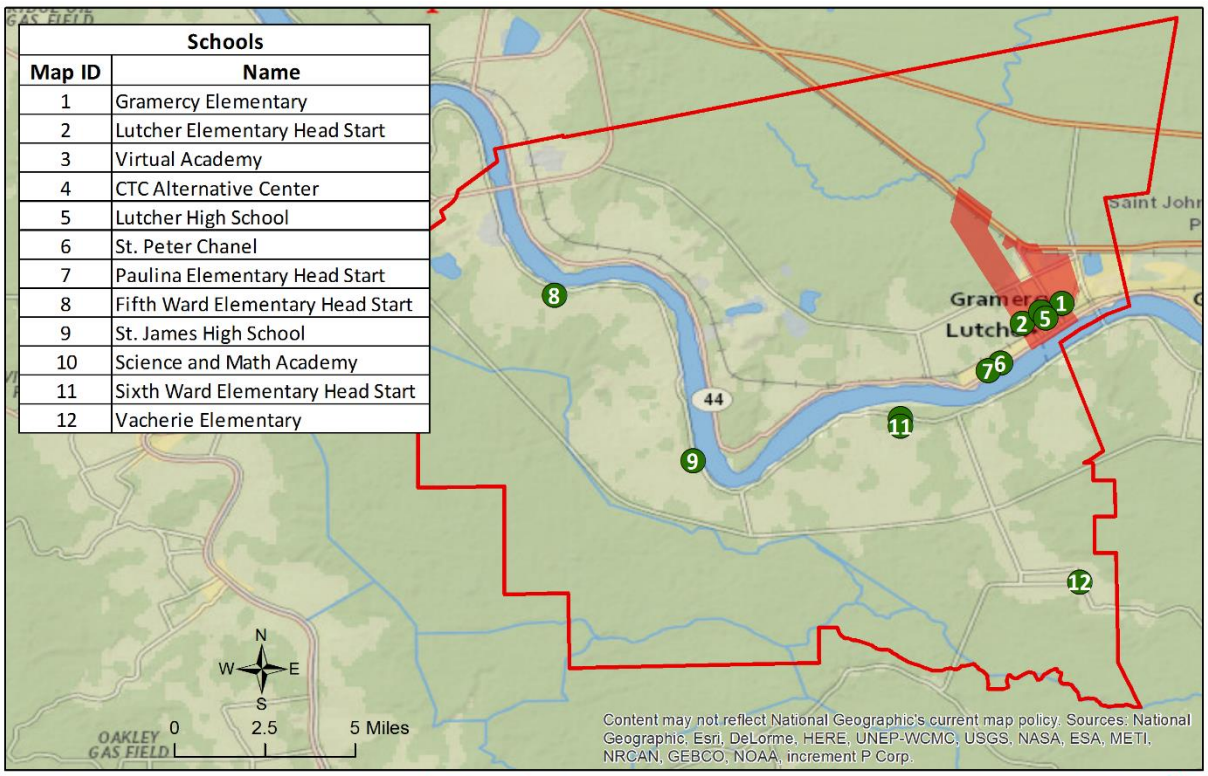



*Figure 2-4: Public Health Facilities in St. James Parish*



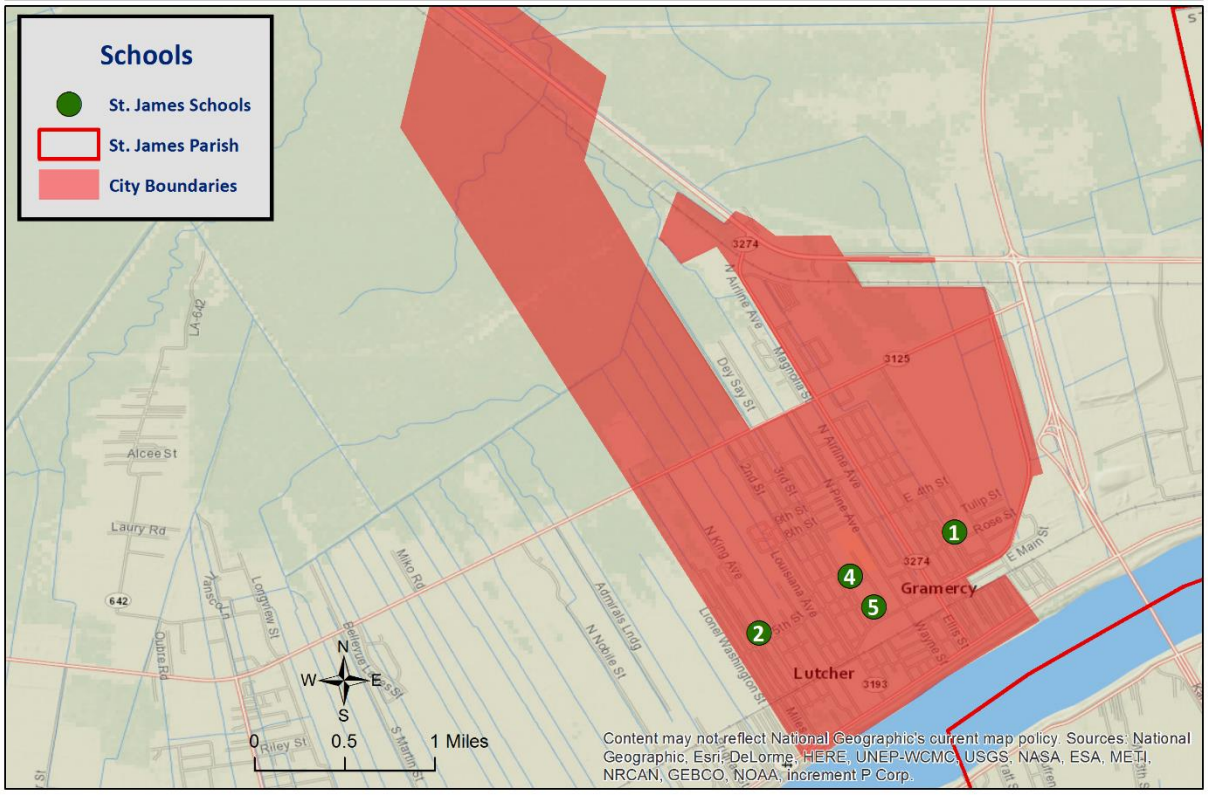




*Figure 2-5: Educational Facilities in St. James Parish*

## Future Development Trends

St. James Parish experienced a small growth in population and housing between the years of 2000 and 2010, growing from a population of 21,216 with 7,605 housing units in 2000 to a population of 22,102 with 8,455 housing units in 2010. This growth was largely in the incorporated area of Gramercy. Housing continued to grow from 2010 to 2013, but population fell slightly from 22,102 to 21,916. The future population and number of buildings can be estimated using U.S. Census Bureau housing and population data. The following tables show population and housing unit estimates from 2000 to 2013:

*Table 2-5: Population Growth Rate for St. James Parish*

| Total Population | St. James Parish | St. James (Unincorporated) | Gramercy | Lutcher |
|---|---|---|---|---|
| 1-Apr-00 | 21,216 | 14,415 | 3,066 | 3,735 |
| 1-Apr-10 | 22,102 | 14,930 | 3,613 | 3,559 |
| 1-Jul-13 | 21,916 | 15,195 | 3,213 | 3,508 |
| Population Growth between 2000 – 2010 | 4.2% | 3.6% | 17.8% | -4.7% |
| Average Annual Growth Rate between 2000 – 2010 | 0.4% | 0.4% | 1.8% | -0.5% |
| Population Growth between 2010 – 2013 | -0.8% | 1.8% | -11.1% | -1.4% |
| Average Annual Growth Rate between 2010 – 2013 | -0.28% | 0.59% | -3.69% | -0.48% |

*Table 2-6: Housing Growth Rate for St. James Parish*

| Total Housing Units | St. James Parish | St. James (Unincorporated) | Gramercy | Lutcher |
|---|---|---|---|---|
| 1-Apr-00 | 7,605 | 5,074 | 1,163 | 1,368 |
| 1-Apr-10 | 8,455 | 5,667 | 1,382 | 1,406 |
| 1-Jul-13 | 8,514 | 5,768 | 1,295 | 1,451 |
| Housing Growth between 2000 – 2010 | 11.2% | 11.7% | 18.8% | 2.8% |
| Average Annual Growth Rate between 2000 – 2010 | 1.1% | 1.2% | 1.9% | 0.3% |
| Housing Growth between 2010 – 2013 | 0.7% | 1.8% | -6.3% | 3.2% |
| Average Annual Growth Rate between 2010 – 2013 | 0.2% | 0.6% | -2.1% | 1.1% |

As shown in the previous tables, St. James Parish has experienced slight growth in housing units, but population has declined slightly from the years 2010 to 2013. Housing growth rates grew at 1.1% annually from 2000 to 2010, and at 0.2% annually from 2010 to 2013. Population growth rates for the parish were slightly lower at 0.4% annually from 2000 to 2010, and declined (-0.28% annually) from 2010 to 2013. From 2000 to 2010, the incorporated area of Gramercy had the largest increase in population rate at 1.8% annually, followed by the unincorporated areas of St. James Parish at 0.4%. The incorporated area of Lutcher had the largest decrease in population during this time period at -0.5%. From 2010 to 2013, the unincorporated areas of St. James Parish was the only area that experienced a population increase.

The incorporated area of Gramercy experienced the largest increase in housing units from 2000 to 2010 at 1.9% annually, followed by the unincorporated area of St. James Parish at 1.2% annually. From 2010 to 2013, Gramercy experienced a decline in housing units (-2.1% annually). The incorporated area of Lutcher and the unincorporated area of St. James Parish both experienced an increase in housing units, with Lutcher increasing its housing units by 3.2% and the unincorporated area increasing its housing units by 1.8%.

## Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2019 and 2024). Yearly population and housing growth rates were applied to parish inventory assets for composite flood and tropical cyclones. Based on a review of available information, it is assumed that population and housing units will grow slightly within St. James Parish from the present until 2024. A summary of estimated future impacts is shown in the table on the following page. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%.

*Table 2-7: Estimated Future Impacts, 2019-2024*
*(Source: Hazus, US Census Bureau)*

| Hazard / Impact | Total in Parish (2014) | Hazard Area (2014) | Hazard Area (2019) | Hazard Area (2024) |
|---|---|---|---|---|
| **Flood Damage** | | | | |
| Structures | 8,534 | 4,779 | 4,835 | 4,903 |
| Value of Structures | $2,098,738,225 | $1,175,293,406.05 | $1,250,916,112.45 | $1,348,113,478.49 |
| # of People | 21,855 | 12,239 | 12,068 | 11,866 |
| **Tropical Cyclone** | | | | |
| Structures | 8,534 | 8,534 | 8,634 | 8,755 |
| Value of Structures | $2,098,738,225 | $2,098,738,225 | $2,233,778,772 | $2,407,345,497 |
| # of People | 21,855 | 21,855 | 21,550 | 21,190 |

## Land Use

The St. James Land Use table and map are provided below and on the following page, respectively. Residential, commercial, and industrial areas account for only 10% of the parish's land use. Wetlands is the largest category at 94,826 acres, accounting for 58% of parish land. At 45,247 acres, agricultural land accounts for 27% of parish lands, while 7,555 acres of water areas account for 5% of parish lands. The parish also consists of 479 acres of forest areas, accounting for less than 1% of all parish lands.

*Table 2-8: St. James Parish Land Use*
*(Source: USGS Land Use Map)*

| Land Use | Acres | Percentage |
|---|---|---|
| Agricultural Land, Cropland, and Pasture | 45,247 | 27% |
| Wetlands | 94,826 | 58% |
| Forest Land (not including forested wetlands) | 479 | <1% |
| Urban/Development | 16,985 | 10% |
| Water | 7,555 | 5% |

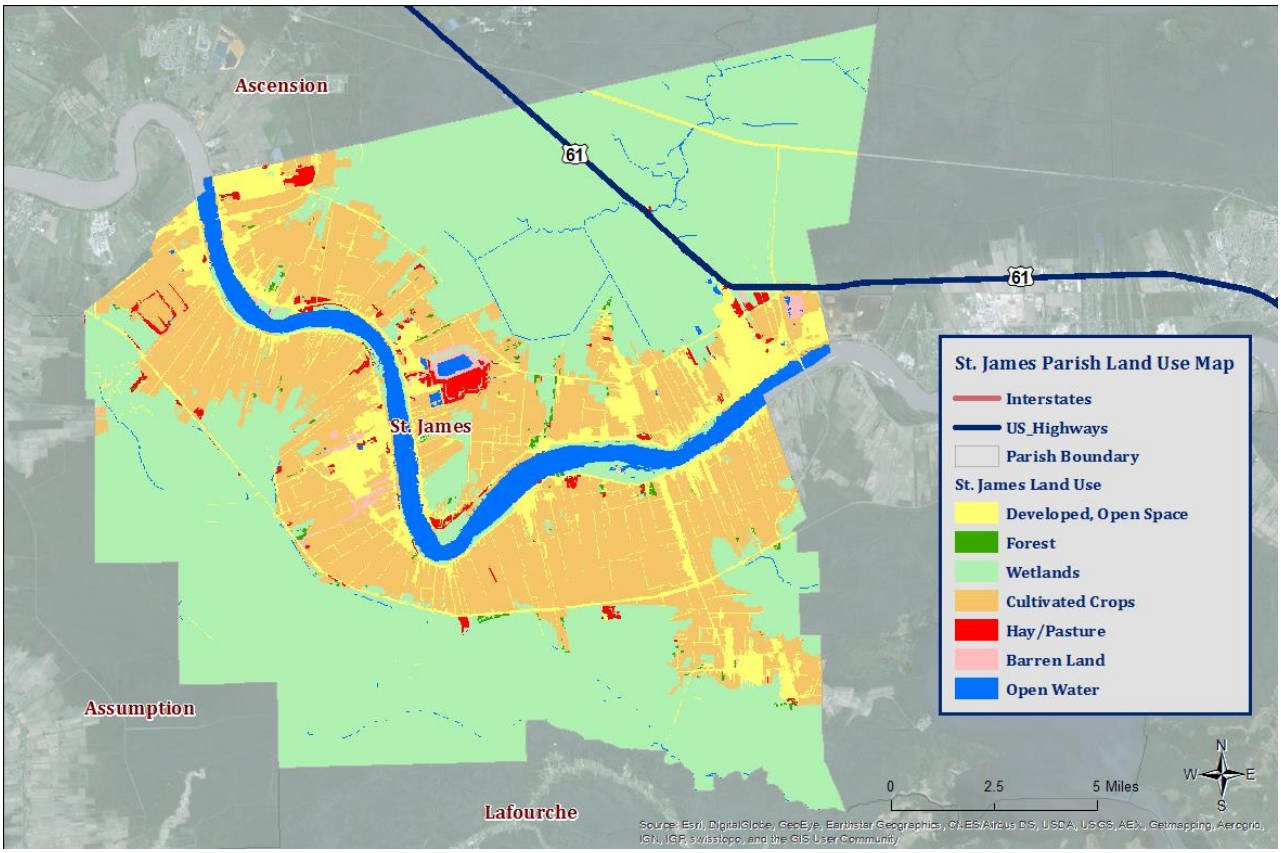



*Figure 2-6: St. James Parish Land Use Map*
*(Source: USGS Land Use Map)*

## Hazard Identification

### Coastal Land Loss/Subsidence

Coastal land loss is the loss of land (especially beach, shoreline, or dune material) by natural and/or human influences. Coastal land loss occurs through various means, including erosion, subsidence (the sinking of land over time as a result of natural and/or human-caused actions), saltwater intrusion, coastal storms, littoral drift, changing currents, manmade canals, rates of accretion, and sea level rise. The effects of these processes are difficult to differentiate because of their complexity and because they often occur simultaneously, with one influencing each of the others.

Some of the worst recent contributors to coastal land loss in the state have been the tropical cyclones of the past decade. Two storms that stand out in this regard are Hurricanes Katrina and Rita. These powerful cyclones completely covered large tracts of land in a very brief period, permanently altering the landscape. The disastrous legacy of these storms concentrated already ongoing efforts to combat coastal land loss. Consistent with the 2014 State Hazard Mitigation Plan Update, coastal land loss is considered in terms of two of the most dominant factors: sea level rise and subsidence.

Sea level rise and subsidence impact Louisiana in a similar manner—again making it difficult to separate impacts. Together, rising sea level and subsidence—known together as relative sea level rise—can accelerate coastal erosion and wetland loss, exacerbate flooding, and increase the extent and frequency of storm impacts. According to NOAA, global sea level rise refers to the upward trend currently observed in the average global sea level. Local sea level rise is the level that the sea rises relative to a specific location (or, benchmark) at the coastline. The most prominent causes of sea level rise are thermal expansion, tectonic actions (such as sea floor spreading), and the melting of the Earth's glacial ice caps. The current U.S. Environmental Protection Agency (EPA) estimate of global sea level rise is 10–12 in. per century, while future sea level rise could be within the range of 1–4 ft. by 2100. According to the U.S. Geological Survey (USGS), the Mississippi Delta plain is subject to the highest rate of relative sea level rise of any region in the nation largely due to rapid geologic subsidence.

Subsidence results from a number of factors including:

- Compaction/consolidation of shallow strata caused by the weight of sediment deposits, soil oxidation, and aquifer draw-down (shallow component)
- Gas/oil/resource extraction (shallow & intermediate component)
- Consolidation of deeper strata (intermediate components)
- Tectonic effects (deep component)

For the most part, subsidence is a slow-acting process with effects that are not as evident as hazards associated with discrete events. Although the impacts of subsidence can be readily seen in coastal parishes over the course of decades, subsidence is a "creeping" hazard. The highest rate of subsidence is occurring at the Mississippi River Delta (estimated at greater than 3.5 ft./century). Subsidence rates tend to decrease inland, and they also vary across the coast.

Overall, subsidence creates three distinct problems in Louisiana:

- By lowering elevations in coastal Louisiana, subsidence accelerates the effects of saltwater intrusion and other factors that contribute to land loss
- By lowering elevations, subsidence may make structures more vulnerable to flooding
- By destabilizing elevations, subsidence undermines the accuracy of surveying benchmarks (including those affecting levee heights, coastal restoration programs, surge modeling, BFEs, and other engineering inputs), which can contribute to additional flooding problems if construction occurs at lower elevations than anticipated or planned

### *Location*

Historic areas of coastal land loss and gain ( *Figure* 2-7) and subsidence rates ( *Figure* 2-8) have been quantified for St. James Parish using data from the U.S. Geologic Survey and Louisiana Coastal Protection and Restoration Authority (CPRA). Since 1932, the average annual land loss in Louisiana is 35 $mi^2$, while the average annual land gain has been 3 $mi^2$, resulting in a net loss of 32 $mi^2$ per year. Land loss is sparsely occurring in the northern unincorporated areas of St. James Parish ( *Figure* 2-7). Subsidence is occurring in the unincorporated areas and in the incorporated areas of Gramercy and Lutcher *( Figure* 2-8).

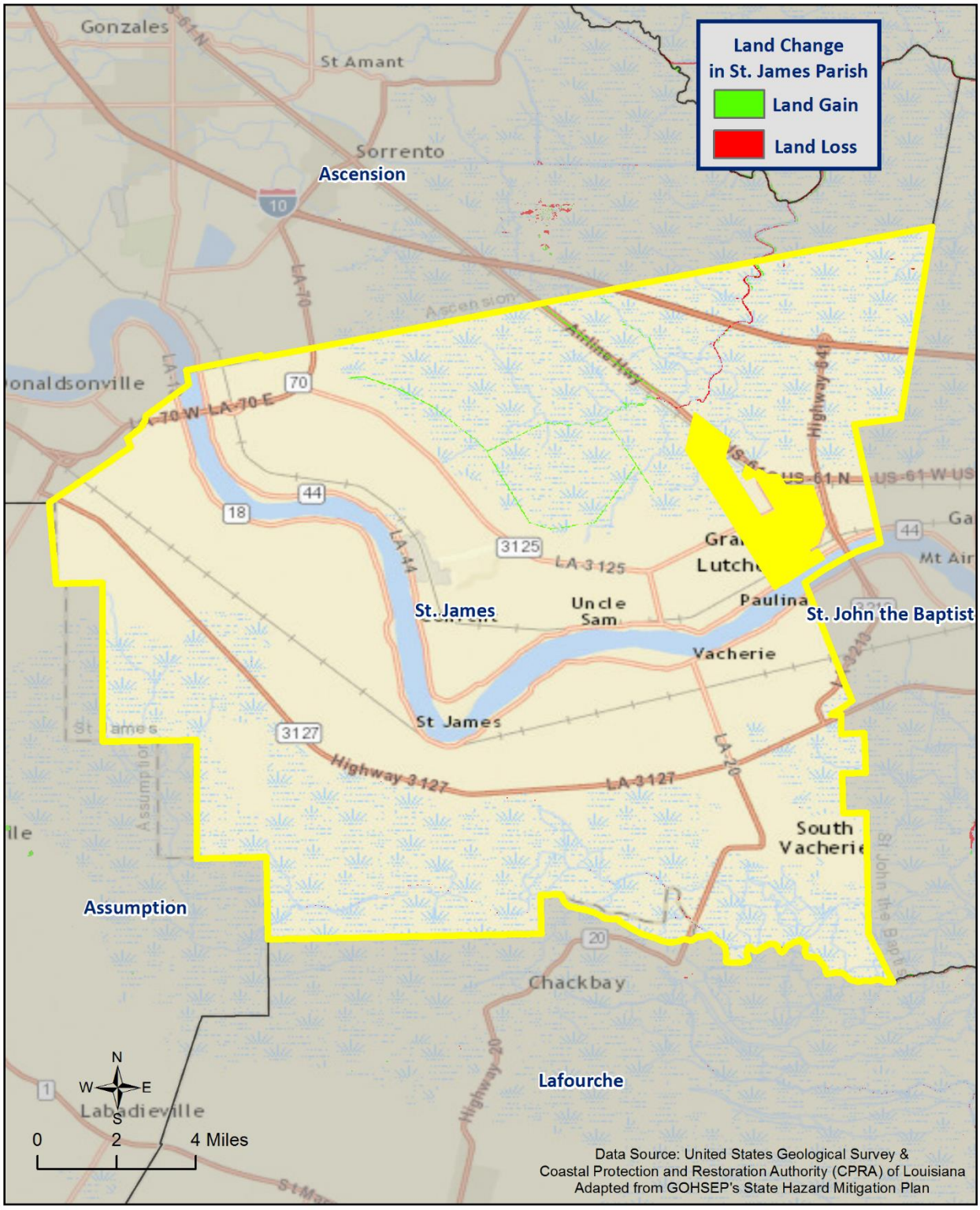



*Figure 2-7: Historical Areas of Land Loss and Gain between 1932 and 2010*
*(Source: State of Louisiana Hazard Mitigation Plan)*

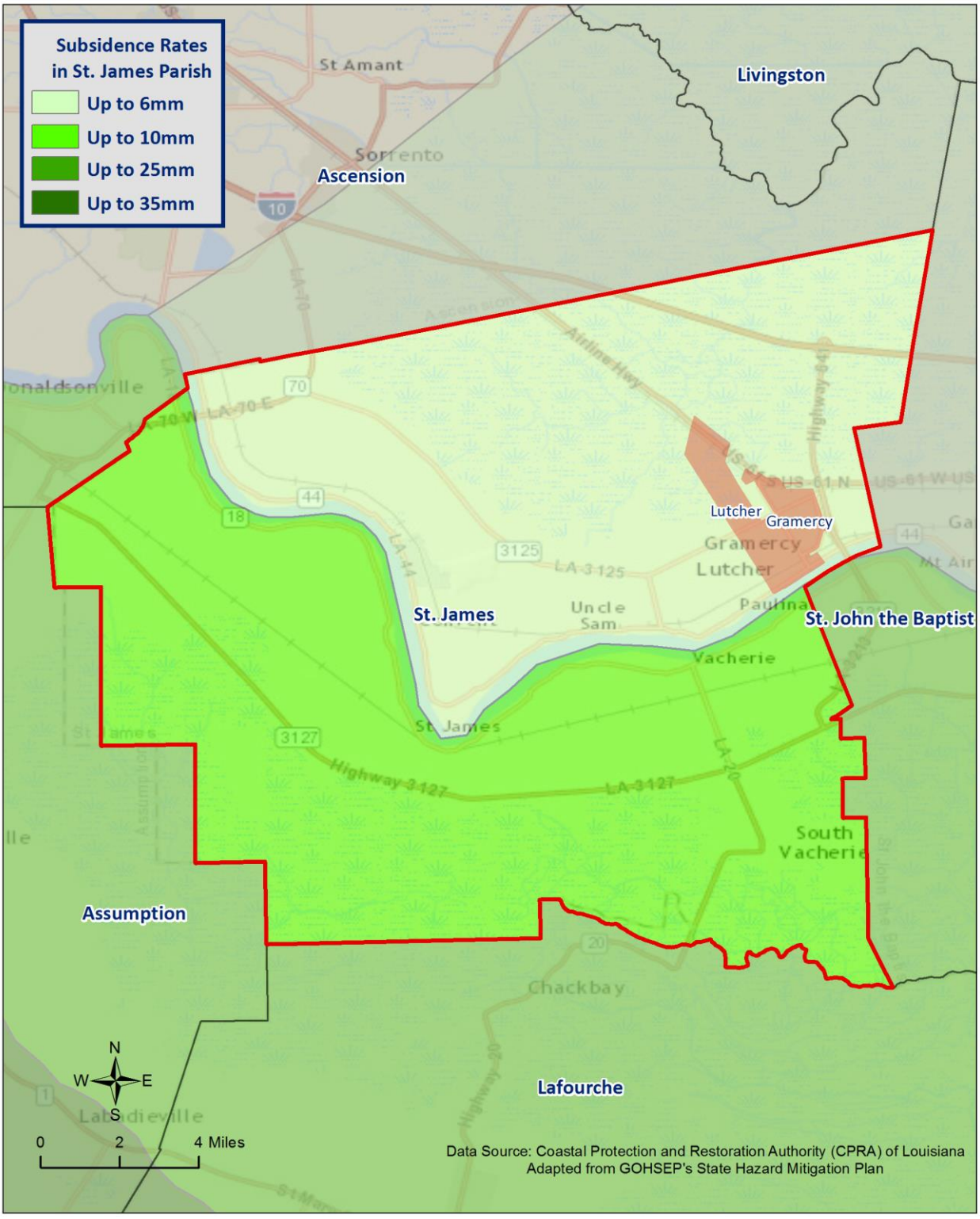



*Figure 2-8: Maximum Annual Subsidence Rates Based on Subsidence Zones in Coastal Louisiana (Source: State of Louisiana Hazard Mitigation Plan)*

### *Previous Occurrences / Extent*

Coastal land loss is an ongoing process, including discrete (hurricanes) and continuous (subsidence, sea level rise) processes. While historic flood loss data undoubtedly include the effects of coastal land loss, specific previous occurrences have not been identified as a source of direct disaster damage in Louisiana. Rather, the effects of the underlying flood or hurricane storm surge hazard are recorded. Land loss is a significant hazard, however, and assessment of the added flood impacts caused by land loss is quantified in the following sections. The unincorporated area of St. James Parish south of the Mississippi River can expect to experience subsidence rates of approximately 10mm annually, while the unincorporated areas north of the Mississippi River and the incorporated areas of Gramercy and can expect subsidence rates of approximately 6mm annually.

### *Frequency / Probability*

Subsidence, sea level rise, and coastal land loss are ongoing hazards. Based on historical subsidence rates and land loss/gain trends, the probability of future land loss in Louisiana is 100% certain, but actual rates of subsidence and land loss/gain vary along the coast based on various meteorological, geological, and human-influenced dynamics (e.g., water/resource extraction, canal dredging, saltwater intrusion, marsh restoration projects, etc.).

*Table 2-9: Annual Probability of Coastal Land Loss in St. James Parish*

| Coastal Land Loss Probability St. James Parish | | |
|---|---|---|
| **Unincorporated St. James Parish** | **Gramercy** | **Lutcher** |
| 100% | 100% | 100% |

### *Estimated Potential Loses*

To determine the estimated potential losses, the methodology implemented in the 2014 Louisiana State Plan Update was used. In the state plan, two parameters were considered to estimate the projected increase in coastal flood losses from storm surge scenarios – global sea level rise and subsidence. A time frame of 10 years was used for evaluation of future effects of sea level rise and subsidence for comparison with current conditions. The NOAA Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model was used to estimate the maximum of maximum (MOM) storm surge elevations for a Category 1 hurricane at mean tide along the coast of Louisiana. The MOM scenario is not designed to describe the storm surge that would result from a particular event, but rather evaluates the impacts of multiple hurricane scenarios with varying forward speeds and storm track trajectories to create the maximum storm surge elevation surface that would occur given the simultaneous occurrence of all hurricane events for a given category.

There are many global sea level rise scenarios from which to select; however, within a 10-year timeframe, methods that predict accelerating sea level rise rates do not deviate significantly from straight line methods. Therefore, a linear sea level rise projection for the sea level rise occurring in 10 years (SLR2024) using a linear global sea level rise rate of 3.1 mm/year was used (IPCC, 2007), which is also in accordance with the CPRA Coastal Master Plan. This resulted in an increase of 0.1 feet, which was applied to the NOAA MOM storm surge elevation results over the model output domain.

$$SLR_{2024} = 0.0031 \frac{m}{year} x\ 10\ years$$
$$SLR_{2024} = 0.031\ meters = 0.10\ ft\ in\ 2024$$

To estimate the effects of subsidence, the elevation profile for southern Louisiana was separated into sections based on subsidence zones. The 20th percentile values for subsidence were used, in accordance with the CPRA Master Plan, and subtracted from the digital elevation model (DEM) for each zone, then re-joined to create a final subsided ground elevation layer.

To perform the economic loss assessment, depth grids were created for current conditions (SLOSH MOM Results – Current Land Elevation) and for projected 2024 conditions ([SLOSH MOM Results + 0.1 ft. sea level rise] – [Current Land Elevation – Subsidence]). HAZUS-MH was used to calculate economic loss for the current and future depth grids.

*Figure 2-9* shows the projected increase in total flood loss resulting from a SLOSH Category 1 MOM in the year 2014, with many areas, primarily in unincorporated St. James Parish, expecting an increase in losses. Some areas that would be currently unaffected by a SLOSH Category 1 MOM would be impacted in ten years based on subsidence and sea level rise projections (*Figure 2-10*).

To determine annual potential loss estimates for coastal land loss, increased exposure estimates over the next 10 years calculated using HAZUS-MH were annualized at the parish level (*Figure 2-11*). To provide an annual estimated potential loss per jurisdiction, the total loss for the census block groups within each jurisdiction were calculated. Based on hazard exposure, *Table 2-10* provides an estimate of annual potential losses for St. James Parish.

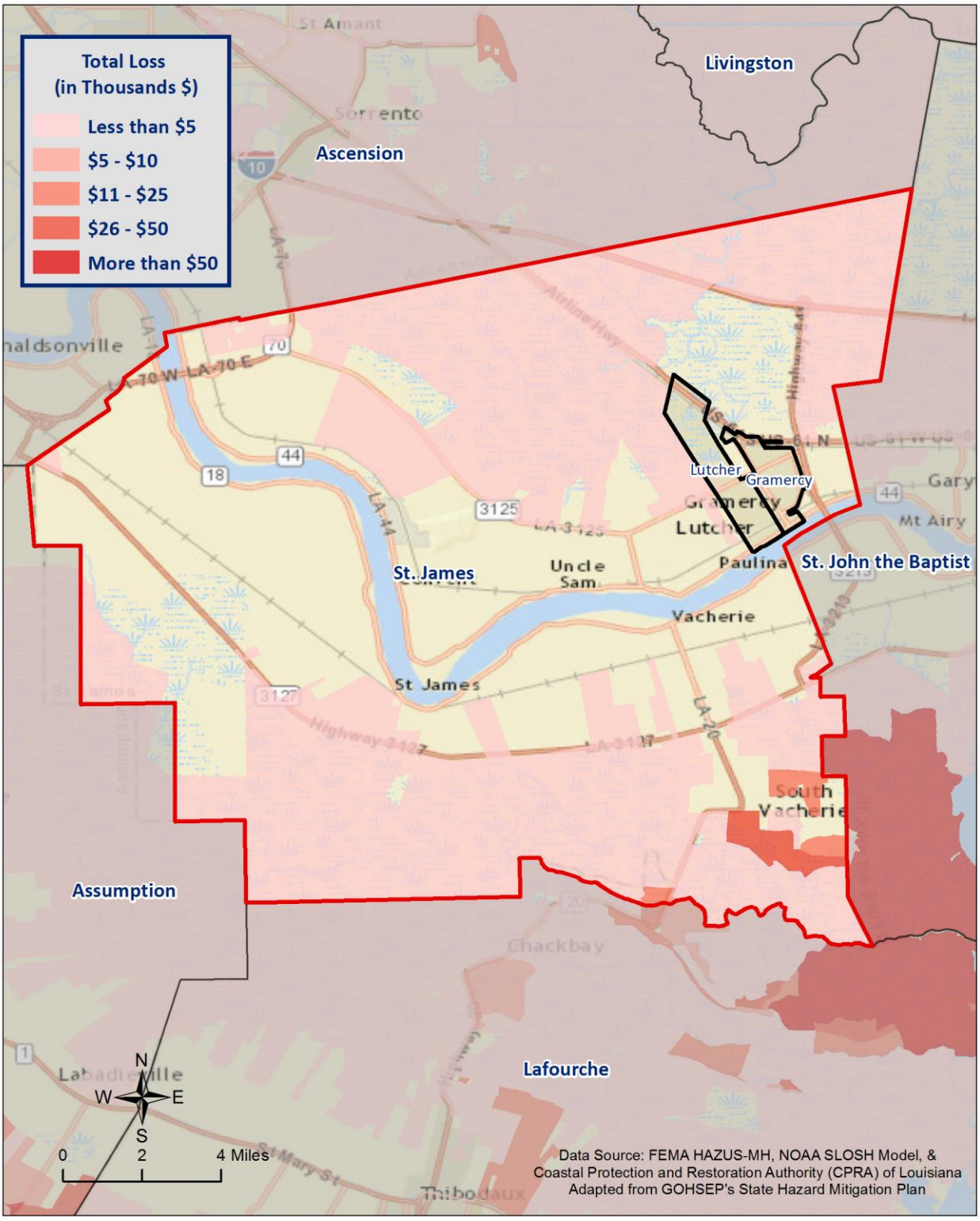



*Figure 2-9: Increase in Total Loss Estimates in 2024 by Census Block Group Based on the HAZUS-MH Flood Model and NOAA SLOSH Model*
*(Source: State of Louisiana Hazard Mitigation Plan)*

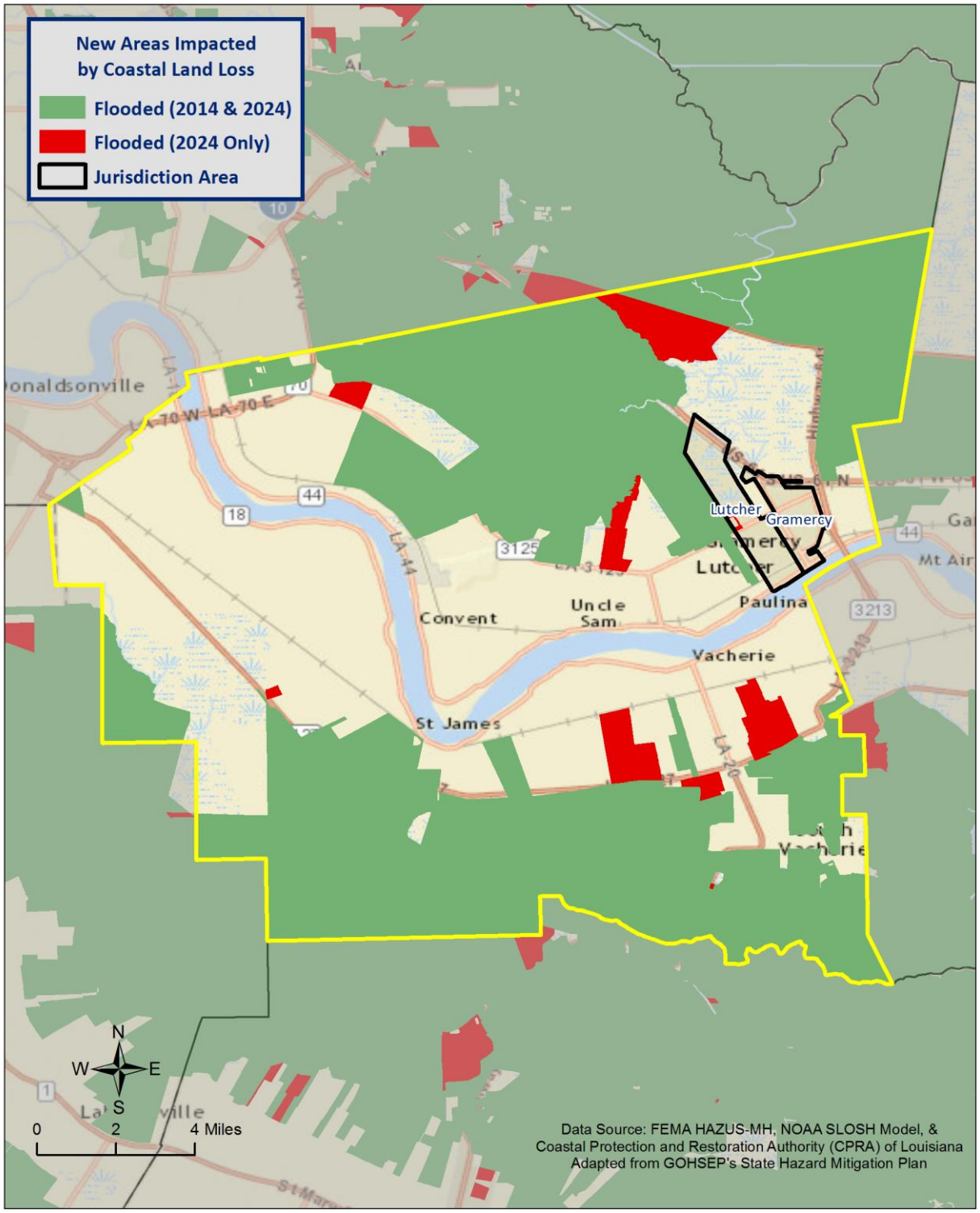



*Figure 2-10: Census Block Groups not Currently Impacted by Category 1 Hurricane Storm Surge but Expected to be Impacted in 2024 are Shown in Red*
*(Source: State of Louisiana Hazard Mitigation Plan)*

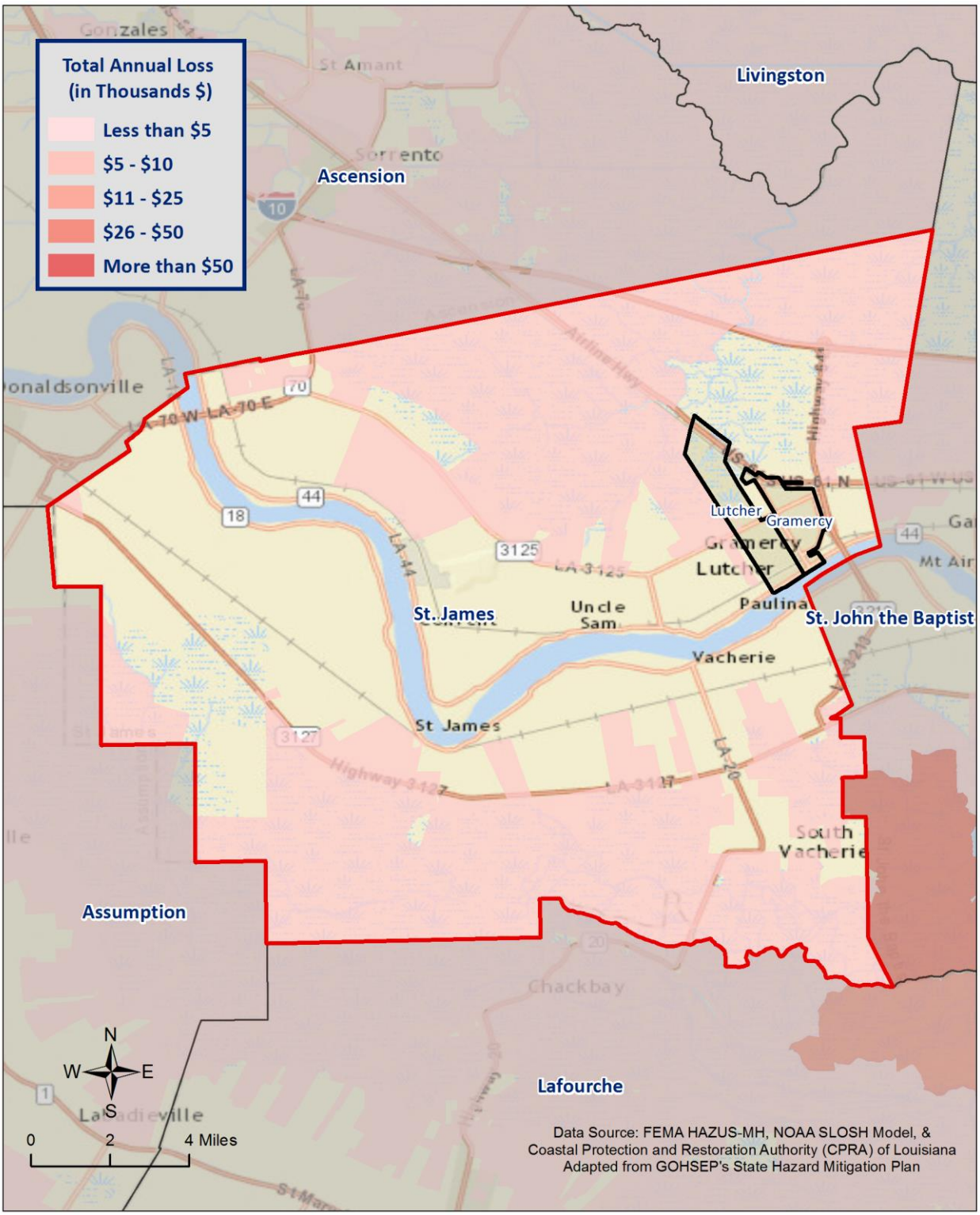



*Figure 2-11: Estimated Annual Losses for Coastal Land Loss by Census Block Group*

The following table shows the current and future exposure potential based on the HAZUS-MH 2.2 inventory database.

*Table 2-10: Estimated Annual Losses for Coastal Land Loss in St. James Parish (Source: HAZUS-MH)*

| Coastal Land Loss Estimated Annual Potential Losses for St. James Parish | | |
|---|---|---|
| Unincorporated St. James Parish | Gramercy | Lutcher |
| $11,300 | $0 | $0 |

### Threat to People

Coastal land loss can impact all demographics and age groups. Buildings located within highly vulnerable coastal land loss areas could be eventually permanently shut down and forced to re-locate. Long-term sheltering and permanent relocation could be a concern for communities that are at the highest risk for future coastal land loss. The total population within the parish that is susceptible to the effects of coastal land loss are shown in the following table.

*Table 2-11: Number of People Susceptible to Coastal Land Loss in St. James Parish (Source: Census 2010)*

| Number of People Exposed to Hurricane Hazards | | | |
|---|---|---|---|
| **Location** | **# in Community** | **# in Hazard Area** | **% in Hazard Area** |
| Parish (Unincorporated) | **14,930** | **17,482** | **12.1%** |
| Gramercy | **3,613** | **0** | **0%** |
| Lutcher | **3,559** | **0** | **0%** |
| **Total** | **22,102** | **1,807** | **8.2%** |

The HAZUS-MH Hurricane Model was used to identify populations vulnerable to coastal land loss throughout the jurisdictions in the table below:

*Table 2-12: Population Vulnerable to Coastal Land Loss in Unincorporated St. James Parish*

| St. James Parish (Unincorporated) | | |
|---|---|---|
| Category | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area | 1,807 | 12.1% |
| Persons Under 5 Years | 116 | 6.4% |
| Persons Under 18 Years | 437 | 24.2% |
| Persons 65 Years and Over | 260 | 14.4% |
| White | 893 | 49.4% |
| Minority | 914 | 50.6% |

### *Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to coastal land loss and subsidence.

## Drought

A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water, either by evaporation or transpiration through plant leaves. It is important to note that the lack of precipitation alone does not constitute drought; the season during which the precipitation is lacking has a major impact on whether drought occurs. For example, a week of no precipitation in July, when the solar energy to evaporate water and vegetation's need for water to carry on photosynthesis are both high, may trigger a drought, while a week of no precipitation in January may not initiate a drought.

Drought is a unique and insidious hazard. Unlike other natural hazards, no specific threshold of "dryness" exists for declaring a drought. In addition, the definition of drought depends on stakeholder needs. For instance, the onset (and demise) of agricultural drought is quick, as crops need water every few days; once they get rainfall, they improve. But hydrologic drought sets in (and is alleviated) only over longer time periods. A few dry days will not drain a reservoir, but a few rain showers cannot replenish it either. Moreover, different geographical regions define drought differently based on the deviation from local, normal precipitation. Drought can occur anywhere, triggered by changes in the local-to-regional-scale atmospheric circulation over an area, or by broader-scale circulation variations such as the expansion of semi-permanent oceanic high-pressure systems or the stalling of an upper-level atmospheric ridge in place over a region. The severity of a drought depends upon the degree and duration of moisture deficiency, as well as the size of the affected area. Periods of drought also tend to be associated with other hazards, such as wildfires and/or heat waves. Lastly, drought is a slow onset event, causing less direct—but tremendous indirect—damage. Depletion of aquifers, crop loss, and livestock and wildlife mortality rates are examples of direct impacts. Since the groundwater found in aquifers is the source of about 38% of all county and city water supplied to households (and comprises 97% of the water for all rural populations that are not already supplied by cities and counties), droughts can potentially have direct, disastrous effects on human populations. The indirect consequences of drought, such as unemployment, reduced tax revenues, increased food prices, reduced outdoor recreation opportunities, higher energy costs as water levels in reservoirs decrease and consumption increases, and water rationing, are not often fully known. This complex web of impacts causes drought to affect people and economies well beyond the area physically experiencing the drought.

This hazard is often measured using the Palmer Drought Severity Index (PDSI, also known operationally as the Palmer Drought Index). The PDSI, first developed by Wayne Palmer in a 1965 paper for the U.S. Weather Bureau, measures drought through recent precipitation and temperature data with regard to a basic supply-and-demand model of soil moisture. It is most effective in long-term calculations. Three other indices used to measure drought are the Palmer Hydrologic Drought Index (PHDI), the Crop Moisture Index (CMI), which is derived from the PDSI, and the Keetch-Byram Drought Index (KBDI), created by John Keetch and George Byram in 1968 for the U.S. Forest Service. The KBDI is used mainly for predicting the likelihood of wildfire outbreaks. As a compromise, the PDSI is used most often for droughts since it is a medium-response drought indicator. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. *Table 2-13* displays the range and Palmer classifications of the PDSI index. *Figure 2-12* displays the current drought monitor for the state of Louisiana and its parishes.

*Table 2-13: Palmer Drought Severity Index Classification and Range*

| Range | Palmer Classifications |
|---|---|
| 4.0 or more | Extremely Wet |
| 3.0 to 3.9 | Very Wet |
| 2.0 to 2.9 | Moderately Wet |
| 1.0 to 1.99 | Slightly Wet |
| 0.5 to 0.99 | Incipient Wet Spell |
| 0.49 to -0.49 | Near Normal |
| -0.5 to -0.99 | Incipient Dry Spell |
| -1.0 to -1.99 | Mild Drought |
| -2.0 to -2.99 | Moderate Drought |
| -3.0 to -3.99 | Severe Drought |
| -4.0 or less | Extreme Drought |

The PDSI best measures the duration and intensity of drought-inducing circulation patterns at a somewhat long-term time scale, although not as long-term as the PHDI. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns in addition to the effects of cumulative patterns of previous months. Although weather patterns can change almost overnight from a long-term drought pattern to a long-term wet pattern, as a medium-response indicator, the PDSI responds relatively rapidly. Data compiled by the National Drought Mitigation Center indicates normal conditions exist in St. James Parish at the time this plan went to publication (*Figure 2-12*).

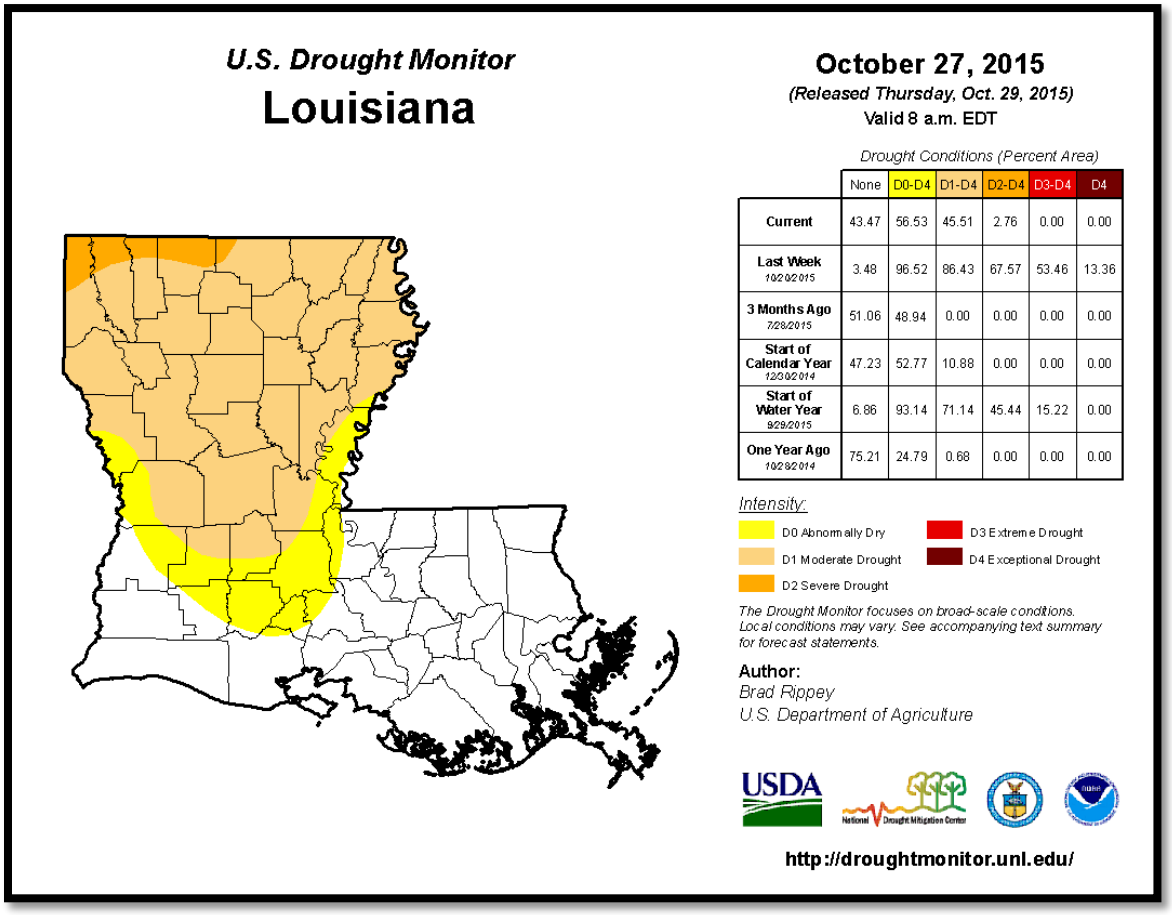



*Figure 2-12: United States Drought Monitor for the State of Louisiana and its Parishes (Source: The National Drought Mitigation Center)*

### *Location*

Drought typically impacts a region and not one specific parish or jurisdiction. While the entire planning area can experience drought, the major impact of a drought event in St. James Parish is on the agricultural community.

### *Previous Occurrences / Extents*

The SHELDUS database reports a total of two drought events occurring within the boundaries of St. James Parish between the years of 1989 to 2014. *Table 2-14* identifies the date of occurrence, estimated crop damage, and severity of the events that have occurred in St. James Parish. Based on previous occurrences, and in accordance with the Palmer Drought Index, the worst case scenario for drought in St. James Parish would be a severe drought event.

*Table 2-14: Drought Events with Crop Damage Totals for St. James Parish (Source: SHELDUS)*

| Date | Crop Damage | Palmer Classification |
|---|---|---|
| August 1998 | $5,034,626 | Severe Drought |
| December 2000 | $6,072,695 | Severe Drought |

### *Frequency / Probability*

Based on previous occurrences of two drought events in 25 years, the probability of drought occurrence in the planning area in any given year is 8%.

### *Estimated Potential Losses*

According to the SHELDUS database, there have been two drought events that have caused some level of crop damage. The total agricultural damage from these events is $11,107,321 with an average cost of $5,553,661 per drought event. When annualizing the total cost over the 25-year record, total annual losses based on drought is estimated to be $444,293. *Table 2-15* presents an analysis of agricultural exposure that is susceptible to drought by major crop type for St. James Parish.

*Table 2-15: Agricultural Exposure by Crop Type for Drought in St. James Parish (Source: LSU Ag Center 2014 Parish Totals)*

| Agricultural Exposure by Type for Drought | | | | | | |
|---|---|---|---|---|---|---|
| **Sugarcane** | **Tomato** | **Mustard** | **Cabbage** | **Cucumber** | **Potato** | **Total** |
| $28,714,806 | $352,800 | $271,250 | $102,564 | $5,925 | $9,625 | $29,456,970 |

There have been no reported injuries or deaths as a direct result to drought in St. James Parish.

## Expansive Soils

Soils and soft rock that tend to swell or shrink due to changes in moisture content are commonly known as expansive soils. Changes in soil volume present a hazard primarily to structures built on top of expansive soils. The most extensive damage occurs to highways and streets.

"Clay" is defined as a natural, earthy, fine-grained material that develops plasticity when mixed with a limited amount of water. Swelling clay is clay that is capable of absorbing large quantities of water, thus increasing greatly in volume.

Variations in moisture content and volume changes are greatest in clays found in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. It is in these regions, which include many of the Southern, Central, and Western States, that swelling of clays resulting from climatic fluctuations cause the most severe engineering problems.

### *Location*

The availability of data on expansive soils varies greatly. In or near metropolitan centers and at dam sites, abundant information on the amount of clay generally is available. However, for large areas of the United States, little information is reported other than field observations of the physical characteristics of clay of a particular stratigraphic unit. Therefore, fixed criteria for determining the swelling potential have not been devised. However, one method that was devised in 1989 was based mostly on numerous published descriptions of the physical and mineralogical properties of clays. Using this classification system, it is evident that the southeastern portion of Louisiana, primarily along the Mississippi River from East Baton Rouge Parish to the mouth of the Mississippi River, is abundant with high swelling potential clays. Clays in the Quaternary Alluvium of the lower Mississippi River valley in Louisiana are reported to be of the "montmorillonite type". Clayey soils of the alluvial valley a have high "shrink-swell capacity", and foundation problems in the area are associated with changing water levels and the instability of clayey soils. Foundation failures in alluvial deposits of the Mississippi River valley are common. *Figure 2-13* shows the primary locations of swelling clays in Louisiana and *Figure 2-14* shows the areas within the planning area that are at risk to expansive soils.

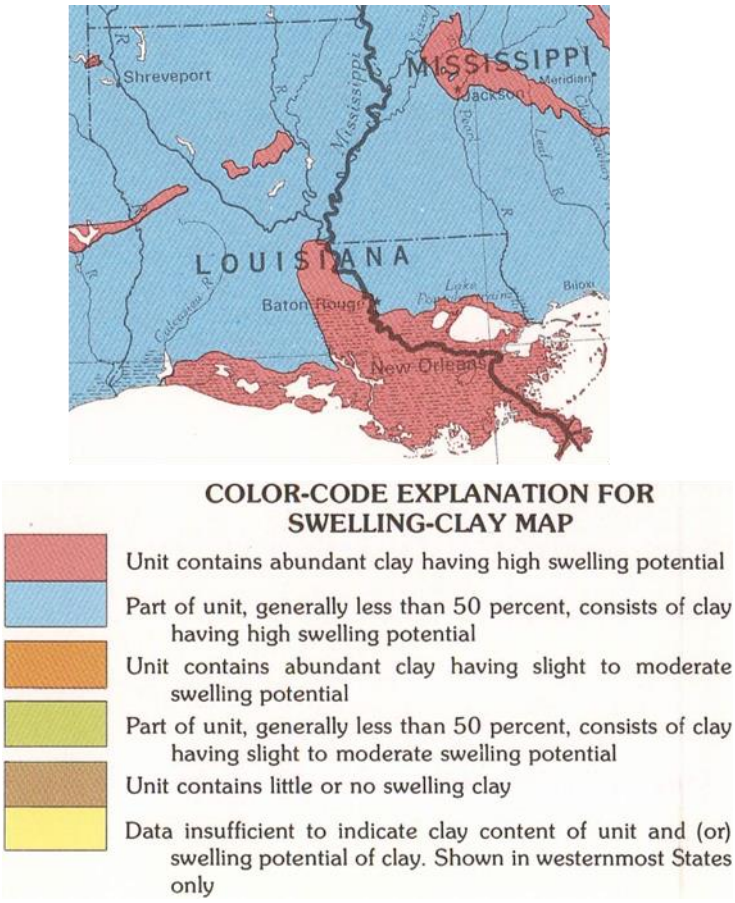



*Figure 2-13: Location of Swelling Clays in Louisiana*
*(Source: "Swelling Clays Map of the Conterminous United States", W.W. Olive, A.F. Chleborad, C.W. Frahme, J. Schlocker, R.R. Schneider, and R.L. Shuster; 1989)*

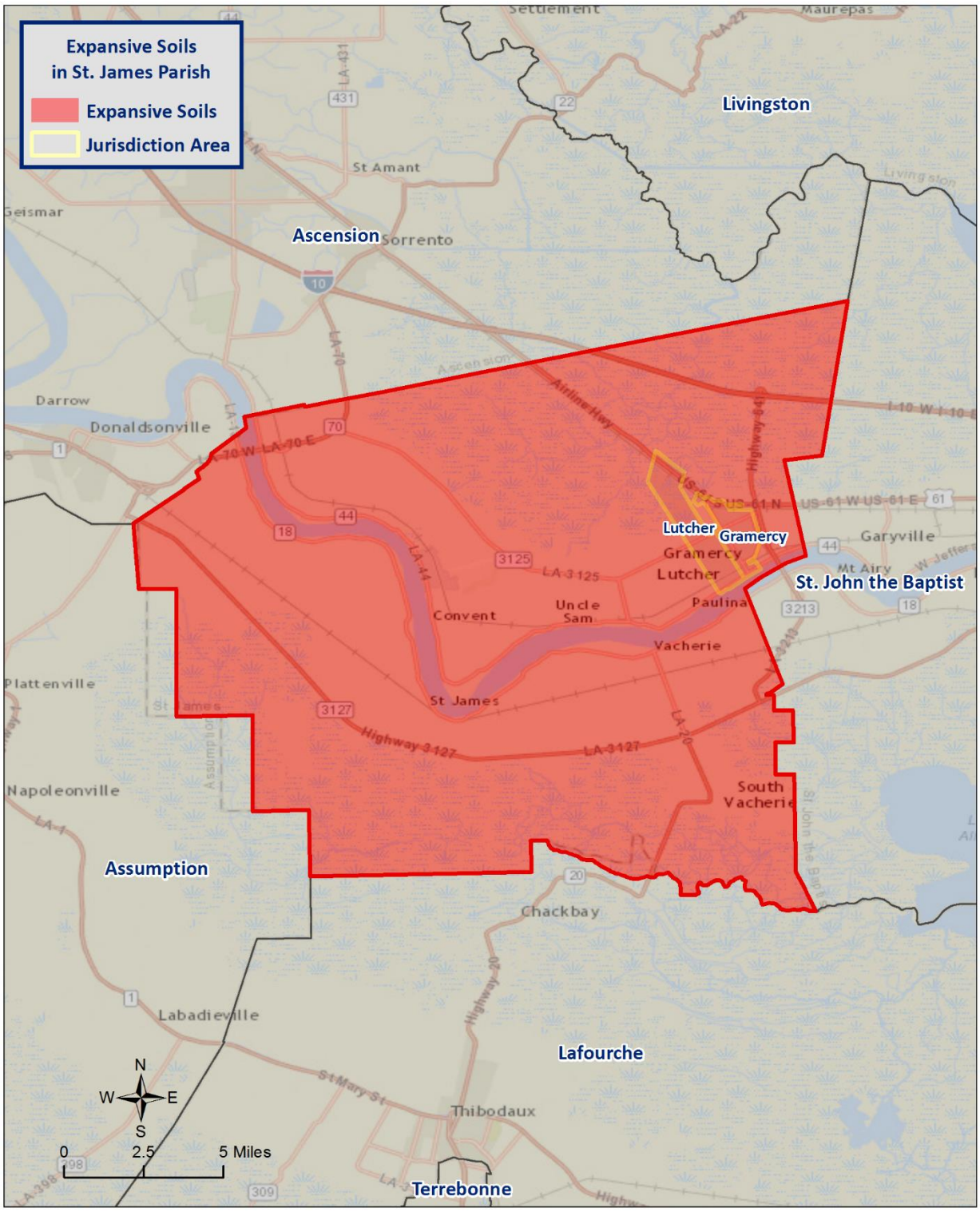



*Figure 2-14: Location of Swelling Clays in St. James Parish*
*(Source: "Swelling Clays Map of the Conterminous United States", W.W. Olive, A.F. Chleborad, C.W. Frahme, J. Schlocker, R.R. Schneider, and R.L. Shuster; 1989)*

Based on the map in *Figure 2-14*, the entire parish is susceptible to expansive soils.

### *Previous Occurrences / Extent*

The soils in St. James Parish consist primarily of Barbary association (44% of the parish, primarily in low, ponder backswamps), Commerce silt loam (13% of the parish), and Sharkey clay, silty clay loam (15% of the parish, collectively), and other soils of the Sharkey association, which are frequently flooded. The anticipated maximum swell volume for the soils is 10.5% and the anticipated minimum swell volume is 5.6% based on an average soil plasticity index (National Cooperative Soil Survey) and the methodology established by the U.S. Army Engineer Waterways Experiment Station.

There is insufficient historical data for previous occurrences of expansive soils in St. James Parish.

### *Frequency / Probability*

Based on the map in *Figure 2-14*, expansive soils dominate throughout St. James Parish planning area and an annual chance of occurrence is calculated at 100%.

### *Estimated Potential Losses*

Because SHELDUS and NCDC does not track expansive soils, it is difficult to estimate the annualized losses that have occurred within the parish. The following table presents and analysis of building exposure that are susceptible to expansive soils by general occupancy type for St. James Parish.

*Table 2-16: Building Exposure by General Occupancy Type for Expansive Soils in St. James Parish (Source: FEMA's Hazus 2.2)*

| Building Exposure by General Occupancy Type for Expansive Soils Exposure Types ($1,000) | | | | | | |
|---|---|---|---|---|---|---|
| **Residential** | **Commercial** | **Industrial** | **Agricultural** | **Religion** | **Government** | **Education** |
| 1,706,357 | 193,711 | 96,116 | 8,284 | 39,122 | 20,725 | 55,987 |

### *Vulnerability*

See Appendix C for parish building exposure to expansive soils hazard.

## Flooding

A flood is the overflow of water onto land that is usually not inundated. The National Flood Insurance Program (NFIP) defines a flood as:

> A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Factors influencing the type and severity of flooding include natural variables such as precipitation, topography, vegetation, soil texture, and seasonality, as well as anthropogenic factors such as urbanization (extent of impervious surfaces), land use (agricultural and forestry tend to remove native vegetation and accelerate soil erosion), and the presence of flood-control structures such as levees and dams.

Excess precipitation produced from thunderstorms or hurricanes is often the major initiating condition for flooding, and Louisiana can have high rainfall totals at any time of day or year. During the cooler months, slow-moving frontal weather systems produce heavy rainfalls, while the summer and autumn seasons produce major precipitation in isolated thunderstorm events (often on warm afternoons) that may lead to localized flooding. During these warmer seasons, floods are overwhelmingly of the flash flood variety, as opposed to the slower-developing river floods caused by heavy stream flow during the cooler months.

In cooler months, particularly in the spring, Louisiana is in peak season for severe thunderstorms. The fronts that cause these thunderstorms often stall while passing over the state, occasionally producing rainfall totals exceeding ten inches within a period of a few days. Since soil tends to be nearly saturated at this time (due to relatively low overall evaporation rates), spring typically becomes the period of maximum stream flow across the state. Together, these characteristics increase the potential for high water, with low-lying, poorly drained areas being particularly susceptible to flooding during these months.

In Louisiana, six specific types of flooding are of main concern: riverine, flash, ponding, backwater, urban, and coastal.

- **Riverine flooding** occurs along a river or smaller stream. It is the result of runoff from heavy rainfall or intensive snow or ice melt. The speed with which riverine flood levels rise and fall depends not only on the amount of rainfall, but even more on the capacity of the river itself, as well as the shape and land cover of its drainage basin. The smaller the river, the faster that water levels rise and fall. Thus, the Mississippi River levels rise and fall slowly due to its large capacity. Generally, elongated and intensely-developed drainage basins will reach faster peak discharges and faster falls than circular-shaped and forested basins of the same area.
- **Flash flooding** occurs when locally intense precipitation inundates an area in a short amount of time, resulting in local stream flow and drainage capacity being overwhelmed.
- **Ponding** occurs when concave areas (e.g., parking lots, roads, and clay-lined natural low areas) collect water and are unable to drain.

- **Backwater flooding** occurs when water slowly rises from a normally unexpected direction where protection has not been provided. A model example is the flooding that occurred in LaPlace during Hurricane Isaac in 2012. Although the town was protected by a levee on the side facing the Mississippi River, floodwaters from Lake Maurepas and Lake Pontchartrain crept into the community on the side of town opposite the Mississippi River.
- **Urban flooding** is similar to flash flooding but is specific to urbanized areas. It takes place when storm water drainage systems cannot keep pace with heavy precipitation, and water accumulates on the surface. Most urban flooding is caused by slow-moving thunderstorms or torrential rainfall.
- **Coastal flooding** can appear similar to any of the other flood types, depending on its cause. It occurs when normally dry coastal land is flooded by seawater, but may be caused by direct inundation (when the sea level exceeds the elevation of the land), overtopping of a natural or artificial barrier, or the breaching of a natural or artificial barrier (i.e., when the barrier is broken down by the sea water). Coastal flooding is typically caused by storm surge, tsunamis, or gradual sea level rise.

Historically, in St. James Parish, most of these flooding events have historically been observed. For purposes of this assessment, ponding, flash flood, and urban flooding are considered to be flooding as a result of storm water from heavy precipitation thunderstorms

Based on stream gauge levels and precipitation forecasts, the National Weather Service (NWS) posts flood statements, watches, and warnings. The NWS issues the following weather statements with regard to flooding:

- **Flood Categories**
  - Minor Flooding: Minimal or no property damage, but possibly some public threat.
  - Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
  - Major Flooding: Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
  - Record Flooding: Flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.

- **Flood Warning**
  - Issued along larger streams when there is a serious threat to life or property.

- **Flood Watch**
  - Issued when current and developing hydrometeorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.

Floods are measured mainly by probability of occurrence. A 10-year flood event, for example, is an event of small magnitude (in terms of stream flow or precipitation) but with a relatively high annual probability of recurrence (10%). A 100-year flood event is larger in magnitude, but it has a smaller chance of recurrence (1%). A 500-year flood is significantly larger than both a 100-year event and a 10-year event, but it has a lower probability than both to occur in any given year (0.2%). It is important to understand that an X-year flood event does not mean an event of that magnitude occurs only once in X years. Instead,

it means that on average, we can expect a flood event of that magnitude to occur once every X years. Given that such statistical probability terms are inherently difficult for the general population to understand, the Association of State Floodplain Managers (ASFPM) promotes the use of more tangible expressions of flood probability. As such, the ASFPM also expresses the 100-year flood event as having a 25% chance of occurring over the life of a 30-year mortgage.

It is essential to understand that the magnitude of an X-year flood event for a particular area depends on the source of flooding and the area's location. The size of a specific flood event is defined through historic data of precipitation, flow, and discharge rates. Consequently, different 100-year flood events can have very different impacts. The 100-year flood event in two separate locations have the same likelihood to occur, but they do not necessarily have the same magnitude. For example, a 100-year event for the Mississippi River means something completely different in terms of discharge values ($ft^3/s$) than for the Amite River. Not only are the magnitudes of 100-year events different between rivers, they can be different along any given river. A 100-year event upstream is different from one downstream due to the change of river characteristics (volume, discharge, and topography). As a result, the definition of what constitutes a 100-year flood event is specific to each location, river, and time, since floodplain and river characteristics change over time. Finally, it is important to note that each flood event is unique. Two hypothetical events at the same location, given the same magnitude of stream flow, may still produce substantially different impacts if there were different antecedent moisture characteristics, different times of day of occurrence (which indicates the population's probable activities at the flood's onset), or other characteristic differences.

The 100-year flood event is of particular significance since it is the regulatory standard that determines the obligation (or lack thereof) to purchase flood insurance. Flood insurance premiums are set depending on the flood zone, as modeled by NFIP Rate Maps. The NFIP and the Federal Emergency Management Agency (FEMA) suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-15*.

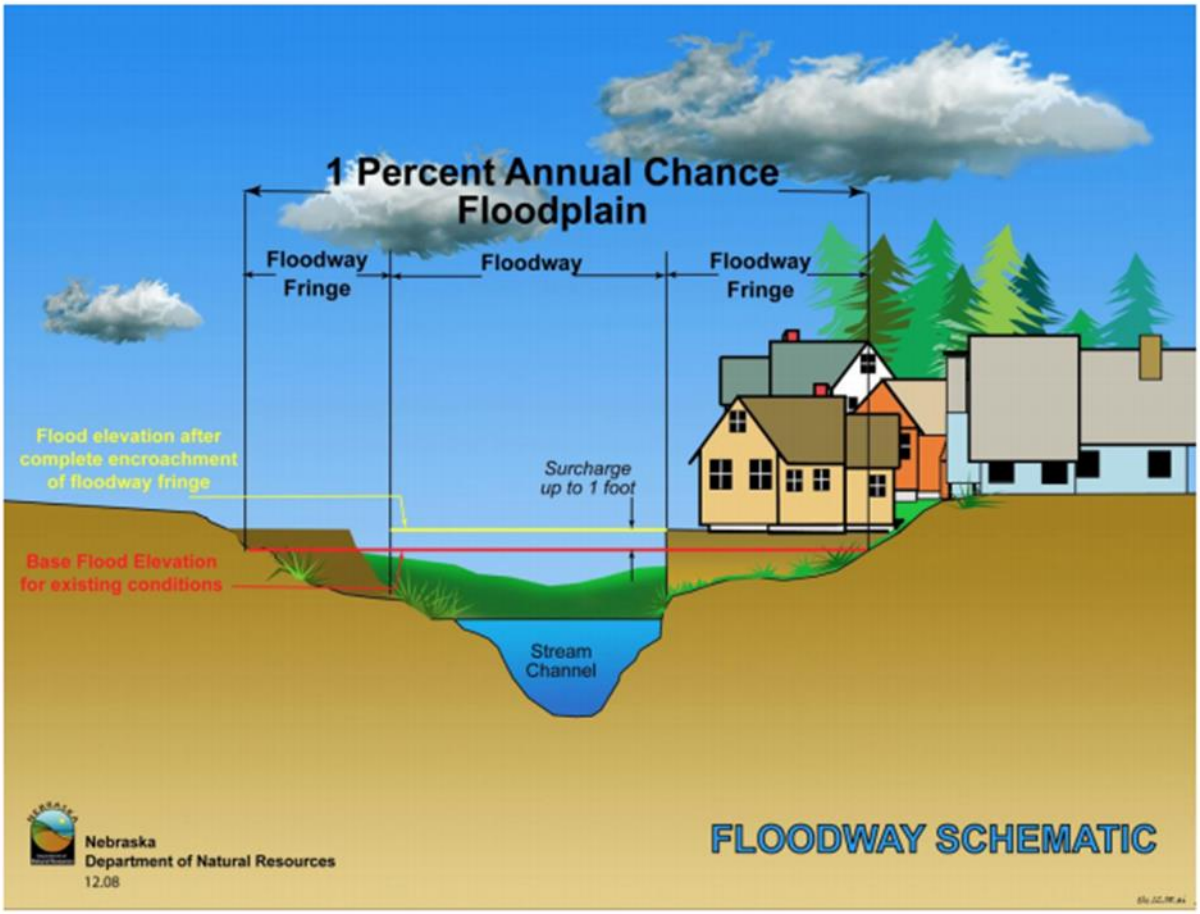



*Figure 2-15: Schematic of 100-Year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.*
*(Source: Nebraska Department of Natural Resources)*

A SFHA is the land area covered by the floodwaters of the base flood (red line in *Figure 2-15*), where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

### *Property Damage*

The depth and velocity of flood waters are the major variables in determining property damage. Flood velocity is important because the faster water moves, the more pressure it puts on a structure and the more it will erode stream banks and scour the earth around a building's foundation. In some situations, deep and fast moving waters can push a building off its foundation. Structural damage can also be caused by the weight of standing water (hydrostatic pressure).

Another threat to property from a flood is called "soaking". When soaked, many materials change their composition or shape. Wet wood will swell, and if dried too quickly, will crack, split, or warp. Plywood can come apart and gypsum wallboard can deteriorate if it is bumped before it has time to completely dry. The longer these materials are saturated, the more moisture, sediment, and pollutants they absorb.

Soaking can also cause extensive damage to household goods. Wooden furniture may become warped, making it unusable, while other furnishings such as books, carpeting, mattresses, and upholstery are usually not salvageable. Electrical appliances and gasoline engines will flood, making them worthless until they are professionally dried and cleaned.

Many buildings that have succumbed to flood waters may look sound and unharmed after a flood, but water has the potential to cause severe property damage. Any structure that experiences a flood should be stripped, cleaned, and allowed to dry before being reconstructed. This can be an extremely expensive and time consuming effort.

### *Repetitive Loss Properties*

Repetitive loss structures are structures covered by a contract for flood insurance made available under the NFIP that:

a. Have incurred flood-related damage on two occasions, in which the cost of the repair, on average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
b. At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Severe Repetitive Loss (SRL) is defined by the Flood Insurance Reform Act of 2004 and updated in the Biggert-Waters Flood Insurance Reform Act of 2012. For a property to be designated SRL, the following criteria must be met:

a. It is covered under a contract for flood insurance made available under the NFIP; and
b. It has incurred flood related damage –
    1) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or
    2) For which at least two separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Figures regarding repetitive loss structures for St. James Parish are provided in the table below:

*Table 2-17: Repetitive Loss Structures for St. James Parish*

| Jurisdiction | Number of Structures | Residential | Commercial | Government | Total Claims | Total Claims Paid | Average Claim Paid |
|---|---|---|---|---|---|---|---|
| St. James Parish (Unincorporated) | 10 | 9 | 1 | 0 | 25 | 629,419 | $25,177 |
| Gramercy | 0 | 0 | 0 | 0 | 0 | $0 | $0 |
| Lutcher | 1 | 0 | 1 | 0 | 3 | $5,157 | $1,719 |
| **Total** | 11 | 9 | 2 | 0 | 28 | $634,576 | $22,663 |

Of the 11 repetitive loss properties, 10 were able to be geocoded in order to provide an overview of where the repetitive loss structures were located throughout the parish. *Figure 2-16* shows the approximate location of the 10 structures, while *Figure 2-17* shows where the highest concentration of repetitive loss structures are located. Through the repetitive loss map, it is clear that the primary concentrated area of repetitive loss structures is focused in the unincorporated areas of the parish.

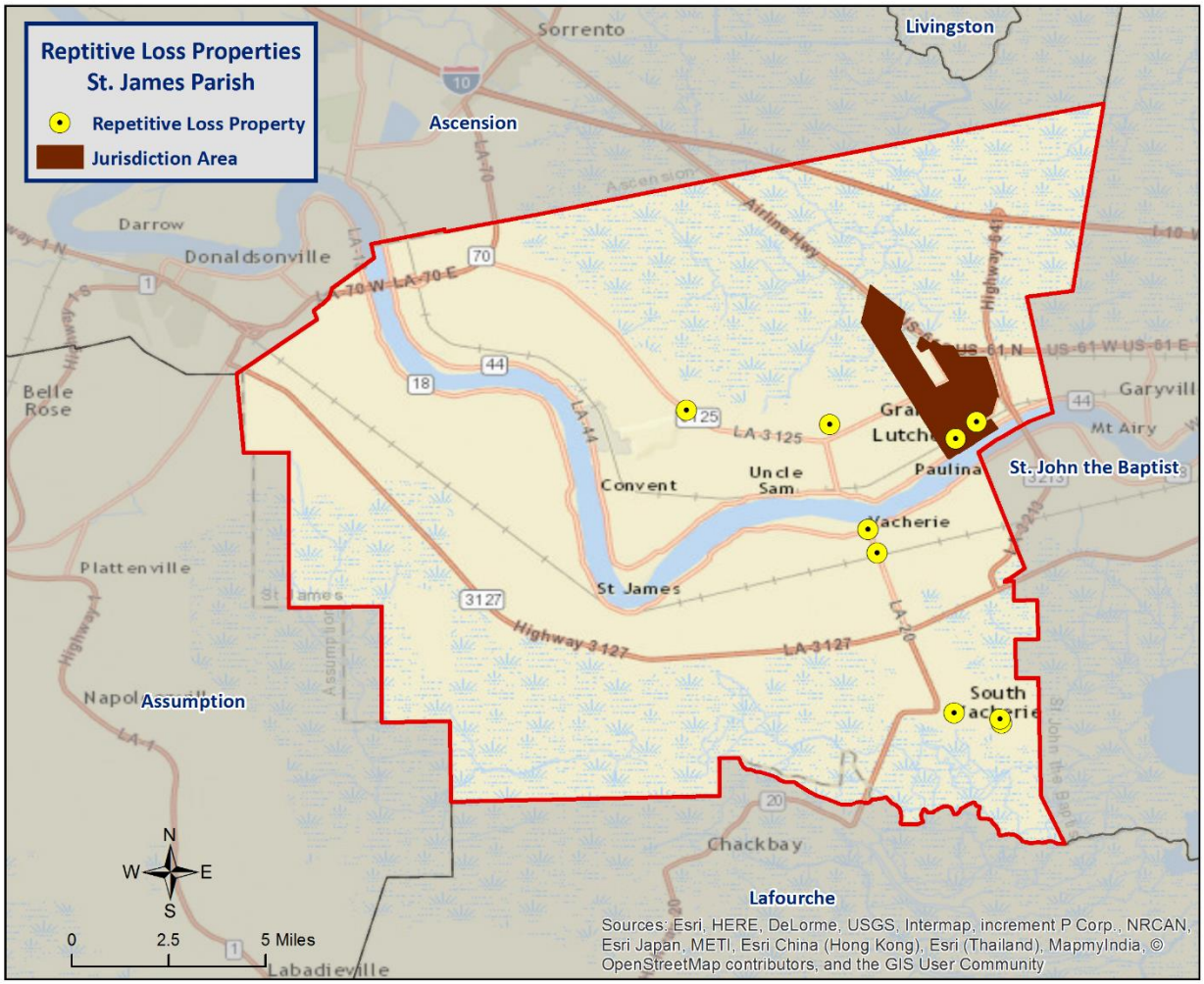



*Figure 2-16: Repetitive Loss Properties in St. James Parish*

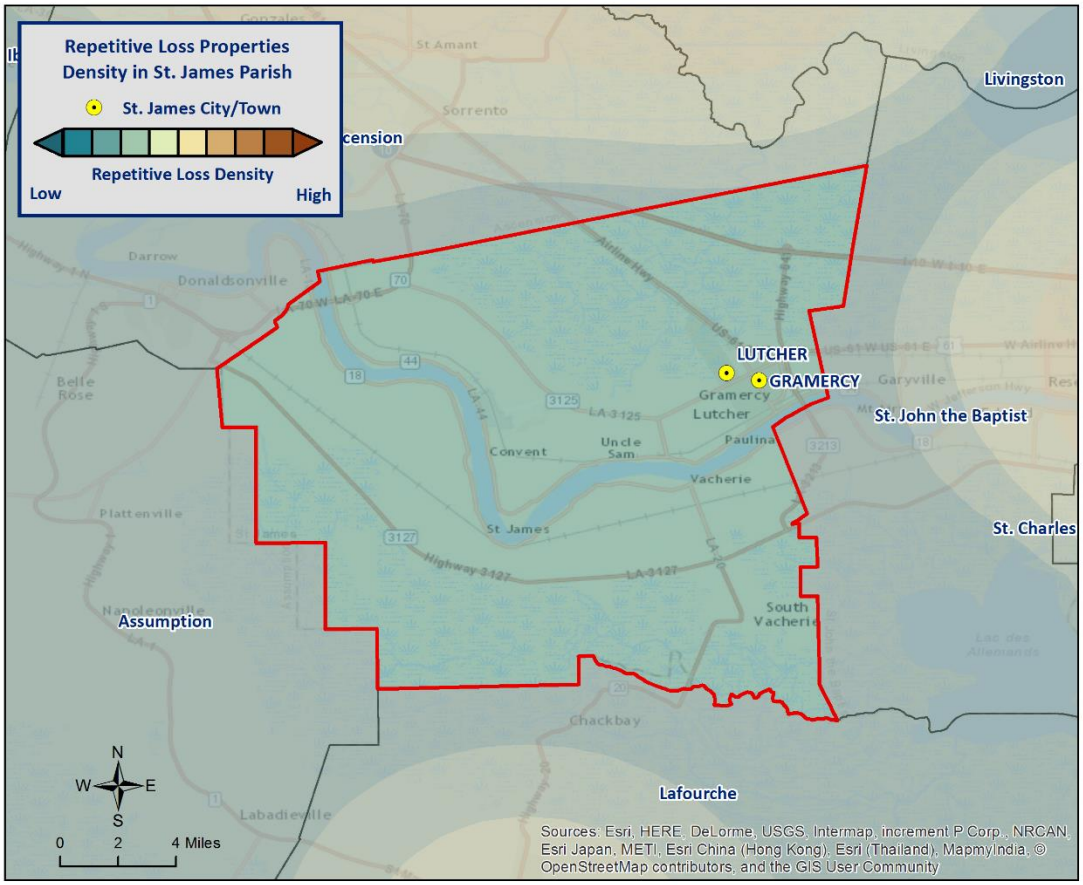



*Figure 2-17: Repetitive Loss Property Densities in St. James Parish*

### *National Flood Insurance Program*

Flood insurance statistics indicate that St. James Parish has 1,479 flood insurance policies with the NFIP, with total annual premiums of $639,478. St. James Parish and the towns of Gramercy and Lutcher are all participants in the NFIP. St. James Parish and each of the incorporated jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, and will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for St. James Parish are provided in the tables to follow.

*Table 2-18: Summary of NFIP Policies for St. James Parish*

| Location | No. of Insured Structures | Total Insurance Coverage Value | Annual Premiums Paid | No. of Insurance Claims Filed Since 1978 | Total Loss Payments |
|---|---|---|---|---|---|
| St. James Parish (Unincorporated) | 1,010 | $278,782,600 | $453,441 | 145 | $2,527,878 |
| Gramercy | 224 | $62,447,000 | $86,322 | 27 | $1,275,586 |
| Lutcher | 245 | $71,217,800 | $99,715 | 37 | $1,510,510 |
| **Total** | 1,479 | $412,447,400 | $639,478 | 209 | $5,313,974 |

*Table 2-19: Summary of Community Flood Maps for St. James Parish*

| CID | Community Name | Initial FHBM Identified | Initial FIRM Identified | Current Effective Map Date | Date Joined the NFIP | Tribal |
|---|---|---|---|---|---|---|
| 220261# | St. James Parish | 5/24/1977 | 7/13/1982 | 7/4/2011 | 7/13/1982 | No |
| 220162# | Gramercy, Town of | 5/3/1974 | 1/24/1978 | 7/4/2011 | 1/24/1978 | No |
| 220248# | Lutcher, Town of | 5/3/1974 | 4/24/1979 | 7/4/2011 | 4/24/1979 | No |

According to the Community Rating System (CRS) list of eligible communities dated June 1, 2014, St. James Parish and the town of Lutcher participate in the CRS, while the town of Gramercy does not participate.

*Table 2-20: List of Areas within St. James Parish that Participate in the Community Rating System*

| Community Number | Name | CRS Entry Date | Current Effective Date | Current Class | % Discount for SFHA | % Discount for Non-SFHA | Status |
|---|---|---|---|---|---|---|---|
| 220261 | St. James Parish | 10/1/1991 | 5/1/2012 | 7 | 15 | 5 | C |
| 220248 | Lutcher, Town of | 10/1/1992 | 10/1/1992 | 9 | 5 | 5 | C |

### *Threat to People*

Just as with property damage, depth and velocity are major factors in determining the threat posed to people by flooding. It takes very little depth or velocity for flood waters to become dangerous. A car will float in less than two feet of moving water, and can be swept downstream into deeper waters, trapping passengers within the vehicle. Victims of flooding have often put themselves in perilous situations by entering flood waters that they believe to be safe, or by ignoring travel advisories.

Major health concerns are also associated with floods. Flood waters can transport materials such as dirt, oil, animal waste, and chemicals (e.g., farm, lawn, and industrial) that may cause illnesses of various degrees when coming in contact with humans. Flood waters can also infiltrate sewer lines and inundate wastewater treatment plants, causing sewage to backup and creating a breeding ground for dangerous bacteria. This infiltration may also cause water supplies to become contaminated and undrinkable.

### *Flooding in St. James Parish*

By definition, flooding is caused when an area receives more water than the drainage system can convey. The following is a synopsis of the types of flooding that St. James Parish experiences.

**Flash Flooding:** Flash flooding is characterized by a rapid rise in water level, high velocity, and large amounts of debris. It is capable of uprooting trees, undermining buildings and bridges, and scouring new channels. Major factors in flash flooding are the high intensity and short duration of rainfall, as well as the steepness of watershed and stream gradients.

**Local Drainage or High Groundwater Levels:** Locally heavy precipitation may produce flooding in areas other than delineated floodplains or along recognizable drainage channels. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems.

**Backwater Flooding:** Backwater flooding is normally associated with riverine flooding and connotes minimal velocity. All low lying areas are at risk. A heavy rainfall event coupled with a swollen river, canal, bayou, or marsh hinders drainage outflow, causing backwater flooding to the same areas susceptible to storm surge.

**Riverine Flooding:** Riverine flooding, by definition, is river-based. Most of the riverine flooding problems occur when the Mississippi River crests at flood stage levels, causing extensive flooding in low-lying areas.

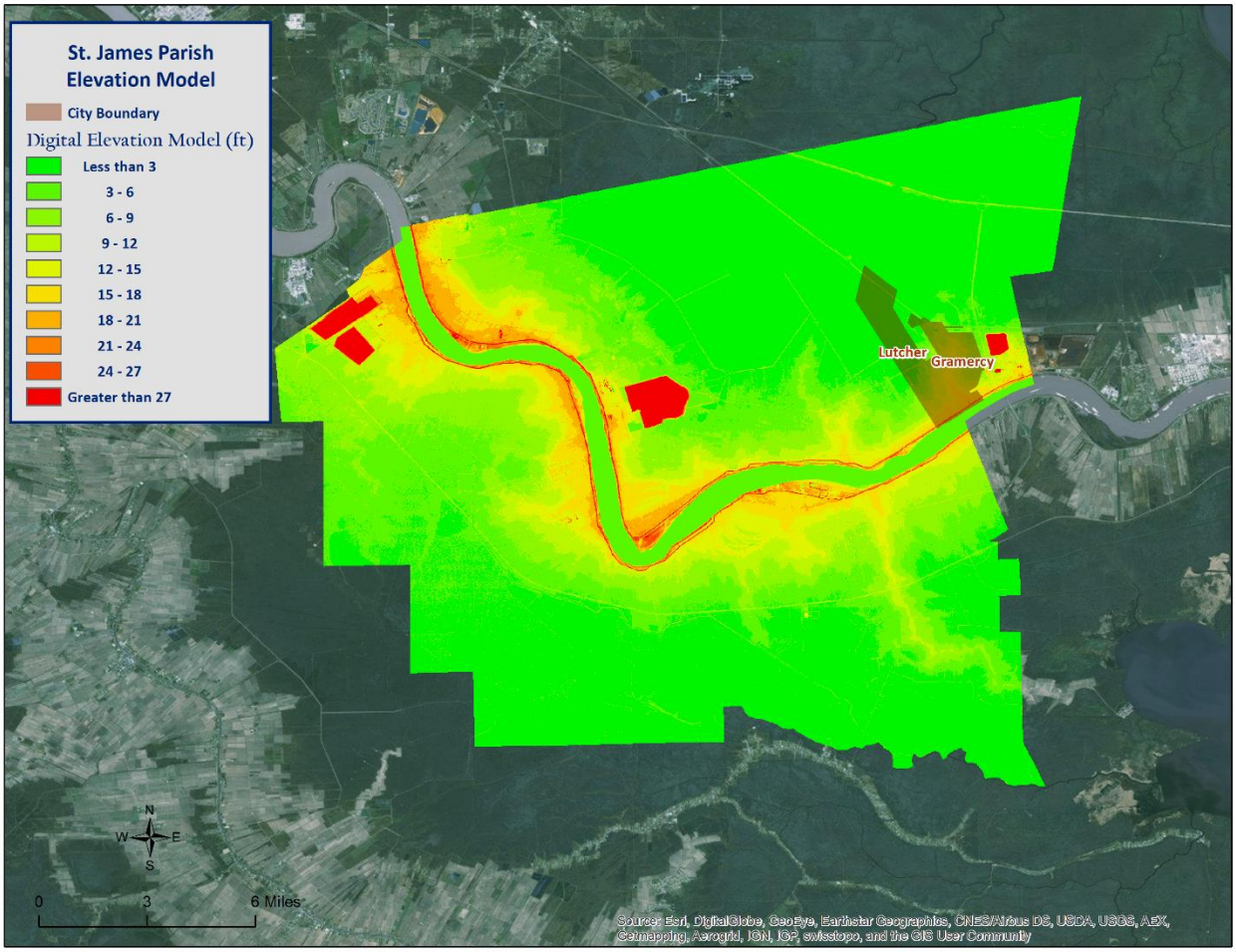



*Figure 2-18: Elevation throughout St. James Parish*

Looking at the digital elevation model (DEM) in the figure above for St. James Parish is instructive in visualizing where the low lying and high risk areas are for the parish. Elevations in the parish range from near sea level to 30 feet. The highest elevations in the parish are approximately 30 feet, located in the unincorporated areas of the parish. These higher elevations mainly concentrated along the banks of the

Mississippi River and are not common for the majority of the area. The incorporated areas of Lutcher and Gramercy both have an average elevation of approximately 16 feet.

### Location

St. James Parish is located within the Lake Pontchartrain Basin (east bank) and the Barataria Basin (west bank). The flooding that does occur in St. James Parish is primarily experienced in the alluvial valley, where drainage is poor and where most of the population centers and agricultural development is located. There are two main drainage outlets for St. James Parish. The Blind River drains the east bank of the parish and Bayou Chevreuil drains the west bank of the parish.

The following are enlarged maps of the incorporated areas showing the areas within each jurisdiction that are at risk of flooding:

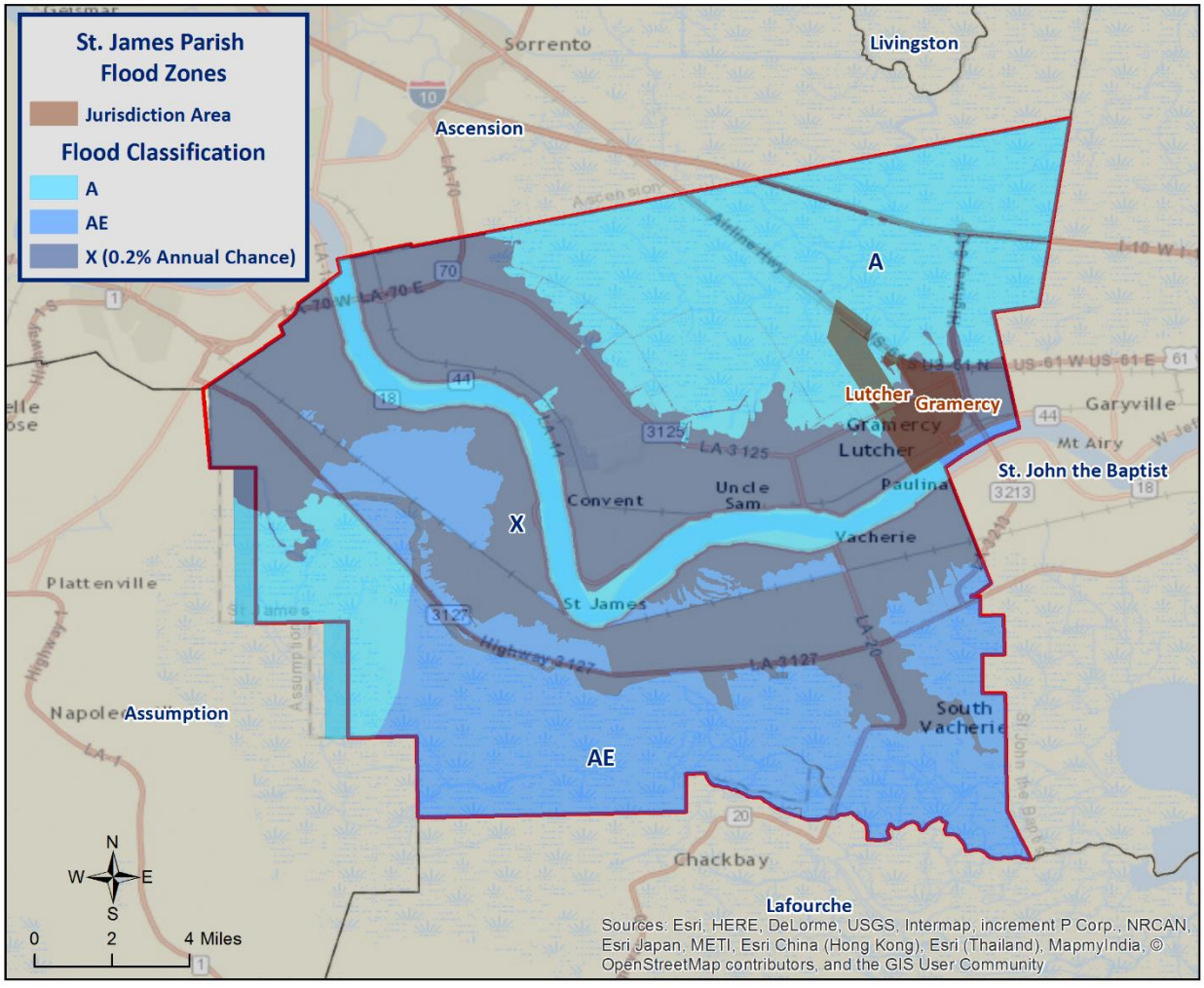



*Figure 2-19: St. James Parish Areas within the Flood Zones*

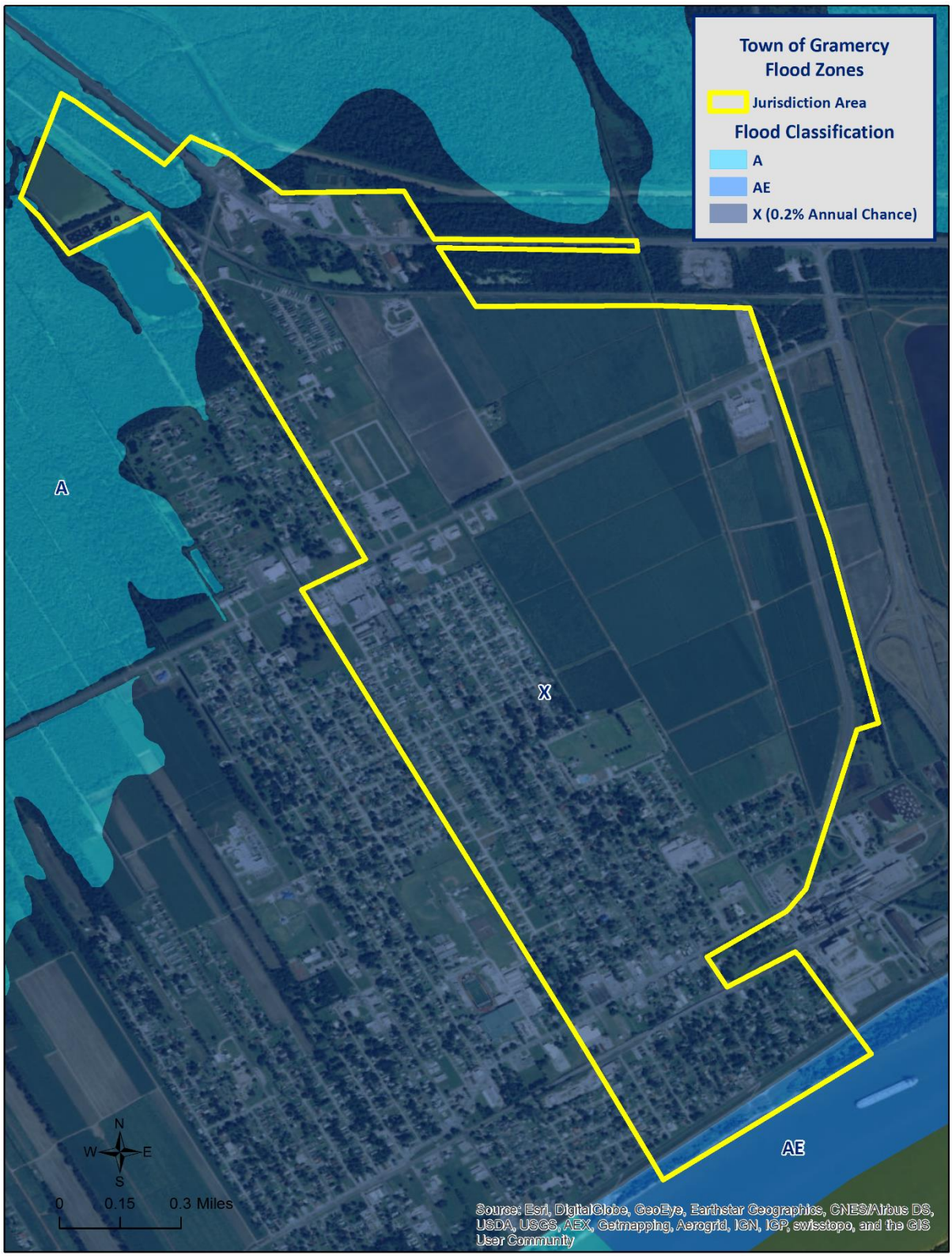



*Figure 2-20: Town of Gramercy Areas within the Flood Zones*

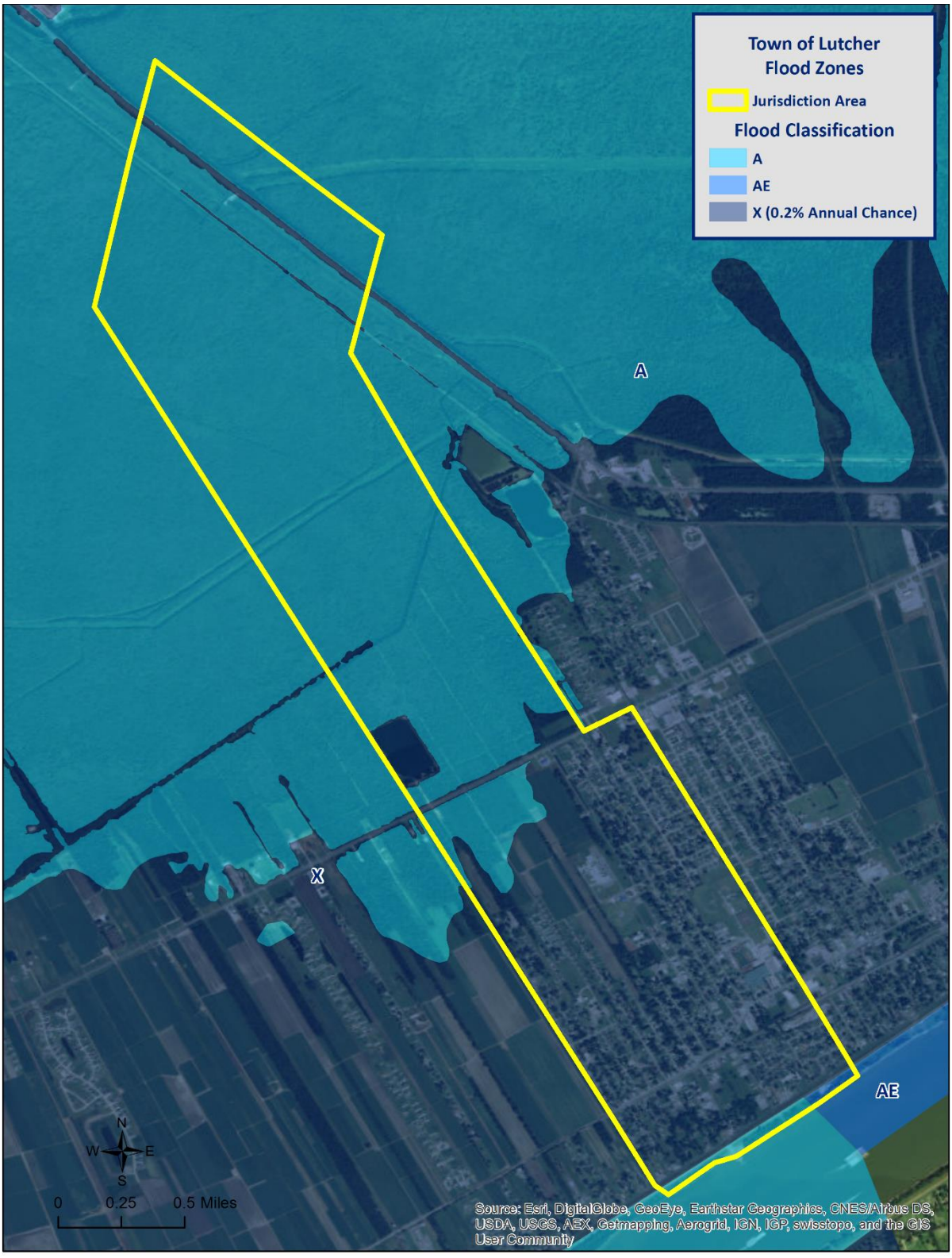



*Figure 2-21: Town of Lutcher Areas within the Flood Zones*

*Previous Occurrences / Extents*

Historically, there have been 14 flooding events that have created significant flooding in St. James Parish between 1989 and 2014. Below is a brief synopsis of the three flooding events that have occurred since 2009, including those that have occurred since the parish's last planning update.

*Table 2-21: Historical Floods in St. James Parish with Locations from 2009 - 2014*

| Date | Extents | Type of Flooding | Estimated Damages | Location |
|---|---|---|---|---|
| December 8, 2009 | Heavy rainfall between 4 to 7 inches overwhelmed local draining and caused flash flooding in the unincorporated areas of the parish. Widespread street flooding occurred and some buildings had water enter them. | Flash Flood | $15,000 | UNINCORPORATED AREA |
| May 28, 2014 | Heavy rain in the Gramercy area caused multiple roadways to flood. Some homes had water enter them. | Flash Flood | $100,000 | GRAMERCY |
| May 28, 2014 | Heavy rainfall produced flooding of numerous roadways. At least 50 homes and businesses were reported with water in them in the Gramercy and Lutcher area. | Flash Flood | $500,000 | GRAMERCY AND LUTCHER |

The worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to six feet can be expected in the unincorporated areas of the parish. The incorporated areas of Gramercy and Lutcher can expect flood depths from three to five feet.

### *Frequency / Probability*

While other parts of this plan, along with the State's Hazard Mitigation Plan, have relied on the SHELDUS database to provide the annual probability, due to St. James Parish having multiple jurisdictions, it was necessary to assess the historical data found in the National Climatic Data Center for St. James Parish and its jurisdictions to properly determine probability for future flood events. The table below shows the probability and return frequency for each jurisdiction.

*Table 2-22: Annual Flood Probabilities for St. James Parish*

| Jurisdiction | Annual Probability | Return Frequency |
|---|---|---|
| St. James Parish (Unincorporated) | 40% | 2 – 3 years |
| Gramercy | 24% | 4 – 5 years |
| Lutcher | 36% | 2 – 3 years |

Based on historical record, the overall flooding probability for the entire St. James Parish Planning area is 56%, with 14 events occurring over a 25-year period.

### *Estimated Potential Losses*

Using the Hazus 2.2 Flood Model, along with the Parish DFIRM, the 100-year flood scenario was analyzed to determine losses from this worst-case scenario. *Table 2-23* shows the total economic losses that would result from this occurrence.

*Table 2-23: Estimated Losses in St. James Parish from a 100-Year Flood Event (Source: Hazus 2.2)*

| Jurisdiction | Estimated Total Losses from 100-Year Flood Event |
|---|---|
| St. James Parish (Unincorporated) | $1,163,000 |
| Gramercy | $639,000 |
| Lutcher | $331,000 |
| **Total** | $2,133,000 |

The Hazus 2.2 Flood Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the following tables:

*Table 2-24: Estimated 100-Year Flood Losses for Unincorporated St. James by Sector (Source: Hazus 2.2)*

| St. James (Unincorporated) | Estimated Total Losses from 100-Year Flood Event |
|---|---|
| Agricultural | $20,000 |
| Commercial | $97,000 |
| Government | $46,000 |
| Industrial | $92,000 |
| Religious / Non-Profit | $98,000 |
| Residential | $779,000 |
| Schools | $31,000 |
| **Total** | $1,163,000 |

*Table 2-25: Estimated 100-Year Flood Losses for Gramercy by Sector (Source: Hazus 2.2)*

| Gramercy | Estimated Total Losses from 100-Year Flood Event |
|---|---|
| Agricultural | $1,000 |
| Commercial | $23,000 |
| Government | $0 |
| Industrial | $0 |
| Religious / Non-Profit | $41,000 |
| Residential | $574,000 |
| Schools | $0 |
| **Total** | $639,000 |

*Table 2-26: Estimated 100-Year Flood Losses for Lutcher by Sector (Source: Hazus 2.2)*

| Lutcher | Estimated Total Losses from 100-Year Flood Event |
|---|---|
| Agricultural | $0 |
| Commercial | $4,000 |
| Government | $0 |
| Industrial | $0 |
| Religious / Non-Profit | $6,000 |
| Residential | $321,000 |
| Schools | $0 |
| **Total** | $331,000 |

*Threat to People*

The total population within the parish that is susceptible to a flood hazard is shown in the table below:

*Table 2-27: Vulnerable Populations Susceptible to a 100-Year Flood Event*
*(Source: Hazus 2.2)*

| Number of People Exposed to Flood Hazards | | | |
|---|---|---|---|
| **Location** | **# in Community** | **# in Hazard Area** | **% in Hazard Area** |
| St. James Parish (Unincorporated) | 14,930 | 3,117 | 20.9% |
| Gramercy | 3,613 | 1,213 | 33.6% |
| Lutcher | 3,559 | 1,001 | 28.1% |
| **Total** | 22,102 | 5,331 | 24.1% |

The Hazus 2.2 Flood Model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions in the following tables:

*Table 2-28: Vulnerable Populations Susceptible to a 100-Year Flood Event in Unincorporated St. James Parish*
*(Source: Hazus 2.2)*

| St. James Parish (Unincorporated) | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 3,117 | 20.9% |
| Persons Under 5 Years | 199 | 6.4% |
| Persons Under 18 Years | 754 | 24.2% |
| Persons 65 Years and Over | 449 | 14.4% |
| White | 1,540 | 49.4% |
| Minority | 1,577 | 50.6% |

*Table 2-29: Vulnerable Populations Susceptible to a 100-Year Flood Event in Gramercy*
*(Source: Hazus 2.2)*

| Gramercy | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 1,213 | 33.6% |
| Persons Under 5 Years | 91 | 7.5% |
| Persons Under 18 Years | 321 | 26.5% |
| Persons 65 Years and Over | 169 | 13.9% |
| White | 625 | 51.5% |
| Minority | 588 | 48.5% |

*Table 2-30: Vulnerable Populations Susceptible to a 100-Year Flood Event in Lutcher (Source: Hazus 2.2)*

| Lutcher | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 1,001 | 28.1% |
| Persons Under 5 Years | 61 | 6.1% |
| Persons Under 18 Years | 178 | 17.8% |
| Persons 65 Years and Over | 171 | 17.1% |
| White | 463 | 46.3% |
| Minority | 538 | 53.7% |

### *Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to flooding due to proximity within the 100-year floodplain.

## Sinkholes

Sinkholes are areas of ground with no natural external surface drainage. They can vary in size from a few square feet to hundreds of acres, and can reach depths of more than 100 feet. Sinkholes are usually found in karst terrain—that is, areas where limestone, carbonate rock, salt beds, and other water-soluble rocks lie below the Earth's surface. Karst terrain is marked by the presence of other uncommon geologic features, such as springs, caves, and dry streambeds that lose water into the ground. In general, sinkholes form gradually (in the case of cover-subsidence sinkholes), but they can also occur suddenly (in the case of cover-collapse sinkholes).

Sinkhole formation is a very simple process. Whenever water is absorbed through soil, it encounters water-soluble bedrock. The water then begins to dissolve the bedrock, forming sinkholes. The karst rock dissolves along cracks; as the fissures grow, soil and other particles fill the gaps, loosening the soil above the bedrock. *Figure 2-22* illustrates the development of a cover subsidence sinkhole. As the soil sinks from the surface, a depression forms which draws in more water, funneling it down to the water-soluble rock. The increase of water and soil in the rock pushes open the cracks, again drawing more soil and water into it. This positive feedback loop continues, unless clay plugs into the cracks in the bedrock, at which time a pond may form. A sudden cover-collapse sinkhole occurs when the top soil above dissolving bedrock does not sink, but forms a bridge over the soil that is sinking beneath it. As *Figure 2-23* demonstrates, underground soil continues to fill the bedrock fissures, until finally the soil bridge collapses and fills the void beneath it.

Both kinds of sinkholes can occur naturally or through human influence. While sinkholes tend to form naturally in karst areas, sinkholes can form in other geological areas that have been altered by humans, by processes such as mining, sewers, hydraulic fracture drilling, groundwater pumping, irrigation, or storage ponds. In all of these cases, and others, the cause for the sinkhole is that support for surface soil has been weakened or substantially removed.

In the United States, 20% of the land is susceptible to sinkholes. Most of this area lies in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. In Louisiana, most of the sinkholes are precipitated by the human-influenced collapse of salt dome caverns. The collapse of a salt dome is usually a slow process; however, it may occur suddenly and without any advance warning.

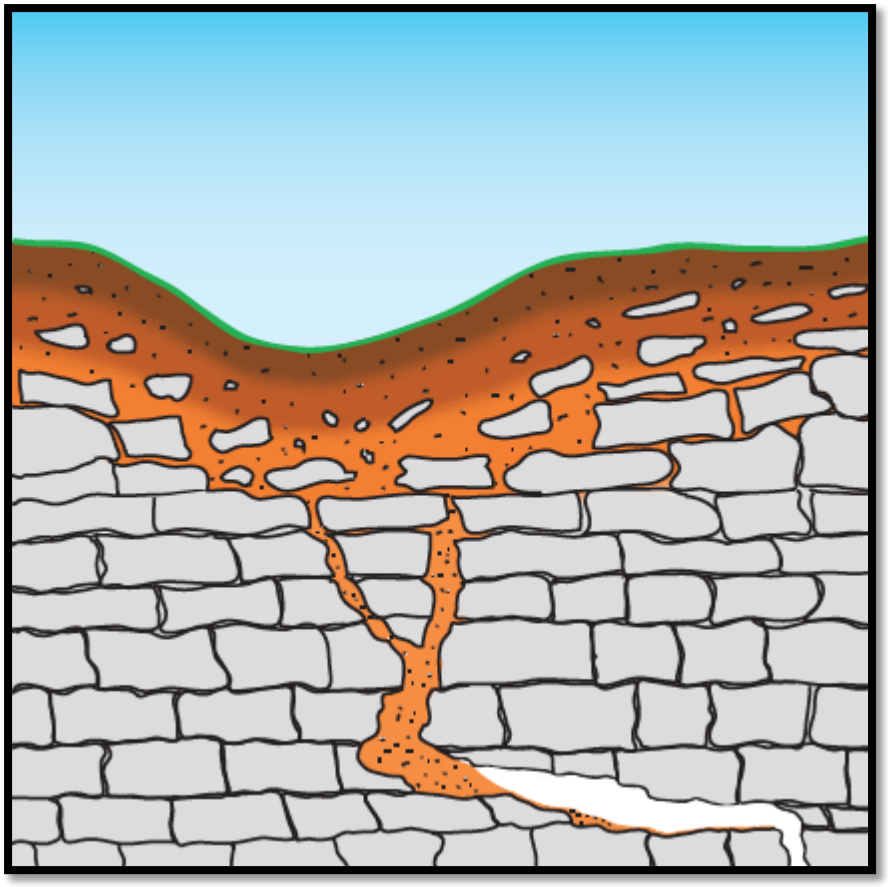


*Figure 2-22: Cover-subsidencence Sinkole Formation from the Breaking Apart of Karst Bedrock by Soil Deposit*
*(Courtesy of USGS Sinkholes Fact Sheet)*

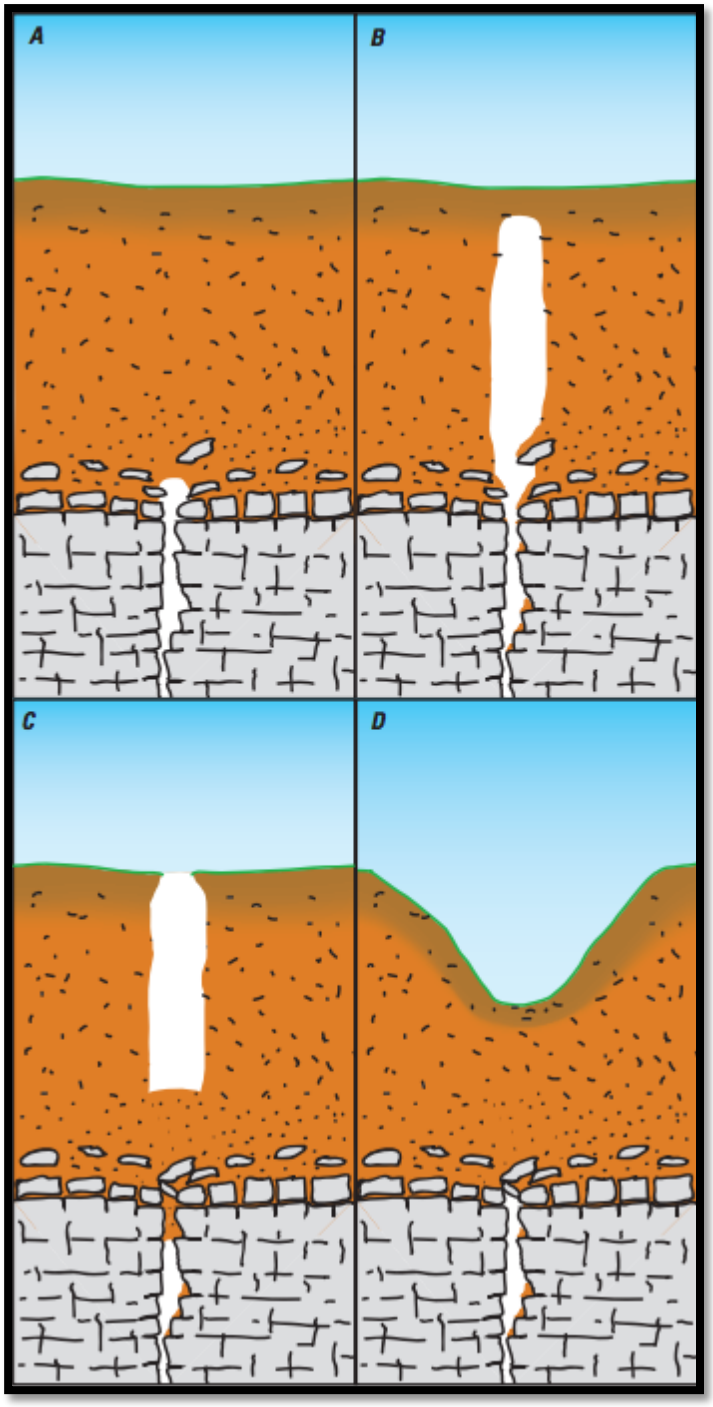



*Figure 2-23: Formation of Cover-collapse Sinkhole after a Soil Bridge Forms Above Dissolving Bedrock (Courtesy of USGS Sinkhole Fact Sheet)*

### *Location*

Currently, there is one identifiable salt dome location in St. James Parish. *Figure 2-24* displays the location of this salt dome with its relative location to the nearest jurisdiction. As depicted in *Figure 2-24*, the sinkhole is located in the central section of the unincorporated area of the parish.

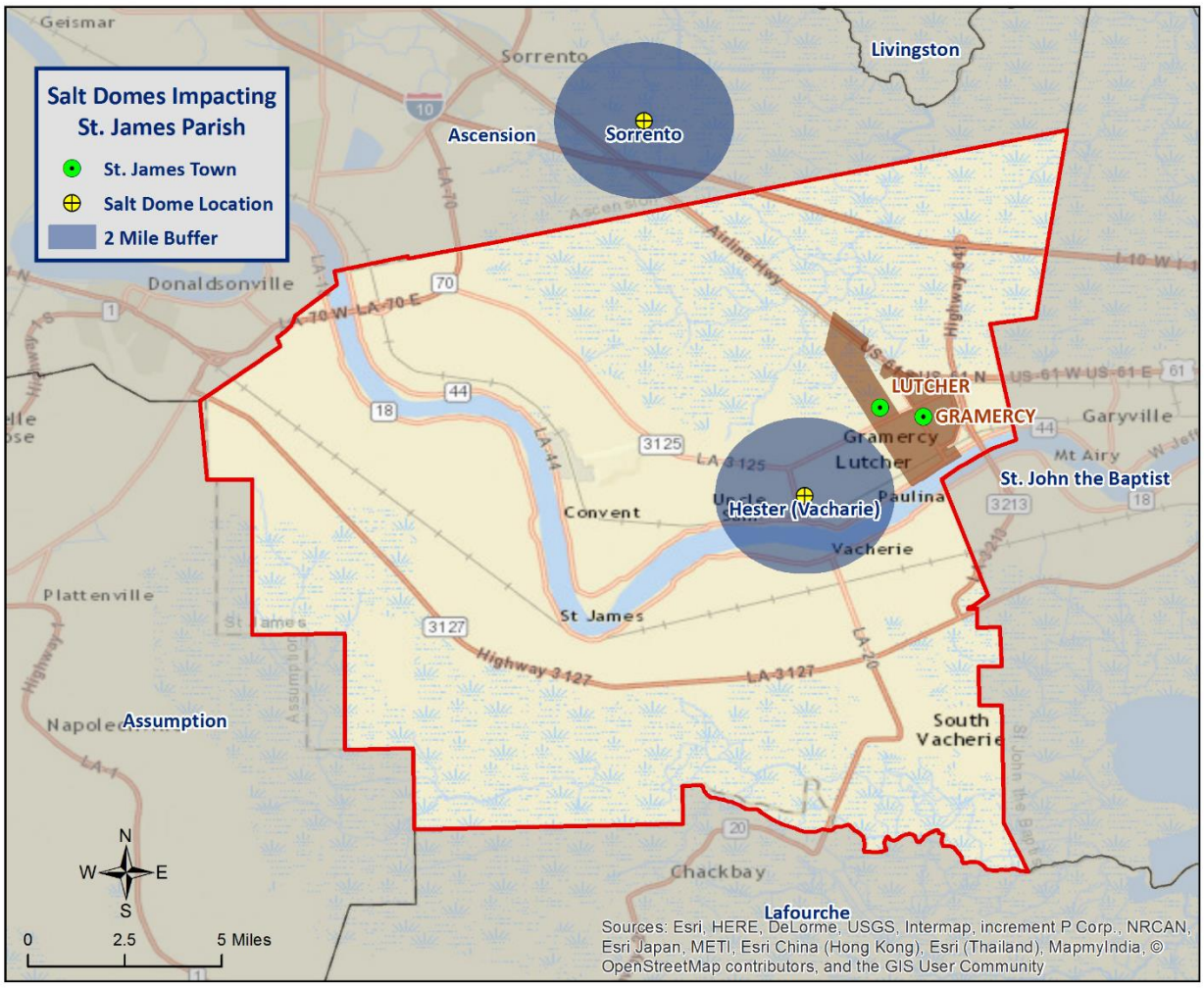



*Figure 2-24: Salt Dome Locations in St. James Parish Relative to Jurisdictions*

### *Previous Occurrences / Extents*

There have been no recorded incidents of sinkholes or salt dome collapses in St. James Parish to date.

### *Frequency / Probability*

Since there has been no recorded incidents of sinkhole or salt dome collapse in St. James Parish, the annual chance of occurrence is calculated at less than 1%.

### *Estimated Potential Losses*

The one salt dome location was analyzed to determine the number of people and houses that are potentially susceptible to losses from a sinkhole materializing from the salt dome. The following tables are based on conducting a two mile buffer around the center of the salt dome. The values were

determined by querying the 2010 U.S. Census block data to determine the number of houses and people located within two miles of the salt dome. Critical facilities were also analyzed to determine if they fell within the two mile buffer of the salt dome. Total value for all occupancy groups from Hazus 2.2 was used to estimate a total loss of all facilities that were within two miles of the salt dome.

The salt dome that poses the greatest risk to St. James Parish is the Hester (Vacharie) Salt Dome. The Hester (Vacherie) Salt Dome contains a total of 1,498 homes and 4,809 people within its two mile buffer.

*Table 2-31: Estimated Potential Losses from a Sinkhole Formation*
*(Source: U.S. 2010 Census Data and Hazus 2.2)*

| Salt Dome Name | Total Building Exposure | Critical Infrastructure Exposure | Number of People Exposed | Number of Houses Exposed |
|---|---|---|---|---|
| Hester (Vacharie) | $398,118,000 | 8 | 4,809 | 1,498 |

### *Vulnerability*

See Appendix C for parish and municipality building exposure to a sinkhole hazard.

## Thunderstorms

The term "thunderstorm" is usually used as a catch-all term for several kinds of storms. Here, "thunderstorm" is defined to include any precipitation event in which thunder is heard or lightning is seen. Thunderstorms are often accompanied by heavy rain and strong winds, and depending on conditions, occasionally by hail or snow. Thunderstorms form when humid air masses are heated, which causes them to become convectively unstable. Consequently, the air masses rise. Upon rising, the air masses' water vapor condenses into liquid water and/or deposits directly into ice when they rise sufficiently to cool to the dew-point temperature.

Thunderstorms are classified into four main types (single-cell, multi-cell, squall line, and supercell), depending on the degree of atmospheric instability, the change in wind speed with height (called wind shear), and the degree to which the storm's internal dynamics are coordinated with those of adjacent storms. There is no such interaction for single-cell thunderstorms, but there is significant interaction with clusters of adjacent thunderstorms in multi-cell thunderstorms, and with a linear "chain" of adjacent storms in squall line thunderstorms. Though supercell storms have no significant interactions with other storms, they have very well-organized and self-sustaining internal dynamics, which allows them to be the longest-lived and most severe of all thunderstorms.

The life of a thunderstorm proceeds through three stages: the developing (or cumulus) stage, the mature stage, and the dissipation stage. During the developing stage, the unstable air mass is lifted as an updraft into the atmosphere. This sudden lift rapidly cools the moisture in the air mass, releasing latent heat as condensation and/or deposition occurs, which warms the surrounding environment, thus making it less dense than the surrounding air. This process intensifies the updraft and creates a localized lateral rush of air from all directions into the area beneath the thunderstorm to feed continued updrafts. At the mature stage, the rising air is accompanied by downdrafts caused by the shear of falling rain (if melted completely), or hail, freezing rain, sleet, or snow (if not melted completely). The dissipation stage is characterized by the dominating presence of the downdraft as the hot surface that gave the updrafts their buoyancy is cooled by precipitation. During the dissipation stage, the moisture in the air mass largely empties out.

The Storm Prediction Center, in conjunction with the National Weather Service, has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued, along with definitions of each:

- *Severe Thunderstorm Watch*: Issued to alert people to the possibility of a severe thunderstorm developing in the area. Expected time frame for these storms is three to six hours.

- *Severe Thunderstorm Warning*: Issued when severe thunderstorms are imminent. This warning is highly localized and covers parts of one to several parishes (counties).

A variety of hazards might be produced by thunderstorms, including lightning, hail, tornadoes or waterspouts, flash flooding, and high-speed winds called downbursts. Nevertheless, given the criteria, the National Oceanic and Atmospheric Administration (NOAA) characterizes a thunderstorm as severe when it produces one or more of the following:

- Hail of one inch in diameter or larger
- Wind gusts to 58 mph or greater
- One or more tornadoes

Tornadoes and flooding hazards have been profiled within this report; therefore, for the purpose of thunderstorms, the sub-hazards of hail, high winds, and lightning will be profiled.

Thunderstorms occur throughout Louisiana at all times of the year, although the types and severity of those storms vary greatly depending on a wide variety of atmospheric conditions. Thunderstorms generally occur more frequently during the late spring and early summer when extreme variations exist between ground surface temperatures and upper atmospheric temperatures.

### *Hazard Description*

#### Hailstorms

Hailstorms are severe thunderstorms in which balls or chunks of ice fall along with rain. Hail initially develops in the upper atmosphere as ice crystals that are bounced about by high-velocity updraft winds. The ice crystals grow through deposition of water vapor onto their surface. They then fall partially to a level in the cloud where the temperature exceeds the freezing point, melt partially, and then get caught in another updraft whereupon re-freezing and deposition grows another concentric layer of ice. After several trips up and down the cloud, they develop enough weight to fall. The size of hailstones varies depending on the severity and size of the thunderstorm. Higher surface temperatures generally mean stronger updrafts, which allow more massive hailstones to be supported by updrafts, leaving them suspended longer. This longer suspension time means larger hailstone sizes. The tables on the following page display the TORRO Hailstorm Intensity Scale, as well as a spectrum of hailstone diameters and their everyday equivalents.

*Table 2-32: TORRO Hailstorm Intensity Scale*

| Intensity Category | | Hail Diameter (mm) | Probable Kinetic Energy | Typical Damage Impacts |
|---|---|---|---|---|
| H0 | Hard Hail | 5 | 0 - 20 | No damage |
| H1 | Potentially Damaging | 5 - 15 | >20 | Slight general damage to plant, crops |
| H2 | Significant | 10 - 20 | >100 | Significant damage to fruit, crops, vegetation |
| H3 | Severe | 20 - 30 | >300 | Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored |
| H4 | Severe | 25 - 40 | >500 | Widespread glass damage, vehicle body work |
| H5 | Destructive | 30 - 50 | >800 | Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries |
| H6 | Destructive | 40 - 60 | | Bodywork of grounded aircraft dented, brick walls pitted |
| H7 | Destructive | 50 - 75 | | Severe roof damage, risk of serious injuries |
| H8 | Destructive | 60 - 90 | | Severe damage to aircraft bodywork |
| H9 | Super Hailstorms | 75 - 100 | | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |
| H10 | Super Hailstorms | >100 | | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |

*Table 2-33: Spectrum of Hailstone Diameters and Their Everyday Description (Source: National Weather Service)*

| Spectrum of Hailstone Diameters | |
|---|---|
| **Hail Diameter Size** | **Description** |
| 1/4” | Pea |
| 1/2” | Plain M&M |
| 3/4” | Penny |
| 7/8” | Nickle |
| 1” (severe) | Quarter |
| 1 1/4” | Half Dollar |
| 1 1/2” | Ping Pong Ball / Walnut |
| 1 3/4” | Golf Ball |
| 2” | Hen Egg / Lime |
| 2 1/2" | Tennis Ball |
| 2 3/4" | Baseball |
| 3” | Teacup / Large Apple |
| 4” | Softball |
| 4 1/2" | Grapefruit |
| 4 3/4” – 5” | Computer CD-DVD |

Hailstorms can cause widespread damage to structures, automobiles, and crops. While the damage to individual structures or vehicles is often minor, the cumulative cost to communities, especially across large metropolitan areas, can be quite significant. Hailstorms can also be devastating to crops. Thus, the severity of hailstorms depends on the size of the hailstones, the length of time the storm lasts, and where it occurs. Hail rarely causes loss of life, although large hailstones can cause bodily injury.

### High Winds

In general, high winds can occur in a number of different ways, within and without thunderstorms. FEMA distinguishes these as shown in the following table.

*Table 2-34: High Winds Categorized by Source, Frequency, and Duration*
*(Source: Making Critical Facilities Safe from High Wind, FEMA)*

| High Winds Categories | | | |
|---|---|---|---|
| **High Wind Type** | **Description** | **Relative Frequency in Louisiana** | **Relative Maximum Duration in Louisiana** |
| Straight-line Winds | Wind blowing in straight line; usually associated with intense low-pressure area | High | Few minutes – 1 day |
| Downslope Winds | Wind blowing down the slope of a mountain; associated with temperature and pressure gradients | N/A | N/A |
| Thunderstorm Winds | Wind blowing due to thunderstorms, and thus associated with temperature and pressure gradients | High (especially in the spring and summer | Few minutes – several hours |
| Downbursts | Sudden wind blowing down due to downdraft in a thunderstorm; spreads out horizontally at the ground, possibly forming horizontal vortex rings around the downdraft | Medium-to-High(~5% of all thunderstorms) | ~15 – 20 minutes |
| Northeaster (nor'easter) Winds | Wind blowing due to cyclonic storm off the east coast of North America; associated with temperature and pressure gradients between the Atlantic and land | N/A | N/A |
| Hurricane Winds | Wind blowing in spirals, converging with increasing speed toward eye; associated with temperature and pressure gradients between the Atlantic and Gulf and land | Low-to-Medium | Several days |
| Tornado Winds | Violently rotating column of air from base of a thunderstorm to the ground with rapidly decreasing winds at greater distances from center; associated with extreme temperature gradient | Low-to-Medium | Few minutes – few hours |

The only high winds of present concern are thunderstorm winds and downbursts. Straight-line winds are common but are a relatively insignificant hazard (on land) compared to other high winds. Downslope winds are common but relatively insignificant in the mountainous areas of Louisiana where they occur. Nor'easters are cyclonic events that have at most a peripheral effect on Louisiana, and none associated with high winds. Winds associated with hurricanes and tornadoes will be considered in their respective sections.

The following table presents the Beaufort Wind Scale, first developed in 1805 by Sir Francis Beaufort, which aids in determining relative force and wind speed based on the appearance of wind effects.

*Table 2-35: Beaufort Wind Scale*
*(Source: NOAA's SPC)*

| Beaufort Wind Scale | | | |
|---|---|---|---|
| **Force** | **Wind (MPH)** | **WMO Classification** | **Appearance of Wind Effects on Land** |
| | | | Calm, smoke rises vertically |
| 1 | 1-3 | Light Air | Smoke drift indicates wind direction, still wind vanes |
| 2 | 4-7 | Light Breeze | Wind felt on face, leaves rustle, vanes begin to move |
| 3 | 8-12 | Gentle Breeze | Leaves and small twigs constantly moving, light flags extended |
| 4 | 13-17 | Moderate Breeze | Dust, leaves, and loose paper lifted, small tree branches move |
| 5 | 18-24 | Fresh Breeze | Small trees in leaf begin to sway |
| 6 | 25-30 | Strong Breeze | Larger tree branches moving, whistling in wires |
| 7 | 31-38 | Near Gale | Whole trees moving, resistance felt walking against wind |
| 8 | 39-46 | Gale | Twigs breaking off trees, generally impedes progress |
| 9 | 47-54 | Strong Gale | Slight structural damage occurs, slate blows off roofs |
| 10 | 55-63 | Storm | Seldom experienced on land, trees broken or uprooted, "considerable structural damage" |
| 11 | 54-73 | Violent Storm | N/A |
| 12 | 74+ | Hurricane | N/A |

Major damage directly caused by thunderstorm winds is relatively rare, while minor damage is common and pervasive, and most noticeable when it contributes to power outages. These power outages can have major negative impacts such as increased tendency for traffic accidents, loss of revenue for businesses, increased vulnerability to fire, food spoilage, and other losses that might be sustained by a loss of power. Power outages may pose a health risk for those requiring electric medical equipment and/or air conditioning.

### Lightning

Lightning is a natural electrical discharge in the atmosphere that is a by-product of thunderstorms. Every thunderstorm produces lightning. There are three primary types of lightning: intra-cloud, cloud-to-ground, and cloud-to-cloud. Cloud-to-ground lightning has the potential to cause the most damage to property and crops, while also posing as a health risk to the populace in the area of the strike.

Damage caused by lightning is usually to homes or businesses. These strikes have the ability to damage electrical equipment inside the home or business, and can also ignite a fire that could destroy homes or crops.

Lightning continues to be one of the top three storm-related killers in the United States per FEMA, but it also has the ability to cause negative long-term health effects to the individual that is struck. The following table outlines the lightning activity level that is a measurement of lightning activity.

*Table 2-36: Lightning Activity Level (LAL) Grids*

| LAL | Cloud and Storm Development | Lightning Strikes/15 Min |
|---|---|---|
| 1 | No thunderstorms. | - |
| 2 | Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent. | 1-8 |
| 3 | Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation. Light to moderate rain will reach the ground, and lightning is infrequent. | 9-15 |
| 4 | Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent. | 16-25 |
| 5 | Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent. | >25 |
| 6 | Similar to LAL 3 except thunderstorms are dry | |

### *Hazard Profile*

### Hailstorms

#### *Location*

Because hailstorms are a climatological based hazard, the entire planning area for St. James Parish is equally at risk for hailstorms.

#### *Previous Occurrences / Extents*

The SHELDUS database reports no significant hailstorm events occurring within the boundaries of St. James Parish between the years of 1989-2014. According to the National Climatic Data Center, hailstorm diameters experienced in St. James Parish have ranged from 0.75 inches to 1.75 inches since 1989. The most frequently recorded hail size has been 0.75 inch diameters. *Figure 2-25* displays the density of hailstorms in St. James Parish and adjacent parishes. St. James Parish can expect to experience hail up to 1.75 inches in diameter for future events.

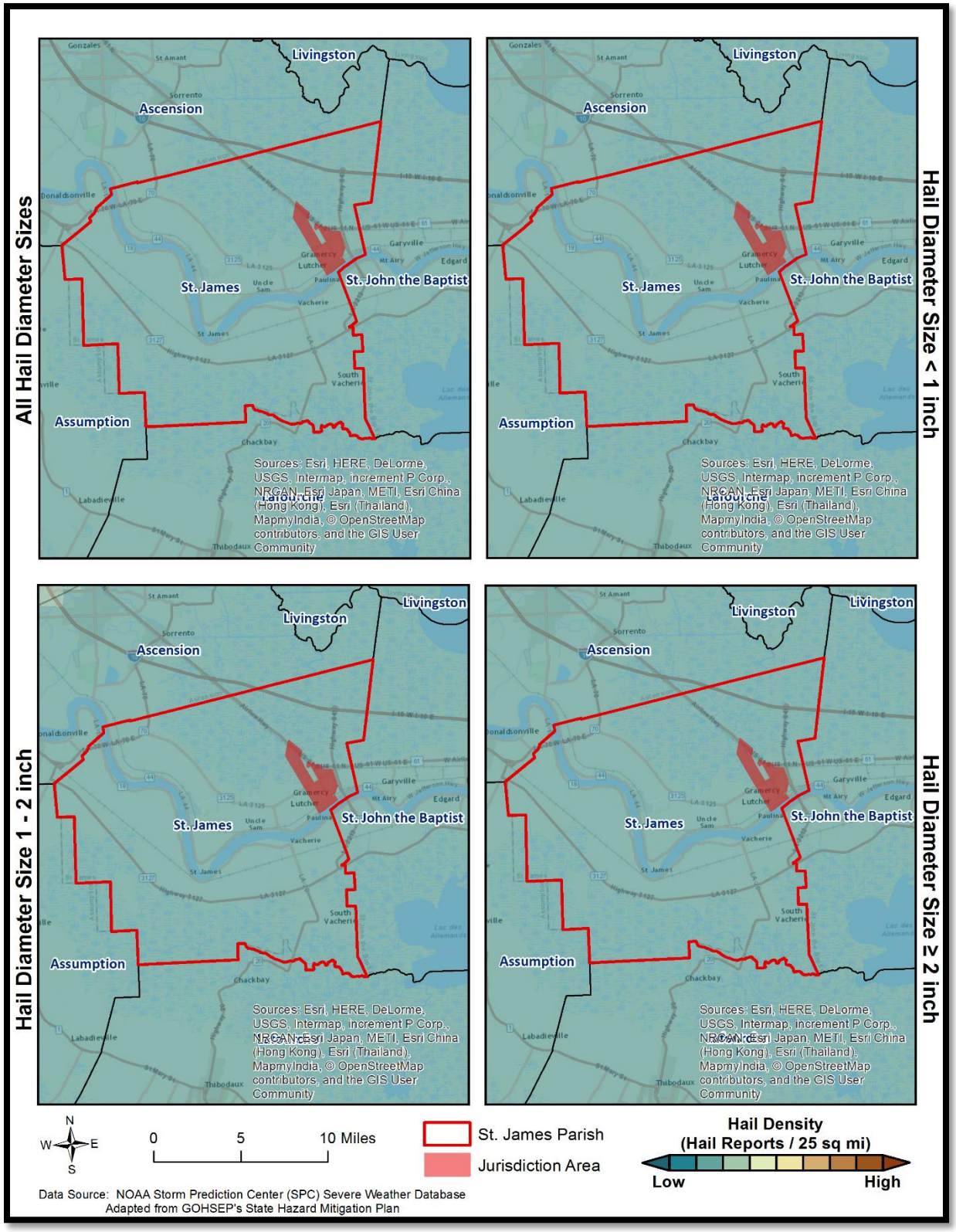



*Figure 2-25: Density of Hailstorms by Diameter from 1950-2012*
*(Source: State of Louisiana Hazard Mitigation Plan 2014)*

*Frequency*

Based on historical data from SHELDUS for the past 25 years, it is estimated the probability of occurrence for a significant hailstorm event is less than 1%.

*Estimated Potential Losses*

According to the SHELDUS database, there have been no recorded hailstorm events that have caused property damage in St. James Parish from the years 1989 – 2014. The parish has suffered no fatalities or injuries due to hailstorms during this same time period.

*Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to hailstorms.

## High Winds

*Location*

Because high winds are a climatological based hazard, the entire planning area for St. James Parish is equally at risk for high winds.

*Previous Occurrences / Extents*

The SHELDUS database reports a total of 26 thunderstorm wind events occurring within the boundaries of St. James Parish between the years of 1989 to 2014. The significant thunderstorm wind events experienced in St. James Parish have ranged in wind speed from 46 mph to 84 mph. St. James Parish can expect to receive thunderstorm winds up to 84 mph for future high wind events.

*Table 2-37: Previous Occurrences for Thunderstorm High Wind Events*

| Location | Date | Recorded Wind Speeds (mph) | Property Damage | Crop Damage |
|---|---|---|---|---|
| GRAMERCY | May 29, 2010 | 60 | $2,671 | $0 |
| GRAND PT | June 5, 2010 | 69 | $5,342 | $0 |
| GRAMERCY | April 4, 2011 | 69 | $2,589 | $0 |
| GRAMERCY | March 12, 2012 | 69 | $1,522 | $0 |

There have been no thunderstorm high wind events that have impacted the incorporated area of Lutcher since 2009.

*Frequency*

High winds are a fairly common occurrence within St. James Parish, with an annual chance of occurrence calculated at 100%.

### *Estimated Potential Losses*

Since 1989, there have been 26 significant wind events that have resulted in property damages according to the SHELDUS database. The total property damages associated with those storms have totaled $141,316. To estimate the potential losses of a wind event on an annual basis, the total damages recorded for wind events was divided by the total number of years of available wind data in SHELDUS (1989 – 2014). This provides an annual estimated potential loss of $5,653. The following table provides an estimate of potential property losses for St. James Parish:

*Table 2-38: Estimated Annual Property Losses in St. James Parish Resulting from Wind Damage*

| Estimated Annual Potential Losses from Thunderstorm Winds for St. James Parish | | |
|---|---|---|
| Unincorporated St. James Parish (67.6% of Population) | Gramercy (16.3% of Population) | Lutcher (16.1% of Population) |
| $3,818 | $924 | $910 |

There have been no reported injuries or fatalities as a result of a thunderstorm wind event over the 25-year record.

### *Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to high winds.

## Lightning

### *Location*

Like hail and high winds, lightning is a climatological based hazard and has the same probability of occurring throughout the entire planning area for St. James Parish.

### *Previous Occurrences / Extents*

The SHELDUS database reports a total of two lightning events occurring within the boundaries of St. James Parish between the years of 1989-2014. The SHELDUS database only records lightning events that cause death, injuries, crop damage, and/or property damage, so these numbers do not accurately reflect the number of lightning events in St. James Parish, which occur on a nearly monthly basis. The planning area can expect to have a lightning density of 11-12 flashes per square mile per year. The table below provides an overview of significant lightning strikes over the last five years:

*Table 2-39: Previous Occurrences of Significant Lightning Strikes in St. James Parish from 2009 – 2014 (Source: NCDC and SHELDUS)*

| Location | Date | Summary | Property Damage |
|---|---|---|---|
| GRAMERCY | February 22, 2013 | A lightning strike caused a power outage in Gramercy. | $1,000 |

Since 2009, there have been no lightning events that have caused property damage or loss of life in the incorporated area of Lutcher.

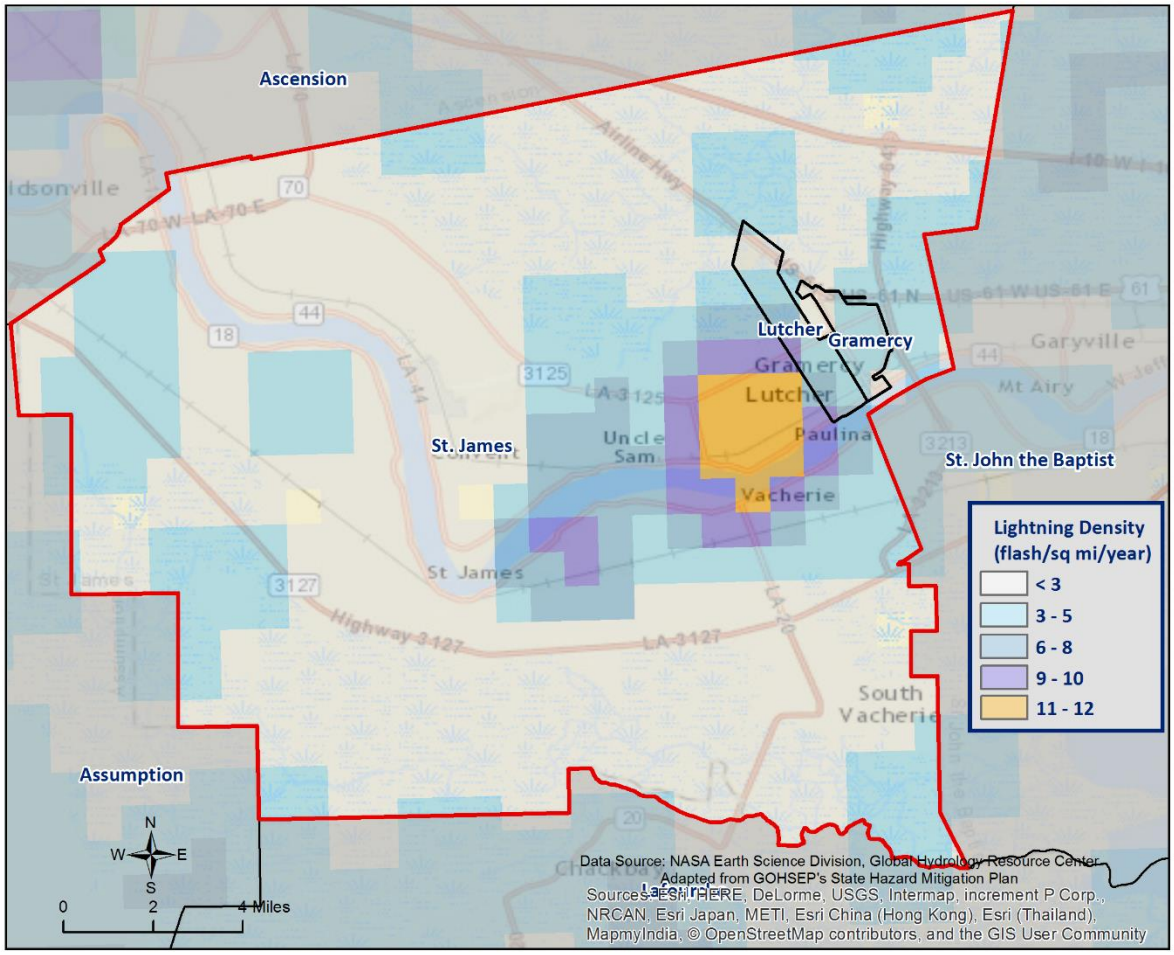



*Figure 2-26: Lightning Density Reports for St. James Parish*

### *Frequency*

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in St. James Parish is high. However, lightning that meets the definition that is used by SHELDUS and the NCDC that actually results in damages to property and injury or death is a less likely event. According to SHELDUS, there have been two lightning events that have caused property damages or injuries over the last 25 years, establishing an annual probability of 8%.

### *Estimated Potential Losses*

Since 1989, there have been two significant lightning events that have resulted in property damages according to the SHELDUS database. The total property damages associated with lightning events totaled $3,970. To estimate the potential losses of a lightning event on an annual basis, the total damages recorded for lightning events was divided by the total number of years of available major lightning strike data in SHELDUS (1989 – 2014). This provides an annual estimated potential loss of $159. The table on the following page provides an estimate of potential property losses for St. James Parish.

*Table 2-40: Estimated Annual Property Losses in St. James Parish from Lightning*

| Estimated Annual Potential Losses from Lightning for St. James Parish | | |
|---|---|---|
| Unincorporated St. James Parish (67.6% of Population) | Gramercy (16.3% of Population) | Lutcher (16.1% of Population) |
| $107 | $26 | $26 |

There have been no reported injuries or fatalities in St. James Parish as a result of a lightning strike over the 25-year record.

### *Vulnerability*

See Appendix C for parish and municipality building exposure to lightning hazards.

## Tornadoes

Tornadoes (also called twisters or cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground. For their size, tornadoes are the most severe storms, and 70% of the world's reported tornadoes occur within the continental United States, making them one of the most significant hazards that Americans face. Tornadoes and waterspouts form during severe weather events, such as thunderstorms and hurricanes, when cold air overrides a layer of warm air, causing the warm air to rise rapidly. This usually results in a counterclockwise rotation in the northern hemisphere. The updraft of air in tornadoes always rotates because of wind shear (differing speeds of moving air at various heights), and it can rotate in either a clockwise or counterclockwise direction; clockwise rotations (in the northern hemisphere) will sustain the system, at least until other forces cause it to die seconds to minutes later.

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. Table 2-42 *Table 2-41* shows the EF scale in comparison with the old Fujita (F) Scale, which was used prior to February 1, 2007. When discussing past tornadoes, the scale used at the time of the hazard is used. Damage and adjustment between scales can be made using the following tables.

*Table 2-41: Comparison of the Enhanced Fujita (EF) Scale to the Fujita (F) Scale*

| | Enhanced Fujita Scale | | | | | |
|---|---|---|---|---|---|---|
| | **EF0** | **EF1** | **EF2** | **EF3** | **EF4** | **EF5** |
| Wind speed (mph) | 65-85 | 86-110 | 111-135 | 136-165 | 166-200 | >200 |
| | **Fujita Scale** | | | | | |
| | **F0** | **F1** | **F2** | **F3** | **F4** | **F5** |
| | <73 | 73-112 | 113-157 | 158-206 | 207-260 | >261 |

*Table 2-42: Fujita and Enhanced Fujita Tornado Damage Scale*

| Scale | Typical Damage |
|---|---|
| F0/EF0 | Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged. |
| F1/EF1 | Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads. |
| F2/EF2 | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; light-object missiles generated; cars lifted off ground. |
| F3/EF3 | Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown. |
| F4/EF4 | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated. |
| F5/EF5 | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur. |

The National Weather Service has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued, along with definitions of each:

- *Tornado Watch*: Issued to alert people to the possibility of a tornado developing in the area. A tornado has not been spotted but the conditions are favorable for tornadoes to occur.
- *Tornado Warning*: Issued when a tornado has been spotted or when radar identifies a distinctive "hook-shaped" area within a thunderstorm line.

Structures within the direct path of a tornado vortex are often reduced to rubble. Structures adjacent to the tornado's path are often severely damaged by high winds flowing into the tornado vortex, known as inflow winds. It is here, adjacent to the tornado's path, that the building type and construction techniques are critical to the structure's survival. Although tornadoes strike at random, making all buildings vulnerable, mobile homes, homes with crawlspaces, and buildings with large spans are more likely to suffer damage.

The major health hazard from tornadoes is physical injury from flying debris, or being trapped in a collapsed building or mobile home. Within a building, flying debris or projectiles are generally stopped by interior walls. However, if a building has no partitions, any glass, brick, or other debris blown into the interior is life threatening. Following a tornado, damaged buildings are a potential health hazard due to instability, electrical system damage, and gas leaks. Sewage and water lines may also be damaged.

Peak tornado activity in Louisiana occurs during the spring, as it does in the rest of the United States. Nearly one-third of observed tornadoes in the United States occur during April. About half of those in Louisiana, including many of the strongest, occur between March and June. Fall and winter tornadoes are less frequent, but the distribution of tornadoes throughout the year is more uniform in Louisiana than in locations farther north.

### *Location*

While there is a significant tornado record in St. James Parish with actual locations, tornadoes in general are a climatological based hazard and have the same approximate probability of occurring in St. James Parish as all of its jurisdictions. Because a tornado has a similar probability of striking anywhere within the planning area for St. James Parish, all jurisdictions are equally at risk for tornadoes.

### *Previous Occurrences / Extents*

SHELDUS reports a total of three tornadoes or waterspouts occurring within the boundaries of St. James Parish between the years of 1989-2014. The tornadoes experienced in St. James Parish have been EF0s on the EF scale, and F0s on the F scale. The worst case scenario St. James can expect in the future is an EF1 tornado.

The tornado that caused the most damage to property occurred on April 4, 2011. The EF0 tornado touched down near the intersection of North Airline Avenue and Louisiana Highway 3124 in Gramercy.

The tornado caused significant tree damage and removed a carport from a home. Total damages were in excess of $50,000. There have been no fatalities or injuries in St. James Parish as a result of tornadoes.

*Table 2-43: Historical Tornadoes in St. James Parish from 1989-2014*

| Date | Impacts | Property Damage | Location | Magnitude |
|---|---|---|---|---|
| March 20, 2002 | 0.2 mile path with a width of 20 yards. Caused roof damage to two houses and knocked one home off cinder blocks. | $51,797 | VACHERIE | F0 |
| May 2, 2006 | 0.2 mile path with a width of 25 yards. A weak tornado caused minor damage to the exterior of a building | $1,156 | VACHERIE | F0 |
| April 4, 2011 | 0.94 mile path with a width of 50 yards. Lifted a carport off a home and caused significant tree damage in the area. | $51,921 | GRAMERCY | EF0 |

The unincorporated area of St. James Parish and the incorporated area of Lutcher have not experienced a tornado event from 2009 to the present. Since 2011, the year in which the last update to this hazard mitigation plan was written, St. James Parish has had one tornado touch down in the incorporated area of Gramercy. The following is a brief synopsis of these events:

### April 4, 2011 – EF0 Tornado in Gramercy

A tornado touched down near the intersection of North Airline Avenue and Louisiana Highway 3125. The tornado moved south-southeast through a residential neighborhood, with the worst damage occurring on Ezildore Avenue between 5$^{th}$ and 7$^{th}$ Streets. A carport was removed from a home, causing significant damage to the home. The tornado continued south-southeast, causing significant tree damage and some minor to moderate roof damage to homes. The tornado lifted near the end of East 2$^{nd}$ Street. Maximum wind speeds were estimated at 80 mph.

### *Frequency / Probability*

Tornadoes are a sporadic occurrence within St. James Parish, with an annual chance of occurrence calculated at 12% based on the records for the past 25 years (1989-2014). The figure on the following page displays the density of tornado touch downs in St. James Parish and neighboring parishes.

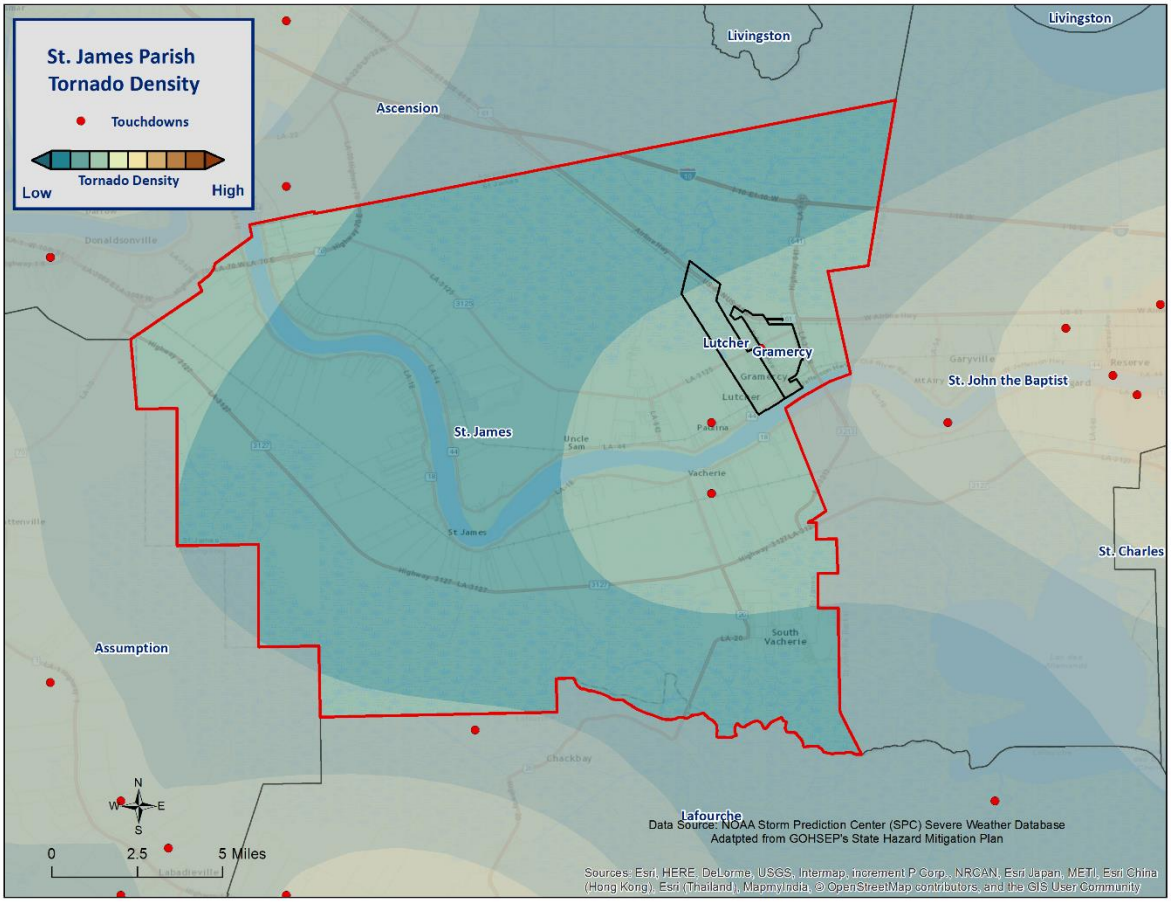



*Figure 2-27: Location and Density of Tornadoes to Touch Down in St. James Parish (Source: NOAA/SPC Severe Weather Database)*

### *Estimated Potential Losses*

According to the SHELDUS database, there have been three tornadoes that have caused some level of property damage. The total damage from the actual claims for property is $104,734, with an average cost of $34,911 per tornado strike. When annualizing the total cost over the 25-year record, total annual loses based on tornadoes are estimated to be $4,189. To provide an estimated annual estimated potential loss per jurisdiction, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. Based on the 2010 Census data, the table below provides an annual estimate of potential losses for St. James Parish.

*Table 2-44: Estimated Annual Losses for Tornadoes in St. James Parish*

| Estimated Annual Potential Losses from Tornadoes for St. James Parish | | |
|---|---|---|
| **Unincorporated St. James Parish (67.6% of Population)** | **Gramercy (16.3% of Population)** | **Lutcher (16.1% of Population)** |
| $2,830 | $685 | $675 |

*Table 2-45* presents an analysis of building exposure that is susceptible to tornadoes by general occupancy type for St. James Parish, along with the percentage of building stock that are mobile homes.

*Table 2-45: Building Exposure by General Occupancy Type for Tornadoes in St. James Parish (Source: FEMA's Hazus 2.2)*

| Building Exposure by General Occupancy Type for Tornadoes Exposure Types ($1,000) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Residential | Commercial | Industrial | Agricultural | Religion | Government | Education | Mobile Homes (%) |
| 1,706,357 | 193,711 | 96,116 | 8,284 | 3,912 | 20,725 | 8,411 | 16.2% |

The parish has suffered experienced no injuries or fatalities due to a tornado during the 25-year record.

In assessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 16.2% of all housing in St. James Parish consists of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are three known locations where manufactured housing is concentrated. Each of those three locations have an overall number of manufactured houses ranging from one to 100. The location and density of manufactured houses can be seen in *Figure 2-28*.

Manufactured housing is more likely to sustain damage from a tornado than any other residential structure. The highest concentration of manufactured home parks is located in the incorporate area of Gramercy (*Table 2-46*). However, this does not influence the risk associated with a tornado event since they strike at random, making all structures and population within the planning area equally vulnerable.

*Table 2-46: Manufactured Home Distribution throughout St. James Parish*

| Location | Number of Manufactured Home Parks | % of Manufactured Home Parks |
|---|---|---|
| Unincorporated Area | 1 | 33.3% |
| Gramercy | 2 | 66.7% |
| Lutcher | 0 | 0% |

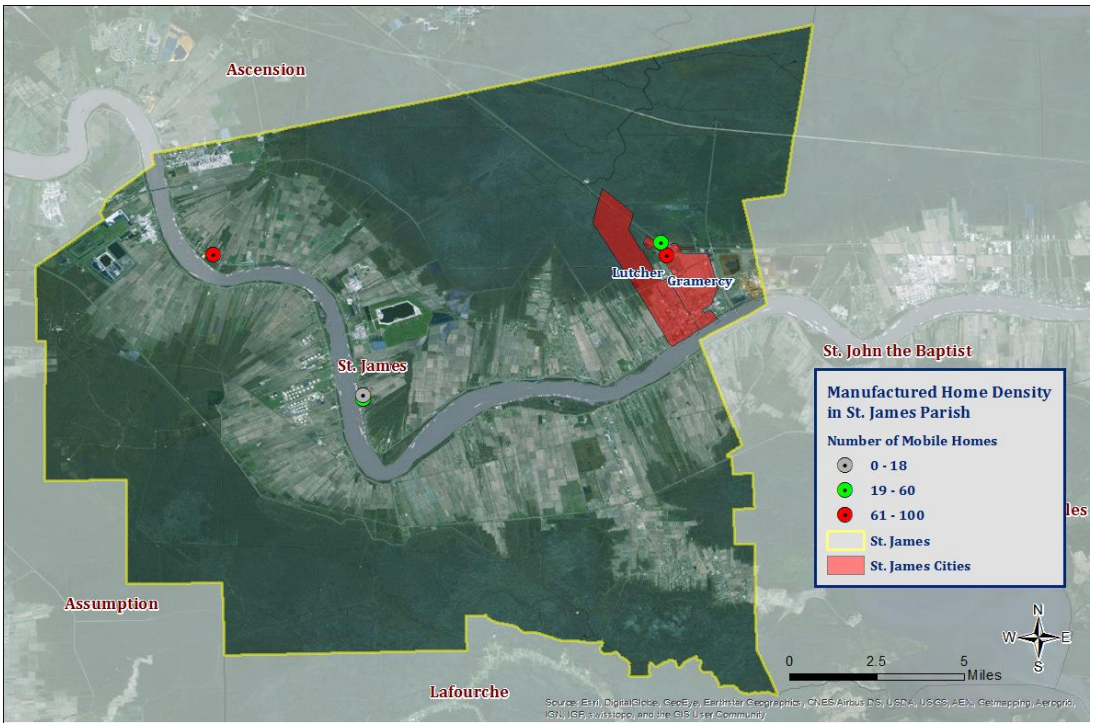



*Figure 2-28: Location and Approximate Number of Units in Manufactured Housing Locations throughout St. James Parish*

### *Vulnerability*

See Appendix C for parish and municipality building exposure to tornado hazards.

## Tropical Cyclones

Tropical cyclones are among the worst hazards that Louisiana faces. These spinning, low-pressure air masses draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes. Usually, these storms begin as clusters of oceanic thunderstorms off the western coast of Africa, moving westward in the trade wind flow. The spinning of these thunderstorm clusters begins because of the formation of low pressure in a perturbation in the westerly motion of the storms associated with differential impacts of the Earth's rotation. The west-moving, counterclockwise-spinning collection of storms, now called a tropical disturbance, may then gather strength as it draws humid air toward its low-pressure center. This results in the formation of a tropical depression (defined when the maximum sustained surface wind speed is 38 mph or less), then a Tropical Cyclone (when the maximum sustained surface wind ranges from 39 mph to 73 mph), and finally a hurricane (when the maximum sustained surface wind speeds exceed 73 mph). On the next page, *Table 2-47* presents the Saffir-Simpson Hurricane Wind Scale, which categorizes tropical cyclones based on sustained winds.

*Table 2-47: Saffir-Simpson Hurricane Wind Scale*

| Saffir-Simpson Hurricane Wind Scale | | | |
|---|---|---|---|
| **Category** | **Sustained Winds** | **Pressure** | **Types of Damage Due to Winds** |
| Tropical Depression | <39 mph | N/A | N/A |
| Tropical Cyclone | 39-73 mph | N/A | N/A |
| 1 | 74-95 mph | >14.2 psi | Very dangerous winds will produce some damage. Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallow-rooted trees may be toppled, especially after the soil becomes waterlogged. Extensive damage to power lines and poles will likely result in power outages that could last several days. |
| 2 | 96-110 mph | 14-14.2 psi | Extremely dangerous winds will cause extensive damage. Well-constructed frame homes could sustain major roof and siding damage. Many shallow-rooted trees will be snapped or uprooted, especially after the soil becomes waterlogged, and block numerous roads. Near total power loss is expected, with outages that could last from several days to weeks. |
| 3 | 111-129 mph | 13.7 -14 psi | Devastating damage will occur. Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, especially after the soil becomes waterlogged, blocking numerous roads. Electricity and water may be unavailable for several days to weeks after the storm passes. |
| 4 | 130-156 mph | 13.3-13.7 psi | Catastrophic damage will occur. Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted, especially after the soil becomes waterlogged, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months. |
| 5 | 157 mph or higher | <13.7 psi | Catastrophic damage will occur. A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks to months. |

Many associated hazards can occur during a hurricane, including heavy rains, flooding, high winds, and tornadoes. A general rule of thumb in coastal Louisiana is that the number of inches of rainfall to be expected from a tropical cyclone is approximately 100 divided by the forward velocity of the storm in mph; so a fast-moving storm (20 mph) might be expected to drop five inches of rain while a slow-moving (5 mph) storm could produce totals of around 20 inches. However, no two storms are alike, and such generalizations have limited utility for planning purposes. Hurricane Beulah, which struck Texas in 1967, spawned 115 confirmed tornadoes. In recent years, extensive coastal development has increased the storm surge resulting from these storms so much that this has become the greatest natural hazard threat to property and loss of life in the state. Storm surge is a temporary rise in sea level generally caused by reduced air pressure and strong onshore winds associated with a storm system near the coast. Although storm surge can technically occur at any time of the year in Louisiana, surges caused by hurricanes can be particularly deadly and destructive. Such storm surge events are often accompanied by large, destructive waves (exceeding ten meters in some places) that can inflict a high number of fatalities and economic losses. In 2005, Hurricane Katrina clearly demonstrated the destructive potential of this hazard, as it produced the highest modern-day storm surge levels in the state of Louisiana, reaching up to 18.7 feet near Alluvial City in St. Bernard Parish.

Property can be damaged by the various forces that accompany a tropical cyclone. High winds can directly impact structures in three ways: wind forces, flying debris, and pressure. By itself, the force of the wind can knock over trees, break tree limbs, and destroy loose items, such as television antennas and power lines. Many things can be moved by high winds. As winds increase, so does the pressure against stationary objects. Pressure against a wall rises with the square of the wind speed. For some structures, this force is enough to cause failure. The potential for damage to structures is increased when debris breaks the building “envelope” and allows the wind pressure to impact all surfaces (the building envelope includes all surfaces that make up the barrier between the indoors and the outdoors, such as the walls, foundation, doors, windows, and roof). Mobile homes and buildings in need of maintenance are most subject to wind damage. High winds mean bigger waves. Extended pounding by waves can demolish any poorly or improperly designed structures. The waves also erode sand beaches, roads, and foundations. When foundations are compromised, the building will collapse.

Nine out of ten deaths during hurricanes are caused by storm surge flooding. Falling tree limbs and flying debris caused by high winds have the ability to cause injury or death. Downed trees and damaged buildings are a potential health hazard due to instability, electrical system damage, broken pipelines, chemical releases, and gas leaks. Sewage and water lines may also be damaged. Salt water and fresh water intrusions from storm surge send animals, such as snakes, into areas occupied by humans.

### *Location*

Hurricanes are the single biggest threat to all of south Louisiana. With any single hurricane having the potential to devastate multiple parishes at once, the risk of a tropical cyclone has the probability of impacting anywhere within the planning area for St. James Parish. As such, all jurisdictions are equally at risk for tropical cyclones.

### *Previous Occurrences / Extents*

The central Gulf of Mexico coastline is among the most hurricane-prone locations in the United States, and hurricanes can affect every part of the state. The SHELDUS database reports a total of seven tropical cyclone events occurring within the boundaries of St. James Parish between the years 2002 and 2014 (*Table 2-48*). The tropical cyclone events experienced in St. James Parish include depressions, storms, and hurricanes. As a worst case scenario, St. James Parish can expect to experience hurricanes at the Category 3 level in the future.

*Table 2-48: Historical Tropical Cyclone Events in St. James Parish from 2002- 2014 (Source: SHELDUS)*

| Date | Name | Storm Type At Time of Impact |
|---|---|---|
| September 26, 2002 | Isidore | Tropical Storm |
| October 3, 2002 | Lili | Hurricane – Category 1 |
| August 28, 2005 | Katrina | Hurricane – Category 3 |
| September 23, 2005 | Rita | Hurricane – Category 3 |
| September 1, 2008 | Gustav | Hurricane – Category 2 |
| September 12,2008 | Ike | Hurricane – Category 2 |
| September 1, 2012 | Isaac | Tropical Storm |

### Tropical Storm Isidore (2002)

Tropical Storm Isidore moved steadily northward across the central Gulf of Mexico on September 24 and September 25, 2002, ultimately moving ashore near Grand Isle early on the morning on Thursday, September 26, 2002. The tropical storm moved steadily north across southeast Louisiana, and by the afternoon of September 26, it was located in central Mississippi, where it was downgraded to a tropical depression. Tropical Storm Isidore had a large circulation with tropical storm force winds extending out several hundreds of miles from its center. Earlier in the week, prior to moving across the Yucatan Peninsula and subsequently weakening, Isidore was classified as a major hurricane. Swells from the distant hurricane resulted in riptides along the northern Gulf of Mexico. As a result of these riptides, a 41 year old man drowned on the afternoon of Sunday, Sept 22, 2002, at Port Fourchon.

The large circulation caused a significant storm surge over a large area for a tropical storm. Tide levels were 4 to 6 feet above normal across much of southeast Louisiana, from Grand Isle eastward to the Pearl River. Storm surge flooding occurred outside of the hurricane protection levees across Lafourche, Jefferson, Plaquemine, St. Bernard, and Orleans Parishes, inundating roadways and flooding some non-elevated structures. Across Lake Pontchartrain and Lake Maurepas, storm surge of 4 to 5 feet above normal were measured. Low lying areas, roadways, and some non-elevated structures in parishes surrounding Lake Pontchartrain and Maurepas were flooded. St. Tammany Parish was particularly hard hit with storm surge flooding when Isidore moved north of the area, and the winds shifted to a southwest direction causing water levels to rapidly increase along the north shore of Lake Pontchartrain on the morning of Thursday, September 26, 2000. The storm surge overtopped or breached a small local levee system in southern portions of Slidell causing water to flood several hundred homes. Approximately 1000 homes were flooded in the parish from either storm surge, river flooding, or from flooding from heavy rain.

In St. James Parish, Hurricane Isidore produced more than 15 inches of rain in a two hour period. Many homes and businesses in Gramercy and Lutcher, as well as the unincorporated areas of St. James Parish, were flooded. Wind gusts exceeded 50 mph in some places. Shelters were opened at Lutcher High School and St. James Junior High School to accommodate evacuees.

### Hurricane Lili (2002)

Hurricane Lili made landfall on the Louisiana coast on October 3, 2002, with an estimated intensity of 80 knots. Although Lili weakened considerably before making landfall on the central Louisiana coast, it caused significant wind and flood damage in the area. Strong winds toppled trees onto houses and into roadways, stripped shingles from roofs, and blew out windows. The wind and driving rain flattened sugarcane fields throughout southern Louisiana. A combination of storm surge and rain caused levees to fail in Montegut and Franklin, Louisiana. Lili also temporarily curtailed oil production in the Gulf of Mexico.

Over half of St. James Parish lost power during Hurricane Lili. Winds exceeding 78 mph damaged over 35% of sugarcane crops in the parish. These strong winds downed large trees in the incorporated areas of Lutcher and Gramercy, as well as in the unincorporated areas of the parish. Shelters were opened at Lutcher High School and St. James Junior High School to accommodate displaced citizens.

### Hurricane Katrina (2005)

Hurricane Katrina was one of the strongest and most destructive hurricanes on record to impact the coast of the United States. The National Hurricane Center ranked Katrina as the costliest storm (both before and after adjusting for inflation) and the third deadliest in the U.S. since 1851. The hurricane initially made landfall as a Category 3 storm in Plaquemines Parish on August 29, 2005, and continued on a north-northeast track, with a second landfall occurring near the Louisiana-Mississippi border. Hurricane Katrina caused widespread devastation along the central Gulf Coast states. Following the passage of Katrina, the flooding of New Orleans was catastrophic, resulting in the displacement of more than 250,000 people.

In St. James Parish, Hurricane Katrina produced over six inches of rain in Lutcher and Gramercy, as well as in portions of the unincorporated areas of the parish. St. James Parish received some storm related surge, though the impact was not nearly as devastating as it was in the coastal parishes. Tropical Storm winds were felt throughout the parish, and rampant power outages were experienced in the unincorporated areas of the parish, as well as in the incorporated areas of Gramercy and Lutcher.

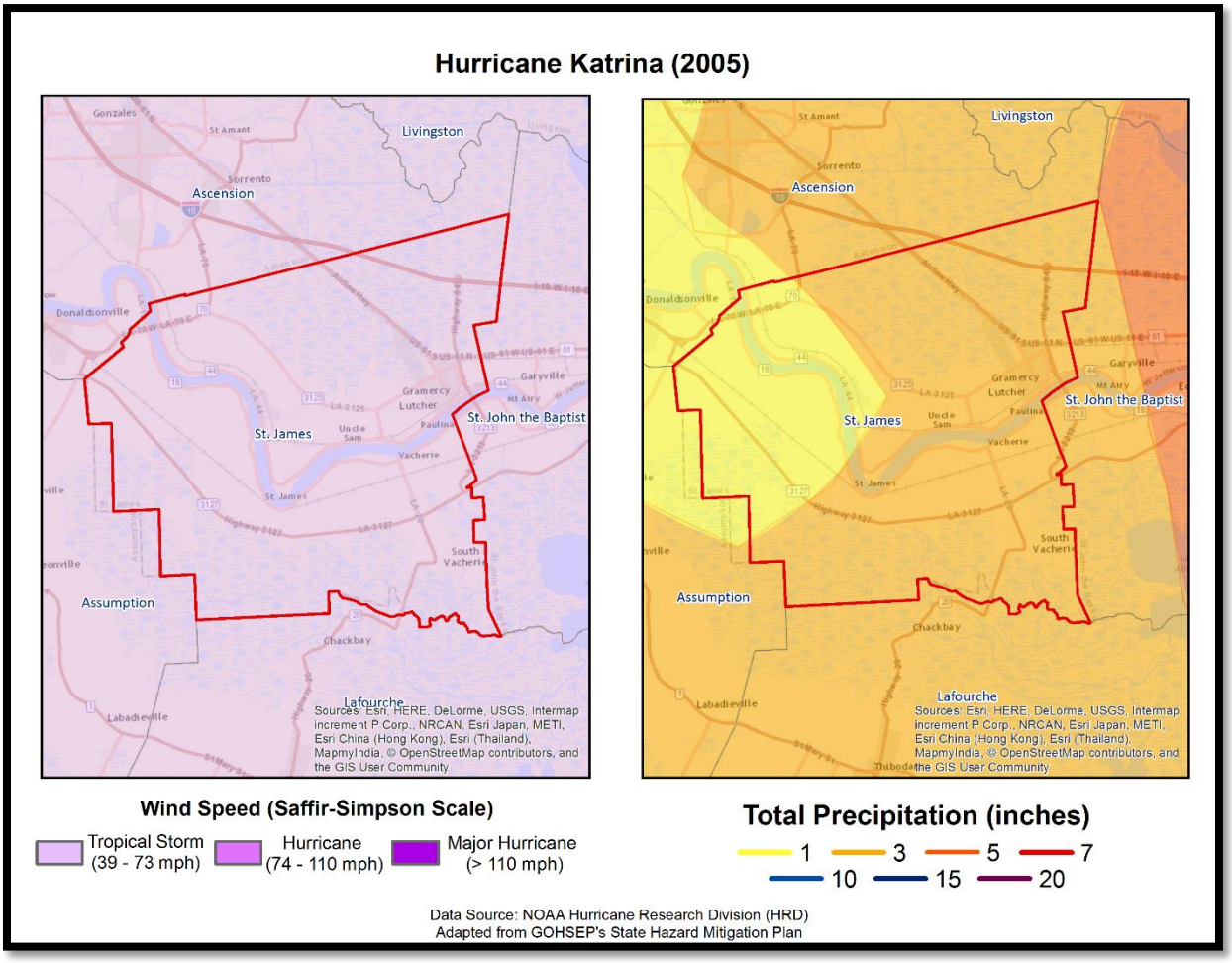



*Figure 2-29: Wind Speed and Precipitation Totals in St. James Parish for Hurricane Katrina*

### Hurricane Rita (2005)

While Hurricane Katrina and resulting levee failures captured headlines worldwide, lesser known (but just as destructive) Hurricane Rita wreaked havoc on southwestern Louisiana less than a month later. The storm made landfall as a Category 3 hurricane in Cameron Parish. Across southeast Louisiana, the main effect from Hurricane Rita was the substantial storm surge flooding that occurred in low lying communities across coastal areas of southern Terrebonne, southern Lafourche, and southern Jefferson Parishes, where numerous homes and businesses were flooded. Some of the most substantial damage occurred in southern Terrebonne Parish, where storm surge of five to seven feet above normal overtopped or breached local drainage levees, inundating many small communities. Newspaper accounts indicated that approximately 10,000 structures were flooded in Terrebonne Parish. Lafitte and other communities in lower Jefferson Parish also suffered extensive storm surge flooding. Storm surge flooding also occurred in areas adjacent to Lake Pontchartrain and Lake Maurepas, affecting homes and businesses from Slidell to Mandeville and Madisonville. Approximately 1,500 structures were reported as flooded in Livingston Parish near Lake Maurepas. Repaired levees damaged by Hurricane Katrina in late August were overtopped or breached along the Industrial Canal in New Orleans, resulting in renewed flooding in adjacent portions of New Orleans and St. Bernard Parish. However, the flooding was much more limited in scope than during Hurricane Katrina.

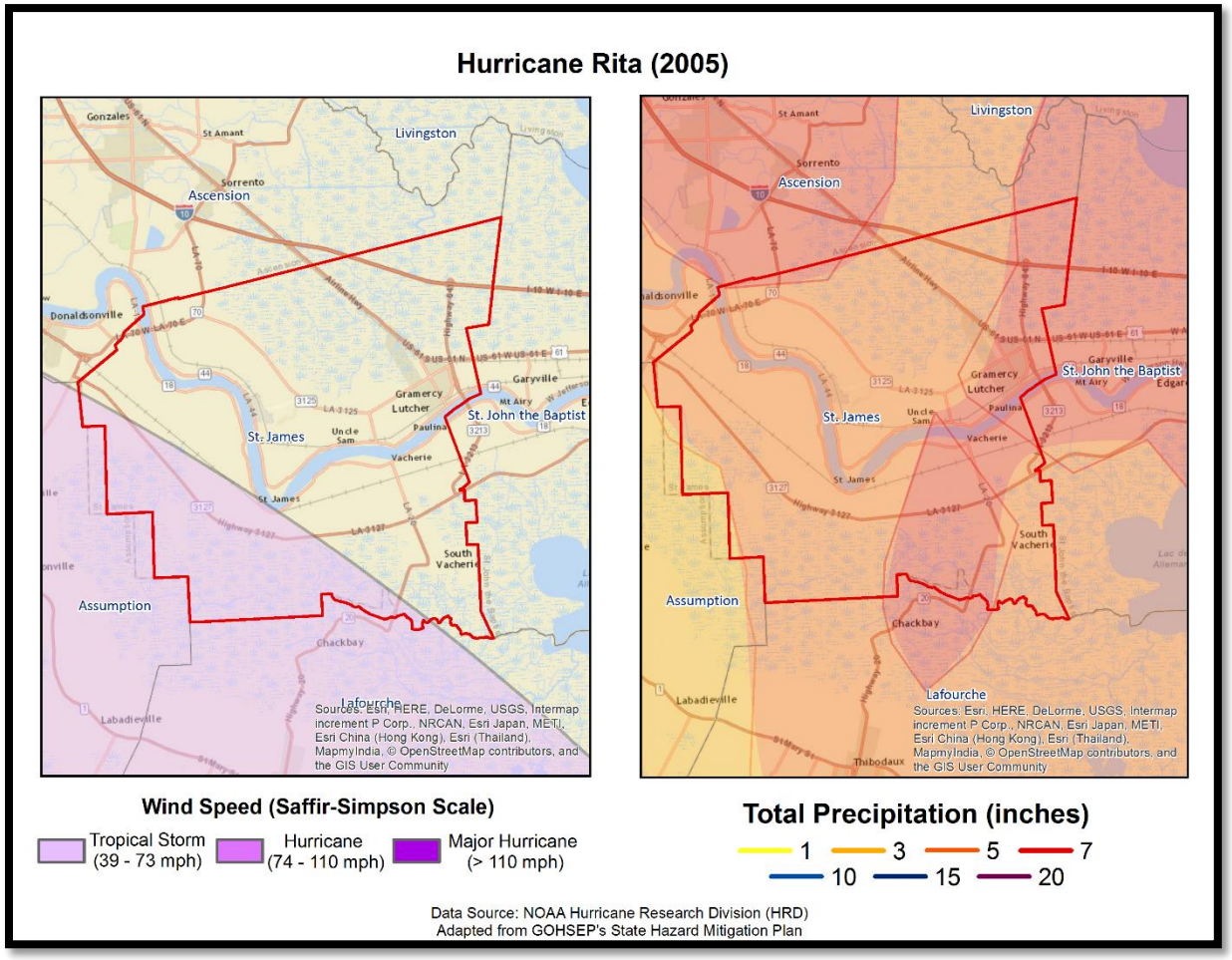



*Figure 2-30: Wind Speed and Precipitation Totals in St. James Parish for Hurricane Rita*

Hurricane Rita was the most powerful hurricane to impact southwestern Louisiana since Hurricane Audrey in 1957. Estimated damages in southwest Louisiana totaled near $4 billion, with the majority of those losses occurring in Cameron and Calcasieu Parishes. Entire towns were destroyed in Cameron Parish, including downtown Cameron, Creole, Holly Beach, and Grand Chenier. An estimated 90 to 95 percent of the homes in the parish were severely damaged or destroyed. Storm surge values were estimated around 15 feet in parts of Cameron Parish.

In St. James Parish, Hurricane Rita produced 3-6 inches of rainfall in the unincorporated areas of the parish, and in the incorporated areas of Lutcher and Gramercy. Tropical storm force winds were experienced throughout the parish.

### Hurricane Gustav (2008)

Hurricane Gustav entered the southeast Gulf of Mexico as a major Category 3 hurricane on August 31, 2008, after developing in the Caribbean Sea and moving across western Cuba. Gustav tracked northwestward across the Gulf toward Louisiana and made landfall as a Category 2 hurricane near Cocodrie, Louisiana, during the morning of September 1. Gustav continued to move northwest across

south Louisiana and weakened to a Category 1 storm over south central Louisiana later that day. The storm diminished to a tropical depression over northwestern Louisiana on September 2nd.

The highest wind gust recorded was 117 mph (102 kts) at a USGS site at the Houma Navigational Canal and at the Pilot Station East C-MAN near the Southwest Pass of the Mississippi River. The highest sustained wind of 91 mph was recorded at the Pilot's Station East C-MAN site. However, due to the failure of equipment at some observation sites during the storm, higher winds may have occurred. The minimum sea level pressure measured was 951.6 millibars at a USGS site at Caillou Lake, southwest of Dulac, and 954.5 millibars at the LUMCON facility near Dulac. Rainfall varied considerably across southeast Louisiana, ranging from around four inches to just over 11 inches.

Gustav produced widespread wind damage across southeast Louisiana, especially in the area from Houma and Thibodaux through the greater Baton Rouge area. Hurricane force wind gusts occurred also across the inland areas, including the Baton Rouge area and surrounding parishes. A peak wind gust of 91 mph was recorded at the Baton Rouge (Ryan Field) Airport at 1:12 PM CST. This was only one mph less than the highest wind gust recorded during Hurricane Betsy in 1965. After the storm, the electric utility serving most of southeast Louisiana reported 75 to 100 percent of utility customers were without power, in areas ranging from Lafourche and Terrebonne Parishes northwest through the Baton Rouge area to southwest Mississippi and central Louisiana. Considerable damage occurred to many houses and structures as large tree limbs and trees were toppled by the hurricane force winds. Preliminary estimates from the American Red Cross indicated that around 13,000 single family dwellings were damaged by the hurricane in southeast Louisiana, and several thousand more apartments and mobile homes were also damaged. Early estimates from Louisiana Economic Development indicated that Gustav caused at least $4.5 billion in property damage in Louisiana, including insured and uninsured losses.

In St. James Parish, Hurricane Gustav produced tropical storm force winds, with some gusts exceeding hurricane force in the unincorporated areas of the parish and the incorporated areas of Gramercy and Lutcher. Over $5 million in damage claims were made in St. James Parish, with most due to wind and flooding.

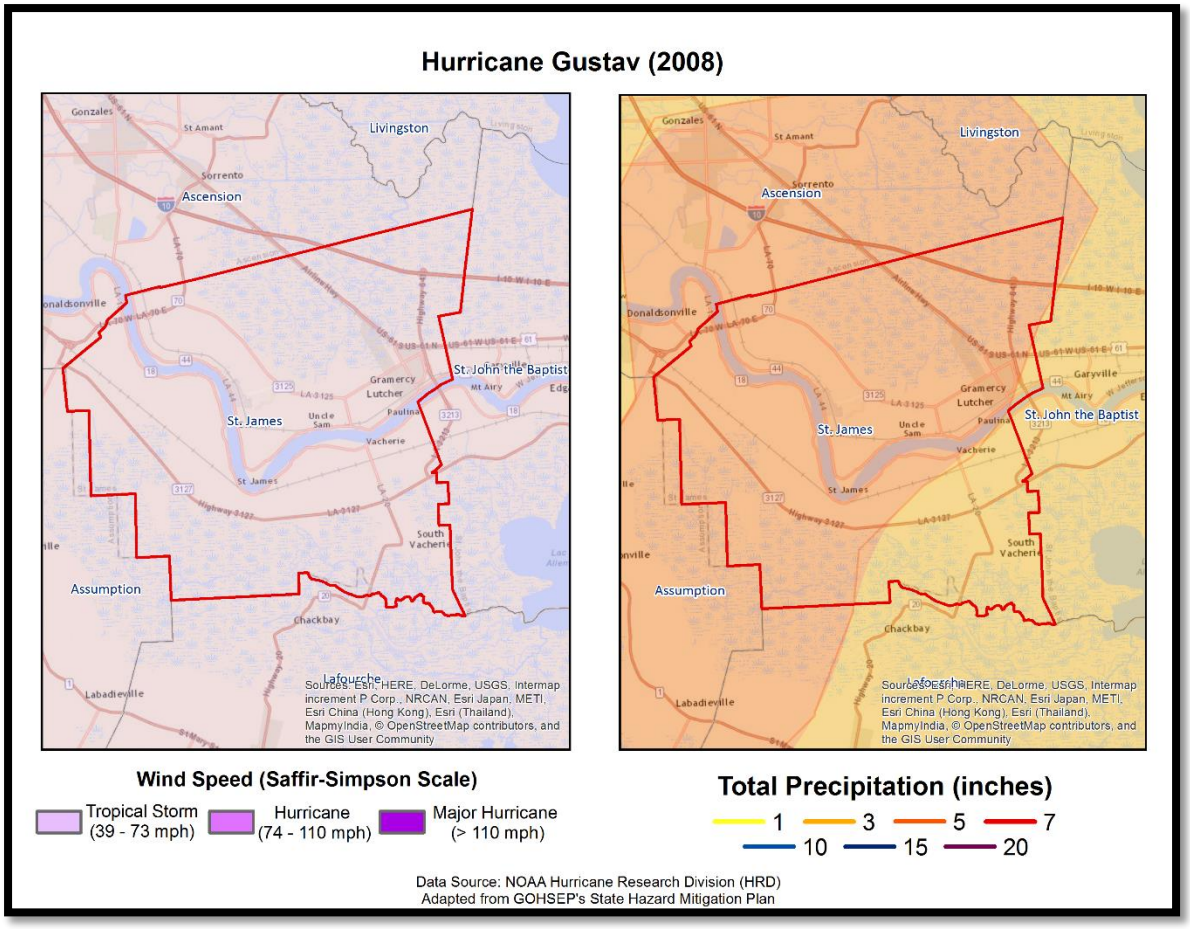



*Figure 2-31: Wind Speed and Precipitation Totals in St. James Parish for Hurricane Gustav*

## Hurricane Ike (2008)

Hurricane Ike caused wind damage, storm surge flooding, and tornadoes across southwest Louisiana. Ike made landfall near Galveston, TX early in the morning on September 13th, 2008, as a strong Category 2 hurricane. Sustained hurricane force winds were confined to extreme western Cameron Parish. The highest recorded winds in southwest Louisiana were experienced at Lake Charles Regional Airport, with sustained winds of 53 mph (46 kts) and gusts of 77 mph (67 kts). The lowest pressure reading occurred at Southland Field near Sulphur, LA, with a low of 994.6 millibars. Several tornadoes were reported across southwest Louisiana. The most significant one was near Mamou, where ten to fifteen homes were damaged, including one that lost its roof. Storm surge was a significant event. Water levels ranged from 14 feet in western Cameron Parish, to eight feet in St. Mary Parish. This resulted in widespread flooding of the same areas that flooded during Hurricane Rita in 2005. Most of Cameron Parish was under water. Over 3,000 homes were flooded. This extended north into Calcasieu Parish, where another 1,000 homes flooded in Lake Charles, Westlake, and Sulphur. In Vermilion Parish, at least 1,000 homes flooded in Pecan Island, Forked Island, Intracoastal City, and Henry. This extended east into Iberia Parish, where another 1,000 homes flooded south of Highway 14 and Highway 90. In St. Mary Parish, some of the worst flooding occurred in Franklin, where a man-made levee failed, flooding over 450 homes. Maximum storm total rainfall ranged from six to eight inches across Cameron, Calcasieu, and Beauregard Parishes. No fatalities were reported in southwest Louisiana. Total property damages, however, were high. Losses were

estimated to be almost $420 million across southwest Louisiana. Agricultural losses were over $225 million.

Hurricane Ike mostly avoided St. James Parish. Some rain and high winds were detected, but property damage was minimal. The biggest strain was on the parish's river systems, which were inundated for the second time in two weeks. Water levels were already high due to Hurricane Gustav, and Hurricane Ike brought the water levels up to critical heights.

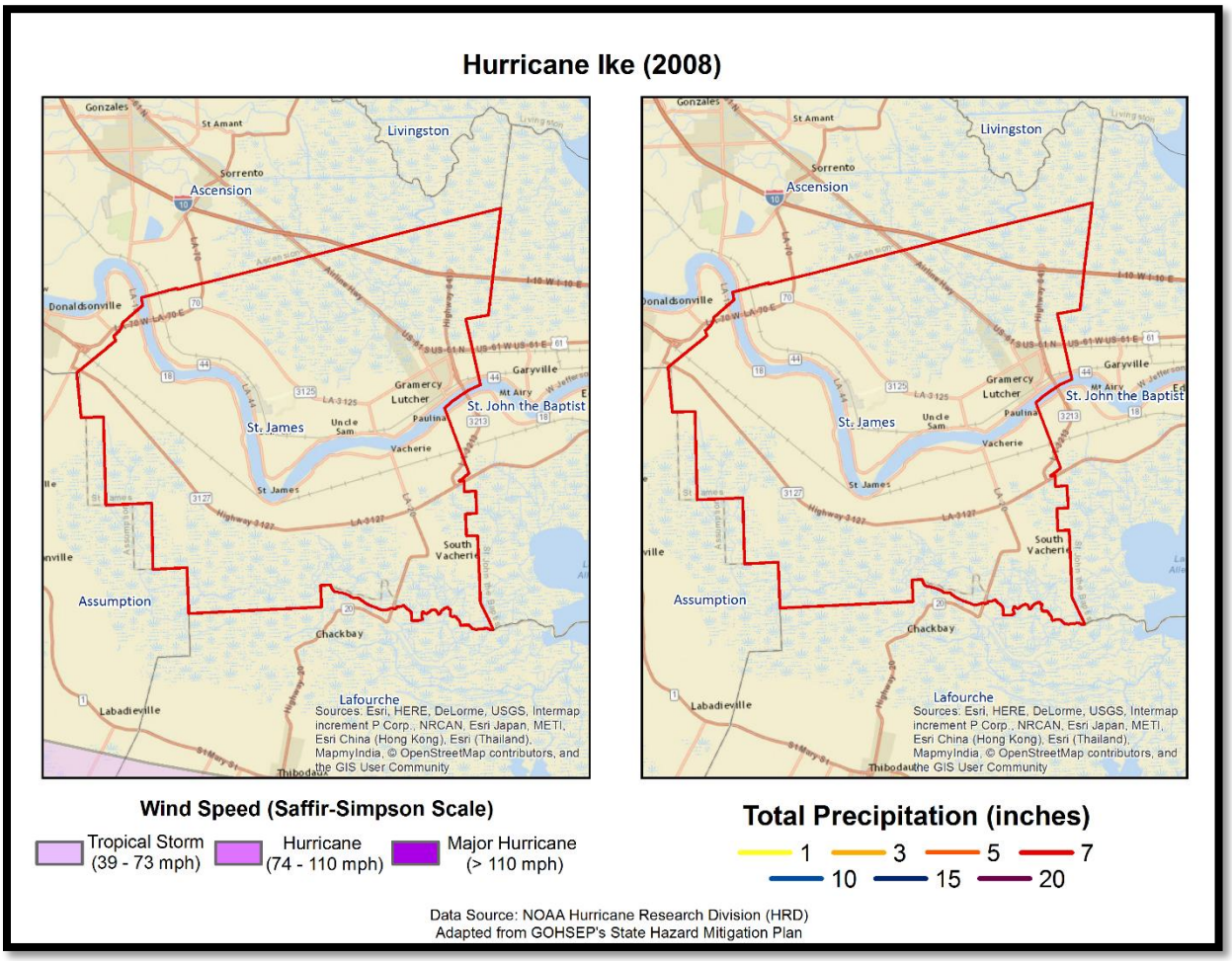



*Figure 2-32: Wind Speed and Precipitation Totals in St. James Parish for Hurricane Ike*

### Hurricane Isaac (2012)

Isaac entered the Gulf of Mexico as a tropical storm on August 26, 2012, moving northwest after crossing Haiti, Cuba, and the Florida Straits. Isaac strengthened into a hurricane on the morning of the 28th when it was 75 miles south-southeast of the mouth of the Mississippi River. Isaac initially made landfall in Plaquemines Parish as a Category 1 hurricane near Southwest Pass of the Mississippi River on the evening of the 28th. A second landfall occurred near Port Fourchon the following morning. The storm weakened to a tropical storm on the afternoon of the 29th about 50 miles west southwest of New Orleans, and weakened further to a tropical depression on the afternoon of the 30th near Monroe, Louisiana.

Due to Isaac's very large size, and slow forward speed, tropical storm force winds lasted in excess of 48 hours in many areas of coastal southeast Louisiana. Occasional hurricane gusts of 70 to 85 mph were recorded across southeast Louisiana during the night of the Aug 28th and early on the 29th, especially south of Lake Pontchartrain. Interior areas of southeast Louisiana, near Baton Rouge and northward, experienced tropical storm force winds. Widespread power outages occurred across the area. Local utility companies reported over 700,000 customers were without power at the peak of the storm in southeast Louisiana. Generally, most of the wind damage was limited to downed trees and power lines, and roof damage caused by wind and falling trees and tree limbs.

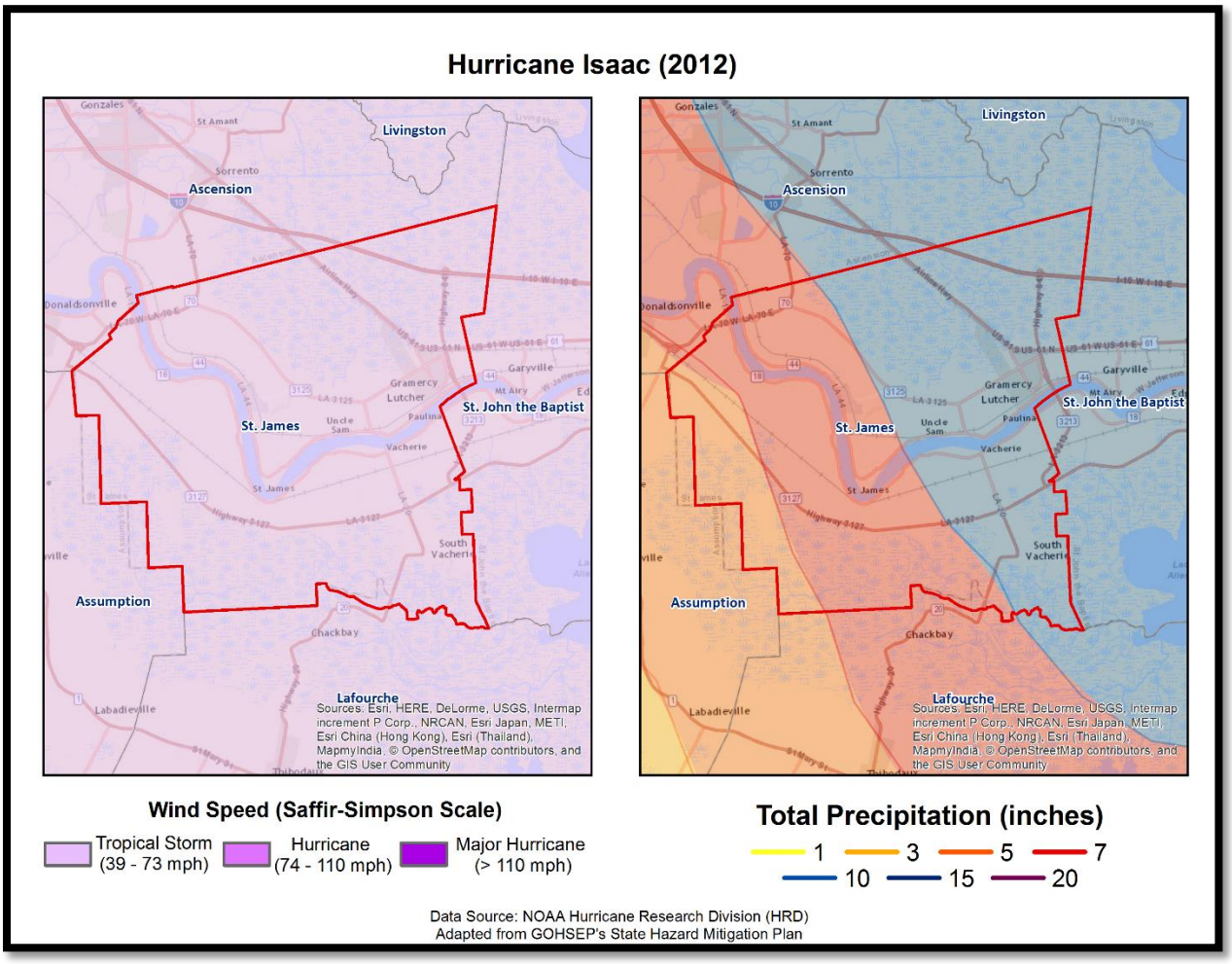



*Figure 2-33: Wind Speed and Precipitation Totals in St. James Parish for Hurricane Isaac*

Significant impact also occurred around Lakes Pontchartrain and Maurepas with a storm tide of 5 to 9 feet. Five to ten thousand homes were flooded in low lying areas of that border these lakes of the following parishes: St. Tammany, Tangipahoa, Livingston, Ascension, St James and St John the Baptist. LaPlace in St. John the Baptist was especially hard hit with over 5,000 homes flooded by storm surge.

Storm surge flooding also affected areas south and southwest of New Orleans with a storm tide of 4 to 7 feet. Roadways and low lying property were flooded. Local levees around Lafitte and Myrtle Grove were overtopped and/or breached resulting flooding of numerous houses and property in this area.

Overall impacts of Isaac resulted in at least $600 million in damages in southeast Louisiana, 3 direct fatalities, and 2 indirect fatalities. Storm surge flooding accounted for the bulk of the damage, accounting for approximately $500 million, as well as the three direct storm surge fatalities in Louisiana. Winds accounted for a much lesser amount of slightly more than a $100 million.

In St. James Parish, Hurricane Isaac was responsible for damage to nearly 1,000 homes in the unincorporated areas of the parish and in the incorporated areas of Gramercy and Lutcher. High winds downed trees and power lines, preventing the parish from receiving electrical service for several days after the storm.

The following figure displays the wind zones that affect St. James Parish in relation to critical facilities throughout the parish.

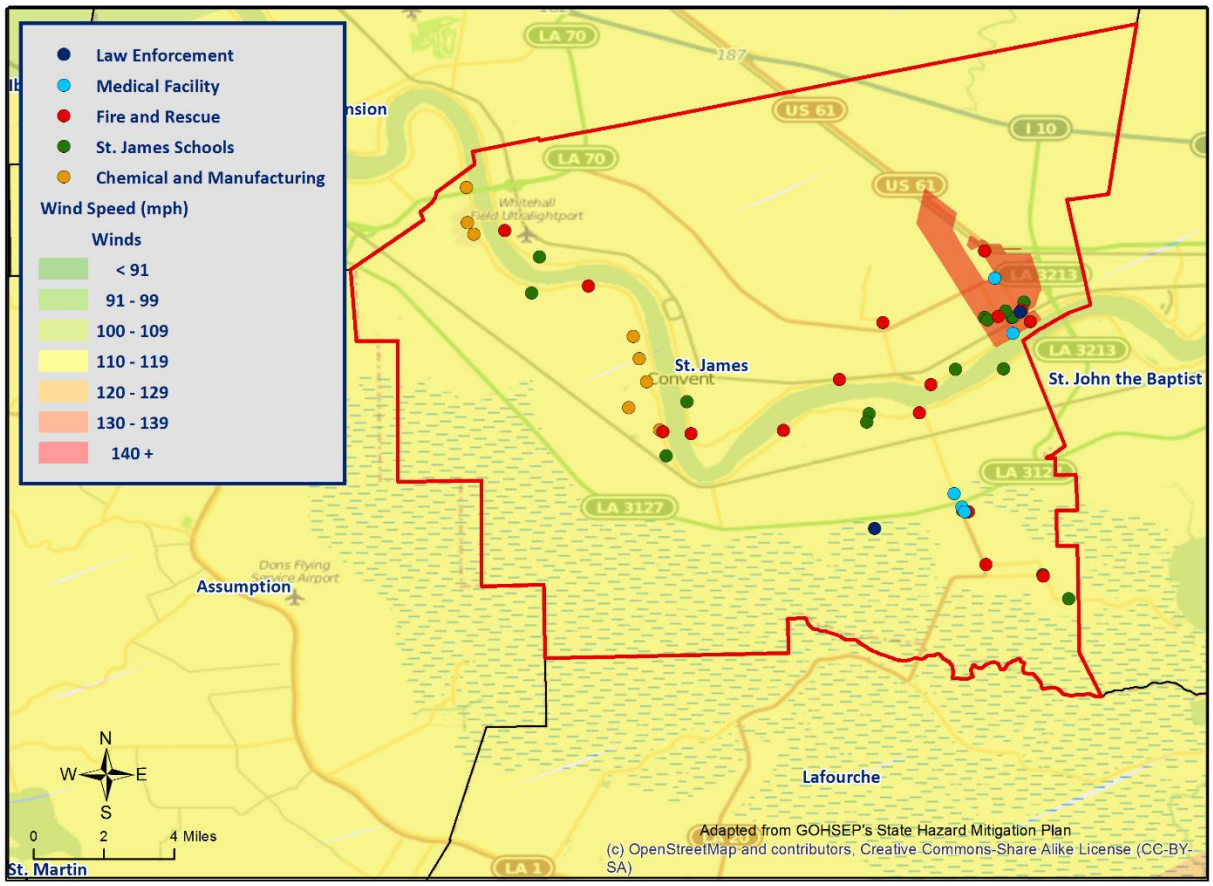



*Figure 2-34: Winds Zones for St. James Parish in Relation to Critical Facilities*

### *Frequency / Probability*

Tropical cyclones are large natural hazard events that regularly impact St. James Parish. The annual chance of occurrence for a tropical cyclone is estimated at 28% for St. James Parish and its municipalities, with seven events occurring within 25 years. The tropical cyclone season for the Atlantic Basin is from June 1st through November 30th, with most of the major hurricanes (Saffir-Simpson Categories 3, 4, & 5) occurring between the months of August and October. Based on geographical location alone, St, James Parish is highly vulnerable to tropical cyclones. This area has experienced several tropical cyclone events in the past and can expect more in the future.

### *Estimated Potential Losses*

Using Hazus 2.2 100-Year Hurricane Model, the 100-Year Hurricane scenario was analyzed to determine losses from this worst-case scenario. The following table shows the total economic losses that would result from this occurrence.

*Table 2-49: Total Estimated Losses for a 100-Year Hurricane Event*
*(Source: Hazus 2.2)*

| Jurisdiction | Estimated Total Losses from 100-Year Hurricane Event |
|---|---|
| St. James Parish (Unincorporated) | $94,505,180 |
| Gramercy | $22,869,874 |
| Lutcher | $22,528,060 |
| **Total** | $139,903,113 |

Total losses from a 100-Year Hurricane event for each jurisdiction were compared with the total value of assets to determine the ratio of potential damage to total inventory in the table below.

*Table 2-50: Ratio of Total Losses to Total Estimated Value of Assets for each Jurisdiction in St. James Parish*
*(Source: Hazus 2.2)*

| Jurisdiction | Estimated Total Losses from 100-Year Hurricane Event | Total Estimated Value of Assets | Ratio of Estimated Losses to Total Value |
|---|---|---|---|
| Unincorporated | $94,505,180 | 1,330,292,000 | 7.1% |
| Gramercy | $22,869,874 | $386,803,000 | 5.9% |
| Lutcher | $22,528,060 | $355,631,000 | 6.3% |

Based on the Hazus 2.2 Hurricane Model, estimated total losses range from 5.9% to 7.1% of the total estimated value of all assets for the unincorporated area of St. James Parish, and the incorporated areas of Gramercy and Lutcher.

The Hazus 2.2 Hurricane Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the tables on the following page.

*Table 2-51: Estimated Losses in Unincorporated St. James Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| St. James Parish (Unincorporated) | Estimated Total Losses from 100-Year Hurricane Event |
|---|---|
| Agricultural | $393,471 |
| Commercial | $5,616,220 |
| Government | $514,573 |
| Industrial | $1,774,316 |
| Religious / Non-Profit | $708,068 |
| Residential | $85,247,104 |
| Schools | $251,428 |
| **Total** | $94,505,180 |

*Table 2-52: Estimated Losses in Gramercy for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| Gramercy | Estimated Total Losses from 100-Year Hurricane Event |
|---|---|
| Agricultural | $95,218 |
| Commercial | $1,359,103 |
| Government | $124,525 |
| Industrial | $429,377 |
| Religious / Non-Profit | $171,350 |
| Residential | $20,629,456 |
| Schools | $60,845 |
| **Total** | $22,869,874 |

*Table 2-53: Estimated Losses in Lutcher for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| Lutcher | Estimated Total Losses from 100-Year Hurricane Event |
|---|---|
| Agricultural | $93,795 |
| Commercial | $1,338,789 |
| Government | $122,664 |
| Industrial | $422,960 |
| Religious / Non-Profit | $168,789 |
| Residential | $20,321,128 |
| Schools | $59,935 |
| **Total** | $22,528,060 |

*Threat to People*

The total population within the parish that is susceptible to a hurricane hazard is shown in the table below:

*Table 2-54: Number of People Susceptible to a 100-Year Hurricane Event in St. James Parish (Source: Hazus 2.2)*

| Number of People Exposed to Hurricane Hazards | | | |
|---|---|---|---|
| **Location** | **# in Community** | **# in Hazard Area** | **% in Hazard Area** |
| Parish (Unincorporated) | **14,930** | **14,930** | **100.0%** |
| Gramercy | **3,613** | **3,613** | **100.0%** |
| Lutcher | **3,559** | **3,559** | **100.0%** |
| **Total** | **22,102** | **22,102** | **100.0%** |

The HAZUS-MH Hurricane Model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions. These populations are illustrated in the following tables:

*Table 2-55: Vulnerable Populations in Unincorporated St. James Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| St. James Parish (Unincorporated) | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 14,930 | 100.0% |
| Persons Under 5 Years | 956 | 6.4% |
| Persons Under 18 Years | 3,613 | 24.2% |
| Persons 65 Years and Over | 2,150 | 14.4% |
| White | 7,375 | 49.4% |
| Minority | 7,555 | 50.6% |

*Table 2-56: Vulnerable Populations in Gramercy for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| Gramercy | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 3,613 | 100.0% |
| Persons Under 5 Years | 271 | 7.5% |
| Persons Under 18 Years | 957 | 26.5% |
| Persons 65 Years and Over | 502 | 13.9% |
| White | 1,861 | 51.5% |
| Minority | 1,752 | 48.5% |

*Table 2-57: Vulnerable Populations in Lutcher for a 100-Year Hurricane Event (Source: Hazus 2.2)*

| Lutcher | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Hazard Area** |
| Number in Hazard Area | 3,559 | 100.0% |
| Persons Under 5 Years | 217 | 6.1% |
| Persons Under 18 Years | 849 | 23.9% |
| Persons 65 Years and Over | 607 | 17.1% |
| White | 1,646 | 46.3% |
| Minority | 1,913 | 53.8% |

### *Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to tropical cyclones.

## Wildfires

A wildfire is combustion in a natural setting, marked by flames or intense heat. Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns. There are three different types of wildfires: (1) **Ground fires** burn primarily in the thick layers of organic matter directly on the forest floor and even within the soil. Ground fires destroy root networks, peat, and compact litter. These fires spread extremely slowly and can smolder for months. (2) **Surface fires** burn litter and vegetative matter in the underbrush of a forest. (3) **Crown fires** spread rapidly by wind and move quickly by jumping along the tops of trees. There are two types of crown fires: (a) *passive (or dependent)* crown fires rely on heat transfer from surface fire, whereas (b) *active (or independent)* crown fires do not require any heat transfer from below. Active crown fires tend to occur with greater tree density and drier conditions. A firestorm is a mass, crown fire (also called a running crown fire, area fire, or conflagration). They are large, continuous, intense fires that lead to violent convection. They are characterized by destructively violent surface in-drafts near and beyond their perimeter. Crown fires are the most damaging and most difficult to contain. The intensity of crown fires enables the fire to produce its own wind gusts. These so-called *fire whirls* can move embers ahead of the fire front and ignite new fires. Fire whirls are spinning vortex columns of ascending hot air and gases rising from the fire. Large fire whirls have the intensity of a small tornado.

The conditions conducive to the occurrence of wildfires are not distributed equally across the United States. Wildfires have a much greater likelihood of occurring in the western part of the country. Although less frequent than in other areas, wildfires do occur in Louisiana. Wildfire danger can vary greatly season to season, and is exacerbated by dry weather conditions. Factors that increase susceptibility to wildfires are the availability of fuel (e.g., litter and debris), topography (i.e., slope and elevation affect various factors like precipitation, fuel amount, and wind exposure), and specific meteorological conditions (e.g., low rainfall, high temperatures, low relative humidity, and winds). The potential for wildfire is often measured by the Keetch–Byram Drought Index (KBDI), which represents the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in the soil. The KBDI tries to measure the amount of precipitation needed to return soil to its full field capacity, with KBDI values ranging from 0 (moist soil) to 800 (severe drought).

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger. *Figure 2-35* displays the areas of wildland-urban interaction in St. James Parish.

The Southern Group of State Foresters developed the Southern Wildfire Risk Assessment Portal to create awareness among the public and government sectors about the threat of wildfires in their areas. The Southern Wildfire Assessment Portal allows users to identify areas that are most prone to wildfires. The table on the next page summarizes the intensity levels assigned to areas in the Southern Wildfire Assessment Portal.

*Table 2-58: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale (Source: Southern Wildfire Assessment Portal)*

| Fire Intensity Scale | |
|---|---|
| **Level** | **Definition** |
| 1 | Lowest Intensity: Minimal direct wildfire impacts. Location has a minimal chance of being directly impacted by a wildfire. |
| 2 | Low Intensity: Small flames usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress. |
| 3 | Moderate Intensity: Flames up to eight feet in length; short-range spotting is possible. |
| 4 | High Intensity: Large flames up to 30 feet in length; short-range spotting common; medium range spotting possible. |
| 5 | Highest Intensity: Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire induced winds. |

### *Location*

Wildfires impact areas that are populated with forests and grasslands. The following figure displays the areas of wildland-urban interface and intermix in West Baton Rouge Parish and its jurisdictions.

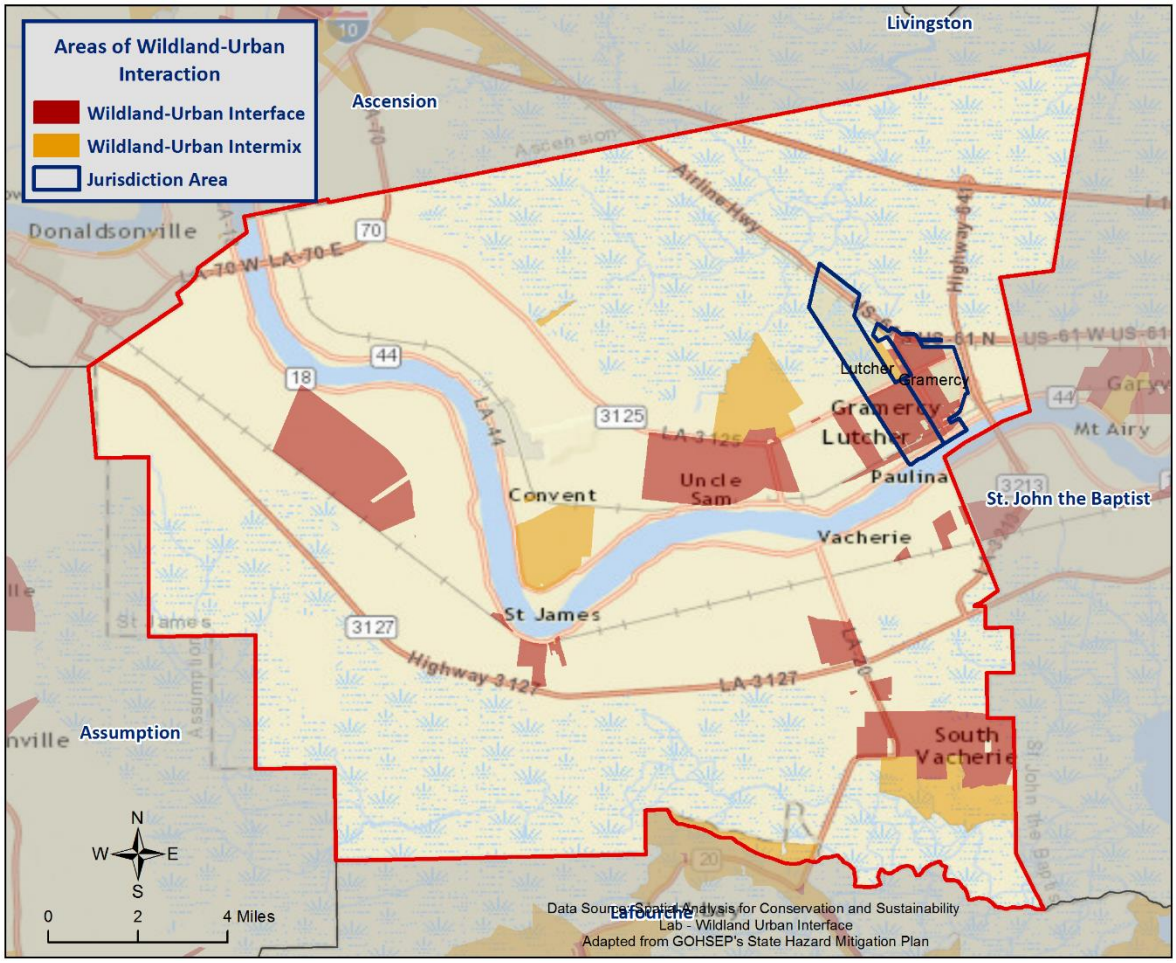



*Figure 2-35: Wildland-Urban Interaction in St. James Parish*

### *Previous Occurrences / Extents*

There have been no reported wildfire events that have occurred within the boundaries of St. James Parish between the years of 1989 and 2014.

Based on the Southern Group of State Foresters Risk Assessment Portal, the following table outlines the intensity that each jurisdictional area within St. James Parish could potentially experience due to a wildfire event.

*Table 2-59: Potential Wildfire Intensity Levels for St. James Parish*
*(Source: Southern Wildfire Assessment Portal)*

| Potential Wildfire Intensity | |
|---|---|
| St. James Parish (Unincorporated) | Highest Intensity Level 5 |
| Gramercy | Lowest Intensity Level 1 |
| Lutcher | Moderate Intensity Level 3 |

### *Frequency / Probability*

Wildfire events within the boundaries of St. James Parish have less than 1% annual chance of occurrence.

### *Estimated Potential Losses*

There have been no wildfire events that have caused property damage, crop damage, injuries, or fatalities in St. James Parish. In assessing the overall risk to population, the most vulnerable population throughout the parish consists of those residing in areas of wildland-urban interaction. *Figure 2-35* displays the areas of wildland-urban interaction in St. James Parish.

Using Hazus 2.2, along with wildland-urban interaction areas, the following table presents an analysis of total building exposure that is located within the wildland-urban interaction areas.

*Table 2-60: Total Building Exposure by Wildland-Urban Interaction Areas*
*(Source: Hazus 2.2)*

| Jurisdiction | Estimated Total Building Exposure |
|---|---|
| St. James Parish (Unincorporated) | $790,539,000 |
| Gramercy | $312,031,000 |
| Lutcher | $287,865,000 |
| **Total** | $1,390,435,000 |

Hazus 2.2 also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. Utilizing this information with the wildland-urban interaction areas allows for identifying the total exposure by jurisdiction. The total exposure for each jurisdiction by sector is listed in the tables on the following page:

*Table 2-61: Estimated Exposure for Unincorporated St. James Parish by Sector (Source: Hazus 2.2)*

| St. James Parish (Unincorporated) | Estimated Total Building Exposure by Sector |
|---|---|
| Agricultural | $2,082,000 |
| Commercial | $19,766,000 |
| Government | $13,367,000 |
| Industrial | $7,087,000 |
| Religious / Non-Profit | $6,175,000 |
| Residential | $737,662,000 |
| Schools | $4,400,000 |
| **Total** | $790,539,000 |

*Table 2-62: Estimated Exposure for Gramercy by Sector (Source: Hazus 2.2)*

| Gramercy | Estimated Total Building Exposure by Sector |
|---|---|
| Agricultural | $300,000 |
| Commercial | $21,922,000 |
| Government | $976,000 |
| Industrial | $9,945,000 |
| Religious / Non-Profit | $4,547,000 |
| Residential | $273,866,000 |
| Schools | $475,000 |
| **Total** | $312,031,000 |

*Table 2-63: Estimated Exposure for Lutcher by Sector (Source: Hazus 2.2)*

| Lutcher | Estimated Total Building Exposure by Sector |
|---|---|
| Agricultural | $723,000 |
| Commercial | $43,377,000 |
| Government | $1,782,000 |
| Industrial | $2,140,000 |
| Religious / Non-Profit | $7,430,000 |
| Residential | $231,359,000 |
| Schools | $1,054,000 |
| **Total** | $287,865,000 |

*Threat to People*

The total population within the parish that is located within a wildland-urban interaction area is shown in the table below:

*Table 2-64: Populations Located within a Wildland-Urban Interaction Area*
*(Source: 2010 U.S. Census Data)*

| Number of People Located in Wildland-Urban Interaction Areas. | | | |
|---|---|---|---|
| **Location** | **# in Community** | **# in Area** | **% in Area** |
| St. James Parish (Unincorporated) | **14,930** | **9,531** | **63.8%** |
| Gramercy | **3,613** | **3,613** | **100%** |
| Lutcher | **3,559** | **3,408** | **95.8%** |
| **Total** | **22,102** | **16,552** | **74.9%** |

The 2010 U.S. Census data was also extrapolated to provide an overview of populations located within wildland-urban interaction areas throughout the jurisdictions. That data is illustrated in the following tables:

*Table 2-65: Population in Unincorporated St. James Parish Located within a Wildland-Urban Interaction Area*
*(Source: 2010 U.S. Census Data)*

| St. James Parish (Unincorporated) | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Wildland-Urban Interaction Area** |
| Number in Hazard Area | 9,531 | 63.8% |
| Persons Under 5 Years | 610 | 6.4% |
| Persons Under 18 Years | 2,307 | 24.2% |
| Persons 65 Years and Over | 1,372 | 14.4% |
| White | 4,708 | 49.4% |
| Minority | 4,823 | 50.6% |

*Table 2-66: Population in Gramercy Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)*

| Gramercy | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Wildland-Urban Interaction Area** |
| Number in Hazard Area | 3,613 | 100.0% |
| Persons Under 5 Years | 271 | 7.5% |
| Persons Under 18 Years | 957 | 26.5% |
| Persons 65 Years and Over | 502 | 13.9% |
| White | 1,861 | 51.5% |
| Minority | 1,752 | 48.5% |

*Table 2-67: Population in Lutcher Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)*

| Lutcher | | |
|---|---|---|
| **Category** | **Total Numbers** | **Percentage of People in Wildland-Urban Interaction Area** |
| Number in Hazard Area | 3,408 | 95.8% |
| Persons Under 5 Years | 208 | 6.1% |
| Persons Under 18 Years | 607 | 17.8% |
| Persons 65 Years and Over | 583 | 17.1% |
| White | 1,578 | 46.3% |
| Minority | 1,830 | 53.7% |

### *Vulnerability*

See Appendix C for parish and municipality facilities that could potentially be exposed to a wildfire hazard. Buildings were determined based on whether or not they fall within the wildfire-urban interface and/or intermix.

## Winter Storms

For Louisiana and other parts of the southeastern United States, a severe winter storm occurs when humid air from the Gulf of Mexico meets a cold air mass from the north. Once the cold air mass crosses Louisiana, and the temperature drops, precipitation may fall in the form of snow or sleet. If the ground temperature is cold enough but air temperature is above freezing, rain can freeze instantly on contact with the surface, causing massive ice storms.

The winter storm events that affect the state of Louisiana are ice storms, freezes, and snow events. Of the winter storm types listed above, ice storms are the most dangerous. Ice storms occur during a precipitation event when warm air aloft exceeds 32 °F, while the surface remains below the freezing point. Ice will form on all surfaces when precipitation originating as rain or drizzle contacts physical structures. These ice storms are usually accompanied by freezing temperatures and occasionally snow.

Winter storms can be accompanied by strong winds, creating blizzard conditions with blinding, wind driven snow, severe drifting, and dangerous wind chill. These types of conditions are very rare in Louisiana, even in north Louisiana, but ice storms are more common. The climatic line between snow and rain often stalls over north Louisiana, creating ideal conditions for ice accumulation.

In a typical winter storm event, homes and buildings are damaged by ice accumulation, either directly by the weight of the ice on the roofs or by trees and/or limbs falling on buildings. While it is not very prevalent, this type of damage can occur in Louisiana, particularly in north Louisiana. Effects of winter weather more likely to occur in Louisiana, especially south Louisiana, include extreme temperatures which can cause waterlines to freeze and sewer lines to rupture. This is especially true with mobile homes, since cold air is able to access more of the building's infrastructure. Winter storms can also have a devastating effect on agriculture, particularly on crops (like citrus) that are dependent on warm weather. Long exposures to low temperatures can kill many kinds of crops, and ice storms can weigh down branches and fruit.

Winter storms are not only a direct threat to human health through conditions like frostbite and hypothermia, but they are also an indirect threat to human health due to vehicle accidents and loss of power and heat, which can be disrupted for days. However, these impacts are rarely seen in Louisiana. As people use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases.

Winter storm events occur throughout Louisiana usually during the colder calendar months of December, January, and February. Severe weather events do not occur with the same frequency across all parts of Louisiana. The northern quarter of Louisiana has historically experienced the most severe winter events between 1987 and 2012. The central, and to an even greater extent the southern parts of the state, such as St. James Parish, have experienced the fewest severe winter events. The following table shows the Sperry-Piltz Ice Accumulation Index which is utilized to predict the potential damage to overhead utility systems from freezing rain and ice storms.

*Table 2-68: Sperry-Piltz Ice Accumulation Index*

| Ice Damage Index | Damage and Impact Descriptions |
|---|---|
| 0 | Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages. |
| 1 | Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous. |
| 2 | Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation. |
| 3 | Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days. |
| 4 | Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structure. Outages lasting 5 – 10 days. |
| 5 | Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed. |

### *Location*

Because a winter storm is a climatological based hazard and has the same probability of occurring in St. James Parish as all of the adjacent parishes, the entire planning area for St. James Parish is equally at risk for winter storms.

### *Previous Occurrences / Extents*

According to SHELDUS, there have been five reported winter storm events that have occurred within the boundaries of St. James Parish between the years of 1989 and 2014. The following table provides a brief synopsis of each event since 2009. Based on historic data, St. James Parish can expect an ice damage index of 1 on the Sperry-Piltz Ice Accumulation Index.

*Table 2-69: Previous Occurrences for Winter Storm Events*

| Date | Synopsis | Property Damage | Crop Damage |
|---|---|---|---|
| January 28, 2014 | A bitterly cold air mass descended on southeast Louisiana producing a large area of sleet and freezing rain. Temperatures remained at or below the freezing mark during the precipitation event. One tenth of an inch of sleet and freezing rain was reported in Gramercy. | $0 | $0 |

Based on previous winter storm events, the worst-case scenario for the unincorporated area of St. James Parish and the incorporated areas of Gramercy and Lutcher is approximately one to two inches of snow accumulation and approximately one tenth inch of ice accumulation.

### *Frequency / Probability*

With five recorded events in 25 years, winter storm events within the boundaries of St. James Parish have an annual chance of occurrence calculated at 20% based on the SHELDUS dataset.

### *Estimated Potential Losses*

Since 1989, there have been five reported winter weather events that have resulted in property and/or crop damages according to the SHELDUS database. The total property damages associated with these storms have totaled $14,677. To estimate the potential losses of a winter weather event on an annual basis, the total damage recorded for winter weather events was divided by the total number of years of available winter weather data in SHELDUS (1989 – 2014). This provides an annual estimated potential loss of $587. To assess potential losses to the participating jurisdictions, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. The following table provides an estimate of potential property losses for St. James Parish based on the 2010 Census data:

*Table 2-70: Estimated Annual Losses for Winter Weather Events in St. James Parish*

| Estimated Annual Potential Losses Winter Storms for St. James Parish | | |
|---|---|---|
| **Unincorporated St. James Parish (67.6% of Population)** | **Gramercy (16.3% of Population)** | **Lutcher (16.1% of Population)** |
| $396 | $96 | $95 |

From 1989 - 2014, there have been three injuries and one fatality as a result of winter weather in St. James Parish.

### *Vulnerability*

See Appendix C for parish and municipality building exposure to winter weather hazards.

# 3 Capability Assessment

This section summarizes the results of the St. James Parish jurisdictions and other agency efforts to develop policies, programs, and activities that directly or indirectly support hazard mitigation. It also provides information on resources and gaps in the parish's infrastructure, as well as relevant changes in its law since the last plan update, in order to suggest a mitigation strategy.

Through this assessment, St. James Parish and the participating jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the community. It also identifies areas where mitigation actions might be used to supplement current capabilities and create a more resilient community before, during, and after a hazard event.

## Policies, Plans and Programs

St. James Parish capabilities are unique to the parish, including planning, regulatory, administrative, technical, financial, and educational and outreach resources. There are a number of mitigation-specific acts, plans, executive orders, and policies that lay out specific goals, objectives, and policy statements which already support or could support pre- and post-disaster hazard mitigation. Many of the ongoing plans and policies hold significant promise for hazard mitigation. They take an integrated and strategic look holistically at hazard mitigation in St. James Parish to propose ways to continually improve it. These tools are valuable instruments in pre- and post-disaster mitigation as they facilitate the implementation of mitigation activities through the current legal and regulatory framework. Examples of existing documents in St. James Parish and its jurisdictions include the following:

*Table 3-1: St. James Parish Planning and Regulatory Capabilities*

| Planning and Regulatory | | | | |
|---|---|---|---|---|
| Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place. | | | | |
| | St. James Parish | Gramercy | Lutcher | Comments |
| Plans | Yes / No | | | |
| Comprehensive / Master Plan | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Capital Improvements Plan | NO | NO | NO | |
| Economic Development Plan | NO | NO | NO | |
| Local Emergency Operations Plan | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Continuity of Operations Plan | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Transportation Plan | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Stormwater Management Plan | NO | NO | NO | St. James- Working on Drainage Management Plan<br>Gramercy/Lutcher- Rely on Parish |
| Community Wildfire Protection Plan | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Other plans (redevelopment, recovery, coastal zone management) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |

## Building Codes, Permitting, Land Use Planning and Ordinances

The St. James Planning and Permitting Office, located in the Parish Courthouse, provides oversight for planning, building permits, and occupational licenses. The Operations Section of the Parish Public Works Department receives and monitors development information to insure compliance with Parish Ordinances through requiring the issuance of construction permits.

As of the 2016 update, St. James Parish and its jurisdictions ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. The Office of Planning and Permitting is administered under the Department of Operations and works hand in hand with the Parish G.I.S. Department to provide adequate information on drainage, public utilities, development requirements, and property elevations.

1. A permit must be obtained prior to the construction of a new home, the movement of a new mobile home within the parish, or the construction of a new building.

2. A permit must also be obtained prior to the construction/renovation of a facility for a commercial permit. The applicant must obtain a set of construction drawings, approval from the State Fire Marshall, and fill out all necessary applications.

The St. James Parish Planning Commission meets regularly on the last Wednesday of every month. Additionally, the Office of Planning and Permitting is the focal point for providing a multitude of services to the public. They include protecting public property, interfacing with the Planning Commission, Floodplain Management, Coastal Zone Management, working with the Parish Operations Department, interfacing with the Parish Assessor's Office, and keeping the permitting process simple.

Further information on the Planning Commission meetings and how to obtain permits or licensing can be found here: http://www.stjamesla.com/permits-license and http://www.stjamesla.com/public-works/PlanningPermitting

While local capabilities for mitigation can vary from community to community, St. James Parish as a whole has a system in place to coordinate and share these capabilities through St. James Parish Government and through this Parish Hazard Mitigation Plan.

Some programs and policies, such as those described above, might use complementary tools to achieve a common end, but fail to coordinate with or support each other. Thus, coordination among local mitigation policies and programs is essential to hazard mitigation.

*Table 3-2: St. James Parish Building Codes, Land Use Planning, and Ordinances*

| Building Code, Permitting and Inspections | Yes / No | | | |
|---|---|---|---|---|
| Building Code | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Building Code Effectiveness Grading Schedule (BCEGS) Score | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Fire Department ISO/PIAL rating | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Site plan review requirements | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| **Land Use Planning and Ordinances** | **Yes / No** | | | |
| Zoning Ordinance | YES | YES | YES | St. James- Land Use Plan<br>Gramercy/Lutcher- Rely on Parish |
| Subdivision Ordinance | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Floodplain Ordinance | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Flood Insurance Rate Maps | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Acquisition of land for open space and public recreation uses | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Other | NO | NO | NO | |

## Administration, Technical, and Financial

As a community, St. James Parish has administrative and technical capabilities in place that may be utilized in reducing hazard impacts or implementing hazard mitigation activities. Such capabilities include staff, skillset, and tools available in the community that may be accessed to implement mitigation activities and to effectively coordinate resources. The ability to access and coordinate these resources is also important. In the table below are examples of resources in place in St. James Parish and its jurisdictions.

*Table 3-3: St. James Parish Administrative and Technical Capabilities*

| Administration and Technical | | | | |
|---|---|---|---|---|
| Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments. | | | | |
| | St. James Parish | Gramercy | Lutcher | Comments |
| **Administration** | **Yes / No** | | | |
| Planning Commission | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Mitigation Planning Committee | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Maintenance programs to reduce risk (tree trimming, clearing drainage systems) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| **Staff** | **Yes / No; FT/PT; % Hazard** | | | |
| Chief Building Official | YES; FT | YES; FT | YES; FT | Gramercy/Lutcher- Rely on Parish |
| Floodplain Administrator | YES; FT | YES; FT | YES; FT | Gramercy/Lutcher- Rely on Parish |
| Emergency Manager | YES; FT | YES; FT | YES; FT | Gramercy/Lutcher- Rely on Parish |
| Community Planner | NO | NO | NO | |
| Civil Engineer | NO | NO | NO | |
| GIS Coordinator | YES; FT | YES; FT | YES; FT | Gramercy/Lutcher- Rely on Parish |
| Grant Writer | YES; FT | YES; FT | YES; FT | Gramercy/Lutcher- Rely on Parish |
| Other | NO | NO | NO | |
| **Technical** | **Yes / No** | | | |
| Warning Systems / Service (Reverse 911, outdoor warning signals) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Hazard Data & Information | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Grant Writing | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Hazus Analysis | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Other | NO | NO | NO | |

Financial capabilities are the resources that St. James Parish and its incorporated jurisdictions have access to or are eligible to use in order to fund mitigation actions. Costs associated with implementing the actions identified by the jurisdictions may vary from little/no cost actions, such as outreach efforts, to substantial action costs such acquisition of flood prone properties.

The following resources are available to fund mitigation actions in St. James Parish and its jurisdictions:

*Table 3-4: St. James Parish Financial Capabilities*

| Financial | | | | |
|---|---|---|---|---|
| Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation. | | | | |
| | St. James Parish | Gramercy | Lutcher | Comments |
| Funding Resource | Yes / No | | | |
| Capital Improvements project funding | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Authority to levy taxes for specific purposes | YES | YES | YES | St. James- By Vote of Tax Payers<br>Garmercy/Lutcher- Rely on Parish (By Vote of Tax Payers) |
| Fees for water, sewer, gas, or electric services | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Impact fees for new development | NO | NO | NO | |
| Stormwater Utility Fee | NO | NO | NO | |
| Community Development Block Grant (CDBG) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Other Funding Programs | YES | YES | YES | St. James- Any of which we're Eligible to apply for<br>Gramercy/Lutcher- Any of which we're Eligible to apply for |

## Education and Outreach

A key element in hazard mitigation is promoting a safer, more disaster resilient community through education and outreach activities and/or programs. Successful outreach programs provide data and information that improves overall quality and accuracy of important information for citizens to feel better prepared and educated with mitigation activities. These programs enable the individual jurisdictions and parish as a whole to maximize opportunities for implementation of activities through greater acceptance and consensus of the community.

St. James Parish and its jurisdictions have existing education and outreach programs to implement mitigation activities, as well as to communicate risk and hazard related information to its communities. Specifically focusing on advising repetitive loss property owners of ways they can reduce their exposure to damage by repetitive flooding remains a priority for the entire parish. The existing programs outlined in the table on the following page.

*Table 3-5: St. James Parish Education and Outreach Capabilities*

| Education and Outreach | | | | |
|---|---|---|---|---|
| Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information. | | | | |
| | St. James Parish | Gramercy | Lutcher | Comments |
| Program / Organization | Yes / No | | | |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | NO | NO | NO | |
| Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education) | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Natural Disaster or safety related school program | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Storm Ready certification | NO | NO | NO | |
| Firewise Communities certification | NO | NO | NO | |
| Public/Private partnership initiatives addressing disaster-related issues | YES | YES | YES | Gramercy/Lutcher- Rely on Parish |
| Other | NO | NO | NO | |

In some cases, the jurisdictions rely on St. James Parish OHSEP and/or St. James Parish Government Agencies for the above listed planning and regulatory, administrative and technical, financial, and education and outreach capabilities. Comments regarding the jurisdictions utilization or intentions to utilize and leverage the capabilities of the parish government can be found in Appendix E in the jurisdictional specific worksheets.

As reflected in the aforementioned existing regulatory mechanisms, programs, and resources within each jurisdiction, St. James Parish and each jurisdiction remains committed to expanding and improving on the existing capabilities within the parish. Each participating jurisdiction will work toward increased participation in funding opportunities and available mitigation programs. Should funding become available, the hiring of additional personnel to dedicate to hazard mitigation initiatives and programs, as well as increasing ordinances within the jurisdictions, will help to enhance and expand risk reduction measures within the parish.

With the sharing of these capabilities, the following municipalities and entities are recognized by the Parish of St. James under the Hazard Mitigation Plan, allowing them to apply for available hazard mitigation funding for as long as these municipalities and entities notify the parish of their intentions and the parish concurs:

- Unincorporated St. James Parish
- Town of Gramercy
- Town of Lutcher

## Flood Insurance and Community Rating System

St. James Parish is a participant in the Community Rating System (CRS). Maintaining and improving the CRS rating for the parish and participating jurisdictions is recognized as a high priority by the Hazard Mitigation Steering Committee, with the addition of a new goal directly relating to CRS. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements.

Under the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) administers the Community Rating System. Under the CRS, flood insurance premiums for properties in participating communities are reduced to reflect the flood protection activities that are being implemented. This program can have a major influence on the design and implementation of flood mitigation activities, so a brief summary is provided here.

A community receives a CRS classification based upon the credit points it receives for its activities. It can undertake any mix of activities that reduce flood losses through better mapping, regulations, public information, flood damage reduction and/or flood warning and preparedness programs.

There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction (see *Figure 3-1*). A community that does not apply for the CRS or that does not obtain the minimum number of credit points is a class 10 community.

During the last update, 38 Louisiana communities participated, including St. James Parish (class 7). Mandeville, Shreveport, and Jefferson and East Baton Rouge Parishes had the best classifications in the state. As of the 2016 update, Jefferson, East Baton Rouge, and Terrebonne Parishes all lead the state with best classifications, class 6.

| CLASS | DISCOUNT | CLASS | DISCOUNT |
|---|---|---|---|
| 1 | 45% | 6 | 20% |
| 2 | 40% | 7 | 15% |
| 3 | 35% | 8 | 10% |
| 4 | 30% | 9 | 5% |
| 5 | 25% | 10 | – |

SFHA (Zones A, AE, A1–A30, V, V1–V30, AO, and AH): Discount varies depending on class.

SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO): 10% discount for Classes 1–6; 5% discount for Classes 7–9.*

Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1–6; 5% discount for Classes 7–9.

* In determining CRS Premium Discounts, all AR and A99 Zones are treated as non-SFHAs.

*Figure 3-1: CRS Discounts by Class (Source: FEMA)*

As of May 2012, 310 communities in the State of Louisiana participate in the Federal Emergency Management Agency's NFIP. Of these communities, 41 (or 13%) participate in the Community Rating System (CRS). Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 27 participate in the CRS. The remaining 23 communities present an outreach opportunity for encouraging participation in the CRS. In St. James Parish, the following communities participate: Town of Lutcher (Class 9) and St. James Parish (class 7).

The CRS provides an incentive not just to start new mitigation programs, but to keep them going. There are two requirements that "encourage" a community to implement flood mitigation activities.

First, the parish will receive CRS credit for this plan when it is adopted. To retain that credit, though, the parish must submit an evaluation report on progress toward implementing this plan to FEMA by October 1st of each year. That report must be made available to the media and the public.

Second, the parish must annually recertify to FEMA that it is continuing to implement its CRS credited activities. Failure to maintain the same level of involvement in flood protection can result in a loss of CRS credit points and a resulting increase in flood insurance rates to residents.

In 2011[1], the National Flood Insurance Program (NFIP) completed a comprehensive review of the Community Rating System that will result in the release of a new CRS Coordinator's Manual.

The changes to the 2013 CRS Coordinator's Manual are the result of a multi-year program evaluation that included input from a broad group of contributors in order to evaluate the CRS and refine the program to meet its stated goals.

The upcoming changes will drive new achievements in the following six core flood loss reduction areas important to the NFIP: (1) reduce liabilities to the NFIP Fund; (2) improve disaster resiliency and sustainability of communities; (3) integrate a whole community approach to addressing emergency management; (4) promote natural and beneficial functions of floodplains; (5) increase understanding of risk, and; (6) strengthen adoption and enforcement of disaster-resistant building codes.

The 2013 CRS Coordinator's Manual changes will impact each CRS community differently. Some communities will see an increase in the points they receive since points for certain activities have increased (e.g., Activity 420 Open Space Preservation). Other communities will receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is likely that some communities with marginal CRS Class 9 programs will have to identify new CRS credits in order to remain in the CRS.

Typically, CRS communities do not request credit for all the activities they are currently implementing unless it would earn enough credit to advance the community to a higher CRS Class. A community that finds itself losing CRS credit with the 2013 Manual could likely identify activities deserving credit they had not previously received.

Due to the changes in both activities and CRS points, community CRS coordinators should speak with their ISO/CRS Specialist to understand how and when the 2013 manual will impact their community.

[1] https://www.fema.gov/national-flood-insurance-program-community-rating-system

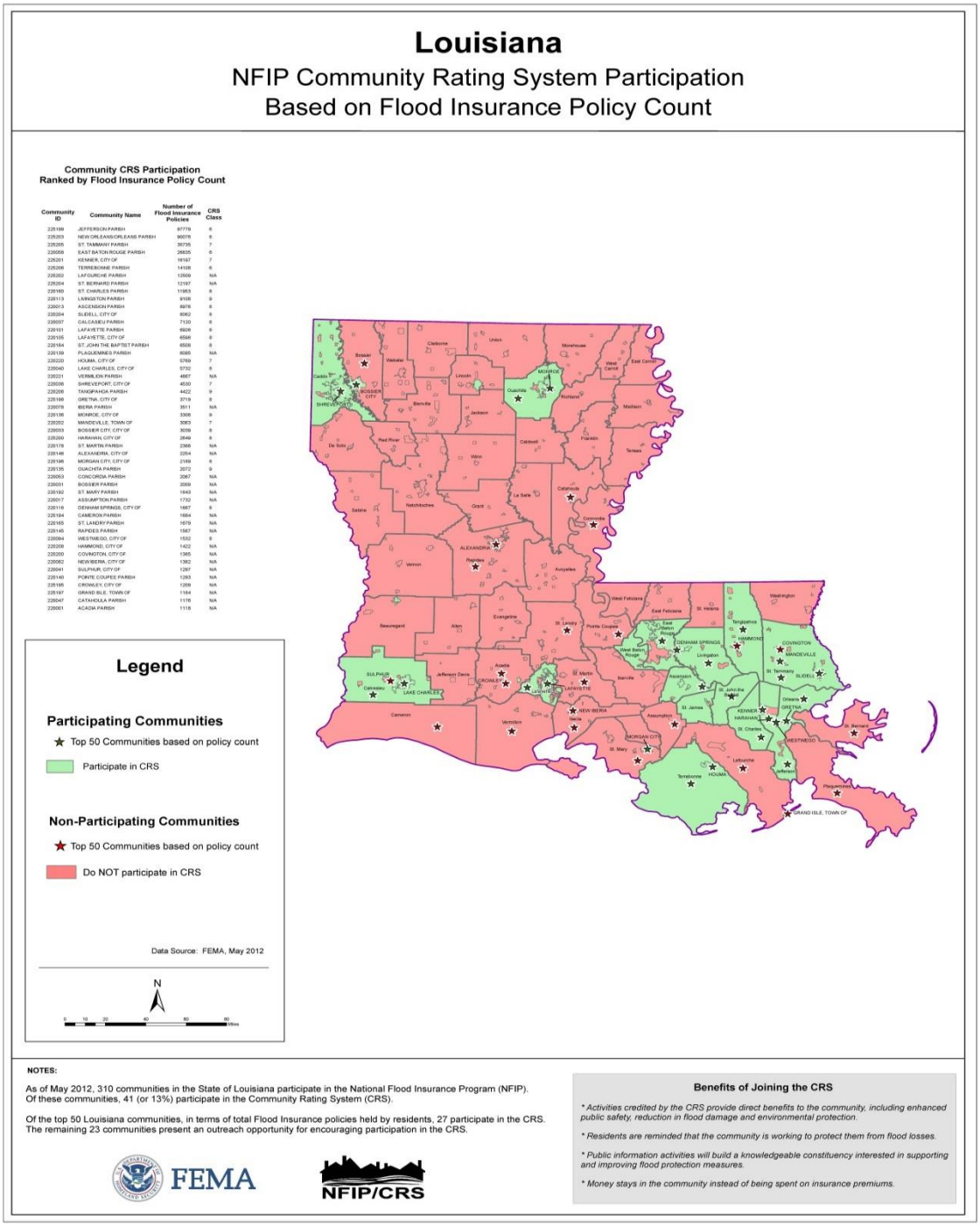



*Figure 3-2: Louisiana NFIP CRS Participation*
*(Source: FEMA[2])*

[2] http://www.fema.gov/media-library-data/20130726-2128-31471-9581/ks_ky_la_crs_may_2012_508.zip

In addition to the direct financial reward for participating in the Community Rating System, there are many other reasons to participate in the CRS. As FEMA staff often say, "If you are only interested in saving premium dollars, you're in the CRS for the wrong reason." The other benefits that are more difficult to measure in dollars include:

1. The activities credited by the CRS provide direct benefits to residents, including:
   – Enhanced public safety
   – A reduction in damage to property and public infrastructure
   – Avoidance of economic disruption and losses
   – Reduction of human suffering
   – Protection of the environment

2. A community's flood programs will be better organized and more formal. Ad hoc activities, such as responding to drainage complaints rather than an inspection program, will be conducted on a sounder, more equitable basis.

3. A community can evaluate the effectiveness of its flood programs against a nationally recognized benchmark.

4. Technical assistance in designing and implementing a number of activities is available at no charge from the Insurance Services Office.

5. The public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.

6. A community would have an added incentive to maintain its flood programs over the years. The fact that its CRS status could be affected by the elimination of a flood related activity or a weakening of the regulatory requirements for new developments would be taken into account by the governing board when considering such actions.

7. Every time residents pay their insurance premiums, they are reminded that the community is working to protect them from flood losses, even during dry years.

**More information on the Community Rating System can be found at www.fema.gov/nfip/crs.shtm**

## NFIP Worksheets

Parish and Participating Jurisdiction NFIP worksheets can be found in Appendix E: State Required Worksheets

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# 4 Mitigation Strategy

## Introduction

St. James Parish's Hazard Mitigation Strategy has a common guiding principle and is the demonstration of the parish's and participating jurisdictions' commitment to reduce risks from hazards. The strategy also serves as a guide for parish and local decision makers as they commit resources to reducing the effects of hazards.

An online public opinion survey was conducted of St. James Parish residents between July and October 2014. The 25 question survey was completed by parish residents over the age of 18.

The survey was designed to capture public perceptions and opinions regarding natural hazards in St. James Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

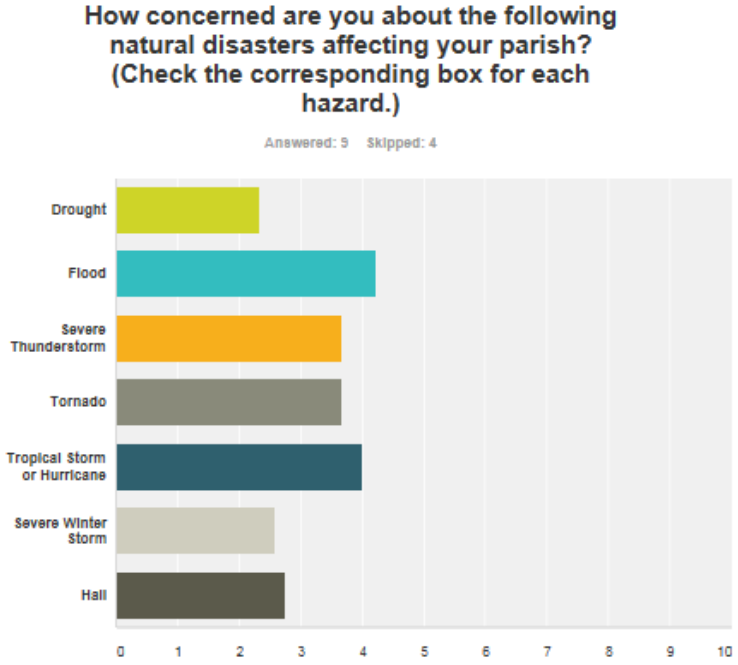
When asked to gauge from a list which categories were more susceptible to impacts caused by natural hazards, the top three categories selected were:

1. Human (Loss of life and/or injuries) / Infrastructure (Damage or loss of bridges, utilities, schools, etc.)
2. Economic (business closure and/or job losses)
3. Governance (Ability to maintain order and/or provide public amenities and services)

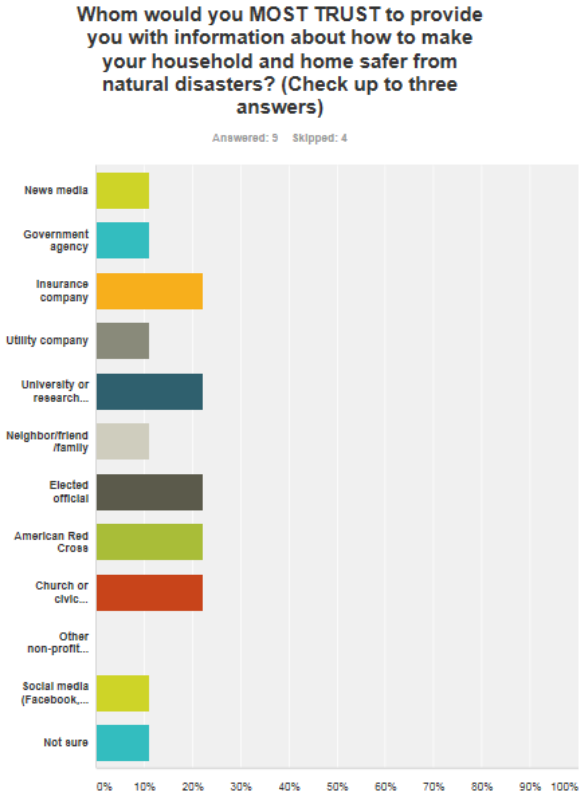
| | 1 | 2 | 3 | 4 | 5 | 6 | Total | Score |
|---|---|---|---|---|---|---|---|---|
| Human (Loss of life and/or injuries) | 57.14%<br>4 | 0.00%<br>0 | 28.57%<br>2 | 14.29%<br>1 | 0.00%<br>0 | 0.00%<br>0 | 7 | 5.00 |
| Economic (Business closures and/or job losses) | 0.00%<br>0 | 50.00%<br>3 | 16.67%<br>1 | 16.67%<br>1 | 16.67%<br>1 | 0.00%<br>0 | 6 | 4.00 |
| Infrastructure (Damage or loss of bridges, utilities, schools, etc.) | 28.57%<br>2 | 42.86%<br>3 | 28.57%<br>2 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 7 | 5.00 |
| Cultural/Historic (Damage or loss of libraries, museums, historic sites) | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 33.33%<br>2 | 66.67%<br>4 | 6 | 1.33 |
| Environmental (Damage or loss of forests, pastureland, waterways, etc.) | 0.00%<br>0 | 16.67%<br>1 | 0.00%<br>0 | 16.67%<br>1 | 33.33%<br>2 | 33.33%<br>2 | 6 | 2.33 |
| Governance (Ability to maintain order and/or provide public amenities and services) | 14.29%<br>1 | 0.00%<br>0 | 28.57%<br>2 | 42.86%<br>3 | 14.29%<br>1 | 0.00%<br>0 | 7 | 3.57 |

The survey results also indicated which natural disasters citizens were *most concerned* with being affected by in St. James Parish. The top three natural disasters selected were:

1. Flooding
2. Hurricanes
3. Severe Thunderstorms and Tornadoes (equal ratings)




The online survey also showed a level of trust in the parish elected officials for disaster related issues, further highlighting the collaborative relationship between citizen and government agencies. This indicated that the strategies and actions being implemented within the communities is trusted and important to citizens.




St. James Parish reviewed and confirmed the goals, objectives, actions, and projects over the period of the Hazard Mitigation Plan Update process. The mitigation actions and projects in this 2016 Hazard Mitigation Plan Update are a product of analysis and review of the St. James Parish Hazard Mitigation Plan Steering Committee, under the coordination of the St. James Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list

of projects and actions, both new and from the 2010 plan, for review from June 2015 to October 2015.

During the public meeting in July, the committee and participating jurisdictions provided a status of the projects from 2010 and the proposed actions for the 2016 update. Breakout forums were provided for citizens to discuss each project with subject matter experts from the parish.

Committee members then submitted jurisdiction-specific projects based on feasibility for funding, ease of completion, and other community-specific factors. The actions were later prioritized.

This activity confirms that the goals and action items developed by the St. James Parish Hazard Mitigation Plan Steering Committee are representative of the outlook of the community at large. Full survey results can be found here:

https://www.surveymonkey.com/r/StJamesHMP

The goals represent the guidelines that the parish and its communities want to achieve with this plan update. To help implement the strategy and adhere to the mission of the Hazard Mitigation Plan, the preceding section of the plan update focused on identifying and quantifying the risks faced by the residents and property owners in St. James Parish from natural and manmade hazards. By articulating goals and objectives based on the previous plans, the risk assessment results, and the intent to address those results, this section sets the stage for identifying, evaluating, and prioritizing feasible, cost effective, and environmentally sound actions to be promoted at the parish and municipal level – and to be undertaken by the state for its own property and assets. By doing so, St. James Parish and its jurisdictions can make progress toward reducing identified risks.

For the purposes of this plan update, goals and action items are defined as follows:

- **Goals** are general guidelines that explain what the parish wants to achieve. Goals are expressed as broad policy statements representing desired long-term results.
- **Action Items** are the specific steps (projects, policies, and programs) that advance a given goal. They are highly focused, specific, and measurable.

## Goals

The current goals of the St. James Parish Hazard Mitigation Plan Update Steering Committee represent long-term commitments by the parish and its jurisdictions. After assessing these goals, the committee decided that the current four goals remain valid and agreed to the addition of a fifth goal. The fifth goal was added by the parish and its jurisdictions as they continue to work towards improving and maintaining their CRS rating.

The goals are as follows:

1. Identify and pursue preventative measures that will reduce future damages from hazards
2. Enhance public awareness and understanding of disaster preparedness
3. Reduce repetitive losses in the parish
4. Facilitate sound development in the parish so as to reduce or eliminate the potential impact of hazards
5. Maintain and continue to improve Community Rating System (CRS) ratings throughout the parish

The Mitigation Action Plan focuses on actions to be taken by St. James Parish and its jurisdictions. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its municipalities in developing and funding projects that are not only cost effective, but also meet the other DMA 2000 criteria of environmental compatibility and technical feasibility.

The Hazard Mitigation Plan Steering Committee and each jurisdiction reviewed and evaluated the potential action and project lists in which consideration was given to a variety of factors. Such factors include determining a project's eligibility for federal mitigation grants, as well as its ability to be funded. This process required evaluation of each project's engineering feasibility, cost effectiveness, and environmental and cultural factors.

## 2016 Mitigation Actions and Update on Previous Plan Actions

The St. James Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions each identified actions that would reduce and/or prevent future damage within St. James Parish and their respective communities. In that effort, each jurisdiction focused on a comprehensive range of specific mitigation actions. These actions were identified in thorough fashion by the consultant team, the committee, and the individual jurisdictions, by way of frequent and open communications and meetings held throughout the planning process.

As outlined in the Local Mitigation Planning Handbook, the following are eligible types of mitigation actions:

- **Local Plans and Regulations –** These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and Infrastructure Projects –** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area, and also includes projects to construct manmade structures to reduce the impact of hazards.
- **Natural System Protection –** These actions minimize the damage and losses and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs –** These actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

In addition to the established and agreed upon parish and jurisdiction actions relative to the parish-wide goals, the action updates from the previous plan updates can be found in the table on the following page.

## St. James 2010 Hazard Mitigation Actions Update

| St. James Parish Action Update | | | | | |
|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Responsible Party, Agency, or Department** | **Hazard** | **Status** |
| Critical Asset Hardening | Harden critical assets in the parish by adding roof tie-downs and additional storm protection features such as hurricane shutters and wind-rated storm proof doors and windows. Also provide lightning protection for the communications and utilities systems. | Parish Budget, Grant Funding | OEP Director and/or Parish Department of Public Works | Floods / Thunderstorms & Lightning with High Winds / Tornadoes | Carried Over |
| Safe Buildings | Provide safe buildings for essential public service/public works employees. i.e. emergency responders, water treatment plant operators, storm flood pump operators, road crews, fire, police and public works personnel at appropriate critical asset locations in the parish. | Parish Budget, Grant Funding | Parish Engineer and/or Parish Department of Public Works/OEP Director | Hurricane / Floods / Storm Surge / Thunderstorms w/ Lightning & High Winds / Tornadoes / Severe Winter Storms / Dam & Levee Failure | Carried Over |
| Emergency Power and Utility Services | Provide reliable emergency power and essential utility services (water, sewer, etc) to meet the needs of critical emergency responders during disaster events. | Parish Budget, DHS Grant Funding | Parish Engineer and/or Parish Department of Public Works | Hurricane / Floods / Storm Surge / Thunderstorms w/ Lightning & High Winds / Tornadoes / Severe Winter Storms / Dam & Levee Failure | Carried Over |
| Potable Water | Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. | Parish Budget, Grant Funding | Parish Engineer and/or Parish Department of Public Works | Hurricane / Floods / Thunderstorm w/ Lightning & High Winds / Tornadoes / Severe Winter Storms | Carried Over |

| St. James Parish Action Update | | | | | |
|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Responsible Party, Agency, or Department** | **Hazard** | **Status** |
| Raising Levees | Raise existing (non-federal) levees to insure no overtopping during storm surges and heavy rains. Widen narrow width areas on existing levees to increase levee stability. | Parish Budget, Grant Funding | Parish Engineer and/or Parish Department of Public Works | Hurricane / Floods / Storm Surge | Carried Over |
| Storm Surge Protection | East Bank Backwater / Levee Protection project with pumps. Provide storm surge protection to low-lying areas on the east bank of the parish. Construct berms and flood gates to prevent backwater flooding from Lake Maurepas and Blind River. | Parish Budget, Grant Funding | Parish Engineer and/or Parish Department of Public Works | Hurricane / Floods / Storm Surge | Carried Over |
| Backwater Protection Structure | Construct small backwater protection structure with pumps at locations where necessary to prevent flooding in low-lying areas. | Parish Budget, Grant Funding | Parish Engineer and/or Parish Department of Public Works | Hurricane / Floods / Storm Surge | Carried Over |
| Power Supply and Generators | Add securely attached and elevated, back up power supply/generators at critical facilities in the Parish. | Parish Budget, Grant Funding | OEP Director | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds / Tornadoes | Completed |
| Public Warning System | Update/upgrade existing public warning system components throughout parish as necessary. | Parish Budgets, FMA project funds, HMGP funds, Sheriff's budget, FEMA 5% funds | OEP Director / Public Works Director / Parish Floodplain Manager / Sheriff's Office | Hurricane / Flooding / Storm Surge / Thunderstorms with Lightning and High Winds / Tornadoes / Severe Winter Storms / Dam and Levee Failure | Carried Over |

| St. James Parish Action Update | | | | | |
|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Responsible Party, Agency, or Department** | **Hazard** | **Status** |
| Adding Protective Structures | Add protective structures, such as dolphins or similar barriers in the Miss. River, to protect potable water intake structures from damages caused by vessels becoming unmoored during high wind hazard events and flooding. | Parish Budgets, Grant Funding | OEP Director / Public Works Director / Parish Floodplain Manager / Corps of Engineers / Coast Guard | Hurricane / Thunderstorms with Lightning and High Winds / Tornadoes / Dam and Levee Failure / Floods | Completed |
| Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). | Parish Budget, 5% Set-Aside for Education | Parish Floodplain Manager | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds | Carried Over |
| Public Awareness | Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, and an educational program for school age children or "how to" classes in retrofitting by local merchants. Integrate "Disaster Resistance Education" into the public school curriculum. Provide public education on the importance of maintaining the ditches. | Parish Budget, 5% Set-Aside for Education | Parish School Board / Parish OEP Director | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds / Tornadoes | Carried Over |
| Evacuation Routes | Develop in conjunction with local and state law enforcement officials and publish primary and alternate evacuation routes in the parish for those hazard events that would prompt evacuation of parish residents. | Parish Budget, DHS Grant Funding | OEP Director / Local and State Law Enforcement Offices / Public Works Director / Planning Director | Hurricane / Floods / Storm Surge / Tornadoes / Dam & Levee Failure | Carried Over |

| St. James Parish Action Update | | | | | |
|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Responsible Party, Agency, or Department** | **Hazard** | **Status** |
| Repetitive Loss Structures | Pursue elevation / acquisition / flood proofing projects and structural solutions to flooding using available grant funding for repetitive loss structures in the parish. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA. | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP) Funds, Small Business Administration (SBA), U.S. Army Corps of Engineers - Section 205, and State Capital Outlay, Local Drainage Funds | Floodplain Manager | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds | Carried Over |
| Interior Drainage Projects | Evaluate and implement appropriate localized interior drainage projects at various locations, subdivisions, and other low lying areas in the parish to reduce flooding of streets and structures. | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP) Funds, Small Business Administration (SBA), U.S. Army Corps of Engineers - Section 205, and State Capital Outlay, Local Drainage Funds | Parish Floodplain Managers / Public Works Director | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds | Carried Over |
| Bank Stabilization and Culvert Improvements | Provide bank stabilization and culvert improvements at various | Parish Budget, Grant Funding | Parish Engineer and/or Parish | Hurricane / Floods / Storm Surge | Carried Over |

| St. James Parish Action Update | | | | | |
|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Responsible Party, Agency, or Department** | **Hazard** | **Status** |
| | canal locations throughout the parish. | | Department of Public Works | | |
| Community Rating System | Review the existing floodplain ordinance and evaluate ways to improve the parish's "Community Rating System (CRS) rating to reduce the flood insurance premium. Choose from the variety of methods and projects available that can be implemented to improve the CRS rating. | Parish Budget | Floodplain Manager | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds | Carried Over |
| Additional Building Regulations | Adopt additional residential and commercial building regulations, which are in conformance with the state's building standards, and incorporate dry floodproofing techniques. | Parish Budget | Parish Floodplain Managers and Planning Director | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds / Tornadoes / Severe Winter Storms | Carried Over |
| Additional Subdivision Guidelines | Develop additional subdivision guidelines that would help reduce flooding, such as requiring proper drainage with adequate sloping; stormwater retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages, and incorporate these provisions into subdivision regulations which are part of the comprehensive planning process. | Parish Budget | Parish Floodplain Manager / Planning Department / Parish Department of Public Works | Hurricane / Floods / Storm Surge / Thunderstorms with Lightning and High Winds / Tornadoes | Carried Over |

## Unincorporated St. James New Mitigation Actions

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| SJ1: Building Retrofits | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms. | FEMA, Local | 2-5 years | St. James Parish OHSEP/Parish Department of Public Works | Thunderstorms (High Wind, Hail), Tropical Cyclones, Tornadoes | 1,5 | New |
| SJ2: Drainage Improvement | Will relieve problems, reduce damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA, Local | 1-10 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Flooding, Thunderstorms (High Wind), Tropical Cyclones | 1,3,5 | New |
| SJ3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties. | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Floodplain Manager | Flooding, Tropical Cyclones, Subsidence | 1,2,3,5 | New |
| SJ4: Safe Room Projects | Construction of a safe room for first responders located in St. James Parish. Other | FEMA, Local | 1-10 years | St. James Parish OHSEP/Parish Engineer/ Parish | Tornadoes, Thunderstorms (high Wind), | 1,5 | New |

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | locations will be identified based on funding availability. | | | Department of Public Works | Tropical Cyclones | | |
| SJ5: Education and Outreach | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, tropical cyclones, tornadoes, wildfires, sinkholes, drought, thunderstorms (lightning, high wind, hail), subsidence and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish School Board | Flooding, Tropical Cyclones, Tornadoes, Wildfires, Sinkholes, Thunderstorms (lightning, high wind, hail), Winter Storms, Subsidence, Expansive Soils, Drought | 1,2,3,4 ,5 | New |
| SJ6: Generators for Continuity of Operations and Government | Procurement and installation of generators at public facilities to ensure continued operations during and after events. | FEMA, Local | 1-5 years | St. James Parish OHSEP/ Parish Department of Public Works/Parish Engineer | Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Subsidence | 1 | New |
| SJ7: Lightning Mitigation | Procurement and installation of lightning rods and surge protectors for public buildings to preserve life and property | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Thunderstorms (Lightning) | 1 | New |
| SJ8: Pumping Station Projects | Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Subsidence, Flooding, Tropical Cyclones | 1,3,5 | New |

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | prevent/protect against backwater | | | | | | |
| SJ9: Warning Systems | Update/upgrade public warning system components throughout the parish as necessary. Install audible and/or reverse 911 warning system(s) | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Sinkholes, Wildfires, Tornadoes, Tropical Cyclones | 1,2,5 | New |
| SJ10: Potable Water | Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes, Drought | 1 | New |
| SJ11: Storm Surge Protection | East Bank Backwater / Levee Protection project with pumps. Provide storm surge protection to low-lying areas on the east bank of the Parish. Construct berms and flood gates to prevent backwater flooding from Lake Maurepas and Blind River. | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Tropical Cyclones, Flooding | 1,3,5 | New |
| SJ12: Backwater Protection Structure | Construct small backwater protection structure with pumps at locations where necessary to prevent flooding in low-lying areas. | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Tropical Cyclones, Flooding | 1,3,5 | New |
| SJ13: Adding Protective Structures | Add protective structures, such as dolphins or similar barriers in the Miss. River, to protect potable water intake | FEMA, Local | 1-5 years | St. James Parish OHSEP/Parish Engineer/ Parish Department of Public Works | Tropical Cyclones, Flooding, Thunderstorms (high wind, | 1,3,5 | New |

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | structures from damages caused by vessels becoming unmoored during high wind hazard events and flooding. | | | | lightning, hail), Tornadoes | | |
| SJ14: Promote Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP) Funds, Small Business Administration (SBA), U.S. Army Corps of Engineers - Section 205, and State Capital Outlay, Local | 1-5 years | Parish Floodplain Manager | Tropical Cyclones, Flooding | 1,3,5 | New |
| SJ15: Evacuation Routes | Develop in conjunction with local and state law enforcement officials and publish primary and alternate evacuation routes in the parish for those hazard events that would prompt evacuation of parish residents. | Parish Budget, DHS grant funding | 1-2 years | St. James OHSEP/Local and State Law Enforcement Offices/Public Works Director/Planning Director | Tropical Cyclones, Flooding, Tornadoes | 1,2 | New |
| SJ16: Bank Stabilization and Culvert Improvements | Provide bank stabilization and culvert improvements at various canal locations throughout the parish. | Parish Budget | 1-5 years | St. James OHSEP/Parish Engineer/Parish Department of Public Works | Tropical Cyclones, Flooding | 1,3 | New |

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| SJ17: Community Rating System | Review the existing floodplain ordinance and evaluate ways to improve the parish's "Community Rating System (CRS) rating to reduce the flood insurance premium. Choose from the variety of methods and projects available that can be implemented to improve the CRS rating. | Parish Budget | 1 year | Floodplain Manager | Tropical Cyclones, Flooding, Thunderstorms (Lightning, High Wind, Hail) | 1,2,3,4,5 | New |
| SJ18: Building Regulations | Adopt additional residential and commercial building regulations, which are in conformance with the State's building standards, and incorporate dry flood proofing techniques. | Parish Budget | 1-2 years | Parish Floodplain Manager/Planning Director | Tropical Cyclones, Flooding, Thunderstorms (high wind, lightning, hail), Tornadoes, Winter Storms | 1,2,3,4,5 | New |
| SJ19: Subdivision Regulations | Develop additional subdivision guidelines that would help reduce flooding, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages, and incorporate these provisions into | Parish Budget | 1-2 years | Parish Floodplain Manager/Planning Department/Parish Department of Public Works | Tropical Cyclones, Flooding, Thunderstorms (high wind, hail, lightning), Tornadoes | 1,2,3,4,5 | New |

| Unincorporated St. James | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | subdivision regulations which are part of the comprehensive planning process. | | | | | | |
| SJ20: Expansive Soil Ordinances | Develop and enforce city ordinances that will limit development on soils known to have problems with expansion in the planning area. | FEMA | 1-5 Years | St James Parish Government | Expansive Soils | 1,2 | New |
| SJ21: Expansive Soil Data Collection and Tracking | Create a monitoring system in an effort to track losses due to expansive soil occurrences | FEMA | 1-5 Years | St. James Parish Government | Expansive Soils | 1,2 | New |

## Town of Gramercy New Mitigation Actions

| Town of Gramercy | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| G1: Building Retrofits | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms. | FEMA, Local | 2-5 years | Town of Gramercy/St. James OHSEP | Thunderstorms (High Wind), Tropical Cyclones, Tornadoes | 1,5 | New |
| G2: Drainage Improvement | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA, Local | 1-10 years | Town of Gramercy/St. James OHSEP | Flooding, Thunderstorms (High Wind) Tropical Cyclones | 1,3,5 | New |
| G3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Flooding, Tropical Cyclones, Subsidence | 1,2,3,5 | New |

| Town of Gramercy | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| G4: Safe Room Projects | Construction of a safe room for first responders located in St. James Parish. Other locations will be identified based on funding availability. | FEMA, Local | 1-10 years | Town of Gramercy/St. James OHSEP | Tornado, Thunderstorms (High Wind) Tropical Cyclones | 1,5 | New |
| G5: Education and Outreach | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, tropical cyclones, tornadoes, wildfires, sinkholes, drought, thunderstorms (lightning, high wind, hail), subsidence, expansive soils, and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Flooding, Tropical Cyclones, Tornadoes, Wildfires, Sinkholes, Thunderstorms (lightning, high wind, hail), Winter Storms, Subsidence, Expansive Soils, Drought | 1,2,3,4, 5 | New |
| G6: Generators for Continuity of Operations and Government | Procurement and installation of generators at public facilities to ensure continued operations during and after events. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Subsidence | 1 | New |
| G7: Lightning Mitigation | Procurement and installation of lightning rods and surge protectors for public buildings to preserve life and property. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Thunderstorms (Lightning) | 1 | New |

| Town of Gramercy | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| G8: Pumping Station Projects | Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Subsidence, Flooding, Tropical Cyclones | 1,3,5 | New |
| G9: Warning Systems | Update/upgrade public warning system components throughout the parish as necessary. Install audible and/or reverse 911 warning system(s). | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Sinkholes, Wildfires, Tornadoes, Tropical Cyclones | 1,2,5 | New |
| G10: Potable Water | Create redundancy of potable water supply to critical facilities, especially hospitals in parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes, Drought | 1 | New |
| G11: Backwater Protection Structure | Construct small backwater protection structure with pumps at locations where necessary to prevent flooding in low-lying areas. | FEMA, Local | 1-5 years | Town of Gramercy/St. James OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |
| G12: Promote Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP) Funds, Small Business Administration (SBA), U.S. Army | 1-5 years | Town of Gramercy/St. James OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |

| Town of Gramercy | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | | Corps of Engineers - Section 205, and State Capital Outlay, Local | | | | | |
| G13: Bank Stabilization and Culvert Improvements | Provide bank stabilization and culvert improvements at various canal locations throughout the parish. | Parish Budget | 1-5 years | Town of Gramercy/St. James OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |
| G14: Community Rating System | Review the existing floodplain ordinance and evaluate ways to improve the parish's "Community Rating System (CRS) rating to reduce the flood insurance premium. Choose from the variety of methods and projects available that can be implemented to improve the CRS rating. | Parish Budget | 1-5 years | Town of Gramercy/St. James OHSEP | Tropical Cyclones, Flooding, Thunderstorms (Lightning, High Wind, Hail) | 1,2,3,4, 5 | New |
| G15: Expansive Soil Ordinances | Develop and enforce city ordinances that will limit development on soils known to have problems with expansion in the planning area. | FEMA | 1-5 Years | Town of Gramercy/St. James Parish Government | Expansive Soils | 1,2 | New |

| Town of Gramercy | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| G16: Expansive Soil Data Collection and Tracking | Create a monitoring system in an effort to track losses due to expansive soil occurrences | FEMA | 1-5 Years | Town of Gramercy/St. James Parish Government | Expansive Soils | 1,2 | New |

## Town of Lutcher New Mitigation Actions

| Town of Lutcher | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| L1: Building Retrofits | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms. | FEMA, Local | 2-5 years | Town of Lutcher/ St. James Parish OHSEP | Thunderstorms (High Wind) Tropical Cyclones, Tornadoes | 1,5 | New |
| L2: Drainage Improvement | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA, Local | 1-10 years | Town of Lutcher/St. James Parish OHSEP | Flooding, Thunderstorms (High Wind) Tropical Cyclones | 1,3,5 | New |
| L3:Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Flooding, Tropical Cyclones, Subsidence | 1,2,3,5 | New |

| Town of Lutcher | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| L4: Safe Room Projects | Construction of a safe room for first responders located in St. James Parish. Other locations will be identified based on funding availability. | FEMA, Local | 1-10 years | Town of Lutcher/St. James Parish OHSEP | Tornadoes, Thunderstorms (High Wind) Tropical Cyclones | 1,5 | New |
| L5: Education and Outreach | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for flooding, tropical cyclones, tornadoes, drought, wildfires, sinkholes, thunderstorms (lightning, high wind, hail), subsidence, expansive soils and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Flooding, Tropical Cyclones, Tornadoes, Wildfires, Sinkholes, Thunderstorms (lightning, high wind, hail), Winter Storms, Subsidence, Expansive Soils, Drought | 1,2,3,4 ,5 | New |
| L6: Generators for Continuity of Operations and Government | Procurement and installation of generators at public facilities to ensure continued operations during and after events. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Subsidence | 1 | New |
| L7: Lightning Mitigation | Procurement and installation of lightning rods and surge protectors for public buildings to preserve life and property. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Thunderstorms (Lightning) | 1 | New |

| Town of Lutcher | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| L8: Pumping Station Projects | Elevate or floodproof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Subsidence, Flooding, Tropical Cyclones | 1,3,5 | New |
| L9: Warning Systems | Update/upgrade public warning system components throughout the parish as necessary. Install audible and/or reverse 911 warning system(s) | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Sinkholes, Wildfires, Tornadoes, Tropical Cyclones | 1,2,5 | New |
| L10: Potable Water | Create redundancy of potable water supply to critical facilities, especially hospitals in parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes, Drought | 1 | New |
| L11: Backwater Protection Structure | Construct small backwater protection structure with pumps at locations where necessary to prevent flooding in low-lying areas. | FEMA, Local | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |
| L12: Promote Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP) Funds, Small Business Administratio | 1-5 years | Town of Lutcher/St. James Parish OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |

| Town of Lutcher | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| | | n (SBA), U.S. Army Corps of Engineers - Section 205, and State Capital Outlay, Local | | | | | |
| L13: Bank Stabilization and Culvert Improvement | Provide bank stabilization and culvert improvements at various canal locations throughout the parish. | Parish Budget | 1-5 Years | Town of Lutcher/St. James Parish OHSEP | Tropical Cyclones, Flooding | 1,3,5 | New |
| L14: Community Rating System | Review the existing floodplain ordinance and evaluate ways to improve the parish's "Community Rating System (CRS) rating to reduce the flood insurance premium. Choose from the variety of methods and projects available that can be implemented to improve the CRS rating. | Parish Budget | 1-5 Years | Town of Lutcher/St. James Parish OHSEP | Tropical Cyclones, Flooding, Thunderstorms (Lightning, High Wind, Hail) | 1,2,3,4,5 | New |
| L15: Expansive Soil Ordinances | Develop and enforce city ordinances that will limit development on soils known to have problems with expansion in the planning area. | FEMA | 1-5 Years | Town of Lutcher/St. James OHSEP | Expansive Soils | 1,2 | New |

| Town of Lutcher | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mitigation Action** | **Action Description** | **Funding Source** | **Target Completion Date** | **Responsible Party, Agency, or Department** | **Hazard** | **Goal** | **Status** |
| L16: Expansive Soil Data Collection and Tracking | Create a monitoring system in an effort to track losses due to expansive soil occurrences | FEMA | 1-5 Years | Town of Lutcher/St. James Parish Government | Expansive Soils | 1,2 | New |

## Action Prioritization

During the prioritization process, each jurisdiction and the steering committee considered the costs and relative benefits of each new action. Costs can usually be listed in terms of dollars, although at times it involves staff time rather than the purchase of equipment or services that can be readily measured in dollars. In most cases, benefits, such as lives saved or future damage prevented, are hard to measure in dollars, many projects were prioritized with these factors in mind.

In all cases, the jurisdictions concluded that the benefits (in terms of reduced property damage, lives saved, health problems averted and/or economic harm prevented) outweighed the costs for the recommended action items.

The steering committee met internally for mitigation action meetings to review and approve St. James Parish and each jurisdictions mitigation actions. Carried over actions, as well as actions which can be undertaken by existing parish or local staff without need for additional funding, were given high priority. The actions with high benefit and low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources with relatively longer completion time were given low priority.

St. James Parish and the participating jurisdictions will implement and administer the identified actions based off of the proposed timeframes and priorities for each reflected in the portions of this section where actions are summarized. The inclusion of any specific action item in this document does not commit the parish to implementation. Each action item will be subject to availability of staff and funding. Certain items may require regulatory changes or other decisions that must be implemented through standard processes, such as changing regulations. This plan is intended to offer priorities based on an examination of hazards.

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# Appendix A: Planning Process

## Purpose

The Hazard Mitigation Plan Update process prompts local jurisdictions to keep their hazard mitigation plan current and moving toward a more resilient community. The plan update builds on the research and planning efforts of previous plans while reviewing recent trends. The steering committee followed FEMA's hazard mitigation planning process per the FEMA Local Mitigation Planning Handbook. This planning process assured public involvement and the participation of interested agencies and private organizations. Documentation of the planning process for the updated plan is addressed in this section.

## The St. James Parish Hazard Mitigation Plan Update

The St. James Parish Hazard Mitigation Plan Update process began in June 2015 with a series of meetings and collaborations between the contractor (SDMI) and the participating jurisdictions. Update activities were intended to give each jurisdiction the opportunity to shape the plan to best fit their community's goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

St. James Parish includes two incorporated municipalities: The Towns of Gramercy and Lutcher. Both municipalities participated in the plan update process. St. James Parish Office of Homeland Security and Emergency Preparedness (OHSEP) invited communities' representatives to meetings though email and calendar invitations, where they supplied critical infrastructure data and reviewed work-in-progress for the plan update.

Similar to the development of the original hazard mitigation plan, the role of the steering committee members during the plan update was to attend the planning meetings and provide valuable information on the parish, develop parts of the plan update, and review the results of research conducted by SDMI. Tasks completed by the steering committee include:

- Reviewing and revising the list of potential hazards included in the plan update
- Assembling a list of critical facilities, such as hospitals, police stations, and shelters
- Updating mitigation goals and objectives
- Determining prudent mitigation measures
- Prioritization of identified mitigation measures

The table below details the meeting schedule and purpose for the planning process:

| Date | Meeting or Outreach | Location | Public Invited | Purpose |
|---|---|---|---|---|
| 5/19/2015 | Initial Coordination | Telephone/ Email | No | Discuss with Parish HM coordinator and any steering committee members expectations and requirements of the project. |
| 6/10/2015 | Kick-Off Meeting | St. James OHSEP, Convent, LA | No | Discuss with the plan steering committee expectations and requirements of the project. Assign plan worksheets to jurisdictions. |
| 9/08/2015 | Risk Assessment Overview | Parish Council Chambers, Convent, LA | No | Discuss and review the risk assessment with the steering committee discuss and review expectations for public meeting. |
| 9/08/2015 | Public Meeting | Parish Council Chambers, Convent, LA | Yes | The public meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the St. James Parish communities were provide for the meeting attendees to identify specific areas where localized hazards occur. |
| Ongoing | Public Survey Tool | Online | Yes | This survey asked participants about public perceptions and opinions regarding natural hazards in St. James Parish. In addition, we asked about the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: https://www.surveymonkey.com/r/StJamesHMP |
| 2 Week Period | Public Plan Review (Digital) | St. James Parish | Yes | Parish Website and St. James Parish OHSEP |

## Planning

The plan update process consisted of several phases:

| Phase | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 |
|---|---|---|---|---|---|---|---|---|
| Plan Revision | | | | | | | | |
| Data Collection | | | | | | | | |
| Risk Assessment | | | | | | | | |
| Public Input | | | | | | | | |
| Mitigation Strategy and Actions | | | | | | | | |
| Plan Review by GOHSEP and FEMA | | | | | | | | |
| Plan Adoption | | | | | | | | |
| Plan Approval | | | | | | | | |

## Coordination

The St. James Parish OHSEP oversaw the coordination of the 2016 Hazard Mitigation Plan Update Steering Committee during the update process. The St. James Parish OHSEP and participating jurisdictions were responsible for identifying members for the committee.

The Parish Director and SDMI were jointly responsible for inviting the steering committees and key stakeholders to all planned meetings and activities by email invitations and calendar invites to each committee member and jurisdiction. SDMI assisted the Parish Director with meeting notices, website and social media statements for notification to the media and general public for public meetings and public outreach activities.

SDMI was responsible for facilitating meetings and outreach efforts during the update process.

## Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the Hazard Mitigation Team encouraged participation from a broad range of jurisdictional entities. The involvement of representatives from the city, state, and regional agencies provided diverse perspectives and mitigation ideas.

Formal participation in this plan includes but is not limited to the following activities:

- Participation in Hazard Mitigation Team meetings at the local and parish level
- Sharing local data and information
- Local action item development
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan document by each jurisdiction following provisional approval by The State of Louisiana and FEMA

The 2016 Hazard Mitigation Plan Update Steering Committee consisted of representatives from the following parish, municipal, or community stakeholders:

- St. James Parish Government
- St. James Office of Homeland Security and Emergency Preparedness
- Town of Gramercy
- Town of Lutcher
- St. James Parish Sheriff's Office
- Various Industry Representatives
- St. James Parish Hospital
- Louisiana Governor's Office of Homeland Security and Emergency Preparedness

The Parish Director of Ascension OHSEP was invited by the St. James Parish OHSEP through email and phone calls to participate in all meetings and activities as well in an effort to collaborate with neighboring communities. With the addition of the sinkhole hazard, Assumption and St. James Parish will collaborate in the future on any mitigation measures necessary to mitigate any areas that may be susceptible to sinkholes in the future. The participation of the GOHSEP Region 3 Coordinator during the process also contributed to neighboring community representation. St. James Parish also regularly collaborates with neighboring St. Charles and Ascension Parishes regarding chemical and industry related mitigation measures. While these are technical hazards, the neighboring parishes make great efforts to ensure the preservation of life and property for all hazards on a continual basis.

As part of the coordination and planning process, each jurisdiction was provided the State Required Hazard Mitigation Plan Update Worksheet. Jurisdictions with the capability to complete and return these worksheets returned them to assist with the 2016 update. The completed worksheets can be found in Appendix E – State Required Plan Update Worksheets

Below is a detailed list of the 2016 Hazard Mitigation Plan Update Steering Committee:

| | |
|---|---|
| Eric Deroche | St. James OHSEP |
| Leon Walker | St. James Operations |
| Ryan Donadieu | St. James Operations |
| Jody Chenier | St. James Operations |
| Shane Landry | St. James Operations |
| Hope Borne | St. James Operations |
| Blaise Gravois | St. James Operations |
| Dustin Montelius | St. James Sheriff |
| Steven Brignac | St. James Sheriff |
| Francis Hymel | St. James OHSEP |
| Jeremy Martin | St. James Parish Hospital |
| Lenny Roussel | Mosaic Fertilizer |
| Bedar Warren | St. James DHR |
| Ingrid LeBlanc | St. James DHR |
| Michelle Nailor-Octave | St. James Parish President's Office |
| Timmy Roussel | St. James Parish Government |
| Patrick St. Pierre | Mayor of Lutcher |
| Terry Borne | Mayor of Gramercy |
| Pam Roussel | GOHSEP |

## Program Integration

Local governments are required to describe how their mitigation planning process is integrated with other ongoing local and area planning efforts. This subsection describes St. James Parish programs and planning.

A measure of integration and coordination is achieved through the Hazard Mitigation Plan participation of Steering Committee members and community stakeholders, who administer programs such as floodplain management under the National Flood Insurance Program (NFIP) and parish planning and zoning and building code enforcement.

Opportunities to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms will continue to be identified through future meetings of the parish and jurisdictions, and through the five-year review process described in the Plan Maintenance section. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update, and implementation of each jurisdiction's individual city/town plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the St. James Parish Hazard Mitigation Steering Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the parish. Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA, the U.S. Army Corps of Engineers (USACE or Corps), and the U.S. Geological Survey. Much of this data was incorporated into the

risk assessment component of the plan relative to plotting historical events and the magnitude of damages that occurred. The parish's 2005 Hazard Mitigation Plan was also used in the planning process. Other existing parish and jurisdiction data and plans reviewed and/or incorporated into the planning process include those listed below:

- Floodplain Ordinances
- Emergency Operations Plan
- Comprehensive Master Plan
- Debris Removal Plan
- Flood Insurance Rate Maps
- Continuity of Operations Plans

Further information on other plans and capabilities reviewed can be found in the Capabilities Assessment, Section 3.

## Meeting Documentation and Public Outreach Activities

The following pages contain information from the meetings and public outreach activities conducted during this Hazard Mitigation Plan Update for St. James Parish.

### Meeting #1: Initial Coordination

**Date:** May 19, 2015
**Location**: Teleconference/Email
**Purpose:** Discuss with the hazard mitigation lead for the parish (OHSEP Director) the expectations and requirements of the Hazard Mitigation Plan Update process and to establish and initial project timeline.
**Public Initiation:** No
**Invitees included:**

**SDMI Staff –** Lauren Stevens, Project Lead
**St. James OHSEP** – Eric Deroche, OHSEP Director

## Meeting #2: Hazard Mitigation Plan Update Kick-Off

**Date:** June 10, 2015

**Location:** Convent, Louisiana

**Purpose:** Discuss the expectations and requirements of the Hazard Mitigation Plan Update process and to establish and initial project timeline with the parish's Hazard Mitigation Plan Steering Committee. Assign each individual jurisdiction and the parish data collection for the plan update.

**Public Initiation:** No

**Invitees Included:**

| | |
|---|---|
| Eric Deroche | St. James OHSEP |
| Leon Walker | St. James Operations |
| Ryan Donadieu | St. James Operations |
| Jody Chenier | St. James Operations |
| Shane Landry | St. James Operations |
| Hope Borne | St. James Operations |
| Blaise Gravois | St. James Operations |
| Dustin Montelius | St. James Sheriff |
| Steven Brignac | St. James Sheriff |
| Francis Hymel | St. James OHSEP |
| Jeremy Martin | St. James Parish Hospital |
| Lenny Roussel | Mosaic Fertilizer |
| Bedar Warren | St. James DHR |
| Ingrid LeBlanc | St. James DHR |
| Michelle Nailor-Octave | St. James Parish President's Office |
| Timmy Roussel | St. James Parish Government |
| Patrick St. Pierre | Mayor of Lutcher |
| Terry Borne | Mayor of Gramercy |
| Pam Roussel | GOHSEP |

## Meeting #3: Risk Assessment Overview

**Date:** September 9, 2015

**Location:** Convent, LA

**Purpose:** Members of the Hazard Mitigation Plan Update Steering Committee were invited and were presented the results of the most recent risk assessment and an overview of the public meeting presentation during this overview. The assessment was conducted based on hazards identified during previous plans.

**Public Initiation:** No

**Invitees Included:**

| | |
|---|---|
| Eric Deroche | St. James OHSEP |
| Leon Walker | St. James Operations |
| Ryan Donadieu | St. James Operations |
| Jody Chenier | St. James Operations |
| Shane Landry | St. James Operations |
| Hope Borne | St. James Operations |
| Blaise Gravois | St. James Operations |
| Dustin Montelius | St. James Sheriff |
| Steven Brignac | St. James Sheriff |
| Francis Hymel | St. James OHSEP |
| Jeremy Martin | St. James Parish Hospital |
| Lenny Roussel | Mosaic Fertilizer |
| Bedar Warren | St. James DHR |
| Ingrid LeBlanc | St. James DHR |
| Michelle Nailor-Octave | St. James Parish President's Office |
| Timmy Roussel | St. James Parish Government |
| Patrick St. Pierre | Mayor of Lutcher |
| Terry Borne | Mayor of Gramercy |
| Rick Webre | Ascension Parish OHSEP |
| Pam Roussel | GOHSEP |

## Meeting #4: Public Meeting

**Date:** September 9, 2015

**Location:** Convent, LA

**Purpose:** The public meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the St. James Parish communities were provided for the meeting attendees to identify specific areas where localized hazards occur.

**Public Initiation:** Yes

**Invitees Included:**

| | |
|---|---|
| Eric Deroche | St. James OHSEP |
| Leon Walker | St. James Operations |
| Ryan Donadieu | St. James Operations |
| Jody Chenier | St. James Operations |
| Shane Landry | St. James Operations |
| Hope Borne | St. James Operations |
| Blaise Gravois | St. James Operations |
| Dustin Montelius | St. James Sheriff |
| Steven Brignac | St. James Sheriff |
| Francis Hymel | St. James OHSEP |
| Jeremy Martin | St. James Parish Hospital |
| Lenny Roussel | Mosaic Fertilizer |
| Bedar Warren | St. James DHR |
| Ingrid LeBlanc | St. James DHR |
| Michelle Nailor-Octave | St. James Parish President's Office |
| Timmy Roussel | St. James Parish Government |
| Patrick St. Pierre | Mayor of Lutcher |
| Terry Borne | Mayor of Gramercy |
| Rick Webre | Ascension Parish OHSEP |
| Pam Roussel | GOHSEP |

****Subject Matter Experts from parish government were present to answer specific questions about proposed projects from any citizens****

**Meeting Public Notices:**

Public Meeting Notices were posted on Parish/Government Buildings and bulletin boards prior to the public meeting.

### Outreach Activity #1: Public Opinion Survey

**Date:** Ongoing throughout planning process
**Location:** Web Survey
**Public Initiation:** Yes

### Outreach Activity #2: Incident Questionnaire

**Date:** Public Meeting Activity
**Location:** Public Meeting
**Public Initiation:** Yes

### Outreach Activity #3: Mapping Activities

Public meeting attendees were asked to identify areas on jurisdictional maps provided that were "problem areas". They were also asked to indicate any areas of new development. This activity gave the public an opportunity to interact with SDMI's GIS Mapping section, as well as provide valuable input on areas that may flood repeatedly during rain events that may not get reported to local emergency managers as significant events.

### Public Plan Review Documentation

The St. James Hazard Mitigation Draft Plan was placed in the St James Parish OHSEP to collect comments and feedback from the public for a two week period. This outreach provided the public an opportunity to comment on the plan during the drafting stage and prior to plan approval.

# Appendix B: Plan Maintenance

## Purpose

The section of the Code of Federal Regulations (CFR) pertaining to Local Mitigation Plans lists five required components for each plan: a description of the planning process; risk assessments; mitigation strategies; a method and system for plan maintenance; and documentation of plan adoption. This section details the method and system for plan maintenance, following the CFR's guidelines that the Plan Update must include (1) "a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle," (2) "a process by which local governments incorporated the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans", and (3) "discussion on how the community will continue public participation in the plan maintenance process."

## Monitoring, Evaluating, and Updating the Plan

By law, the plan must be updated every five years prior to re-submittal to the Federal Emergency Management Agency (FEMA) for re-approval. The first part of this subsection describes the whole update process, including the responsible parties, methods to be used, evaluation criteria to be applied, and, scheduling for monitoring and evaluating the plan. These descriptions are followed by an explanation of how and when the plan will be periodically updated. The Plan must be updated every five years prior to re-submittal to FEMA for re-approval. The first part of this subsection describes the whole update process, including sections on the following:

- Responsible parties
- Methods to be used
- Evaluation criteria to be applied
- Scheduling for monitoring and evaluating the plan

## Responsible Parties

St. James Parish has developed a method to ensure that a regular review and update of the Hazard Mitigation Plan occurs. This will be the responsibility of the steering committee, which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. All jurisdictions participating in this plan will remain active in the steering committee. These St. James Parish participating jurisdictions are:

- St. James Unincorporated
- Town of Gramercy
- Town of Lutcher

## Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

Review and revision of the plan will be directed by the Director of Operations, St. James Parish Government. Although the people filling the positions may change from year to year, each municipality will have a representative on the steering committee. The future steering committee will continue to be comprised of the same job functions as currently evident in the steering committee. However, the

decision of specific job duties will be left to the Director of Operations, St. James Parish Government to be assigned as deemed appropriate.

Progress on the Mitigation Action Plan will be monitored and evaluated by the Director of Operations, St. James Parish Government. The lead manager for each action item will complete an annual progress report and submit them to the Director of Operations. The St. James Parish Director of Operations, OHSEP, and the steering committee will meet annually and/or following disasters to monitor and evaluate the plan. Following disasters, a meeting will be called to monitor and evaluate the risk assessment. The annual meetings will involve gathering necessary information and discussion of progress of action items and implementation. A review of the planning process will also done at this time to insure any changes needed in the steering committee or overall process is needed.

The annual meetings will assist in developing a progress report designed to monitor the state of the projects and evaluate the success of each mitigation item. The report should list each action item and answers several very important questions, such as has the project begun? If not, why not? The status of project; is it complete? If so, did it eliminate the problem? Are there changes needed to better implement the mitigation actions? These questions serve to address the progress being made on each of the mitigation action items.

Copies of the Annual Progress Reports will be maintained by the Director of Operations, St. James Parish Government. Copies of the progress reports will also be sent to the Mayors of each jurisdiction. If during this process of reviewing the Annual Progress Report, the Director of Operations determines that the steering committee should be reconvened for discussion, he or she has the option of doing so. He or she will use the following criteria to determine if a meeting needs to be held:

- Are there any changes in mitigation plan requirements for federal mitigation grant funding programs?
- Are any changes or revision required to the Mitigation Action Plan? (i.e. Have any action items been completed? Are there any new specific mitigation action items? Have any new specific mitigation action items been identified?)
- Are there any changes within the steering committee membership?

Although not required, FEMA recommends an annual meeting of the steering committee. If the Emergency Manager determines that this annual meeting needs to be conducted, he is responsible for contacting committee members, organizing the meeting and providing public notification for the meeting to solicit public input.

In addition to monitoring the progress of projects, the plan update is required to be evaluated, then revised or updated at least every five years from the date of FEMA approval. If a disaster occurs or as action items are completed, the Plan Update will be reviewed, revised, and updated sooner than the required five years, using the process outlined in this section.

Once approval from FEMA is received for an updated plan, the above process will begin again starting a new five-year cycle. This will ensure that the plan is continually updated on a five-year cycle. This new cycle will begin upon the date of FEMA approval. This process is further discussed in the below sub-section entitled “Updating the Plan”.

The steering committee will be reconvened approximately one year before the five-year deadline and begin evaluating the Hazard Mitigation Plan. The above criteria and the following key topics and questions below will be addressed at the meeting.

- ID Hazard – Are there new hazards that affect your community? Has a disaster occurred?
- Profile Hazard Events – Are additional maps or new hazard studies available? Have chances of future events changed? Have recent and future development in the community been checked for their exposure to hazards?
- Inventory Assets – Have inventories of existing structures in hazard areas been updated? Are there any new special high risk populations? Is future land development accounted for in the inventories?
- Estimate Losses – Have losses been updated to account for recent changes?

If the answer to any of the above questions is a "Yes", then the Hazard Mitigation Plan will be updated accordingly. The Hazard Mitigation Plan review and update will be accomplished by reviewing each goal and action item to determine their relevance to changing situations in the parish and in each municipality, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The steering committee will also review the risk assessment portion and determine if this information should be updated or modified.

The steering committee will work together as a team, with each member sharing responsibility for completing the evaluation and updates. Each member of the steering committee is an equal member of the process. It will be the responsibility of the representative from each community to ensure that their section of this plan is updated to meet the required deadline.

The Director of Operations, St. James Parish Government is responsible for including all changes into the plan after the steering committee has met and decided on the changes. Any required revisions will be implemented into existing plans, as applicable, within six months following the review process. This process will be repeated for each five year review of the plan.

After the update process is completed, the final plan will be submitted to GOHSEP's Hazard Mitigation Officer for review and then on to FEMA for review and approval to remain eligible for continued Hazard Mitigation Grant Program (HMGP) funding.

FEMA and GOHSEP have the authority to evaluate the progress of existing mitigation plans to determine if the plan is fulfilling program requirements.

The following basic schedule will be undertaken for monitoring, evaluating and updating the plan:

- At a minimum, monitoring activities by the Director of Operations should be done every six months;
- Best practice is that the update should start a year and a half prior to plan expiration date, taking into consideration one year of development and six months to receive plan approval. Notices regarding annual evaluations should be sent by the Director of Operations in collaboration with St. James Parish OHSEP to the St. James Parish Hazard Mitigation Coordination Committee.

## Updating the Plan

Updates will follow the original planning process outlined in Appendix A. The update process will entail a detailed and structured re-examination of all aspects of the original plan, followed by recommended updates. The update process will be undertaken by the Director of Operations and St. James Parish OHSEP in coordination with the St. James Parish Hazard Mitigation Steering Committee. The recommendations will be presented to the St. James Parish Hazard Mitigation Steering Committee for consideration and approval. It is expected that the parish and each jurisdiction's administration and will issue a letter of adoption for each update of the plan.

At a minimum, the plan will be updated and re-submitted to FEMA for re-approval every five years, as required by DMA 2000. The five-year update for FEMA re-approval requires that all the original steps outlined in Appendix A be revisited to make sure the plan assumptions and results remain valid as a basis for further decision-making and priority-setting.

The plan will also be subject to amendments as significant changes or new information is identified in the periodic evaluations described above. The degree to which the entire process is repeated will depend on the circumstances that precipitate the update.

St. James Parish Steering Committee, led by the St. James Parish OHSEP, will initiate, coordinate, and lead all plan updates in collaboration with each jurisdiction.

## 2016 Plan Version Plan Method and Schedule Evaluation

For the current plan update, the previously approved plan's method and schedule were evaluated to determine if the elements and processes involved in the required 2016 update. Based on this analysis, the method and schedule were deemed to be acceptable, and nothing was changed for this update.

## Incorporation into Existing Planning Programs

It is and has been the responsibility of the St. James Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the St. James Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances (Parish and Jurisdictions)
- Emergency Operations Plan (Parish)
- Comprehensive Master Plan (Entire Parish)
- Continuity of Operations Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the St. James Parish Hazard Mitigation Steering Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). The members of the steering committee will remain charged with ensuring that the goals and strategies

of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the St. James Parish Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability within the Parish.

During the planning process for new and updated local planning documents at the parish and jurisdiction level, such as a risk assessment, comprehensive plan, or emergency operations plan, the jurisdictions will provide a copy of the Parish Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Parish Hazard Mitigation Plan and will not contribute to increased hazards.

Although it is recognized that there are many possible benefits to integrating components of this plan into other parish and jurisdiction planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the steering committee to be the most effective and appropriate method to ensure implementation of parish and local hazard mitigation actions.

The Parish OEP has jurisdiction over the un-incorporated areas during disaster events; therefore, the incorporated areas participate jointly in the Parish Emergency Operations Plan.

On behalf of the jurisdictions of Town of Gramercy and the Town of Lutcher, St. James Parish has the authority to incorporate the contents of the Hazard Mitigation Plan into the parish's existing regulatory mechanisms. Agreements are currently in place with jurisdictions to allow for the parish incorporation mechanisms to take place.

The following parish and local plans incorporate requirements of this HMP Update as follows through steering committee member and jurisdiction representation throughout the planning process as described above:

**St. James Unincorporated**
Comprehensive Master Plan/Updated As needed/St. James Parish Government
Local Emergency Operations Plan/Updated as needed/St. James OHSEP
Continuity of Operations Plan/Updated as needed/St. James Parish Government
Transportation Plan/Updated as needed/St. James Parish Government
Community Wildfire Protection Plan/Updated as needed/St. James Parish Government
Drainage Management Plan is under development/St. James Parish Government

**Town of Gramercy - *Relies on Parish**
Comprehensive Master Plan/Updated As needed/St. James Parish Government
Local Emergency Operations Plan/Updated as needed/St. James OHSEP
Continuity of Operations Plan/Updated as needed/St. James Parish Government
Transportation Plan/Updated as needed/St. James Parish Government
Community Wildfire Protection Plan/Updated as needed/St. James Parish Government

**Town of Lutcher - *Relies on Parish**
Comprehensive Master Plan/Updated As needed/St. James Parish Government
Local Emergency Operations Plan/Updated as needed/St. James OHSEP
Continuity of Operations Plan/Updated as needed/St. James Parish Government
Transportation Plan/Updated as needed/St. James Parish Government
Community Wildfire Protection Plan/Updated as needed/St. James Parish Government

## Continued Public Participation

Public participation is an integral component of the mitigation planning process and will continue to be essential as this plan evolves over time. Significant changes or amendments to the Plan require a public hearing prior to any adoption procedures. Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary.

St. James Parish is dedicated to involving the public directly in the reshaping and updating of the Hazard Mitigation Plan. The steering committee members are involved in the process of the review and update of the plan, which is to be conducted every five years. Although they represent the public to some extent, the public will be able to directly comment on and provide feedback about the plan and its updates. However, the steering committee evaluated the method for obtaining continued public participation in the planning process and considered it still valid and applicable for the 2016 HMP Update.

For subsequent updates, and before the steering committee is reconvened for any meeting, a public notice will be issued for anyone in the general population who would like to participate in the process of HMP review and update. This would include all jurisdictions.

A public notice will be displayed in prominent locations within the main governmental buildings in St. James Parish and in the government buildings of all participating municipalities. Those who opt to participate in this process will have an opportunity to express their concerns, opinions, or ideas about the plan.

Copies of the plan will be catalogued and kept on hand at all of the Parish public libraries. The existence and location of these copies will be publicized in The News-Examiner. The St. James Parish Director of Operations will be responsible for keeping track of public comments on the plan. All public comments will be reviewed and incorporated in the HMP at the five year update if appropriate. If an annual meeting of the steering committee is held, then the public comments will be reviewed and incorporated at this time, if appropriate. The review, changes, and update that are made during the review, every five years, will also be publicized in The News-Examiner

# Appendix C: Essential Facilities

## St. James Parish Essential Facilities – All Jurisdictions

| St James Unincorporated Essential Facilities | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Name | Coastal Land Loss/ Subsidence | Drought | Expansive Soils | Flood | Sinkhole | Hail | Lightning | Wind | Tornado | Tropical Cyclone | Wildfire | Winter Storm |
| Fire and Rescue | Grandpoint Fire Station | X | | X | X | X | | X | X | X | X | X | |
| | Paulina Fire Station | X | | X | X | X | | X | X | X | X | | |
| | Union Fire Station 1 | X | | X | X | | | X | X | X | X | | |
| | Convent Fire Station 1 | X | | X | X | | | X | X | X | X | X | |
| | Welcome Fire Station 3 | X | | X | X | | | X | X | X | X | | |
| | North Vacherie Fire Station 2 | X | | X | X | | | X | X | X | X | | |
| | Baytree Fire Station 4 | X | | X | X | | | X | X | X | X | | |
| | North Vacherie Fire Station 1 | X | | X | X | X | | X | X | X | X | | |
| | South Vacherie Fire Station 2 | X | | X | X | | | X | X | X | X | X | |
| | South Vacherie Fire Station 1 | X | | X | X | | | X | X | X | X | X | |
| | Union Fire Station 2 | X | | X | X | | | X | X | X | X | | |

| St James Unincorporated Essential Facilities | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Name | Coastal Land Loss/ Subsidence | Drought | Expansive Soils | Flood | Sinkhole | Hail | Lightning | Wind | Tornado | Tropical Cyclone | Wildfire | Winter Storm |
| | Convent Fire Station 2 | X | | X | X | | | X | X | X | X | X | |
| | Hester Fire Station | X | | X | X | X | | X | X | X | X | X | |
| Law Enforcement | St. James Parish Sheriff Office | X | | X | X | | | X | X | X | X | X | |
| Government | Courthouse Annex | X | | X | X | | | X | X | X | X | | |
| | Vacherie Library | X | | X | X | | | X | X | X | X | | |
| | Port of South Louisiana | X | | X | X | | | X | X | X | X | | |
| | Water Treatment Plant | X | | X | X | | | X | X | X | X | | |
| Public Health | South Vacherie Health Unit | X | | X | X | | | X | X | X | X | | |
| Schools | St. Peter Chanel | X | | X | X | X | | X | X | X | X | | |
| | Paulina Elementary Head Start | X | | X | X | X | | X | X | X | X | | |
| | Fifth Ward Elementary Head Start | X | | X | X | | | X | X | X | X | | |
| | St. James High School | X | | X | X | | | X | X | X | X | | |

| St James Unincorporated Essential Facilities | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Name | Coastal Land Loss/ Subsidence | Drought | Expansive Soils | Flood | Sinkhole | Hail | Lightning | Wind | Tornado | Tropical Cyclone | Wildfire | Winter Storm |
| | Science and Math Academy | X | | X | X | X | | X | X | X | X | | |
| | Sixth Ward Elementary Head Start | X | | X | X | X | | X | X | X | X | | |
| | Vacherie Elementary | X | | X | X | | | X | X | X | X | | |

| Gramercy Essential Facilities | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Name | Coastal Land Loss/ Subsidence | Drought | Expansive Soils | Flood | Sinkhole | Hail | Lightning | Wind | Tornado | Tropical Cyclone | Wildfire | Winter Storm |
| Fire and Rescue | Gramercy Fire Station 1 | X | | X | X | | | X | X | X | X | X | |
| | Gramercy Fire Station 2 | X | | X | X | | | X | X | X | X | X | |
| | Gramercy Fire Station 3 | X | | X | X | | | X | X | X | X | X | |
| Law Enforcement | Gramercy Police Department | X | | X | X | | | X | X | X | X | X | |
| Government | Gramercy Waterworks | X | | X | X | | | X | X | X | X | X | |
| Schools | Gramercy Elementary | X | | X | X | | | X | X | X | X | X | |

| Lutcher Essential Facilities | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Name | Coastal Land Loss/ Subsidence | Drought | Expansive Soils | Flood | Sinkhole | Hail | Lightning | Wind | Tornado | Tropical Cyclone | Wildfire | Winter Storm |
| Fire and Rescue | Lutcher Fire Station | X | | X | X | | | X | X | X | X | X | |
| Law Enforcement | Lutcher Police Department | X | | X | X | | | X | X | X | X | X | |
| Public Health | St. James Parish Hospital | X | | X | X | | | X | X | X | X | X | |
| | Beacon Mental Health | X | | X | X | | | X | X | X | X | X | |
| Government | Water Treatment Plant | X | | X | X | | | X | X | X | X | X | |
| | Lutcher Waste Treatment | X | | X | X | | | X | X | X | X | X | |
| Schools | Lutcher Elementary Head Start | X | | X | X | | | X | X | X | X | X | |
| | Lutcher High School | X | | X | X | | | X | X | X | X | X | |
| | CTC Alternative Center | X | | X | X | | | X | X | X | X | X | |

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# Appendix D: Plan Adoption

PASSED

The following resolution was offered and moved for adoption by Councilman Louque and seconded by Councilman Kruemer:

**RESOLUTION 16-73**
**ST. JAMES PARISH COUNCIL**

**A RESOLUTION ADOPTING THE PARISHWIDE HAZARD MITIGATION PLAN UPDATE**

WHEREAS, the St. James Parish Government has prepared a multi-hazard mitigation plan hereby known as the ST JAMES PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, St. James Parish Government has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS, St. James Parish Government is participating in the Hazard Mitigation Plan prepared by the St. James Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS, St. James Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS, appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS, the Plan has been recommended for adoption by the steering committee;

WHEREAS, adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

NOW, THEREFORE, BE IT RESOLVED that the St. James Parish Council does hereby adopt the St. James Parish Hazard Mitigation Plan Update.

And, the resolution was declared adopted on this, the 16th day March 2016.

Council Chairman

Secretary

Delivered to Parish President: 03/17/2016

Approved: 03/21/2016

Disapproved: _____

Parish President

Returned to Secretary on 3-22-2016

At 11:50 AM/PM

Received by

**RESOLUTION 08-16**

**A RESOLUTION TO ADOPT THE ST. JAMES PARISH HAZARD MITIGATION PLAN 2016**

WHEREAS, the St. James Parish Government has prepared a multi-hazard mitigation plan hereby known as the ST. JAMES PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, Town of Gramercy has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS, the Town of Gramercy is participating in the Hazard Mitigation Plan prepared by the St. James Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS, the St. James Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS, appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS, the Plan has been recommended for adoption by the steering committee;

WHEREAS, adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

THEREFORE, the Mayor and Board of Aldermen hereby adopt the St. James Parish Hazard Mitigation Plan Update 2016.

A motion to adopt the above resolution was made by Alderman Coleman seconded by Alderman Wiggins and resulted in the following vote:

| | |
|---|---|
| YEAS: | Bourgeois, Calcagno, Coleman, Wiggins |
| NAYS: | None |
| ABSENT: | Lee |
| ABSTAIN: | None |

And the resolution was declared adopted on this the 11th day of April, 2016.

***** CERTIFICATION *****

I, Amy St. Pierre, Clerk of the Town of Gramercy, Louisiana, do hereby certify that the above is a true and correct copy of a resolution duly adopted by the Mayor and Board of Aldermen of the Town of Gramercy, duly convened on 11th day of April, 2016.

Amy St. Pierre, Clerk

**RESOLUTION 16-02**

**A RESOLUTION ADOPTING THE**
**ST. JAMES PARISH HAZARD MITIGATION PLAN 2016**

**WHEREAS,** St James Parish has prepared a multi-hazard mitigation plan hereby known as the **ST. JAMES PARISH HAZARD MITIGATION PLAN 2016** in accordance with the Disaster Mitigation Act of 2000; and

**WHEREAS,** Town of Lutcher has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

**WHEREAS,** Town of Lutcher is participating in the Hazard Mitigation Plan prepared by the St. James Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

**WHEREAS,** St. James Parish and local city representatives and governments have participated in the mitigation planning process;

**WHEREAS,** appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

**WHEREAS,** the Plan has been recommended for adoption by the steering committee;

**WHEREAS,** adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Alderman Manuel moved seconded by Alderwoman Riley to adopt Resolution 16-02 St. James Parish Hazard Mitigation Plan Update 2016. The roll was called on the adoption thereof, and Resolution16-02 was adopted by the following votes:

| | |
|---|---|
| **YEAS:** | Batiste, George, Manuel, Riley, St. Pierre |
| **NAYS:** | None |
| **ABSTAINED:** | None |
| **ABSENT:** | None |

And Resolution 16-02 was declared adopted on this 5th day of April 2016.

Patrick P. St. Pierre, Mayor

**CERTIFICATE**

I, Vanessa C. Roussel, MMC, Town Clerk for the Town of Lutcher, do hereby certify that the above is a true and exact copy of adopted Resolution 16-02 from the minutes of a regular meeting of the Mayor and Board of Aldermen duly called and held on April 5, 2016 and that the same is still in full force and effect.

Witness my hand and the seal of the Town of Lutcher on this 5th day of April, 2016.

Vanessa C. Roussel, MMC
Town Clerk

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# Appendix E: State Required Worksheets

During the planning process (Appendix A) the Hazard Mitigation Plan Update Steering Committee was provided state-required plan update process worksheets to be filled out by each jurisdiction. The worksheets were presented at the Kickoff Meeting by the contractor as tools for assisting in the update of the Hazard Mitigation Plan. The plan update worksheets allowed for collection of information such as planning team members, community capabilities, critical infrastructure and vulnerable populations and NFIP information. The following pages contain documentation of the worksheets.

## Capability Assessment

### St. James Unincorporated

| Worksheet 4.1: Capability Assessment Worksheet - St James Unincorporated | | |
|---|---|---|
| Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible. | | |
| **Planning and Regulatory** | | |
| Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place. | | |
| **Plans** | **Yes / No** | **Comments** |
| Comprehensive / Master Plan | YES | |
| Capital Improvements Plan | NO | |
| Economic Development Plan | NO | |
| Local Emergency Operations Plan | YES | |
| Continuity of Operations Plan | YES | |
| Transportation Plan | YES | |
| Stormwater Management Plan | NO | Working on Drainage Management Plan. |
| Community Wildfire Protection Plan | YES | |
| Other plans (redevelopment, recovery, coastal zone management) | YES | |
| **Building Code, Permitting and Inspections** | **Yes / No** | |
| Building Code | YES | |
| Building Code Effectiveness Grading Schedule (BCEGS) Score | YES | |
| Fire Department ISO/PIAL rating | YES | |
| Site plan review requirements | YES | |
| **Land Use Planning and Ordinances** | **Yes / No** | |
| Zoning Ordinance | YES | LAND USE PLAN |
| Subdivision Ordinance | YES | |
| Floodplain Ordinance | YES | |
| Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire) | YES | |
| Flood Insurance Rate Maps | YES | |
| Acquisition of land for open space and public recreation uses | YES | |
| Other | NO | |

| Administration and Technical | | |
|---|---|---|
| Administration | Yes / No | |
| Planning Commission | YES | |
| Mitigation Planning Committee | YES | |
| Maintenance programs to reduce risk (tree trimming, clearing drainage systems) | YES | |
| Staff | Yes / No; FT/PT; % Hazard | |
| Chief Building Official | YES; FT | |
| Floodplain Administrator | YES; FT | |
| Emergency Manager | YES; FT | |
| Community Planner | NO | |
| Civil Engineer | NO | |
| GIS Coordinator | YES; FT | |
| Grant Writer | YES; FT | |
| Other | NO | |
| Technical | Yes / No | |
| Warning Systems / Service (Reverse 911, outdoor warning signals) | YES | |
| Hazard Data & Information | YES | |
| Grant Writing | YES | |
| Hazus Analysis | YES | |
| Other | NO | |
| Financial | | |
| Funding Resource | Yes / No | |
| Capital Improvements project funding | YES | |
| Authority to levy taxes for specific purposes | YES | By Vote of Tax Payers |
| Fees for water, sewer, gas, or electric services | YES | |
| Impact fees for new development | NO | |
| Stormwater Utility Fee | NO | |
| Community Development Block Grant (CDBG) | YES | |
| Other Funding Programs | YES | Any of which we're Eligible to apply for. |

| Education and Outreach | | |
|---|---|---|
| Program / Organization | Yes / No | |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | NO | |
| Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental | YES | |
| Natural Disaster or safety related school | YES | |
| Storm Ready certification | NO | |
| Firewise Communities certification | NO | |
| Public/Private partnership initiatives addressing disaster-related issues | YES | |
| Other | NO | |

## Town of Gramercy

| Worksheet 4.1: Capability Assessment Worksheet - Gramercy | | |
|---|---|---|
| Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible. | | |
| **Planning and Regulatory** | | |
| Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place | | |
| **Plans** | **Yes / No** | **Comments** |
| Comprehensive / Master Plan | YES | Rely on Parish |
| Capital Improvements Plan | NO | |
| Economic Development Plan | NO | |
| Local Emergency Operations Plan | YES | Rely on Parish |
| Continuity of Operations Plan | YES | Rely on Parish |
| Transportation Plan | YES | Rely on Parish |
| Stormwater Management Plan | NO | Rely on Parish |
| Community Wildfire Protection Plan | YES | Rely on Parish |
| Other plans (redevelopment, recovery, coastal zone management) | YES | Rely on Parish |
| **Building Code, Permitting and Inspections** | **Yes / No** | |
| Building Code | YES | Rely on Parish |
| Building Code Effectiveness Grading Schedule (BCEGS) Score | YES | Rely on Parish |
| Fire Department ISO/PIAL rating | YES | Rely on Parish |
| Site plan review requirements | YES | Rely on Parish |
| **Land Use Planning and Ordinances** | **Yes / No** | |
| Zoning Ordinance | YES | Rely on Parish |
| Subdivision Ordinance | YES | Rely on Parish |
| Floodplain Ordinance | YES | Rely on Parish |
| Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire) | YES | Rely on Parish |
| Flood Insurance Rate Maps | YES | Rely on Parish |
| Acquisition of land for open space and public recreation uses | YES | Rely on Parish |
| Other | NO | |

| Administration and Technical | | |
|---|---|---|
| Administration | Yes / No | |
| Planning Commission | YES | Rely on Parish |
| Mitigation Planning Committee | YES | Rely on Parish |
| Maintenance programs to reduce risk (tree trimming, clearing drainage systems) | YES | Rely on Parish |
| Staff | Yes / No; FT/PT; % Hazard | |
| Chief Building Official | YES; FT | Rely on Parish |
| Floodplain Administrator | YES; FT | Rely on Parish |
| Emergency Manager | YES; FT | Rely on Parish |
| Community Planner | NO | |
| Civil Engineer | NO | |
| GIS Coordinator | YES; FT | Rely on Parish |
| Grant Writer | YES; FT | Rely on Parish |
| Other | NO | |
| Technical | Yes / No | |
| Warning Systems / Service (Reverse 911, outdoor warning signals) | YES | Rely on Parish |
| Hazard Data & Information | YES | Rely on Parish |
| Grant Writing | YES | Rely on Parish |
| Hazus Analysis | YES | Rely on Parish |
| Other | NO | |
| Financial | | |
| Funding Resource | Yes / No | |
| Capital Improvements project funding | YES | Rely on Parish |
| Authority to levy taxes for specific purposes | YES | Rely on Parish (By vote of Tax Payers) |
| Fees for water, sewer, gas, or electric services | YES | Rely on Parish |
| Impact fees for new development | NO | |
| Stormwater Utility Fee | NO | |
| Community Development Block Grant (CDBG) | YES | Rely on Parish |
| Other Funding Programs | YES | Any of which we're eligible to apply f |

| Education and Outreach | | |
|---|---|---|
| Program / Organization | Yes / No | |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | NO | |
| Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental | YES | Rely on Parish |
| Natural Disaster or safety related school | YES | Rely on Parish |
| Storm Ready certification | NO | |
| Firewise Communities certification | NO | |
| Public/Private partnership initiatives addressing disaster-related issues | YES | Rely on Parish |
| Other | NO | |

## Town of Lutcher

| Worksheet 4.1: Capability Assessment Worksheet - Lutcher | | |
|---|---|---|
| Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible. | | |
| **Planning and Regulatory** | | |
| Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place. | | |
| **Plans** | **Yes / No** | **Comments** |
| Comprehensive / Master Plan | YES | Rely on Parish |
| Capital Improvements Plan | NO | |
| Economic Development Plan | NO | |
| Local Emergency Operations Plan | YES | Rely on Parish |
| Continuity of Operations Plan | YES | Rely on Parish |
| Transportation Plan | YES | Rely on Parish |
| Stormwater Management Plan | NO | Rely on Parish |
| Community Wildfire Protection Plan | YES | Rely on Parish |
| Other plans (redevelopment, recovery, coastal zone management) | YES | Rely on Parish |
| **Building Code, Permitting and Inspections** | **Yes / No** | |
| Building Code | YES | Rely on Parish |
| Building Code Effectiveness Grading Schedule (BCEGS) Score | YES | Rely on Parish |
| Fire Department ISO/PIAL rating | YES | Rely on Parish |
| Site plan review requirements | YES | Rely on Parish |
| **Land Use Planning and Ordinances** | **Yes / No** | |
| Zoning Ordinance | YES | Rely on Parish |
| Subdivision Ordinance | YES | Rely on Parish |
| Floodplain Ordinance | YES | Rely on Parish |
| Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire) | YES | Rely on Parish |
| Flood Insurance Rate Maps | YES | Rely on Parish |
| Acquisition of land for open space and public recreation uses | YES | Rely on Parish |
| Other | NO | |

| Administration and Technical | | |
|---|---|---|
| Administration | Yes / No | |
| Planning Commission | YES | Rely on Parish |
| Mitigation Planning Committee | YES | Rely on Parish |
| Maintenance programs to reduce risk (tree trimming, clearing drainage systems) | YES | Rely on Parish |
| Staff | Yes / No; FT/PT; % Hazard | |
| Chief Building Official | YES; FT | Rely on Parish |
| Floodplain Administrator | YES; FT | Rely on Parish |
| Emergency Manager | YES; FT | Rely on Parish |
| Community Planner | NO | |
| Civil Engineer | NO | |
| GIS Coordinator | YES; FT | Rely on Parish |
| Grant Writer | YES; FT | Rely on Parish |
| Other | NO | |
| Technical | Yes / No | |
| Warning Systems / Service (Reverse 911, outdoor warning signals) | YES | Rely on Parish |
| Hazard Data & Information | YES | Rely on Parish |
| Grant Writing | YES | Rely on Parish |
| Hazus Analysis | YES | Rely on Parish |
| Other | NO | |
| Financial | | |
| Funding Resource | Yes / No | |
| Capital Improvements project funding | YES | Rely on Parish |
| Authority to levy taxes for specific purposes | YES | Rely on Parish (By Vote of Tax Payers) |
| Fees for water, sewer, gas, or electric services | YES | Rely on Parish |
| Impact fees for new development | NO | |
| Stormwater Utility Fee | NO | |
| Community Development Block Grant (CDBG) | YES | Rely on Parish |
| Other Funding Programs | YES | Any of which we're eligible to apply for. |

| Education and Outreach | | |
|---|---|---|
| Program / Organization | Yes / No | |
| Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | NO | |
| Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental | YES | Rely on Parish |
| Natural Disaster or safety related school | YES | Rely on Parish |
| Storm Ready certification | NO | |
| Firewise Communities certification | NO | |
| Public/Private partnership initiatives addressing disaster-related issues | YES | Rely on Parish |
| Other | NO | |

Vulnerable Populations – St. James Parish

# Vulnerable Populations Worksheet

## St. James Parish

| Name | Street | City | Zip Code | Latitude | Longitude |
|---|---|---|---|---|---|
| **All Hospitals (Private or Public)** | | | | | |
| St. James Parish Hosptial | 1645 Lutcher Avenue | Lutcher, La. | 70071 | 30.051990W | 90.703531N |
| Beacon Behavioral Hospital | 2471 Louisiana Avenue | Lutcher, La. | 70071 | 30.04657W | 90.700206N |
| Vacherie Health Unit | 29170 Health Unit Street | Vacherie, La. | 70090 | 29.993395W | 90.724686N |
| * No Hospitals in the city/town of Gramercy, La. | | | | | |
| **Nursing Homes (Private or Public)** | | | | | |
| Chateau St. James | 1980 Jefferson Highway | Lutcher, La. | 70071 | 30.039426W | 90.693533N |
| *No Nursing Homes in the town/city of Gramercy | | | | | |
| **Mobile Home Parks** | | | | | |
| Sugar Hill RV Park | 9450 La. State Hwy. 44 | Convent, La. | 70723 | 30.067561W | 90.882643N |
| St. James RV Park | 10463 Northline Street | St. James, La. | 70086 | 30.89547W | 90.934126N |
| Poche Plantation RV Park | 6554 Highway 44 | Convent, La. | 70723 | 30.012630W | 90.826792N |
| E & P Deroche Trailer Park | 1362 North Ezidore Avenue | Gramercy, La. | 70052 | 30.071423W | 90.702289N |
| Millet Trailer Park | 319 East Airline Highway | Gramercy, La. | 70052 | 30.075567W | 90.703462N |

# Vulnerable Populations Worksheet

## St. James Parish

| Name | Street | City | Zip Code | Latitude | Longitude |
|---|---|---|---|---|---|
| Mobile Lane Trailer Park | Mobile lane, | Gramercy, La. | 70052 | 30.047424W | 90.689813N |
| Cherry Street Trailer Park | 225 Cherry Street | Gramercy, La. | 70052 | 30.046695W | 90.685243N |
| * There are no Mobile Home Parks located in the | | | | | |
| city/ town of Lutcher, Louisiana. | | | | | |

## Building Inventory – St. James Parish

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | St. James Parish Courthouse | Parish Administrative Office/ Sheriffs Office/Administrative Office | 5800 Highway 44, | Convent, La. | 29.99431 12W | 90.817 299N | 5,000,000 | 1971 | Concrete |
| X | St. James Parish Gov. E.O.C. | Parish Emergency Operations Center and Administrative Office/911 | 5153 Canatella Street | Convent, La. | 29.99431 16W | 90.817 299N | 2,500,000 | 1985 | Concrete |
| X | St. James Parish D.H.R. | Parish Department of Human Resources and Administrative Office | 5153 Canatella Street | Convent, La. | 29.99431 156W | 90.817 299N | 3,750,000 | 1984 | Concrete |
| X | St. James Parish Detention Ctr. | Parish Jail housing facility | 5800 Highway 44, | Convent, La. | 29.99431 156W | 90.817 299N | 4,250,000 | 1988 | Concrete |
| X | St. James Parish Annex/courthouse. | Parish Annex Administrative Office/ Sheriffs sub station | 2631 Highway 20 | Vacherie, La. | 29.99384 2W | 90.724 988N | 15,000,000 | 1971 | Brick |
| X | West Bank Reception Center | Parish Public Building/open for rent/ holding events | Highway 18 | Vacherie, La. | 30.01238 7W | 90.717 392N | 800,000 | 1979 | Metal/ Brick |
| X | Magnolia 6th District Center/park | Parish Public Building/open | 2205 Church Street | Vacherie, La. | 30.01238 7W | 90.717 392N | 445,000 | 2011 | Metal |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| | | for rent/ holding events | | | | | | | |
| X | St. James 5th District Center/park | Parish Public Building/open for rent/holding events | 7260 Park Street | St. James, La. | 30.049839W | 90.848756N | 234,800 | 1990 | Concrete |
| X | Gramercy Park A & B | Parish Recreational Park/Pavilion | 412 N. Ezidore Avenue | Gramercy, La. | 30.054456W | 90.692372N | 794,800 | 1963 | Concrete/ Wood/Metal |
| X | Lutcher Park | Parish Recreational Park/Pavilion | 2545 Louisiana Avenue | Lutcher, La. | 30.058976W | 90.706663N | 505,000 | 2011 | Concrete/Wood/Metal |
| X | Paulina Park | Parish Recreational Park/Pavilion | 3360 Sugar House Street | Paulina, La. | 30.029666W | 90.738206N | 316,000 | 2012 | Concrete/Wood/Metal |
| X | South Vacherie Park | Parish Recreational Park/Pavilion | 13271 Jake Gravois Street | Vacherie, La. | 29.940083W | 90.695248N | 335,000 | 2012 | Wood/Metal |
| X | Lutcher Town Hall | Administrative Office | 2500 Louisiana Avenue | Lutcher, La. | 30.04787W | 90.700483N | * | * | Brick |
| X | Gramercy Town Hall | Administrative Office | 120 North Montz | Gramercy, La. | 30.048353W | 90.689583N | * | * | Brick |
| X | Gramercy E.O.C | Emergency Operations Center/ Office | 111 East Main Street | Gramercy, La. | 30.047647W | 90.689196N | * | * | Brick/Metal |
| X | Lutcher Elementary School | Public School | 2461 North King Avenue | Lutcher, La. | 30.044972W | 90.704131N | * | * | Brick |
| X | Lutcher High School | Public School | 1910 West Main | Lutcher, La. | 30.045121W | 90.693 96N | * | * | Brick |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | St. James Carrer & Tech. Center | Public School | 1410 Buddy Whitney Street | Lutcher, La. | 30.046755W | 90.700741N | * | * | Brick |
| X | St. James High School | Public School | 5181 Wildcat Drive | St. James, La. | 29.988416W | 90.835967N | * | * | Brick |
| X | Fifth Ward Elementary School | Public School | 8184 Villavaso Street | St. James, La. | 30.023052W | 90.86854N | * | * | Brick |
| X | Vacherie Elementary School | Public School | 13440 Highway 644 | Vacherie, La. | 29.945363W | 90.682802N | * | * | Brick |
| X | Vacherie Primary School | Public School | 19177 Highway 643 | Vacherie, La. | 29.930041W | 90.668468N | * | * | Brick |
| X | St. James Science & Math Acad. | Public School | 3125 Valcour Aime | Vacherie, La. | 30.004249W | 90.753655N | * | * | Brick |
| X | Paulina Elementary School | Public School | 2756 Highway 44 | Paulina, La. | 30.108105W | 90.873432N | * | * | Concrete/Brick |
| X | St. Peter Chanel Catholic School | Parochial School | 2590 Highway 44 | Paulina, La. | 30.056302W | 90.575771N | * | * | Concrete/Brick |
| X | 6th Ward Elementary School | Public School | 3245 Valcour Aime | Vacherie, La. | 30.003394W | 90.753655N | * | * | Concrete/Metal |
| X | Gramercy Elementary School | Public School | 601 E. 2nd Street | Gramercy, La. | 30.082077W | 90.698423N | * | * | Concrete |
| X | Union-Convent Vol. Fire Dept. | Public Volunteer Fire Department | Highway 44 | Convent, La. | 30.052773W | 90.83631N | * | * | Metal |
| X | Gramercy Volunteer Fire Dept. | Public Volunteer Fire Department | 120 North Montz Avenue | Gramercy, La. | 30.048353w | 90.689583N | * | * | Metal |
| X | Gramercy Volunteer Fire Dept. | Public Volunteer Fire Department | 407 East Jefferson Highway | Gramercy, La. | 30.043709w | 90.685849N | * | * | Metal |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | Lutcher Volunteer Fire Dept. | Public Volunteer Fire Department | 2437 Louisiana Avenue | Lutcher, La. | 30.046755w | 90.700741N | * | * | Metal |
| X | Vacherie Volunteer Fire Dept. | Public Volunteer Fire Department | 2433 Highway 18 | Vacherie, La. | 30.006516w | 90.731854N | * | * | Metal |
| X | Vacherie Volunteer Fire Dept. | Public Volunteer Fire Department | 4021 Highway 18 | Vacherie, La. | 29.999231w | 90.787601N | * | * | Metal |
| X | St. James Volunteer Fire Dept. | Public Volunteer Fire Department | 6041 Highway 18 | St. James, La. | 30.035165w | 90.682461N | * | * | Metal |
| X | St. James Volunteer Fire Dept. | Public Volunteer Fire Department | 8120 Kingview Street | St. James, La. | 30.058456w | 90.867638N | * | * | Metal |
| X | Paulina-Grand Point-Belmont-FD | Public Volunteer Fire Department | 3054 Highway 44 | Paulina, La. | 30.28218w | 90.921411N | * | 1972 | Metal |
| X | Paulina-Grand Point-Belmont-FD | Public Volunteer Fire Department | 32122 Highway 642 | Paulina, La. | 30.108105w | 90.873432N | * | 1981 | Metal |
| X | Paulina-Grand Point-Belmont-FD | Public Volunteer Fire Department | 4062 Highway 44 | Paulina, La. | 30.131195W | 90.917849N | * | 2005 | Metal |
| X | South Vacherie Volunteer F/D | Public Volunteer Fire Department | 29170 Highway 644 | Vacherie, La. | 29.939041W | 90.704603N | * | * | Brick |
| X | South Vacherie Volunteer F/D | Public Volunteer Fire Department | 19455 Highway 643 | Vacherie, La. | 29.939376W | 90.680785N | * | * | Brick |
| X | St. James Parish S/O Range | Law Enforcement Building | 29449 Sheriff Range Road | Vacherie, La. | 29.981762W | 90.70868N | 1,000,000** | 2006 | Concrete |
| X | Gramercy Volunteer Fire Dept. | Public Volunteer Fire Department | 1502 North Airline Avenue | Gramercy, La. | 30.073981W | 90.705418N | * | * | |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | St. James O.E.P. Warehouse | Emergency Operations Facility | 5787 Highway 44, | Convent, La. | 29.99431 12W | 90.817 299N | 364,200 | 2015 | Metal |
| X | Welcome Senior Center | Parish Senior Citizens Building | 7140 Park Avenue | St. James, La. | 30.04972 7W | 90.848 884N | 330,000 | 1997 | Metal |
| X | Romeville Senior Center | Parish Senior Citizens Building | 8188 Romeville Street | Convent, La. | 30.06855 9W | 90.840 602N | 10,000 | 1974 | Brick |
| X | Lutcher Senior Center | Parish Senior Citizens Building | 26311 Louisiana Avenue | Lutcher, La. | 30.04772 1W | 90.700 397N | 870,000 | 2003 | Brick |
| X | Vacherie Senior Center | Parish Senior Citizens Building | 29166 Health Unit Street | Vacherie, La. | 29.96533 W | 90.713 272N | 225,000 | 1984 | Brick/Metal |
| X | Lutcher Library | Parish Public Library Building | 1879 West Main Street | Lutcher, La. | 30.04553 W | 90.693 188N | 2,400,000 | 1971 | Brick |
| X | Vacherie Library | Parish Public Library Building | 2593 Highway 20 | Vacherie, La. | 29.99462 3W | 90.725 288N | 2,302,000 | 2003 | Brick |
| X | West Bank Water Treatment Plant | Parish Water Work Building | 3261 La. Highway 18 | Vacherie, La. | 30.00682 7W | 90.772 235N | 1,100,000 | 1955 | Concrete |
| X | East Bank Water Treatment Plant | Parish Water Work Building | 51288 La. 44 | Convent, La. | 30.07106 3W | 90.892 764N | 800,000 | 1955 | Concrete |
| X | Lutcher Water Treatment Plant | Town Water Work Building | 1143 Lutcher Avenue | Lutcher, La. | 30.03946 6W | 90.694 484N | * | * | Brick |
| X | Gramercy Water Treatment Plant | Town Water Work Building | 407 East Jefferson Highway | Gramercy, La. | 30.04392 6W | 90.685 494N | * | * | Concrete |
| X | St. James Parish Utilities | Parish Utilities Administrative Office | 2600 La. 20 | Vacherie, La. | 29.99471 71W | 90.725 494N | 400,000 | 1955 | Brick |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | St. James Operation Center | Parish Works Equipment Building | 22176 La. 20 | Vacherie, La. | 29.964672W | 90.714045N | 350,000 | * | Metal |
| X | Gramercy Police Department | Town Police Headquarters Building | 111 East Main Street | Gramercy, La. | 30.047435W | 90.689490N | * | * | Brick |
| X | Radio Tower-192 | Communications /911 | 5153 Canatella St. , | Convent, La. | 29.9943446W | 90.817299N | 400,000 | 1987 | Steel/Metal |
| X | NEW-Communications Tower 400 | Communications /911 | 5153 Canatella St., | Convent, La. | 29.9943446W | 90.817299N | 1,200,000 | 2012 | Steel/Metal |
| X | Parish-Emergency Warning Syst. | Communications /911 | 5153 Canatella St., | Convent, La. | 29.9943446W | 90.817299N | 992,900 | 1989 | Hardened Building |
| X | E.O.C Server/Core Network | Communications /911 | 5153 Canatella St., | Convent, La. | 29.9943446W | 90.817299N | 225,000 | 2011 | Hardened Building |
| X | Judicial Building | Court House/Judges and Administration Offices | 5816 La. Highway | Convent, La. | 29.9943446W | 90.817299N | 3,250,000 | 2011 | Steel Frame/Metal Panels |
| X | Water Tank-South Vacherie | Water Tower | 19460 Hwy. 643 | Vacherie, La. | 29.939138W | 90.694158N | 500,000 | 1968 | Steel/Metal |
| X | Water Tank-South Vacherie | Water Tower | 23160 Hwy.. 20, | Vacherie, La. | 30.002369W | 90.728148N | 150,000 | 1955 | Steel/Metal |
| X | Water Tank-North Vacherie | Water Tower | 2185 Hwy. 20, | Vacherie, La. | 30.004977W | 90.729129N | 150,000 | 1955 | Steel/Metal |
| X | Water Tank-Welcome | Water Tower | 9119 Hwy. 18, | St. James, La. | 30.060416W | 90.897563N | 150,000 | 1955 | Steel/Metal |
| X | Water Tank-Union | Water Tower | 9108 Water Tower St. | Convent, La. | 30.072902W | 90.895338N | 200,000 | 1955 | Steel/Metal |

| Critical Facility (If Yes, Mark X) | Name of Building | Purpose of Building | Address | City | Latitude | Long. | Assessed Value | Date Built | Construction Type |
|---|---|---|---|---|---|---|---|---|---|
| Unicorp. St. James | | | | | | | | | |
| X | Water Tank-Convent | Water Tower | 3160 Hwy.642 | Paulina, La. | 30.032792W | 90.744178N | 200,000 | 1955 | Steel/Metal |
| X | Purification-Radio Tower | Utilities | 3261 La. 18, | Vacherie, La. | 30.006021W | 90.770035N | 30,000 | 2010 | Steel/Metal |
| X | Vacherie Health Unit | Medical | 29170 Health Unit St. | Vacherie, La. | 29.993395W | 90.724686N | 960,000 | 2011 | Brick/ Metal |
| X | West Bank Maintenance Blds. | Parish Works Equipment Building | 22176 Hwy. 20 | Vacherie, La. | 29.964672W | 90.714045N | 350,000 | * | Metal |
| X | West Bank Radio Tower | Communications | 22176 Hwy. 20 | Vacherie, La. | 29.964672W | 90.714045N | 30,000 | * | Steel/Metal |
| | | | | | | | | | |
| Gramercy | | | | | | | | | |
| | | * (Utilized Building Inventory provided by St. James Parish) | | | | | | | |
| | | | | | | | | | |
| Lutcher | | | | | | | | | |
| | | * (Utilized Building Inventory provided by St. James Parish) | | | | | | | |

## National Flood Insurance Program (NFIP)

St. James Parish

# ELEMENT F: STATE REQUIREMENT

# National Flood Insurance Program (NFIP)

**Parish: St James Parish**

| | St James | Gramercy | Lutcher |
|---|---|---|---|
| **Insurance Summary** | | | |
| How many NFIP polices are in the community? What is the total premium and coverage? | 1048 Polices are in the community/ total premium & coverage $284,989.000 | 240 Polices are in the community/ total premium & coverage $63,627,000 | 255 polices are in community/ total premium and coverage $72,047,400 |
| How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage? | 145 claims paid in community/ total amount of paid claims, $2,527.877, and, 126 claims for substantial damage for $489,205 | 27 paid claims in community/ toptal amount of paid claims, $1,275,587, and 0 claims for substantial damage. | 37 claims paid in community/ total amopunt of paid claims $1,510,513 and 2 claims for substantial damage for $107,781 |
| How many structures are exposed to flood risk with in the community? | 391 | Rely on Parish flood risk assessment | Rely on Parish flood risk assessment. |
| Describe any areas of flood risk with limited NFIP policy coverage. | NONE | NONE | NONE |

| Staff Resources | | | |
|---|---|---|---|
| Is the Community FPA or NFIP Coordinator certified? | YES | YES (Rely on Parish) | YES (Rely on Parish) |
| Is flood plain management an auxiliary function? | NO | NO | NO |
| Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability) | Flood plan determinations: permit review, GIS, education and outreach, inspects; engineering capability. | Flood plan determinations: permit review, GIS, education and outreach, inspects; engineering capability. (Rely on Parish) | Flood plan determinations: permit review, GIS, education and outreach, inspects; engineering capability. (Rely on Parish) |
| What are the barriers to running an effective NFIP program in the community, if any? | Public Awareness | Public Awareness | Public Awareness |
| **Compliance History** | | | |
| Is the community in good standing with the NFIP? | Yes | YES (Rely on Parish) | YES (Rely on Parish) |
| Are there any outstanding compliance issues(i.e., current violations)? | NO | NO | NO |
| When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)? | October, 2012 | October, 2012 (Rely on Parish) | October, 2012 (Rely on Parish) |
| Is a CAV or CAC scheduled or needed? If so when? | Yes, October | Yes, October (Rely on Parish) | Yes, October (Rely on Parish) |
| **Regulation** | | | |
| When did the community enter the NFIP? | 3/8/1974 | 2/17/1979 | 2/4/1974 |
| Are the FIRMs digital or paper? | Both | Both (Rely on Parish) | Both |
| Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways? | Yes, Requires 1' freeboard | Yes, Requires 1' freeboard (Rely on Parish) | Yes, Requires 1' freeboard (Rely on Parish) |
| **Community Rating System (CRS)** | | | |
| Does the community participate in CRS? | YES | YES (Rely on Parish) | YES (Rely on Parish) |
| What is the community's CRS Class Ranking? | CRS Class Ranking is 7 | CRS Class Ranking is 7 (Rely on Parish) | CRS Class Ranking is 7 (Rely on Parish) |
| Does the plan include CRS planning requirements? | YES | YES | YES |