WEST CARROL

PARISH

MULTI-JURISDICTION HAZARD MITIGATION PLAN UPDATE

UNINCORPORATED WEST CARROLL PARISH, EPPS, FOREST, KILBOURNE, OAK GROVE, PIONEER

2021

WEST CARROLL PARISH
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN UPDATE

Prepared for:

West Carroll Parish

Prepared by:

Stephenson Disaster Management Institute

Mr. Brant Mitchell, CEM
Mrs. Lauren Morgan, MEPP
Mr. Chris Rippetoe, CFM
Dr. Joseph B. Harris, PhD*

Louisiana State University – Louisiana Emerging Technology Center
Baton Rouge, LA 70803

***Western Carolina University, Emergency and Disaster Management Program (Dept. of Criminology and Criminal Justice)**

This Page Left Intentionally Blank

ACKNOWLEDGMENTS

This 2021 West Carroll Parish Hazard Mitigation Plan Update was coordinated by the West Carroll Parish Hazard Mitigation Plan Update Planning Committee, in collaboration with community stakeholders and the general public. The participating jurisdictions are made up of the following communities:

Unincorporated West Carroll Parish
Village of Epps
Village of Forest
Village of Kilbourne
Town of Oak Grove
Village of Pioneer

Special thanks are directed to all of those who assisted in contributing their expertise and feedback on this document, especially the West Carroll Parish Office of Homeland Security and Emergency Management. These combined efforts have made this project possible. The West Carroll Parish Planning Committee consists of the following individuals, who are credited in the creation of this document:

Myrtle Green	West Carroll Policy Jury
Angela Griffis	West Carroll Policy Jury
Roosevelt Porter	Village of Epps
James Otwell	Village of Forest
Toni Shumate	Village of Kilbourne
Adam Holland	Town of Oak Grove
Sonya Reiter	Village of Pioneer
Christy Boyte	West Carroll Parish School Board
Lewis Russell	Oak Grove Police Dept
Myrl Sistrunk	West Carroll VFD
Logan Pippins	West Carroll EMS Service
Bill Ellerbe	West Carroll Police Jury
Molly Cooper	Village of Epps
Scott Matthews	West Carroll Parish Sheriff
Stacey Martin	West Carroll Policy Jury
Todd Nevels	West Carroll Planning & Development
Wesley Copland	West Carroll Police Jury

The 2021 West Carroll Parish Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the West Carroll Parish Office of Homeland Security and Emergency Preparedness: 310 Skinner Ln., Oak Grove, LA 71263

Contents

1. Introduction 1-1
Geography, Population and Economy 1-2
Geography 1-2
Population 1-4
Economy 1-4
Hazard Mitigation 1-5
General Strategy 1-7
2021 Plan Update 1-8
2. Hazard Identification and Parish-Wide Risk Assessment 2-1
Prevalent Hazards to the Community 2-1
Previous Occurrences 2-2
Probability of Future Hazard Events 2-3
Inventory of Assets for the Entire Parish 2-4
Essential Facilities of the Parish 2-5
Future Development Trends 2-10
Future Hazard Impacts 2-11
Assessing Vulnerability Overview 2-11
Quantitative Methodology 2-12
Qualitative Methodology 2-12
Priority Risk Index and Hazard Risk 2-12
Land Use 2-14
Hazard Identification 2-16
Drought 2-16
Flooding 2-19
Thunderstorms 2-36
Tornadoes 2-47
Tropical Cyclones 2-53
Winter Weather 2-65
3. Capability Assessment 3-1
Policies, Plans and Programs 3-1
Building Codes, Permitting, Land Use Planning and Ordinances 3-2
Administration, Technical, and Financial 3-2
Education and Outreach 3-3
Flood Insurance and Community Rating System 3-4

NFIP Worksheets....3-6
4. Mitigation Strategies....4-1
Introduction....4-1
Goals....4-3
2021 Mitigation Actions and Update on Previous Plan Actions....4-4
Unincorporated West Carroll Parish Mitigation Actions....4-6
Village of Epps Mitigation Actions....4-19
Village of Forest Mitigation Actions....4-30
Village of Kilbourne Mitigation Actions....4-41
Town of Oak Grove Mitigation Actions....4-52
Village of Pioneer Mitigation Actions....4-63
Action Prioritization....4-74
Appendix A: Planning Process....A-1
Purpose....A-1
The West Carroll Parish Hazard Mitigation Plan Update....A-1
Planning....A-2
Coordination....A-2
Neighboring Community, Local and Regional Planning Process Involvement....A-2
Program Integration....A-4
Meeting Documentation and Public Outreach Activities....A-4
Meeting #1: Hazard Mitigation Plan Update Kick-Off....A-5
Meeting #2: Hazard Mitigation Plan Planning Committee Meeting – Initial Planning Meeting....A-5
Meeting #3: Hazard Mitigation Plan Planning Committee Meeting – Mitigation Actions....A-6
Meeting #4: Risk Assessment Presentation to Planning Committee....A-7
Meeting #5: Public Meeting....A-8
Outreach Activity #1: Public Opinion Survey....A-10
Outreach Activity #2: Incident Questionnaire....A-10
Outreach Activity #3: 2021 West Carroll Parish Hazard Mitigation Plan Public Review....A-12
Appendix B: Plan Maintenance....B-1
Purpose....B-1
Monitoring, Evaluating, and Updating the Plan....B-1
Responsible Parties....B-1
Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria....B-1
2021 Plan Version Plan Method and Schedule Evaluation....B-3
Incorporation into Existing Planning Programs....B-3

Continued Public Participation B-6
Appendix C: Critical Facilities C-1
Critical Facilities within the West Carroll Parish Planning Area C-1
Appendix D: Plan Adoption D-1
Appendix E: State Required Worksheets E-1
Mitigation Planning Team E-1
Capability Assessment E-2
Unincorporated West Carroll Parish E-2
Village of Epps E-5
Village of Forest E-8
Village of Kilbourne E-11
Town of Oak Grove E-14
Village of Pioneer E-17
Building Inventory E-20
Vulnerable Populations E-22
National Flood Insurance Program (NFIP) E-23

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 West Carroll Parish Hazard Mitigation Plan Update (HMPU) process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make West Carroll Parish and its jurisdictions less vulnerable and more disaster resilient. It also includes mitigation project scoping to further identify scopes of work, funding sources, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use.

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

- Unincorporated West Carroll Parish
- Village of Epps
- Village of Forest
- Village of Kilbourne
- Town of Oak Grove
- Village of Pioneer

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/Rita, Gustav/Ike, and Laura/Delta environment in south Louisiana.

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in West Carroll 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.

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 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.

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 (CRS), a program that reduces flood insurance premiums in participating communities. This program is further described in Section Three: Capability Assessment.

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 CRS credit, and provides West Carroll Parish and its communities with a blueprint for reducing the impacts of these natural hazards on people and property.

Geography, Population and Economy

Geography

West Carroll Parish is located in northeast Louisiana, approximately 31 miles northeast of Monroe, LA. (*Figure 1-1*). Neighboring parishes are East Carroll Parish to the east, Richland Parish to the south, Morehouse Parish to the west, and Ashley and Chico Counties in Arkansas. West Carroll Parish contains five incorporated communities: Town of Oak Grove, and the Villages of Epps, Kilbourne, Forest, and Pioneer.

Figure 1-1: Location of West Carroll Parish in the State of Louisiana

Figure 1-2: Incorporated Jurisdictions within West Carroll Parish

The main transportation arteries through West Carroll Parish are Louisiana State Highways 2, 17, 134, 577, and 585. Interstate Highway 20, which runs a few miles south of the border of West Carroll Parish, allows easy access to the east or west. State Highway 2 winds through the central portion of the parish toward the eastern and western borders. State Highway 17 connects all the incorporated communities. It runs north and south through the parish. South of West Carroll Parish, State Highway 17 connects with I-20 and continues to Winnsboro, where it intersects with State Highway 15. This highway is well used and maintained for commercial traffic toward I-20 and the southern part of the state. State Highway 134 runs east-west through Epps in the southern portion of the parish. State Highway 577 runs east-west through Darnell in the southern portion of the parish. State Highway 585 runs north-south and starts at the Richland Parish line at the southwest corner of West Carroll, goes north, and leaves at the northeast corner outside of Kilbourne.

Some of these roadways are significant evacuation routes for West Carroll Parish, as well as surrounding parishes, during states of emergency.

Kelly Airport is located in Oak Grove and has a 3,000 foot paved, lighted runway, which can accommodate some business jets. The runway is lighted for night flying. Fuel, storage and maintenance are available on the premises. Fifty-five miles to the south in Monroe, Monroe Regional Airport serves West Carroll Parish. It is accessible via I-20 and connects to State Highway 17 in Delhi.

While West Carroll Parish has no navigable rivers, its location near the Port of Lake Providence on the Mississippi River should not be overlooked. This port, which is only twelve miles away, can contribute significantly to the parish's economic potential. The closest international waterway port is located 190 miles to the south in Baton Rouge at the Port of Baton Rouge, with a channel depth of 55 feet.

West Carroll Parish weather is typically warm and humid. Daily temperatures are relatively consistent throughout the parish. The average annual temperature for the state as a whole is 68ºF. January is typically the coldest month for Louisiana, averaging approximately 54ºF, while July is typically the warmest at an average of 83ºF. Winter months are usually mild with cold spells of short duration. For West Carroll Parish in particular, the summer months are usually quite warm, with an average daily maximum temperature of 92.3°F in August. Winters are typically mild. Snowfall averages less than one inch per year. Average annual rainfall for the area is approximately 57 inches. West Carroll Parish is susceptible to the normal weather dangers, such as tornadoes and flooding, but due to its location within the state, the parish is highly susceptible to severe thunderstorms, as well as winter weather.

West Carroll Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 8 (*Figure 1-3*).

Figure 1-3: Louisiana Homeland Security Regions

Population

The population of West Carroll Parish is estimated at 10,830 (2019 estimate) with a population change from April 1, 2010 – July 1, 2019 of -6.67%.

Table 1-1: West Carroll Parish Population
(Source: US Census)

	2010 Census	2013 Estimate	2019 Estimate	Percent Change 2010 -2019
Total Population	11,604	11,467	10,830	-6.67%
Population Density (Pop/Sq. Mi.)	32.3	-------	-------	-------
Total Housing Units	-------	-------	5,204	-------
Total Households	4,103	-------	4,084	-0.46%
Persons Per Household	-------	-------	2.60	-------

Economy

In the midst of economic growth, West Carroll Parish has managed to retain its traditional community spirit and easygoing lifestyle. West Carroll Parish, as with most of northeast Louisiana, is grounds for the flourishing of many major companies and small to medium businesses.

Entertainment and retail shopping have become major parts of the economy in West Carroll. In 2004 the Thomas Jason Lingo Community Center opened with a 1,000-seat auditorium; it has many live events each year. The Fiske Theatre has been renovated and returned to regular operation as a first-run movie theatre. Both of these venues bring families from all over Northeast Louisiana and Southeast Arkansas to the parish for entertainment. The opening of the Super Wal-Mart in 2006 contributed to West Carroll becoming a regional retail hub.

West Carroll parish has a substantial amount of agriculture in the parish; the main crops are corn, rice, cotton, and sweet potatoes, but the largest employers are West Carroll Health Systems, West Carroll School Board, Ruffin Building Systems and Wal-Mart.

Table 1-2: West Carroll Parish Business Patterns
(Source: US Census, CBP)

Business Description	Number of Establishments	Number of Employees	Annual Payroll ($1,000)
Retail Trade	25	328	8,173
Manufacturing	4	73	2,588
Health Care and Social Assistance	19	557	17,498
Transportation and Warehousing	8	29	1,578
Construction	8	40	1,346
Wholesale Trade	4	39	2,795
Other Services (except Public Administration)	35	123	2,495
Accommodation and Food Services	12	160	2,029
Financial and Insurance	16	63	2,324
Professional, Scientific, and Technical Services	11	19	456
Information	5	23	666
Agriculture, Forestry, Fishing and Hunting	5	22	1,174
Utilities	7	34	1,462

Hazard Mitigation

To fully understand hazard mitigation efforts in West Carroll 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 in advance of 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 1-4 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 1-4* 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, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

Figure 1-4: 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. More recently, the historically impactful 2020 hurricane season reinforced the need for proper planning and mitigation strategies.

The catastrophic tropical events of 2005 and 2020, coupled with the unprecedented flooding events of 2016 have 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 the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) encourages the parishes and the local communities 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 2021 West Carroll Parish Hazard Mitigation Plan (HMP) maintains much of the information from the 2015 plan version, but it now incorporates the order and methodologies of the 2019 Louisiana State Hazard Mitigation Plan.

The sections in the 2015 West Carroll Parish HMP were as follows:

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

This plan update 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 West Carroll Parish Hazard Mitigation Planning Committee recognized the benefits from the successful analysis and mitigation planning executed in previous plan updates, as well as improvements to be made in the 2021 update. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

2021 Plan Update

This 2021 plan update proceeds with the previous goals of the West Carroll Parish Hazard Mitigation Plan. The current 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 and mitigation
3. Reduce repetitive losses in the parish and municipalities
4. Facilitate sound development in the parish and municipalities so as to reduce or eliminate the potential impact of hazards

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information's (NCEI) Storm Events Database was used in the analysis, which provides historical hazard data from 1950 to 2020. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of much repetition between sections from the previous plan updates.

The 2021 plan update is organized in the same format as the 2015 update as outlined below:

- 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 Critical Facilities
- Appendix D Plan Adoption
- Appendix E State Required Worksheets

Table 1-3: 2021 Plan Update Crosswalk

Plan Update Crosswalk	
2015 Update	**2021 Update**
Section 1: Introduction	Section 1: Introduction
Section 2: Hazard Identification and Parish-Wide Risk Assessment	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 3: Capability Assessment	Section 3: Capability Assessment
Section 4: Mitigation Strategy	Section 4: Mitigation Strategies
Appendix A: Planning Process	Appendix A: Planning Process
Appendix B: Plan Maintenance	Appendix B: Plan Maintenance
Appendix C: Essential Facilities	Appendix C: Critical Facilities
Appendix D: Plan Adoptions	Appendix D: Plan Adoptions
Appendix E: State Required Worksheets	Appendix E: State Required Worksheets

Despite numerous changes in this plan update, the plan remains consistent in its emphasis on the types of hazards that pose the most risk to loss of life, injury, and property in West Carroll Parish and its communities. The extent of this risk is dictated primarily by its geographic location. Most significantly, West Carroll Parish remains at high risk of various hazards, including flooding and tornadoes, winter storms, and severe thunderstorms (high wind, hail and lightning). The entire parish is also at high risk of damages from high winds and wind-borne debris. Other hazards threaten the parish and/or its communities, 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.

This Page Left Intentionally Blank

2. Hazard Identification and Parish-Wide Risk Assessment

This section assesses the various hazard risks that West Carroll 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 West Carroll Parish Hazard Mitigation Plan published in 2015, as well as the hazards that were identified in the state's 2019 Hazard Mitigation Plan that were 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 2020 Update
Drought	X		X
Flooding	X	X	X
Thunderstorms (Hail, Lightning, & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X	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, their occurrence was not merited for further study by the planning committee. The determination was made to focus attention and resources on the most prevalent hazards, which include the hazards previously profiled. The following hazards have been selected to be included in this risk assessment:

a) Drought
b) Flooding
c) Thunderstorms (Hail, Lightning, & Wind)
d) Tornadoes
e) Tropical Cyclones
f) Winter Storms

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

- Flooding from rivers and waterways, rainstorms, 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)
    e) Coastal
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property damage resulting from all profiled natural hazards

The potential destructive power of tropical cyclones was determined to be the most prevalent hazard to the parish. Eight of the fifteen disaster declarations West Carroll Parish has received resulted from tropical cyclones, which validates this as the most significant hazard. Therefore, the issue of hurricanes will 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 destructive potential, the risk assessment will also assess 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 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 West Carroll Parish is included in the hurricane risk assessment.

West Carroll Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass-through West Carroll 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 West Carroll Parish since 1965. Information includes names, dates, and types of disaster.

Table 2-2: West Carroll Parish Major Disaster Declarations.

Disaster Number	Year	Declaration
3031	2/22/1977	Drought & Freezing
829	6/16/1989	Severe Storm, Flood
902	4/23/1991	Severe Storm, Flood
904	4/29/1991	Severe Storm, Flood
1264	12/23/1998	Winter Storm
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita

Disaster Number	Year	Declaration
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
1792	9/13/2008	Tropical Cyclone – Hurricane Ike
4080	8/29/2012	Tropical Cyclone – Hurricane Isaac
4263	3/13/2016	Severe Storm, Flood
4484	3/24/2020	COVID-19 Pandemic
3527	6/7/2020	Tropical Cyclone – Tropical Storm Cristobal
3538	8/23/2020	Tropical Cyclone – Tropical Storms Laura and Marco
4559	8/28/2020	Tropical Cyclone – Hurricane Laura

Probability of Future Hazard Events

The probability of a hazard event occurring in West Carroll Parish is estimated in the table 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 National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information's (NCEI) Storm Events Database, which provides historical hazard data from 1950 to 2020. In staying consistent with the state plan, the Storm Events Database was evaluated for the last thirty years (1990 – 2020) to determine future probability of a hazard occurring. While the 30-year record used by the State was adopted for the purpose of determining the overall probability, to assist with determining estimated losses, unless otherwise stated, the full 70-year record was used when Hazus was not 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. The following table shows the annual probability for each hazard occurring across the parish:

Table 2-3: Probability of Future Hazard Reoccurrence.

Hazard	Probability					
	West Carroll Parish (Unincorporated)	Epps	Forest	Kilbourne	Oak Grove	Pioneer
Drought	13%	13%	13%	13%	13%	13%
Flooding	36%	32%	24%	28%	40%	32%
Thunderstorms - Hail	100%	100%	100%	100%	100%	100%
Thunderstorms - Lightning	3%	3%	3%	3%	3%	3%
Thunderstorms - Winds	100%	100%	100%	100%	100%	100%
Tornadoes	47%	47%	47%	47%	47%	47%
Tropical Cyclones	28%	28%	28%	28%	28%	28%
Winter Storms	7%	7%	7%	7%	7%	7%

As shown in the previous table, hailstorms and high winds have the highest chance of occurrence in the parish (100%). These are followed by tornadoes (47%), flooding for the incorporated area of Oak Grove (40%), flooding for the unincorporated area of the parish (36%), flooding for the incorporated areas of Epps and Pioneer (32%), flooding for the incorporated area of Kilbourne and tropical cyclones (28%), flooding for the incorporated area of Forest (24%), winter storms (7%), and lightning (3%).

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 (GOHSEP) on critical infrastructure from a previous hazard mitigation project.

Within the entire planning area, there is an estimated value of $966,669,000 in structures throughout the parish. The tables below provides the total estimated value for each type of structure by occupancy.

Table 2-4: Estimated Total of Potential Losses throughout West Carroll Parish.

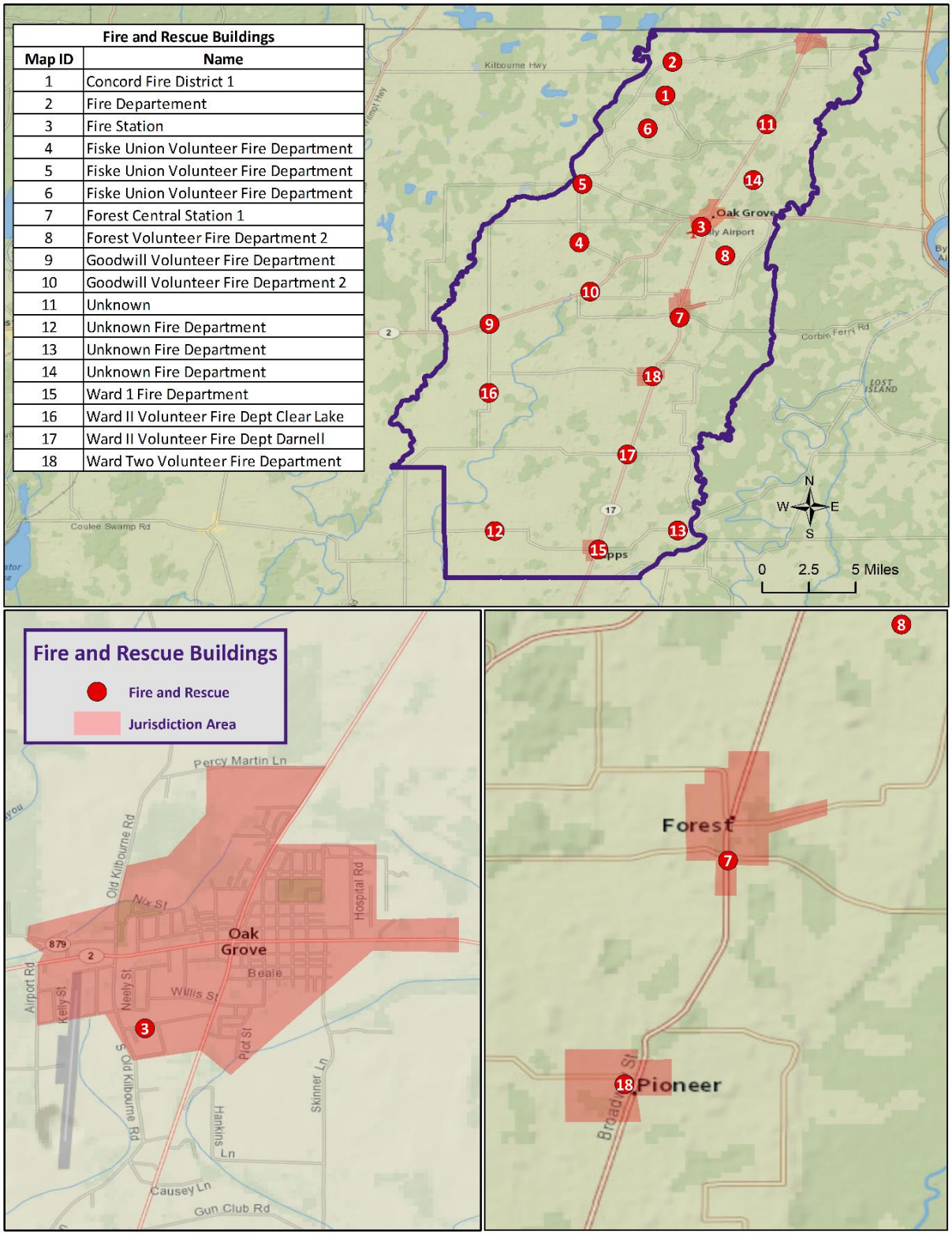
Occupancy	West Carroll Parish	Unincorporated Area	Epps	Forest
Agricultural	$23,211,000	$22,082,000	$0	$269,000
Commercial	$90,141,000	$37,248,000	$648,000	$1,063,000
Government	$11,292,000	$6,720,000	$208,000	$618,000
Industrial	$40,882,000	$37,964,000	$74,000	$83,000
Religion	$39,650,000	$27,807,000	$682,000	$1,167,000
Residential	$744,518,000	$538,516,000	$38,374,000	$13,699,000
Education	$16,975,000	$12,315,000	$0	$0
Total	**$966,669,000**	**$682,652,000**	**$39,986,000**	**$16,899,000**

Table 2-5: Estimated Total of Potential Losses throughout West Carroll Parish.

Occupancy	Kilbourne	Oak Grove	Pioneer
Agricultural	$233,000	$627,000	$0
Commercial	$3,925,000	$47,109,000	$148,000
Government	$461,000	$2,925,000	$360,000
Industrial	$151,000	$2,610,000	$0
Religion	$1,531,000	$8,054,000	$409,000
Residential	$29,160,000	$117,587,000	$7,182,000
Education	$0	$4,660,000	$0
Total	**$35,461,000**	**$183,572,000**	**$8,099,000**

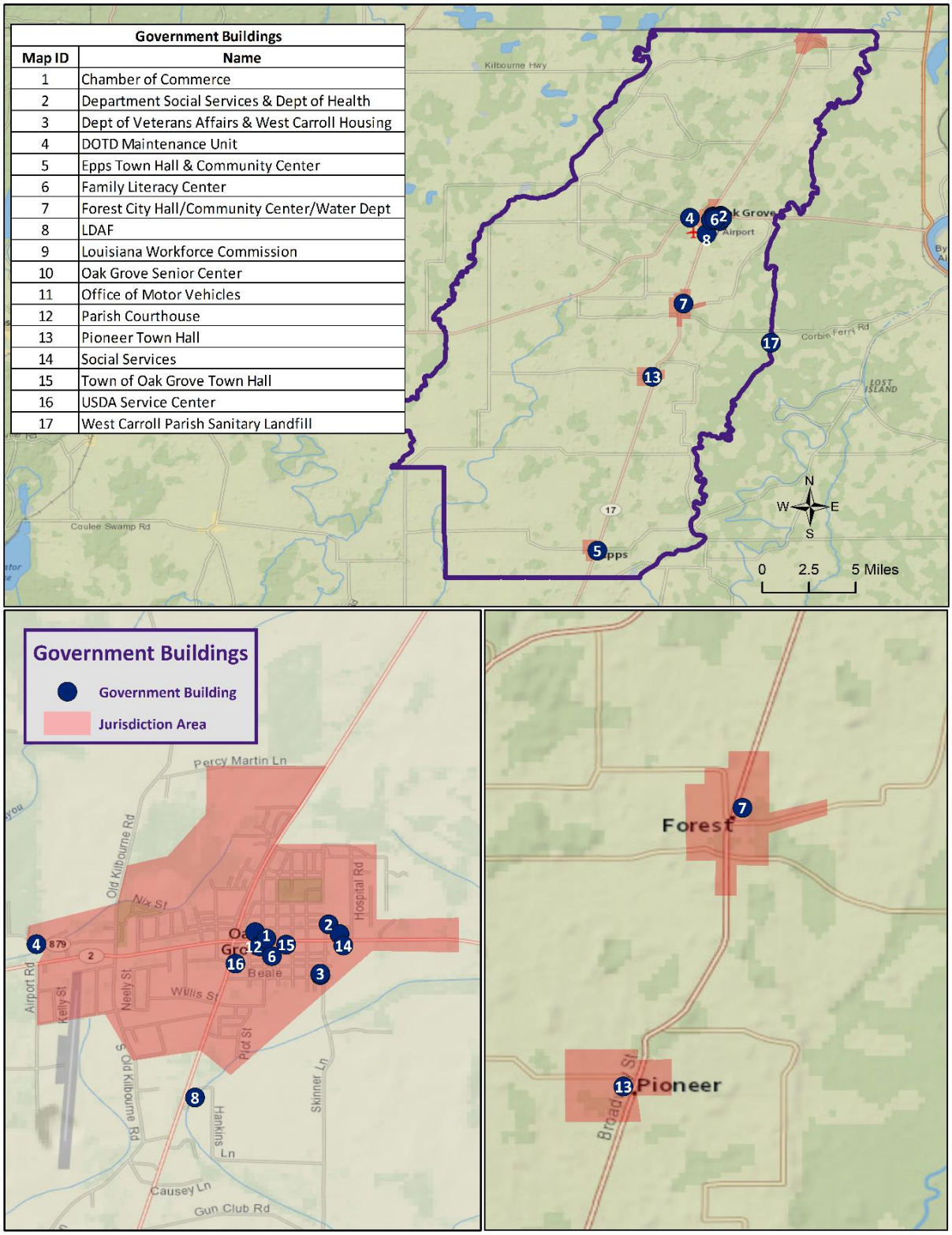
Essential Facilities of the Parish

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



Fire and Rescue Buildings	
Map ID	Name
1	Concord Fire District 1
2	Fire Departement
3	Fire Station
4	Fiske Union Volunteer Fire Department
5	Fiske Union Volunteer Fire Department
6	Fiske Union Volunteer Fire Department
7	Forest Central Station 1
8	Forest Volunteer Fire Department 2
9	Goodwill Volunteer Fire Department
10	Goodwill Volunteer Fire Department 2
11	Unknown
12	Unknown Fire Department
13	Unknown Fire Department
14	Unknown Fire Department
15	Ward 1 Fire Department
16	Ward II Volunteer Fire Dept Clear Lake
17	Ward II Volunteer Fire Dept Darnell
18	Ward Two Volunteer Fire Department

Figure 2-1: Fire and Rescue Facilities in West Carroll Parish.



Government Buildings	
Map ID	Name
1	Chamber of Commerce
2	Department Social Services & Dept of Health
3	Dept of Veterans Affairs & West Carroll Housing
4	DOTD Maintenance Unit
5	Epps Town Hall & Community Center
6	Family Literacy Center
7	Forest City Hall/Community Center/Water Dept
8	LDAF
9	Louisiana Workforce Commission
10	Oak Grove Senior Center
11	Office of Motor Vehicles
12	Parish Courthouse
13	Pioneer Town Hall
14	Social Services
15	Town of Oak Grove Town Hall
16	USDA Service Center
17	West Carroll Parish Sanitary Landfill

Figure 2-2: Government Buildings in West Carroll Parish.

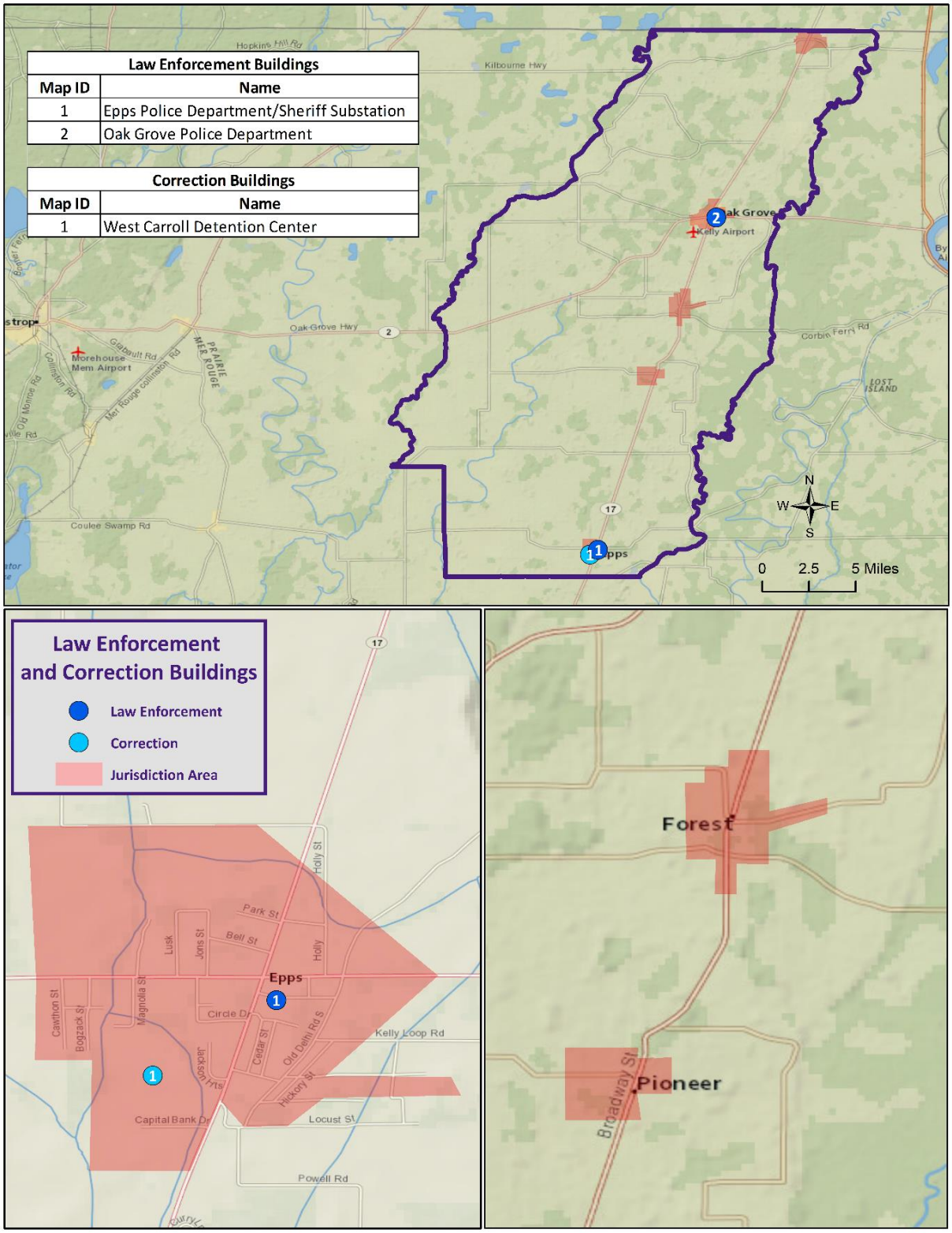


Figure 2-3: Law Enforcement in West Carroll Parish.

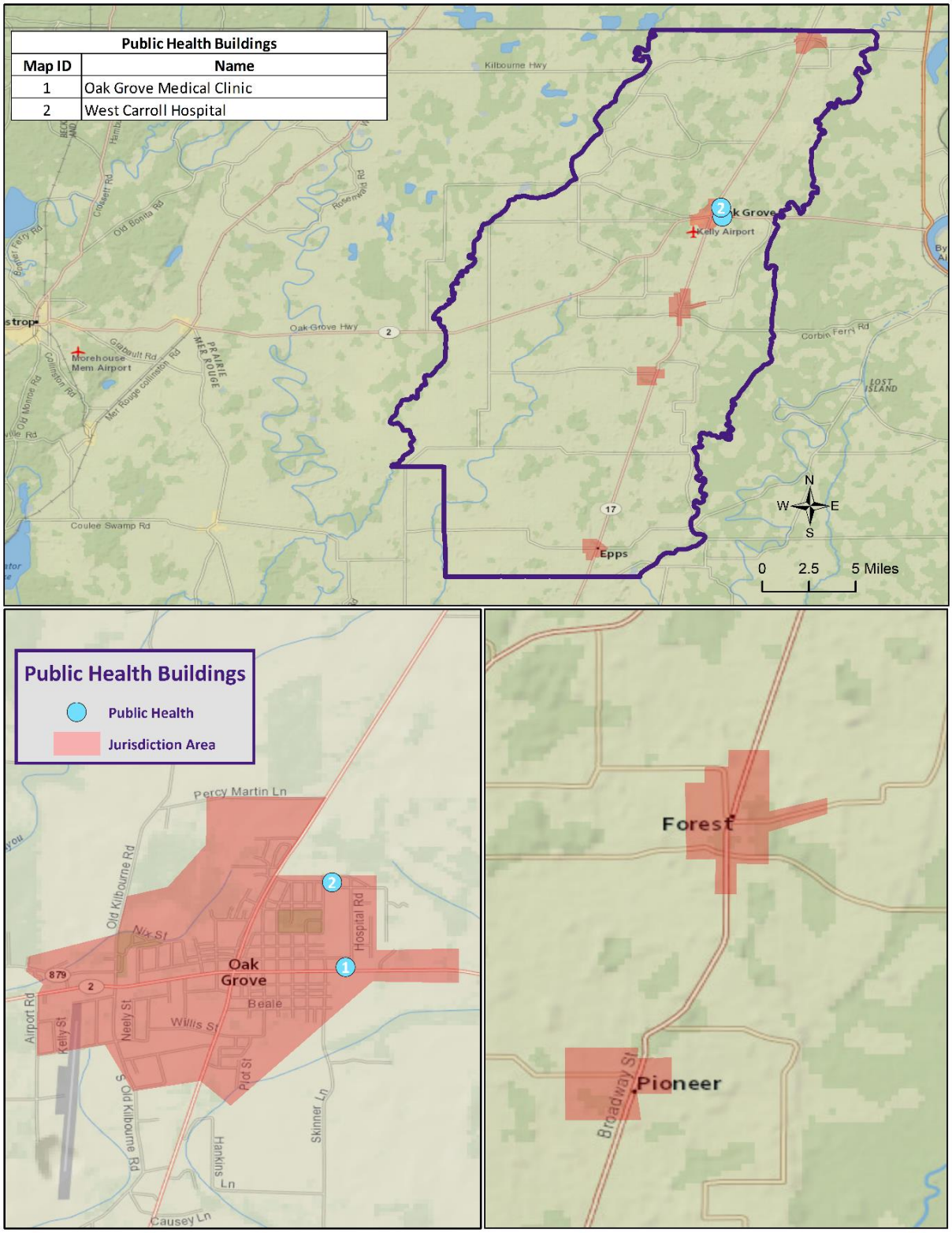


Figure 2-4: Public Health Facilities in West Carroll Parish.

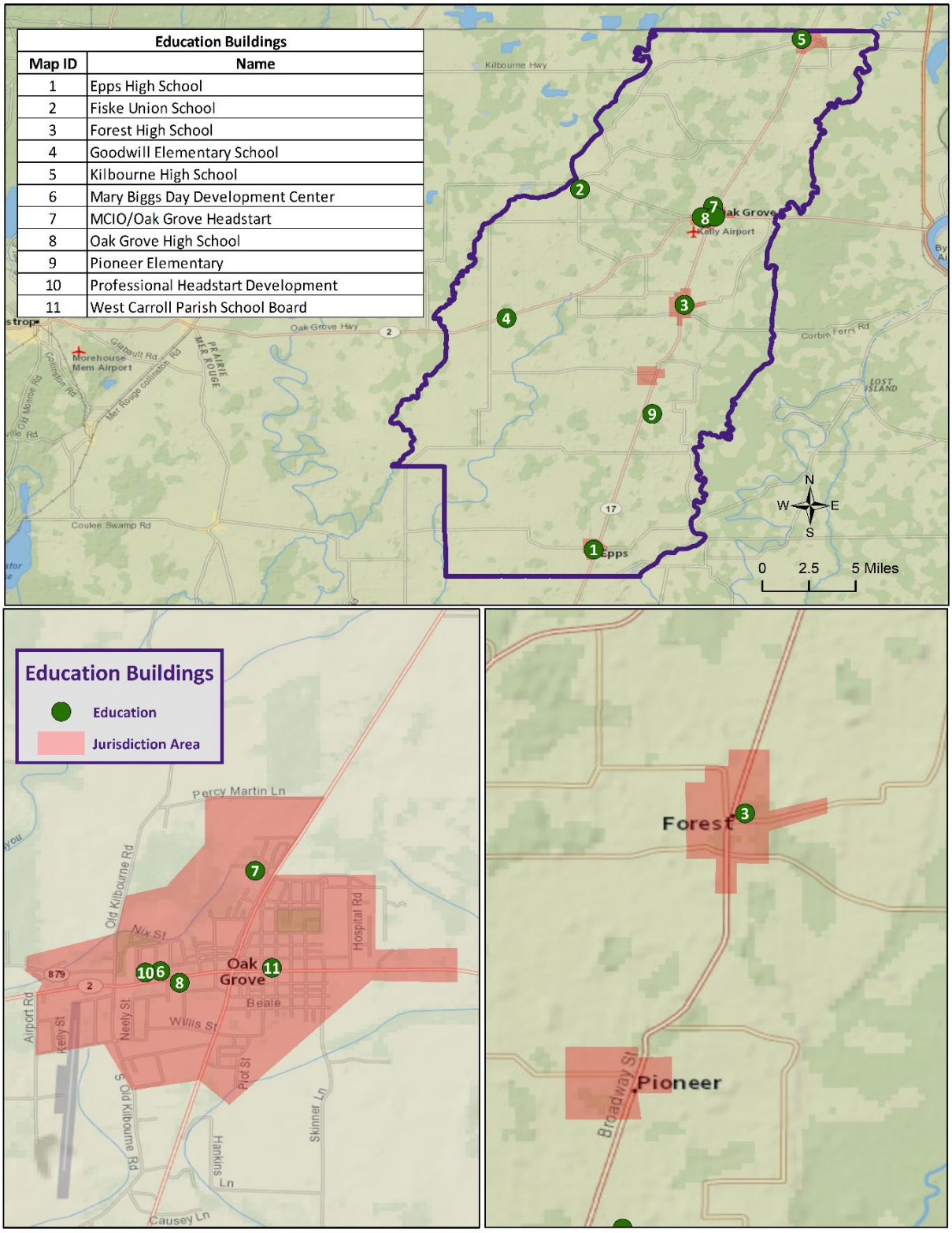


Figure 2-5: Educational Facilities in West Carroll Parish.

Future Development Trends

West Carroll Parish experienced a decline in population and a rise in housing between the years of 2000 and 2019, falling from a population of 12,314 in the year 2000 to a population of 10,830 in the year 2019. Oak Grove experienced the largest decline within the parish falling from a populace of 1,727 in 2010 to 1,553 in 2019 (10.1% decline). This is followed by Kilbourne at 7.9% overall decline, the unincorporated area of the parish at 6.2% overall decline, Pioneer at 5.8% overall decline, Forest at 5.1% overall decline, and then Epps at 4.8% overall decline from 2010 to 2019.

The unincorporated area of the parish experienced the largest growth of housing units from 2010 to 2019 growing from 3,596 in 2010 to 3,772 in 2019. The incorporated area of Kilbourne experienced the second largest growth in housing units during this time period with a 0.3% annual growth rate, followed by the incorporated area of Forest with a 0.2% annual growth rate. The incorporated areas of Epps, Oak Grove, and Pioneer all experienced a decline in housing units during this time period. 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 2019:

Table 2-6: Population Growth Rate for West Carroll Parish.

Total Population	West Carroll Parish	Unincorporated Area	Epps	Forest	Kilbourne	Oak Grove	Pioneer
1-Apr-00	12,314	8,105	1,153	275	436	2,174	171
1-Apr-10	11,604	8,096	854	355	416	1,727	156
1-Jul-19	10,830	7,597	813	337	383	1,553	147
Population Growth between 2000 – 2010	-5.8%	-0.1%	-25.9%	29.1%	-4.6%	-20.6%	-8.8%
Average Annual Growth Rate between 2000 – 2010	-0.6%	0.0%	-2.6%	2.9%	-0.5%	-2.1%	-0.9%
Population Growth between 2010 – 2019	-6.7%	-6.2%	-4.8%	-5.1%	-7.9%	-10.1%	-5.8%
Average Annual Growth Rate between 2010 – 2019	-0.74%	-0.68%	-0.53%	-0.56%	-0.88%	-1.12%	-0.64%

Table 2-7: Housing Growth Rate for West Carroll Parish.

Total Housing Units	West Carroll Parish	Unincorporated Area	Epps	Forest	Kilbourne	Oak Grove	Pioneer
1-Apr-00	4,980	3,486	237	108	185	894	70
1-Apr-10	5,046	3,596	227	134	196	829	64
1-Jul-19	5,204	3,772	220	136	201	814	61
Housing Growth between 2000 – 2010	1.3%	3.2%	-4.2%	24.1%	5.9%	-7.3%	-8.6%
Average Annual Growth Rate between 2000 – 2010	0.1%	0.3%	-0.4%	2.4%	0.6%	-0.7%	-0.9%
Housing Growth between 2010 – 2019	3.1%	4.9%	-3.1%	1.5%	2.6%	-1.8%	-4.7%
Average Annual Growth Rate between 2010 – 2019	0.3%	0.5%	-0.3%	0.2%	0.3%	-0.2%	-0.5%

Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2025 and 2030). 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 within West Carroll Parish from the present until 2030. A summary of estimated future impacts is shown in the table below. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%.

Table 2-8: Estimated Future Impacts, 2018-2030.
(Source: Hazus, US Census Bureau)

Hazard / Impact	Total in Parish (2019)	Hazard Area (2019)	Hazard Area (2025)	Hazard Area (2030)
Flood Damage				
Structures	5,204	882	898	916
Value of Structures	$979,926,469	$165,516,708	$177,182,296	$192,271,321
# of People	10,830	1,831	1,840	1,851
Tropical Cyclone Damage				
Structures	5,204	5,204	5,314	5,425
Value of Structures	$979,926,469	$979,926,469	$1,048,991,514	$1,138,324,698
# of People	10,830	10,830	10,895	10,961

Assessing Vulnerability Overview

The purpose of assessing vulnerability is to quantify and/or qualify exposure and determine how various threats and hazards impact life, property, the environment, and critical operations in West Carroll Parish. Vulnerability can be defined as the manifestation of the inherent states of the system (e.g., physical, technical, organizational, cultural) that can be exploited to adversely affect (cause harm or damage to) that system. For example, identifying areas in the parish that suffer disproportional damages from flooding compared with other areas, or overall exposure of an entire town to flooding. Identifying and understanding vulnerability to each threat and hazard provides a strong foundation for developing and pursuing mitigation actions.

The Vulnerability Assessment section for each hazard builds upon the information provided in the Risk Assessment by assessing the potential impact and amount of damage that each hazard has on the parish and each jurisdiction location. To complete the assessment, best available data were collected from a variety of sources, including local, state, and federal agencies, and multiple analyses were performed qualitatively and quantitatively. The estimates provided in the Vulnerability Assessment should be used to understand relative risk from each hazard and the potential losses that may be incurred; however, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning specific hazards and their effects on the built environment, as well as incomplete datasets from approximations and simplifications that are necessary to provide a meaningful and complete analysis. Further, most datasets used in this assessment contain relatively short periods of records, which increases the uncertainty of any statistically based analysis.

Quantitative Methodology

The quantitative methodology consists of utilizing a detailed GIS-based approach informed through the development of comprehensive hazard and infrastructure databases. This data-centric approach forms the foundation for our quantitative vulnerability assessment. GIS technology allowed for the identification and analysis of potentially at-risk community assets such as people and infrastructure. This analysis was completed for hazards that can be spatially defined in a meaningful manner (i.e., hazards with an official and scientifically determined geographic extent) and for which GIS data were readily available.

Qualitative Methodology

The qualitative assessment relies less on technology, but more on historical and anecdotal data regarding expected hazard impacts. The qualitative assessment completed for West Carroll Parish is based on the Priority Risk Index (PRI). The purpose of the PRI is to prioritize all potential hazards, and then group them into three categories of high, moderate, or low risk to identify and prioritize mitigation opportunities. The PRI is a good practice to use when prioritizing hazards because it provides a standardized numerical value for hazards to be compared. PRI scores were calculated using five categories:

- Probability
- Impact
- Spatial Extent
- Warning Time
- Duration

Each degree of risk is assigned a value (1-4) and a weighting factor. To calculate the Risk Factor for a given hazard, the assigned risk value for each category is multiplied by the weighted factor, and the sum of all six categories is totaled together to determine the final Risk Factor. The highest possible Risk Factor is 4.0.

Risk Factor = [(Probability * 0.25) + (Impact * 0.25) + (Spatial Extent * 0.20) + (Warning Time *0.15) + (Duration * 0.15)]

Priority Risk Index and Hazard Risk

Hazard risk is determined by calculating the Risk Factor for each hazard impacting West Carroll Parish. A summary of the PRI is found in the following table. The conclusions drawn from the qualitative and quantitative assessments are fitted into three categories based on High, Moderate, or Low designations. Hazards identified as high risk have risk factors of 2.5 or greater. Risk Factors ranging from 2.0 to 2.4 are deemed moderate risk hazards. Hazards with Risk Factors less than 2.0 are considered low risk.

Table 2-9: Summary of the Priority Risk Index.

PRI Category	Degree of Risk			Assigned Weighting Factor
	Level	Criteria	Index Value	
Probability	Unlikely	Less than 1% annual probability	1	25%
	Possible	Between 1 and 10% annual probability	2	
	Likely	Between 10 and 100% probability	3	
	Highly Likely	100% annual probability	4	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	25%
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than a week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	15%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	15%
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

Table 2-10: Associated Risk Factor with PRI Value Range.

Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9

Table 2-11: Risk Assessment for West Carroll Parish.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Drought	3	2	4	2	3	**2.8**
Flooding	3	4	3	4	3	**3.4**
Thunderstorms - Hail	4	2	3	3	1	**2.7**
Thunderstorms - Lightning	2	2	2	3	1	**2**
Thunderstorms - Wind	4	2	3	3	1	**2.7**
Tornadoes	3	3	2	4	3	**2.95**
Tropical Cyclones	3	4	4	1	4	**3.3**
Winter Storms	2	4	4	1	2	**2.75**

Land Use

The West Carroll Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 5% of the parish's land use. Agricultural land at 178,050 acres is the largest category accounting for 78% of land in the parish. The parish also consists of wetlands (12%), forest land (5%), and water areas (< 1%).

Table 2-12: West Carroll Parish Land Use.
(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	178,050	78%
Wetlands	27,384	12%
Forest Land (Not including forested wetlands)	12,604	5%
Urban/Development	12,009	5%
Water	702	< 1%

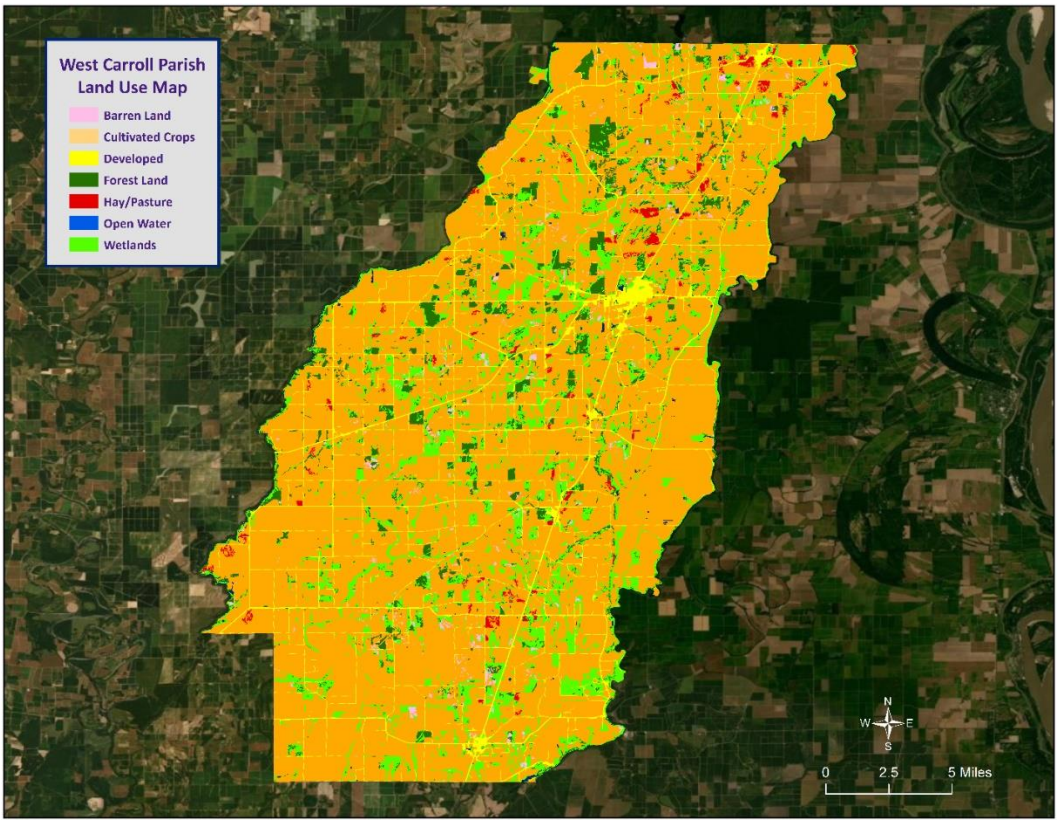


Figure 2-6: West Carroll Parish Land Use Map.
(Source: USGS Land Use Map)

Hazard Identification

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. And 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 while *Figure 2-7* 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 Abnormally Dry and Moderate Drought conditions currently exists within West Carroll Parish.

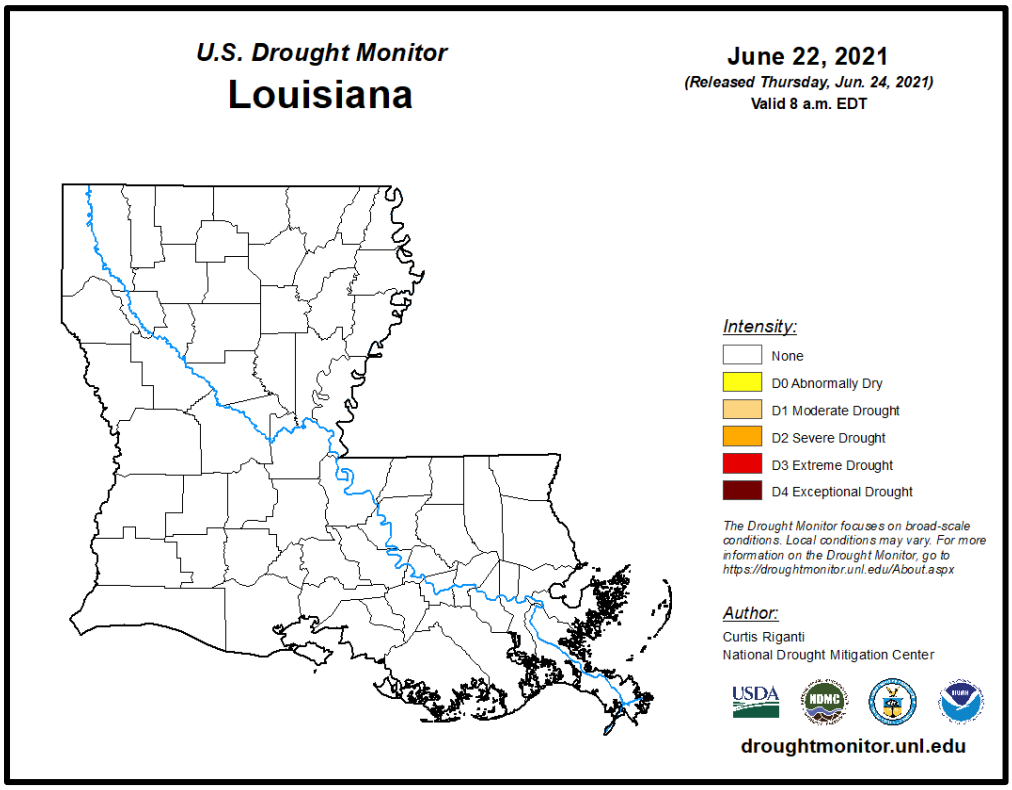


Figure 2-7: United States Drought Monitor for the State of Louisiana and its Parishes. (Source: The National Drought Mitigation Center)

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 West Carroll Parish is on the agricultural community. The worst-case drought scenario for West Carroll Parish would be a severe drought (D2).

Previous Occurrences / Extent

Historically, there have been four drought incidents in West Carroll Parish. Drought events have ranged from Mild to Moderate per the National Climatic Data Center. Since the last update in 2015, there has been one drought event within the boundaries of West Carroll Parish.

Table 2-14: Previous Occurrences for Drought Events since the 2015 Hazard Mitigation Plan Update. (Source: NCEI Storm Events Database)

Date	Crop Damage	Palmer Classification
October – December 2016	$180,000	Severe

Frequency / Probability

Based on four drought events since 1990, the annual chance of occurrence of a drought event occurring within a given year is calculated at 13% for West Carroll Parish.

Estimated Potential Loses

According to the NCEI Storm Events Database, there have been four drought events which have impacted West Carroll Parish which resulted in limited to no damage to crops in the parish. When examining the drought hazard, the main impact will primarily be on the crops. The following table presents an analysis of agricultural exposure which are susceptible to droughts by type for West Carroll Parish.

Table 2-15: Agricultural Exposure by Crop Type for Droughts in West Carroll Parish. (Source: LSU AG Center 2018 Parish Totals)

Agricultural Exposure by Type for Drought					
Cotton	Feed Grains	Rice	Soybeans	Sweet Potatoes	Rice
$158,419	$16,114,111	$2,114,765	$41,517,650	$14,301,105	$2,614,771

There have been no reported injuries or deaths as a direct result of drought in West Carroll Parish.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to drought.

Flooding

A flood is the overflow of water onto land that is usually not inundated. The National Flood Insurance Program 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 West Carroll Parish, all types of flooding events have historically been observed except for coastal flooding. 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, but they can also 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 National Flood Insurance Program (NFIP) Rate Maps. The NFIP and FEMA suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-8*.

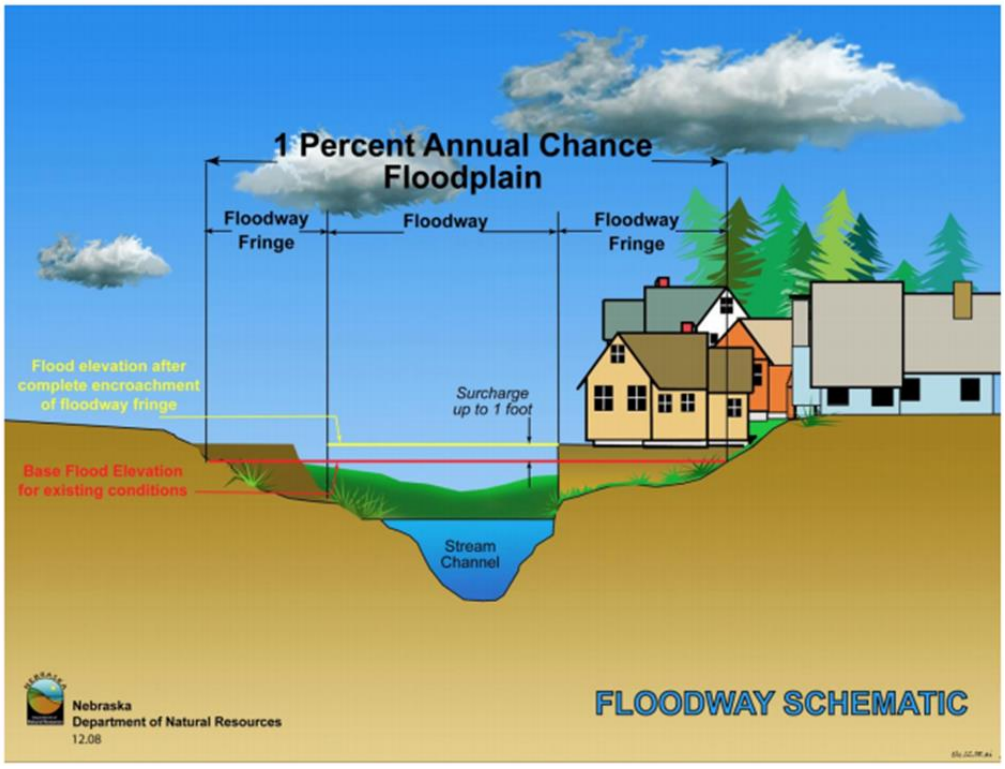


Figure 2-8: Schematic of 100-year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.
(Source: Nebraska Department of Natural Resources)

A SFHA is the land area covered by the floodwaters of the base flood (red line in *Figure 2-8*), 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 usually are 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 West Carroll Parish are provided in the table below:

Table 2-16: Repetitive Loss Structures for West Carroll Parish.

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
West Carroll Parish (Unincorporated)	0	0	0	0	0	$0	$0
Epps	0	0	0	0	0	$0	$0
Forest	1	0	1	0	2	$13,427.79	$6713.90
Kilbourne	0	0	0	0	0	$0	$0
Oak Grove	0	0	0	0	0	$0	$0
Pioneer	0	0	0	0	0	$0	$0
Total	**1**	**0**	**1**	**0**	**2**	**$13,427.79**	**$6,713.90**

The one repetitive loss structure was geocoded in order to provide an overview of where the repetitive loss structure was located. *Figure 2-9* shows the approximate location of the structure, while *Figure 2-10* shows where the highest concentration of repetitive loss structures is located. Through the repetitive loss map, it is clear the primary concentrated area of repetitive loss structures is focused in and around the incorporated area of Forest.

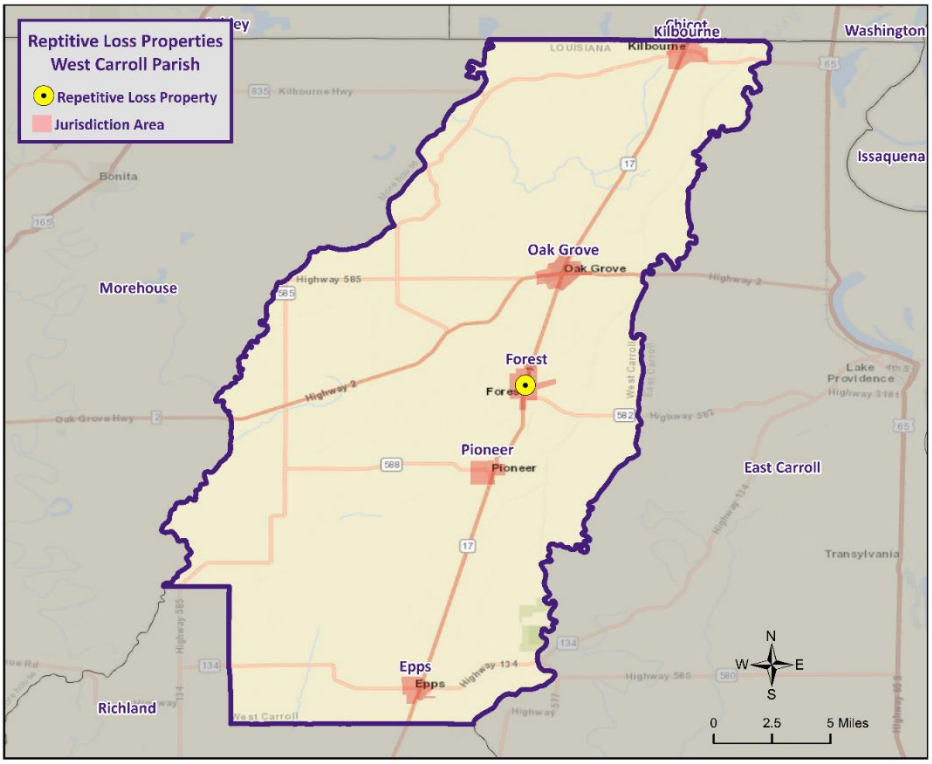


Figure 2-9: Repetitive Loss Properties in West Carroll Parish.

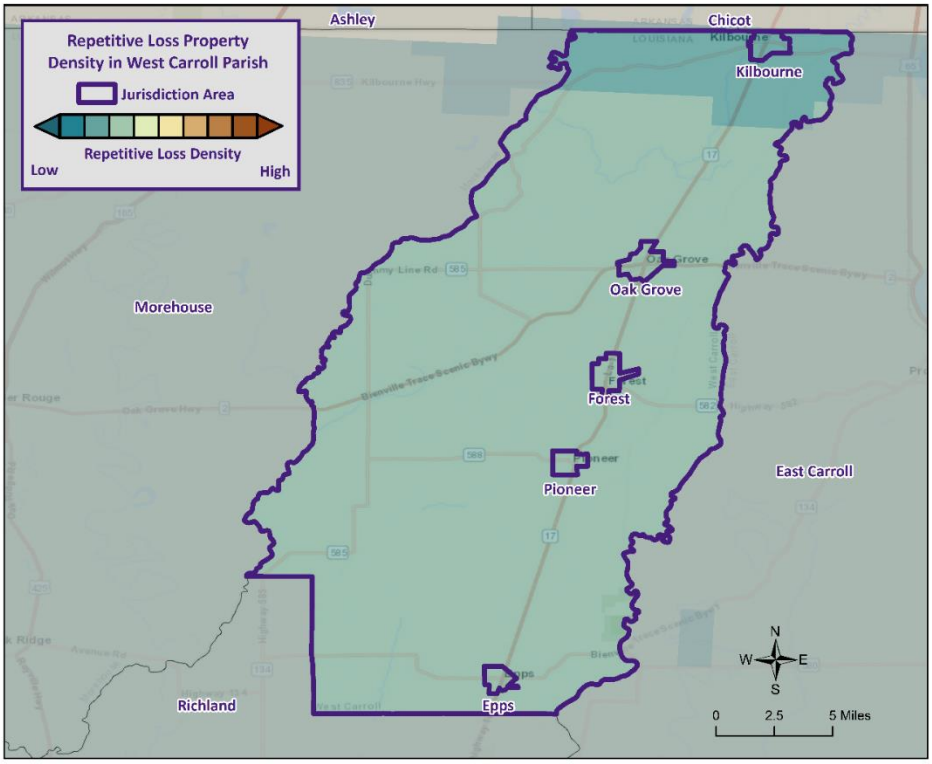


Figure 2-10: Repetitive Loss Property Densities in West Carroll Parish.

National Flood Insurance Program

Flood insurance statistics indicate that West Carroll Parish has 115 flood insurance policies with the NFIP, with total annual premiums of $58,219. West Carroll Parish and the jurisdictions of Epps, Forest, Oak Gove, and Pioneer are all participants in the NFIP. The incorporated area of Kilbourne does not participate in the NFIP. The jurisdiction is very limited when it comes to personnel, funding, and resources needed to administer the NFIP program. The jurisdiction has determined that participation in the NFIP has little or no large benefit or impact for the residents or the town's economy. West Carroll Parish and all of its 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 West Carroll Parish and its jurisdictions is provided in the tables to follow.

Table 2-17: Summary of NFIP Policies for West Carroll Parish.

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
West Carroll Parish	108	$10,599,800	$55,586	39	$1,419,880
Epps	1	$70,000	$244	4	$36,629
Forest	0	$0	$0	0	$0
Kilbourne	0	$0	$0	0	$0
Oak Grove	5	$1,540,000	$2,001	5	$187,644
Pioneer	1	$175,000	$388	0	$0
Total	**115**	**$12,384,800**	**$58,219**	**48**	**$1,644,153**

Table 2-18: Summary of Community Flood Maps for West Carroll Parish.

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220243	West Carroll Parish	6/17/77	3/1/87	10/5/18	3/1/87	No
220283	Epps	06/04/76	3/1/10	10/5/18	3/1/10	No
220286	Forest	11/26/76	10/15/18	10/15/18 (M)	2/6/09	No
220342	Oak Grove	5/21/76	10/5/18	10/5/18	8/18/97	No
220244	Pioneer	6/4/76	10/5/18	10/5/18	7/11/97	No

According to the Community Rating System (CRS) list of eligible communities dated October 1, 2020, neither West Carroll Parish nor the jurisdictions of Epps, Forest, Kilbourne, Oak Grove, and Pioneer participate in the CRS program.

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 floods 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 West Carroll 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 West Carroll Parish experiences.

Flash Floods: Flash floods are characterized by a rapid rise in water level, high velocity, and large amounts of debris. They are 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 rivers crests at flood stage levels, causing extensive flooding in low-lying areas.
The digital elevation model (DEM) in the figure below for West Carroll Parish is instructive in visualizing where the low-lying and high-risk areas are for the parish. The most obvious landform is the Macon ridge that extends west of Bayou Macon from Arkansas to Franklin Parish. The contour of the land slopes from north to south and east to west. Elevations on the western side of the parish are on average 20 feet lower than the eastern side. Elevations in the southern part of the parish are 90 to 95 feet above mean sea level, and at the Arkansas state line, they are approximately 115 to 120 feet above mean sea level.

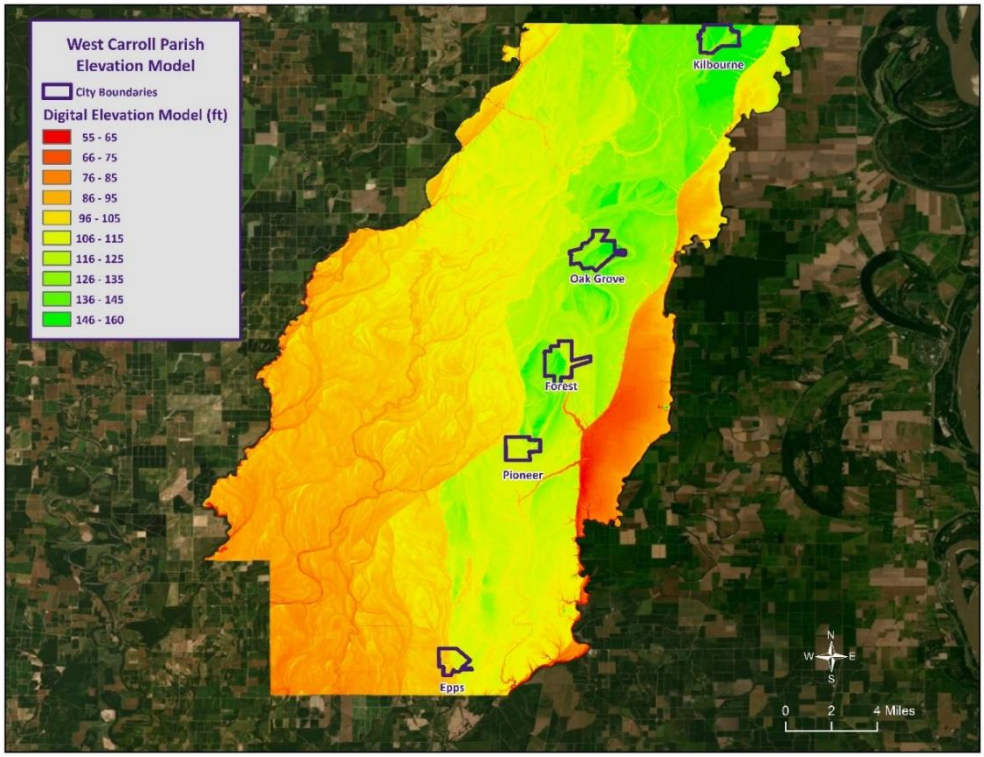


Figure 2-11: Elevation throughout West Carroll Parish.

Location

West Carroll Parish has experienced significant flooding in its history and can expect more in the future. West Carroll Parish lies wholly within the Tensas Basin. Most of the parish lies on the Macon Ridge and is bounded by Bayou Macon on the east and on the west of Boeuf River. Drainage is generally north to south. The Boeuf River, Colewa Creek, and Bayou Macon are the major drainage outlets. Colewa Creek drains approximately 60% of the parish. Boeuf River flows into the Ouachita River and Bayou Macon flows into the Tensas River. West Carroll Parish is mainly impacted by riverine flooding and localized drainage problems, resulting in pockets of backwater flooding where water moving from north to south from higher to lower elevations does not flow adequately.

Based on previous flood events, 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 three feet can be expected in the unincorporated areas of the parish. The incorporated areas of Epps, Pioneer, Kilbourne, Forest, and Oak Grove can minor street flooding with flood depths of approximately one foot in the future.

The following is a flood zone map displaying 100- and 500-year flood zones for West Carroll Parish:

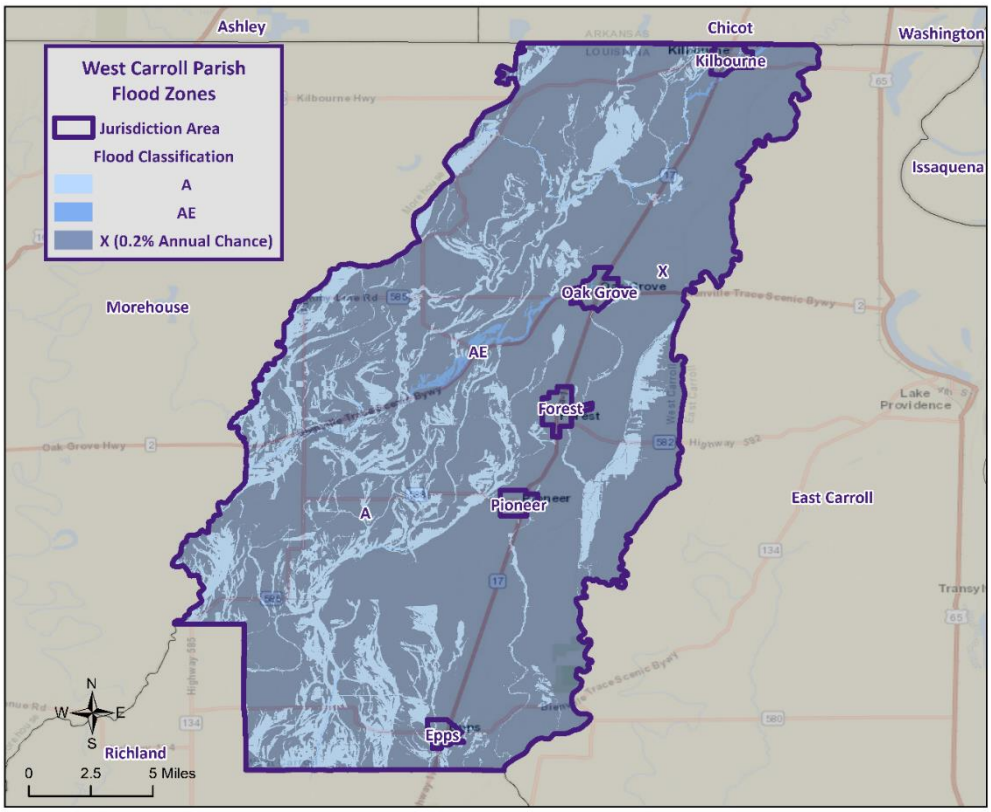


Figure 2-12: West Carroll Parish Areas within the Flood Zones.

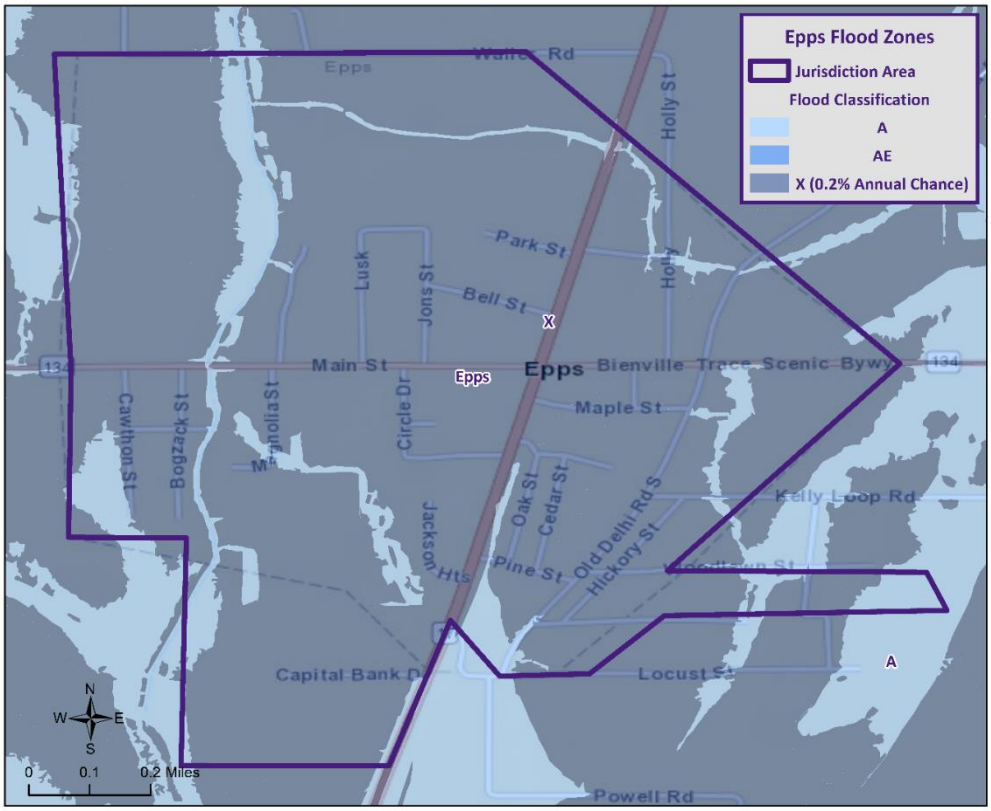


Figure 2-13: Epps Areas within the Flood Zones.

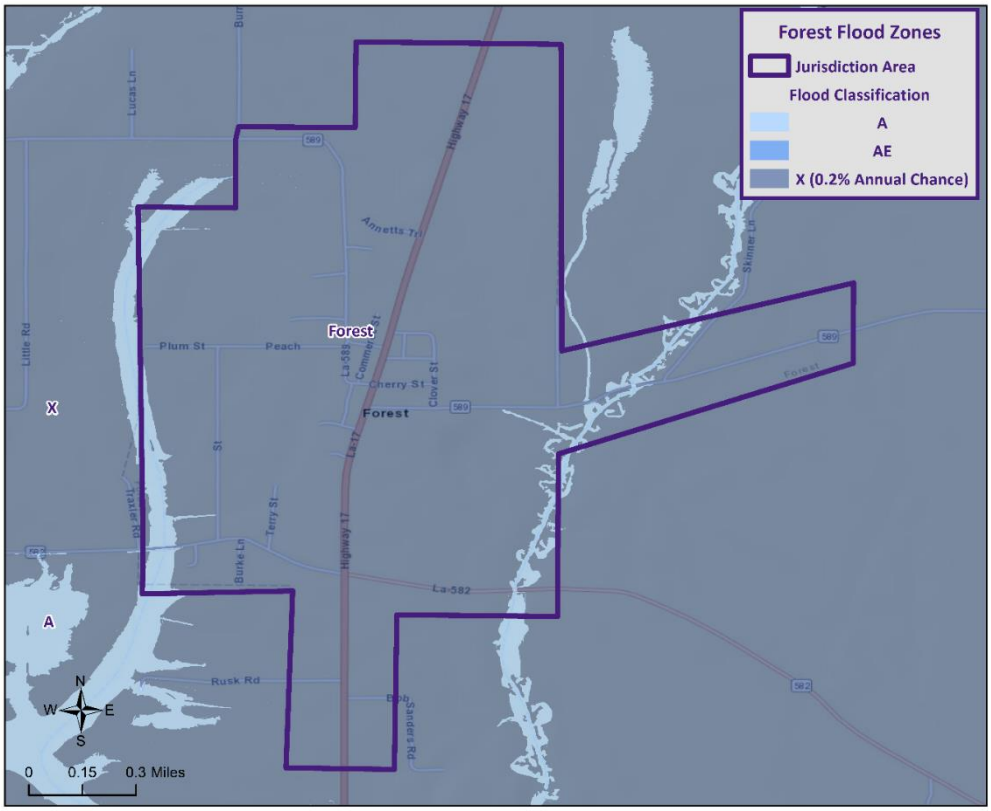


Figure 2-14: Forest Areas within the Flood Zones.

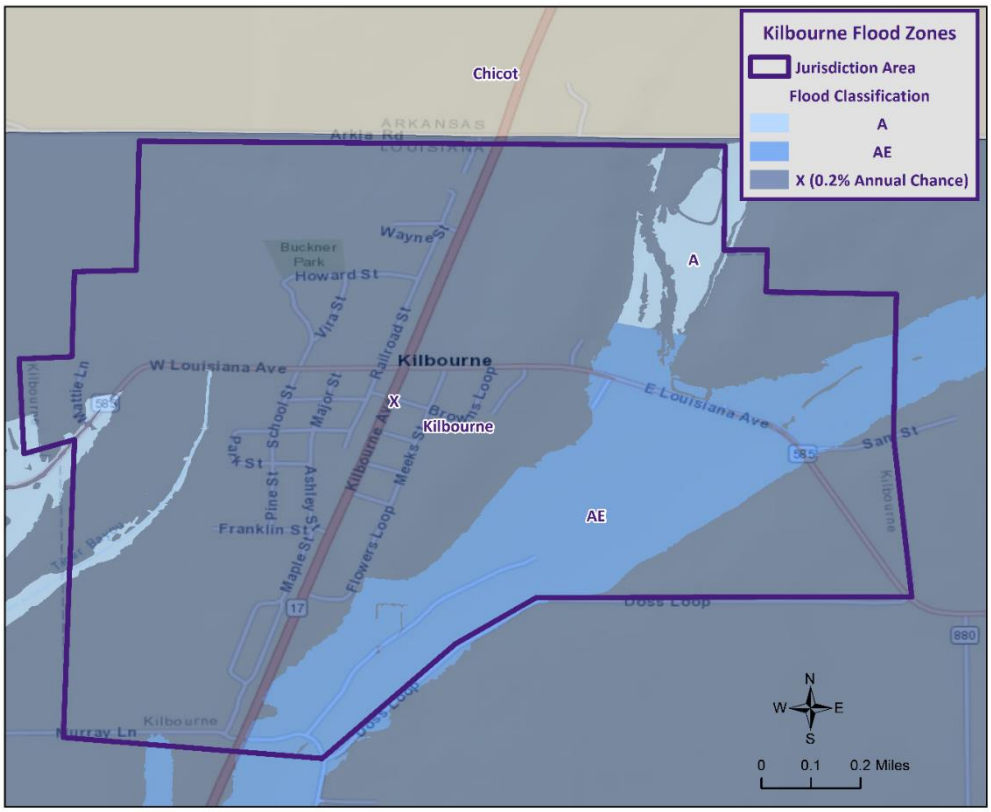


Figure 2-15: Kilbourne Areas within the Flood Zones.

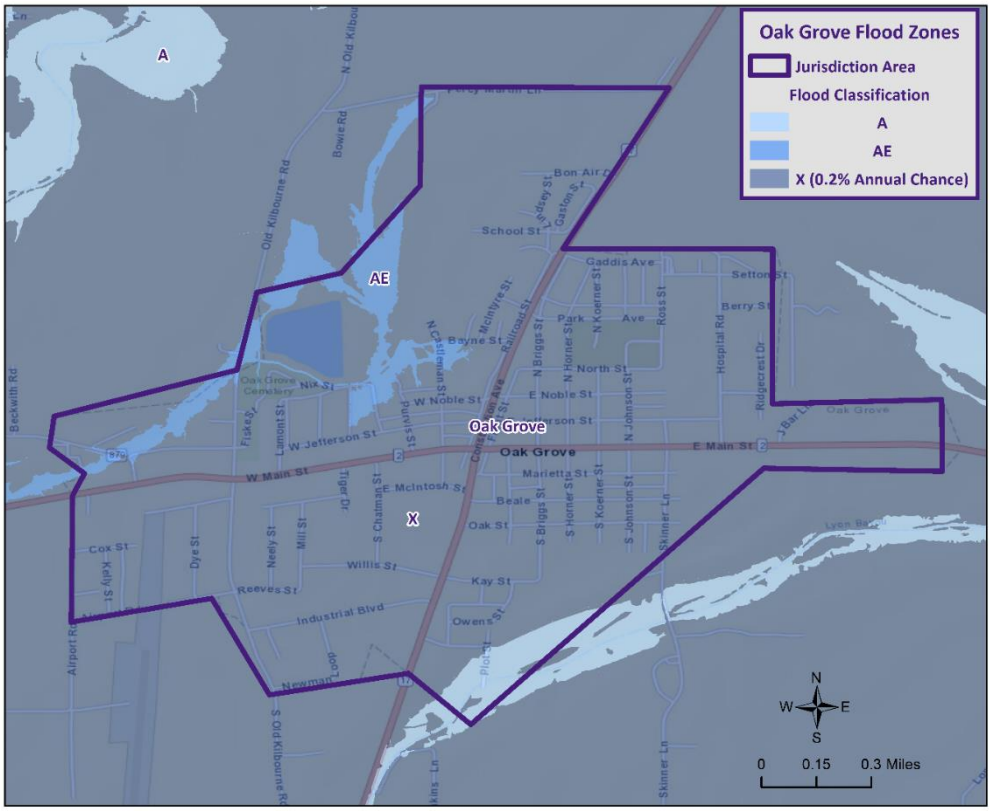


Figure 2-16: Oak Grove Areas within the Flood Zones.

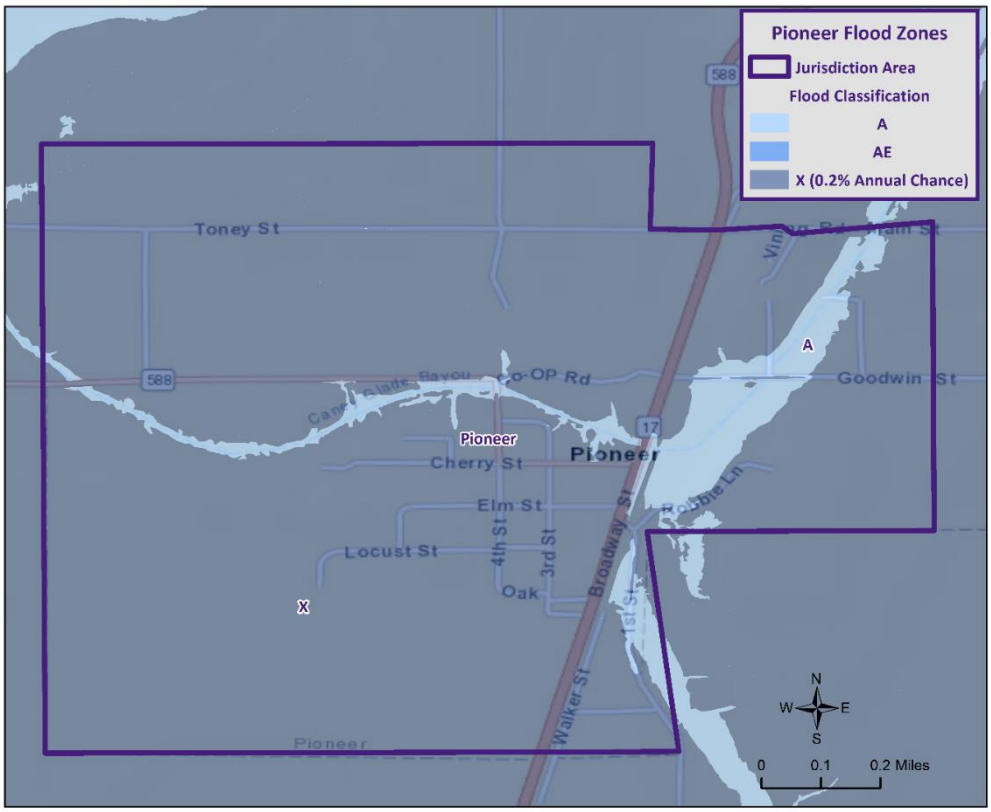


Figure 2-17: Pioneer Areas within the Flood Zones.

Previous Occurrences / Extents

Historically, there have been 32 flooding events that have caused significant flooding in West Carroll Parish and its jurisdictions between 1990 and 2020. Below is a brief synopsis of the flooding evet which occurred since the last West Carroll Parish HMP Update in 2015.

Table 2-19: Historical Floods in West Carroll Parish with Locations since the 2015 West Carroll Parish HMP Update.

Date	Extents	Type of Flooding	Estimated Damages	Location
April 13, 2018	Multiple roads were flooded north of Pioneer in the western portion of West Carroll Parish.	Flash Flood	$3,000	GOODWILL
September 26, 2018	Flooding occurred on Highway 17 between Forest and Pioneer.	Flash Flood	$2,000	FOREST
January 11, 2020	Water was over a portion of Highway 17.	Flash Flood	$2,000	FOREST and KILBOURNE
January 14, 2020	A few roads were flooded in and around Oak Grove.	Flash Flood	$3,000	OAK GROVE

Frequency / Probability

The NCEI Storm Events Database identified 32 flooding events within the West Carroll Parish planning area since 1990. The table below shows the probability and return frequency for each jurisdiction.

Table 2-20: Annual Flood Probabilities for West Carroll Parish.

Jurisdiction	Annual Probability	Return Frequency
West Carroll Parish (Unincorporated)	36%	1event every 2 to 3 years
Epps	32%	1 event every 3 to 4 years
Forest	24%	1 event every 4 to 5 years
Kilbourne	28%	1 event every 3 to 4 years
Oak Grove	40%	1 event every 2 to 3 years
Pioneer	32%	1 event every 3 to 4 years

Based on historical record, the overall flooding probability for the entire West Carroll Parish Planning area is 100% with 32 events occurring over a 30-year period.

Estimated Potential Losses

Using the Hazus Flood Model, the 100-year flood scenario, along with the Parish DFIRM, was analyzed to determine losses from this worst-case scenario. On the next page, *Table 2-32* shows the total economic losses that would result from this occurrence.

Table 2-21: Estimated Losses in West Carroll Parish from a 100-year Flood Event. (Source: Hazus)

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
West Carroll Parish (Unincorporated Area)	$2,312,000
Epps	$14,000
Forest	$19,000
Kilbourne	$16,000
Oak Grove	$74,000
Pioneer	$7,000
Total	**$2,442,000**

The Hazus Flood model also provides a breakdown for seven primary sectors (Hazus occupancy) throughout the parish. The losses for West Carroll Parish by sector are listed in the following table:

Table 2-22: Estimated 100-year Flood Losses for West Carroll Parish by Sector. (Source: Hazus)

West Carroll Parish (Unincorporated)	Estimated Total Losses from 100-Year Flood Event
Agricultural	$66,000
Commercial	$193,000
Government	$74,000
Industrial	$75,000
Religious / Non-Profit	$164,000
Residential	$1,740,000
Schools	$0
Total	**$2,312,000**

Table 2-23: Estimated 100-year Flood Losses for Epps by Sector. (Source: Hazus)

Epps	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$14,000
Schools	$0
Total	**$14,000**

Table 2-24: Estimated 100-year Flood Losses for Forest by Sector. (Source: Hazus)

Forest	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$19,000
Schools	$0
Total	**$19,000**

Table 2-25: Estimated 100-year Flood Losses for Kilbourne by Sector. (Source: Hazus)

Kilbourne	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$16,000
Schools	$0
Total	**$16,000**

Table 2-26: Estimated 100-year Flood Losses for Oak Grove by Sector. (Source: Hazus)

Oak Grove	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$74,000
Schools	$0
Total	**$74,000**

Table 2-27: Estimated 100-year Flood Losses for Pioneer by Sector.
(Source: Hazus)

Pioneer	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$7,000
Schools	$0
Total	**$7,000**

Threat to People

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

Table 2-28: Vulnerable Populations Susceptible to a 100-year Flood Event.
(Source: Hazus)

Number of People Exposed to Flood Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
West Carroll Parish (Unincorporated)	8,096	1,960	24.2%
Epps	854	21	2.5%
Forest	355	11	3.1%
Kilbourne	416	14	3.4%
Oak Grove	1,727	101	5.8%
Pioneer	156	5	3.2%
Total	**11,604**	**2,112**	**18.2%**

The Hazus flood model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions in the following table:

Table 2-29: Vulnerable Populations Susceptible to a 100-year Flood Event in West Carroll Parish.
(Source: Hazus)

West Carroll Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,960	24.2%
Persons Under 5 Years	118	6.0%
Persons Under 18 Years	472	24.1%
Persons 65 Years and Over	345	17.6%
White	1,609	82.1%
Minority	351	17.9%

Table 2-30: Vulnerable Populations Susceptible to a 100-year Flood Event in Epps. (Source: Hazus)

Epps		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	21	2.5%
Persons Under 5 Years	1	4.5%
Persons Under 18 Years	2	9.0%
Persons 65 Years and Over	2	10.0%
White	10	46.5%
Minority	11	53.5%

Table 2-31: Vulnerable Populations Susceptible to a 100-year Flood Event in Forest. (Source: Hazus)

Forest		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	11	3.1%
Persons Under 5 Years	1	6.8%
Persons Under 18 Years	3	23.1%
Persons 65 Years and Over	2	15.8%
White	10	91.3%
Minority	1	8.7%

Table 2-32: Vulnerable Populations Susceptible to a 100-year Flood Event in Kilbourne. (Source: Hazus)

Kilbourne		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	14	3.4%
Persons Under 5 Years	1	7.5%
Persons Under 18 Years	2	16.1%
Persons 65 Years and Over	3	20.0%
White	13	93.0%
Minority	1	7.0%

Table 2-33: Vulnerable Populations Susceptible to a 100-year Flood Event in Oak Grove. (Source: Hazus)

Oak Grove		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	101	5.8%
Persons Under 5 Years	7	6.5%
Persons Under 18 Years	18	17.6%
Persons 65 Years and Over	22	21.6%
White	67	66.8%
Minority	34	33.2%

Table 2-34: Vulnerable Populations Susceptible to a 100-year Flood Event in Pioneer. (Source: Hazus)

Pioneer		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	5	3.2%
Persons Under 5 Years	1	10.9%
Persons Under 18 Years	1	19.2%
Persons 65 Years and Over	1	12.2%
White	3	57.7%
Minority	2	42.3%

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to flooding due to proximity within the 100-year flood plain.

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 and therefore 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, multicell, 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 multicell 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, and warming 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 (NWS) have the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued 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 counties (parishes).

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

- Hail of 1 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 develops in the upper atmosphere initially as ice crystals that are bounced about by high-velocity updraft winds. The ice crystals grow through deposition of water vapor onto their surface, fall partially to a level in the cloud where the temperature exceeds the freezing point, melt partially, get caught in another updraft whereupon re-freezing and deposition grows another concentric layer of ice, and fall after developing enough weight, sometimes after several trips up and down the cloud. The size of hailstones varies depending on the severity and size of the thunderstorm. Higher surface temperatures generally mean stronger updrafts, which allows more massive hailstones to be supported by updrafts, leaving them suspended longer. This longer time means larger hailstone sizes. The tables on the next page display the TORRO Hailstorm Intensity Scale along with a spectrum of hailstone diameters and their everyday equivalents.

Table 2-35: 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 2-36: 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 homes and other 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. The Federal Emergency Management Agency (FEMA) distinguishes these as shown in Table 2-37.

Table 2-37: 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.

Table 2-38 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 2-38: 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	
12	74+	Hurricane	

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 2-39: 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

Hailstorms are a meteorological phenomenon that can occur anywhere. Therefore, the entire planning area for West Carroll Parish and its jurisdictions are equally at risk for hailstorms. The worst-case scenario for hailstorms is hail up to a 2” diameter.

Previous Occurrences / Extents

Historically, there have been 99 hail incidents in West Carroll Parish. Hailstorm diameters have ranged from 0.75 inches to 2 inches per the National Climatic Data Center since 1990. The most frequently recorded hail sizes have been 1.75-inch in diameter. There have been nine significant hailstorm events in West Carroll Parish since the 2015 West Carroll Parish HMP update. The table on the next page contains a brief synopsis of those events.

Table 2-40: Previous Occurrences for Hailstorm Events since the 2015 Hazard Mitigation Plan Update. (Source: NCEI Storm Events Database)

Date	Hail Size (inches)	Property Damage	Crop Damage
March 3, 2016	0.88	$0	$0
March 13, 2016	1	$0	$0
March 18, 2016	1.5	$3,000	$0
April 29, 2016	1.5	$10,000	$0
May 22, 2018	1	$0	$0
April 13, 2019	1.75	$20,000	$0
February 5, 2020	1	$0	$0
July 31, 2020	1.25	$25,000	$0

Frequency

Hailstorms occur frequently within West Carroll Parish with an annual chance of occurrence calculated at 100% based on the records for the past 30 years (1990-2020). *Figure 2-18* displays the density of hailstorm events in West Carroll Parish, while *Figure 2-19* provides an overview of hailstorm size based on location.

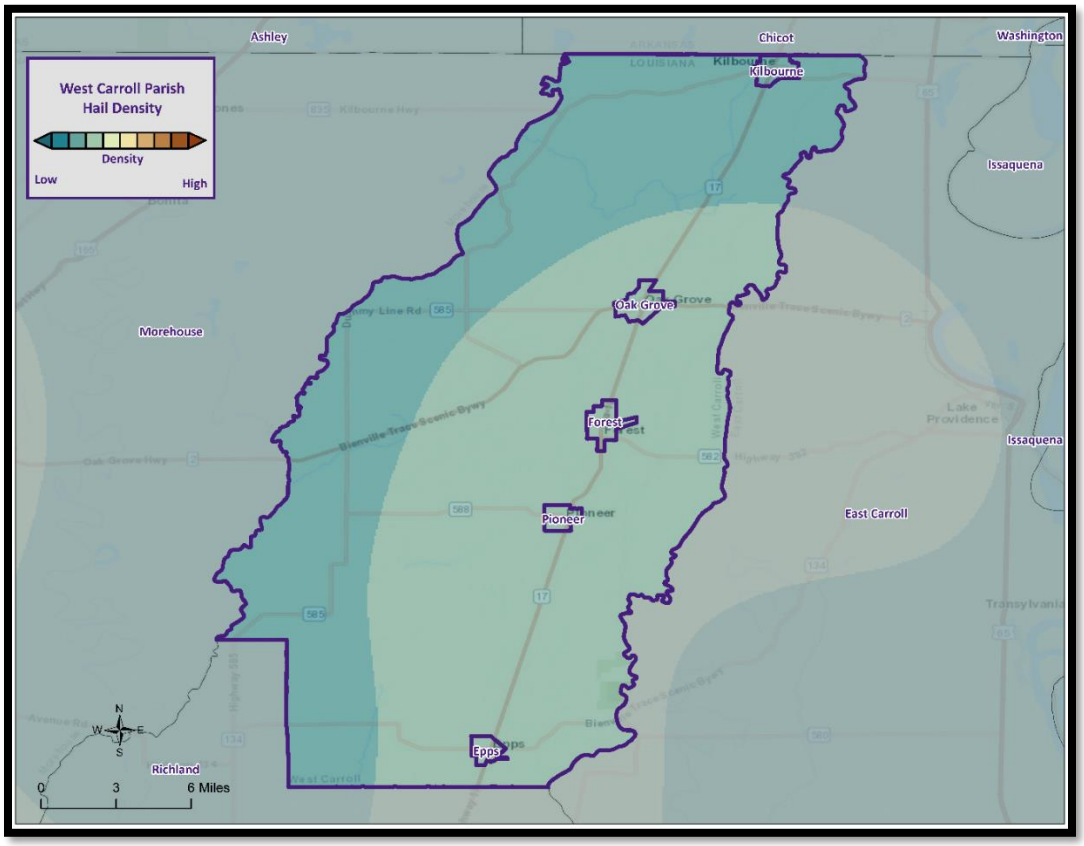


Figure 2-18: Density of Hailstorms by Diameter from 1950-2019.

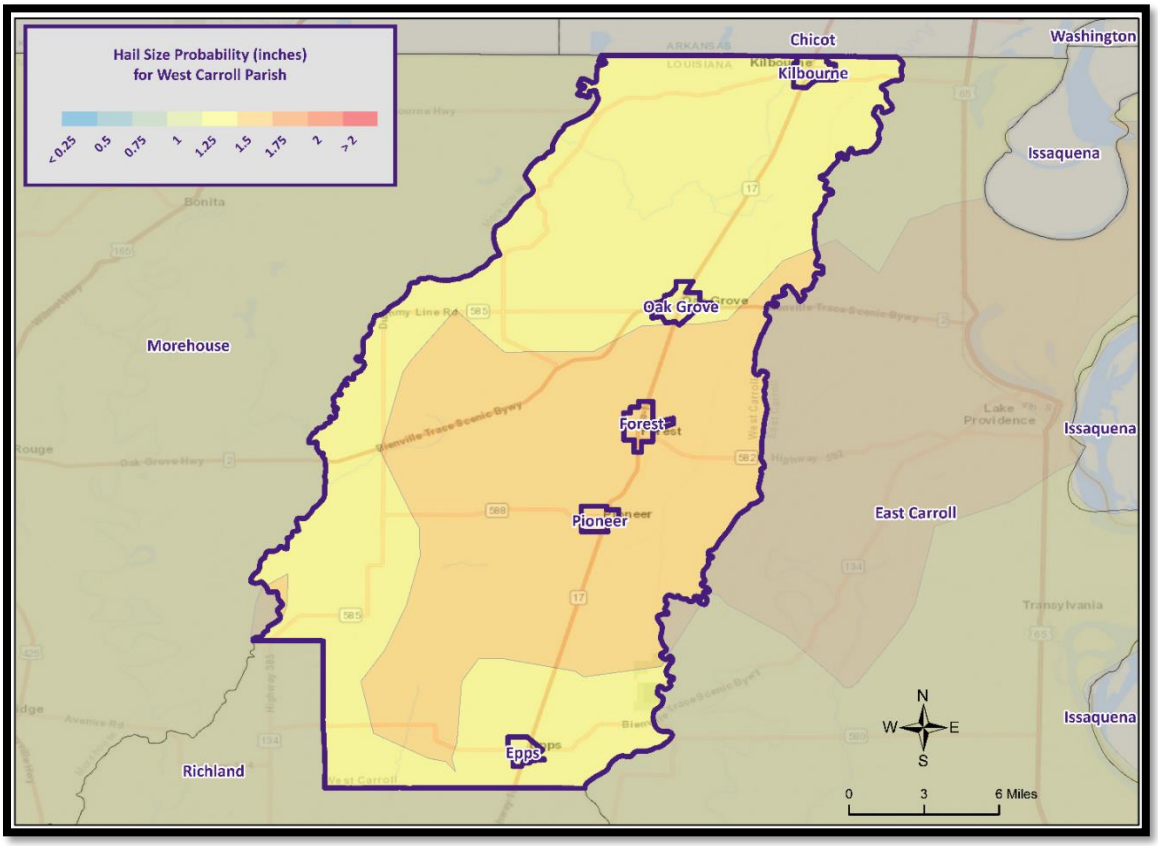


Figure 2-19: Hail Size Probability in Inches for West Carroll Parish.

Estimated Potential Losses

Since 1990, there have been 99 significant hail events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately $351,000. To estimate the potential losses of a hailstorm 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 the NCEI Storm Events Database (1990 - 2020). This provides an annual estimated potential loss of $11,700 and $3,545 per event. The following table provides an estimate of potential property losses for West Carroll Parish:

Table 2-41: Estimated Annual Losses West Carroll Parish and its Jurisdictions Resulting from Hailstorms.

Estimated Annual Potential Losses From Hailstorms					
Unincorporated Area	**Epps**	**Forest**	**Kilbourne**	**Oak Grove**	**Pioneer**
$8,163	$861	$358	$419	$1,741	$157

There have been no reported injuries or fatalities as a result of a hail events over the 30-year record.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to hailstorms.

High Winds

Location

Because high winds are a meteorological phenomenon that can occur anywhere, the entire planning area for West Carroll Parish is equally at risk from high winds. The worst-case scenario for thunderstorm high wind is wind speeds of approximately 100 mph.

Previous Occurrences / Extents

Historically, there have been 152 thunderstorm high wind events in West Carroll Parish. The high wind events have ranged in windspeeds from 46 mph to 81 mph per the National Climatic Data Center since 1990. There have been 21 high wind speeds events which impacted the West Carroll Parish Planning area since the 2015 West Carroll Parish HMP update. Below is a brief synopsis of those events.

Table 2-42: Previous Occurrences for Thunderstorm High Wind Events since the 2015 Hazard Mitigation Plan Update.
(Source: NCEI Storm Events Database)

Date	Wind Speed (mph)	Property Damage	Crop Damage
February 23, 2016	43	$3,000	$0
July 11, 2016	43	$8,000	$0
July 11, 2016	45	$14,000	$0
July 14, 2016	49	$50,000	$0
April 3, 2018	48	$20,000	$0
April 6, 2018	43	$5,000	$0
May 22, 2018	47	$75,000	$0
June 13, 2018	43	$1,000	$0
June 22, 2018	43	$3,000	$0
August 20, 2018	47	$15,000	$0
November 5, 2018	43	$8,000	$0
April 13, 2019	48	$20,000	$0
April 13, 2019	43	$3,000	$0
June 24, 2019	43	$3,000	$0
June 24, 2019	43	$3,000	$0
January 11, 2020	43	$2,000	$0
January 11, 2020	43	$5,000	$0
April 12, 2020	43	$3,000	$0
June 5, 2020	45	$10,000	$0
July 31, 2020	43	$1,000	$0
July 31, 2020	43	$5,000	$0

Frequency

High winds are a fairly uncommon occurrence within West Carroll Parish and its jurisdictions with an annual chance of occurrence calculated at 100% based on the records for the past 30 years (1990-2020). *Figure 2-20* displays the thunderstorm wind speed probability for West Carroll Parish and its jurisdictions.

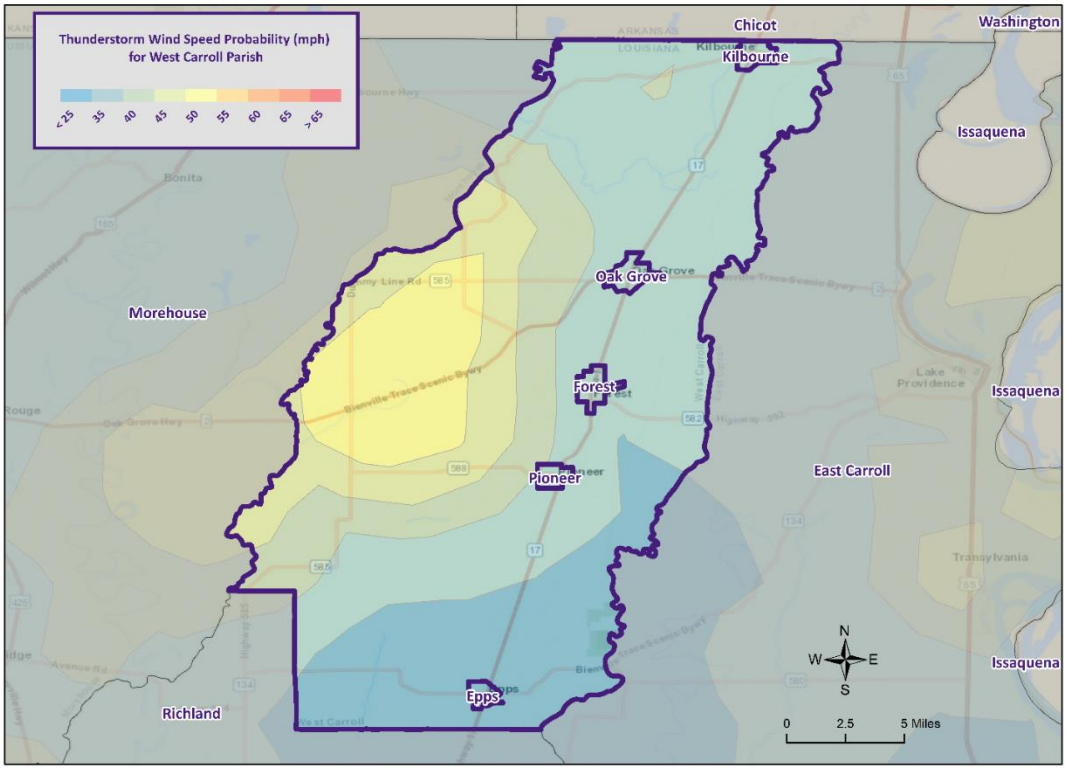


Figure 2-20: Thunderstorm High Wind Speed Probability in Miles Per Hour for West Carroll Parish.

Estimated Potential Losses

Since 1990, there has been 152 significant wind events that have resulted in property damages according to NCEI Storm Events Database. The total property damage associated with this storm totaled approximately $1,600,000. 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 the NCEI Storm Events Database (1990 - 2020). This provides an annual estimated potential loss of $53,333 and $10,526 per event. The following table provides an estimate of potential property losses for West Carroll Parish:

Table 2-43: Estimated Annual Property Losses in West Carroll Parish resulting from Wind Damage.

Estimated Annual Potential Losses From High Winds					
Unincorporated Area	**Epps**	**Forest**	**Kilbourne**	**Oak Grove**	**Pioneer**
$37,210	$3,925	$1,632	$1,912	$7,937	$717

There have been three injuries and no fatalities as a result of a thunderstorm high wind event over the 30-year record.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to thunderstorm high winds.

Lightning

Location

Like hail and high winds, lightning is a meteorological phenomenon that can occur anywhere within the West Carroll Parish planning area. The worst-case scenario for lightning events is a lightning activity level of 4 which is approximately 16 to 25 lightning strikes every 15 minutes.

Previous Occurrences / Extent

Historically, there has been one lightning event in West Carroll Parish and its jurisdictions between the years 1990 and 2020. Since the last HMP update, there have been no significant lighting events within the boundaries of West Carroll Parish.

Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in West Carroll Parish is high. However, lightning that meets the definition that is used by the NCEI Storm Events Database that results in damages to property and injury or death to people is a less likely event. West Carroll Parish experienced one significant lightning event between the years 1990 and 2020 resulting in a 3% annual chance of occurrence.

Estimated Potential Losses

Since 1990, there has been one significant lightning event that has resulted in property damages according to NCEI Storm Events Database. The total property damages associated with this storm has totaled approximately $12,000. 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 lightning data in the NCEI Storm Events Database (1990 - 2020). This provides an annual estimated potential loss of $400 and $12,000 per event. The following tables provide an estimate of potential property losses for West Carroll Parish:

Table 2-44: Estimated Annual Property Losses in West Carroll Parish resulting from Lightning Damage.

Estimated Annual Potential Losses From Lightning					
Unincorporated Area	**Epps**	**Forest**	**Kilbourne**	**Oak Grove**	**Pioneer**
$279	$29	$12	$14	$60	$5

Per the NCEI Storm Events Database, there have been no fatalities or injuries as a result of lightning in West Carroll Parish.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality building exposure to lightning hazards.

Tornadoes

Tornadoes (also called twisters and 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 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, which usually occurs in a counterclockwise direction 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 2-45* 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 2-45: 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 2-46: 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 (NWS) has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued 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 Doppler 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 on 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 in a collapsed building or mobile home. Within a building, flying debris or missiles 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 West Carroll Parish with actual locations, tornadoes in general are a climatological based hazard and have the same approximate probability of occurring in West Carroll Parish as all of its jurisdictions. Because a tornado has a similar probability of striking anywhere within the planning area for West Carroll Parish, all areas in the parish are equally at risk for tornadoes.

Previous Occurrences / Extent

The NCEI Storm Events Database reports a total of 14 tornadoes or waterspouts occurring within the boundaries of West Carroll Parish since 1990 ranging in extent from F0 to F2 under the Fujita Scale and EF0 to EF2 on the Enhanced Fujita Scale. West Carroll Parish can expect future tornadoes up to an EF3 under the Enhanced Fujita Scale as a worst-case scenario.

The most destructive tornado to impact West Carroll Parish was a F3 tornado which occurred on March 20, 1976. The tornado touched down near the small town of Kilbourne where it caused approximately $2 million in damage and 32 injuries. Seventeen homes and six trailer homes were demolished. Eight commercial buildings, including a grocery store and a post office, as well as a new 250,000 gallon water tank were heavily damaged. There have been no fatalities as a result of a tornado in West Carroll Parish.

Since the 2015 HMP Update, six tornadoes have occurred within the boundaries of West Carroll Parish. Below is a list and brief description of the impact for the event.

Table 2-47: Historical Tornadoes in West Carroll Parish with Locations since the 2015 Update.

Date	Impacts	Property Damage	Location	Magnitude
April 13, 2018	0.33 mile path with a width of 100 yards. his tornado began in open fields just west of the Bouef River and tracked northward across LA Highway 2, where it removed portions of the metal roof of an unoccupied building. The tornado continued northward along the Beouf River on the Morehouse and West Carroll Parish line just west of Benton Rd before ending shortly thereafter. Multiple trees were uprooted and trees and large tree branches were snapped along the path. Maximum estimated wind speed was 74 mph in West Carroll Parish but 95 mph for the entire tornado path.	$15,000	Goodwill	EF0
April 14, 2018	2.38 mile path with a width of 200 yards. The tornado began west of LA Highway 585 south of Bonner Road, where the roof of a barn was damaged and multiple trees were damaged. It continued eastward, roughly paralleling Bonner Road and reached its peak intensity near the Bonner Road and Peterson Road intersection, where it destroyed a storage shed and scattered pieces of it over 1/3 mile downwind to Warren Road. Another small storage shed was turned on its side and leaned against a mobile home at this location. The tornado then lifted along Mount Zion Road just north of Bonner Road. Maximum estimated wind speed was 85 mph.	$75,000	Goodwill	EF0
April 14, 2018	4.42 mile path with a width of 200 yards. he tornado began north of Roundhill Road, snapping and uprooting multiple trees. It continued eastward across Morgan Road and Tackett Road, damaging additional trees. It then crossed LA Highway 878 at the intersection of Grubbs Road and Walters Road, where a mobile home sustained roof damage. It then crossed Bienz Road twice, lifting in a wooded area just north of the road. The maximum estimated winds were 85 mph.	$50,000	Fiske	EF0
April 12, 2020	6.18 mile path with a width of 700 yards. This tornado began in far northern Richland Parish east of the intersection of LA Highways 134 and 183. It crossed into southwestern West Carroll Parish, crossing Fusilier Rd, Gwin Rd, LA Highway 134, Duckworth Rd, and Sharplin Rd before crossing and ending just northeast of Waller Rd. Along the path, several trees were uprooted and multiple irrigation pivots were flipped. The total path length was 6.18 miles. The maximum estimated winds of the tornado occurred in West Carroll Parish at 105 mph.	$25,000	Bear Skin	EF1

Date	Impacts	Property Damage	Location	Magnitude
April 12, 2020	2.74 mile path with a width of 100 yards. This tornado began in northern Richland Parish along Goose Hollow Rd. It traveled northeastward crossing Lingefelt Rd and then Mitchiner Rd, where it crossed into southwestern West Carroll Parish. The tornado then crossed Guice Rd, then lifted along LA Highway 134 just east of the damage path of another tornado that was occurring simultaneously in the same area. Along the path, multiple trees were uprooted and an irrigation pivot was flipped. The total path length was 4.65 miles. The maximum estimated winds in West Carroll Parish were 80mph. The overall tornado was rated an EF1 with 100 mph winds. The maximum width of the tornado was 150 yards.	$3,000	Epps	EF0
April 12, 2020	7.59 mile path with a width of 700 yards. his tornado began in far southeastern Morehouse Parish near the intersection of Trails End Rd and Bingham Ranch Rd, crossing the Boeuf River into far northern Richland Parish, where it crossed LA Highway 585. It then crossed Wiles Rd into western West Carroll Parish again crossing LA Highway 585, Henry Jones Rd, and then LA Highway 585 for a third time. The tornado crossed Smith Rd, Clay Rd, and Clear Lake Rd before ending along Copes Rd. Along the path, a few homes sustained minor roof damage, a couple mobile homes received minor damage, a motor home was overturned, a couple sheds were damaged, and several trees were snapped or uprooted. The tornado was strongest as it crossed LA Highway 585 near the intersection of Self Rd where five utility poles were snapped, several trees were snapped or uprooted, and a home was damaged by a fallen tree.	$30,000	Bear Skin	EF2

Frequency / Probability

Tornadoes occur frequently within West Carroll Parish and its jurisdictions with an annual chance of occurrence calculated at 47% based on the records for the past 30 years (1990-2020). On the next page *Figure 2-21* displays the density of tornado touchdowns in West Carroll Parish and neighboring parishes.

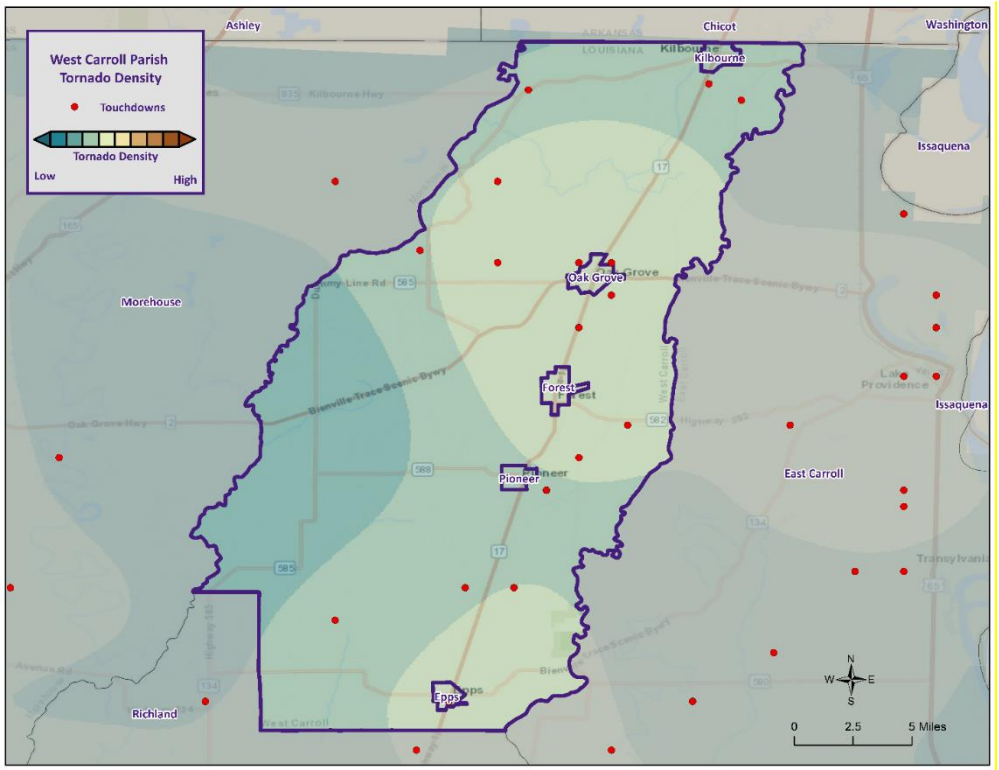


Figure 2-21: Location and Density of Tornadoes to Touchdown in West Carroll Parish. (Source: NOAA/SPC Severe Weather Database)

Estimated Potential Loses

According to the NCEI Storm Events Database, there have been 14 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is approximately $1,933,000 with an average cost of $138,071 per tornado event. When annualizing the total cost over the 30-year record, total annual loses based on tornadoes are estimated to be $64,433. The table on the next page provides an annual estimate of potential losses for West Carroll Parish.

Table 2-48 Estimated Annual Losses for Tornadoes in West Carroll Parish.

Estimated Annual Potential Losses From Tornadoes					
Unincorporated Area	Epps	Forest	Kilbourne	Oak Grove	Pioneer
$44,955	$4,742	$1,971	$2,310	$9,589	$866

Table 2-49 presents an analysis of building exposure that are susceptible to tornadoes by general occupancy type for West Carroll Parish along with the percentage of building stock that are mobile homes.

Table 2-49: Building Exposure by General Occupancy Type for Tornadoes in West Carroll Parish. (Source: Hazus)

Building Exposure by General Occupancy Type for Tornadoes ($1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
744,518	90,141	40,882	23,211	39,650	11,292	16,975	24.1%

The Parish has suffered through a total of 14 events in which tornadoes or waterspouts have accounted for three injuries and no fatalities during this 30-year period.

In accessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 24.1% of all housing in West Carroll Parish consists of manufactured housing. The location and density of manufactured houses can be seen in *Figure 2-22*.

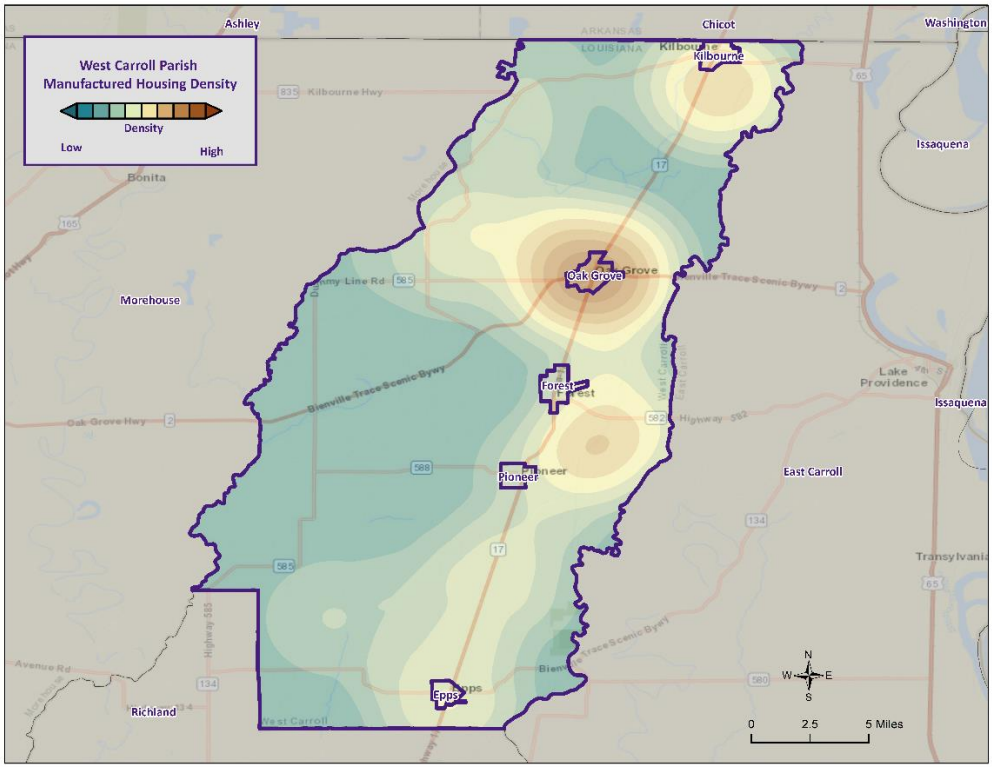


Figure 2-22: Location and Approximate Number of Units in Manufactured Housing Locations throughout West Carroll Parish.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality building exposure to tornadoes.

Tropical Cyclones

Tropical cyclones are among the worst hazards 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, the table presents the Saffir-Simpson Hurricane Wind Scale, which categorizes tropical cyclones based on sustained winds.

Table 2-50: 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 freshwater intrusions from storm surge send animals, such as snakes, into areas occupied by humans.

Location

Hurricanes are the single biggest threat to the state of Louisiana. With any single tropical cyclone event having the potential to devastate multiple parishes at once, tropical cyclones are a significant threat to the entire West Carroll Parish planning area. The worst-case scenario for a tropical cyclone event in West Carroll Parish is a Category 2 Hurricane.

Previous Occurrences / Extents

West Carroll Parish has experienced five major tropical cyclone events since 2002. Hurricane Rita has been by far the worst hurricane to impact West Carroll Parish in recorded history. The following table provides a list of tropical cyclones which have impacted West Carroll Parish since 2002.

Table 2-51: Historical Tropical Cyclone Events in West Carroll Parish from 2002 – 2020.

Date	Name	Storm Type at Time of Impact
2005	Katrina	Tropical Storm
2005	Rita	Tropical Storm
2012	Isaac	Tropical Storm
2020	Laura	Tropical Storm
2020	Delta	Tropical Depression

Since the last West Carroll Parish HMP update in 2015, there have been two tropical cyclone events which have impacted the parish. Below is a brief description of the events and the impact they had on West Carroll Parish.

Tropical Storm Laura (2020)

Laura began as a large tropical wave that emerged off the west coast of Africa on August 16th. The wave traversed the tropical Atlantic for the next several days with little additional organization. On August 19th, the system became better organized, closed off a low-level circulation, and subsequently the National Hurricane Center began issuing advisories on Tropical Depression Thirteen late that evening.

On the morning of August 21st, Tropical Depression Thirteen strengthened into Tropical Storm Laura, which was the earliest twelfth named Atlantic storm, beating the previous record of Hurricane Luis of 1995 by eight days. As Laura moved westward, little additional strengthening took place as the center moved over the northern Lesser Antilles later that evening, and south of Puerto Rico on August 22nd. Early on August 23rd, Tropical Storm Laura made landfall across Hispaniola, traversed the entire island, and made landfall across Eastern Cuba later that evening. Tropical Storm Laura continued west northwestward, traveling just south of the island with a second landfall across Western Cuba late on August 24th.

On August 25th, Laura entered the Gulf of Mexico and became a Category 1 hurricane at 10 AM CDT. Laura began to explosively intensify on August 26th, reaching category 2 by 1 AM CDT, category 3 by 7 AM CDT, and category 4 by 1 PM CDT. Laura reached a peak intensity of 150 mph (130 knots) and a minimum central pressure of 937 millibars (27.67 inches of mercury) by 8 PM CDT.

With little change in strength, Laura made landfall at Cameron, Louisiana around 1 AM CDT August 27th, with sustained winds of 150 mph (130 knots) and a minimum central pressure of 938 millibars (27.70 inches of mercury). Laura was the strongest hurricane to strike Southwest Louisiana since records began in 1851. Laura slowly weakened after landfall but maintained major hurricane status throughout its passage across Cameron, Calcasieu, and southern Beauregard Parishes, and category 2 status across northern Beauregard and Vernon parishes as daybreak approached on August 27th. Laura finally weakened below hurricane strength by Noon as it was crossing I-20 in North Louisiana. With this being the strongest hurricane to affect Southwest Louisiana, wind damage to buildings and trees was major to catastrophic across Cameron and Calcasieu parishes, with considerable damage across Beauregard and Vernon parishes where the core of the hurricane passed.

The National Weather Service in Lake Charles, Louisiana recorded a station record highest peak wind gust of 116 knots (133 mph) at 1:42 AM CDT before the Automated Surface Observing System (ASOS) wind equipment failed. However, the ASOS barometer sensor that was safely within the NWS building (which

received very little damage) recorded a station record minimum sea level pressure of 956 millibars (28.23 inches of mercury) at 2:20 AM CDT when the eye of Hurricane Laura passed nearly overhead.

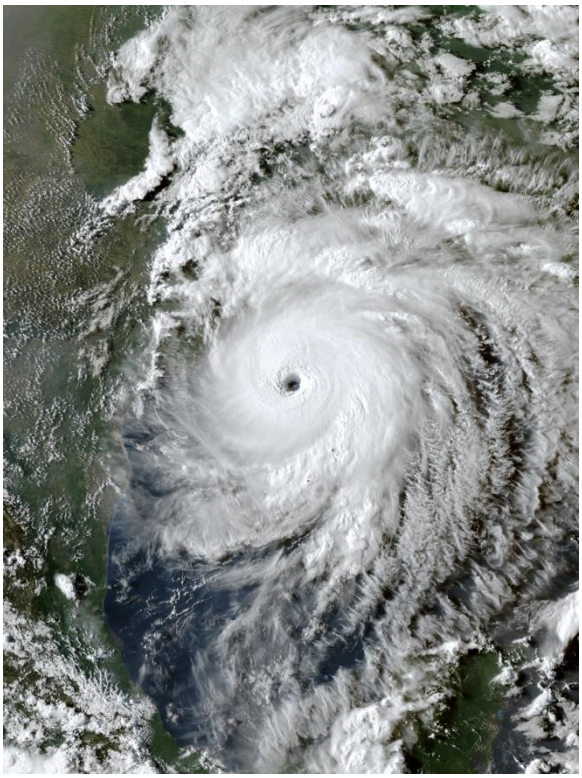


Figure 2-23: Hurricane Laura in the Gulf Coast Area. (Source: NOAA)

A total of 33 fatalities occurred throughout the state with four of them coming from falling trees. They included a 14-year-old girl in Vernon Parish, a 68-year-old man in Acadia Parish, a 51-year-old man in Jackson Parish, and a 64-year-old man in Allen Parish. Carbon monoxide poisoning from generators being inside homes, which is strongly discouraged, led to the deaths of twelve people in Calcasieu Parish and two people in Allen Parish. Another man died of drowning while aboard a sinking boat during the storm. Finally, one person died in Calcasieu Parish in a house fire, four people died in Calcasieu Parish, Natchitoches Parish, and Rapides Parish during the cleanup process, and eight others died in Beauregard Parish, Grant Parish, Rapides Parish, and Vernon Parish due to heat-related illnesses following the loss of electricity.

In West Carroll Parish, trees and power lines were blown down across the parish. Since Laura moved inland fairly quickly, rainfall totals were not high in the parish.

Tropical Depression Delta (2020)

Hurricane Delta was the record-tying fourth named storm of 2020 to strike Louisiana, as well as the record-breaking tenth named storm to strike the United States in that year. The twenty-sixty tropical cyclone, twenty-fifth named storm, ninth hurricane, and third major hurricane of the record breaking 2020 Atlantic hurricane season, Delta formed from a tropical wave which was first monitored by the National Hurricane Center on October 1. As it tracked across the western Caribbean, it rapidly intensified into a Category 4 hurricane. In fact, intensifying from tropical depression to Category strength in 40 hours is the fastest rate of intensification of any storm on record in the Atlantic Basin and accomplished by Delta. Delta quickly

weakened to a category 1 hurricane after making its first landfall on the Yucatan Peninsula. It gradually recurved north towards the Louisiana coastline, fluctuating in intensity between category 2 and 3.

Hurricane Delta made landfall around 5 pm as a category 2 storm east of Cameron, Louisiana or about 15 miles east of where category 4 Hurricane Laura made landfall just a couple of months earlier of the same year. Local impacts included 50 to 70 mph wind gusts across the area, storm surge of 2 to 3 feet above ground, and widespread tree and structural damage. There were six injuries due to Hurricane Delta. In addition, outer bands of Delta produced a significant amount of rainfall on the north side of Baton Rouge Metro. Upwards of five to 10 inches of rain fell, causing street flooding in Baton Rouge and moderate river flooding in the region. Delta caused approximately $100 million worth of damage across southeast Louisiana.

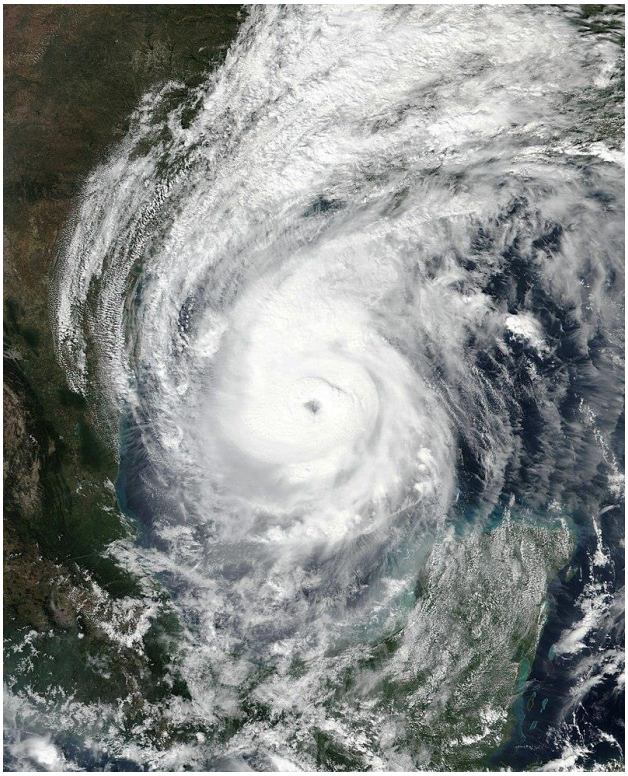


Figure 2-24: Hurricane Delta in the Gulf Coast Area. (Source: NOAA)

In West Carroll Parish, tropical depression force winds from Delta blew down numerous trees across the parish, and a power line was blown down in Oak Grove. A personal weather station on the east side of Oak Grove measured a peak wind gust of 42 mph at 1:10 am CDT. Rainfall amounts of up to five to eight inches were measured in the parish.

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

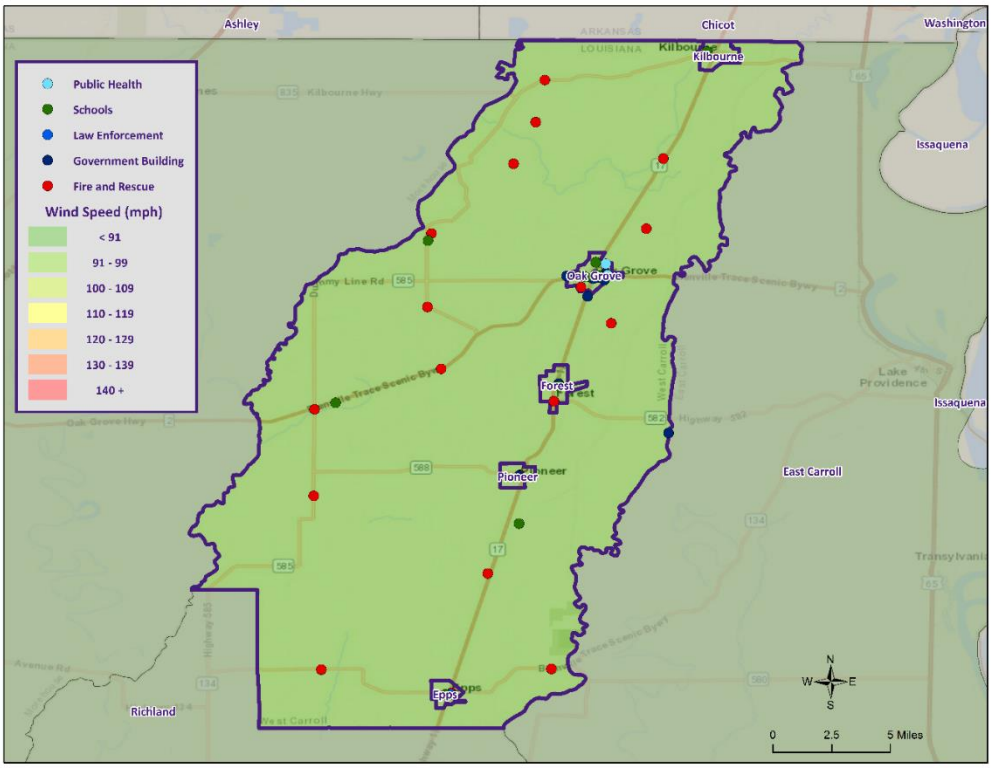


Figure 2-25: Winds Zones for West Carroll Parish in Relation to Critical Facilities

Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact West Carroll Parish. The annual chance of occurrence for a tropical cyclone is estimated at 28% for West Carroll Parish with five events occurring within 18 years (2002 to 2020). 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 West Carroll Parish and its jurisdictions are 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 100-Year Hurricane Model, the 100-year hurricane scenario was analyzed to determine losses from this worst-case scenario. The table on the next page shows the total economic losses that would result from this occurrence.

Table 2-52: Total Estimated Losses for a 100-Year Hurricane Event (Source: Hazus)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
West Carroll Parish (Unincorporated)	$475,142
Epps	$50,120
Forest	$20,834
Kilbourne	$24,414
Oak Grove	$101,355
Pioneer	$9,155
Total	**$681,022**

Total losses from a 100-year hurricane event for West Carroll Parish were compared with the total value of assets to determine the ratio of potential damage to total inventory in the table below.

Table 2-53: Ratio of Total Losses to Total Estimated Value of Assets for West Carroll Parish (Source: Hazus)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
West Carroll Parish (Unincorporated)	$576,497	$682,652,000	0.08%
Epps	$50,120	$39,986,000	0.13%
Forest	$20,834	$16,899,000	0.12%
Kilbourne	$24,414	$35,461,000	0.07%
Oak Grove	$101,355	$183,572,000	0.06%
Pioneer	$9,155	$8,099,000	0.11%

Based on the Hazus Hurricane Model, estimated total losses for West Carroll Parish and its jurisdictions ranged from 0.06% to 0.13% of the total estimated value of all assets.

The Hazus Hurricane Model also provides a breakdown for seven primary sectors (Hazus occupancy) throughout the parish. The losses for West Carroll Parish by sector are listed in the table below.

Table 2-54: Estimated Losses in Unincorporated West Carroll Parish for a 100-Year Hurricane Event (Source: Hazus)

West Carroll Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$891
Commercial	$6,337
Government	$790
Industrial	$2,912
Religious / Non-Profit	$2,788
Residential	$460,393
Schools	$1,445
Total	**$475,142**

Table 2-55: Estimated Losses in Epps for a 100-Year Hurricane Event (Source: Hazus)

Epps	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$0
Commercial	$668
Government	$83
Industrial	$301
Religious / Non-Profit	$294
Residential	$48,564
Schools	$0
Total	**$50,120**

Table 2-56: Estimated Losses in Forest for a 100-Year Hurricane Event (Source: Hazus)

Forest	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$35
Commercial	$278
Government	$35
Industrial	$125
Religious / Non-Profit	$122
Residential	$20,188
Schools	$0
Total	**$20,834**

Table 2-57: Estimated Losses in Kilbourne for a 100-Year Hurricane Event (Source: Hazus)

Kilbourne	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$41
Commercial	$326
Government	$41
Industrial	$147
Religious / Non-Profit	$143
Residential	$23,657
Schools	$0
Total	**$24,414**

Table 2-58: Estimated Losses in Oak Grove for a 100-Year Hurricane Event (Source: Hazus)

Oak Grove	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$169
Commercial	$1,352
Government	$169
Industrial	$610
Religious / Non-Profit	$595
Residential	$98,209
Schools	$253
Total	**$101,355**

Table 2-59: Estimated Losses in Pioneer for a 100-Year Hurricane Event (Source: Hazus)

Pioneer	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$0
Commercial	$122
Government	$15
Industrial	$0
Religious / Non-Profit	$54
Residential	$8,871
Schools	$0
Total	**$9,155**

Threat to People

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

Table 2-60: Number of People Susceptible to a 100-Year Hurricane Event in West Carroll Parish (Source: Hazus)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
West Carroll Parish (Unincorporated)	8,096	8,096	100.0%
Epps	854	854	100.0%
Forest	355	355	100.0%
Kilbourne	416	416	100.0%
Oak Grove	1,727	1,727	100.0%
Pioneer	156	156	100.0%
Total	**11,604**	**11,604**	**100%**

The Hazus hurricane model was also extrapolated to provide an overview of vulnerable populations throughout West Carroll Parish. These populations are illustrated in the following tables:

Table 2-61: Vulnerable Populations in Unincorporated West Carroll Parish for a 100-Year Hurricane Event (Source: Hazus)

West Carroll Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	8,096	100.0%
Persons Under 5 Years	486	6.0%
Persons Under 18 Years	1,951	24.1%
Persons 65 Years and Over	1,425	17.6%
White	6,647	82.1%
Minority	1,449	17.9%

Table 2-62: Vulnerable Populations in Epps for a 100-Year Hurricane Event (Source: Hazus)

Epps		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	854	100.0%
Persons Under 5 Years	38	4.5%
Persons Under 18 Years	77	9.0%
Persons 65 Years and Over	85	10.0%
White	397	46.5%
Minority	457	53.5%

Table 2-63: Vulnerable Populations in Forest for a 100-Year Hurricane Event (Source: Hazus)

Forest		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	355	100.0%
Persons Under 5 Years	24	6.8%
Persons Under 18 Years	82	23.1%
Persons 65 Years and Over	56	15.8%
White	324	91.3%
Minority	31	8.7%

Table 2-64: Vulnerable Populations in Kilbourne for a 100-Year Hurricane Event (Source: Hazus)

Kilbourne		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	416	100.0%
Persons Under 5 Years	31	7.5%
Persons Under 18 Years	67	16.1%
Persons 65 Years and Over	83	20.0%
White	387	93.0%
Minority	29	7.0%

Table 2-65: Vulnerable Populations in Oak Grove for a 100-Year Hurricane Event (Source: Hazus)

Oak Grove		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,727	100.0%
Persons Under 5 Years	112	6.5%
Persons Under 18 Years	304	17.6%
Persons 65 Years and Over	373	21.6%
White	1,153	66.8%
Minority	574	33.2%

Table 2-66: Vulnerable Populations in Pioneer for a 100-Year Hurricane Event (Source: Hazus)

Pioneer		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	156	100.0%
Persons Under 5 Years	17	10.9%
Persons Under 18 Years	30	19.2%
Persons 65 Years and Over	19	12.2%
White	90	57.7%
Minority	66	42.3%

Vulnerability

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

Winter Weather

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 southern Louisiana, include extreme temperatures which can cause waterlines to freeze and sewer lines to rupture. This is especially true with elevated or 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 Ascension Parish, have experienced the fewest severe winter events. The table on the next page 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 2-67: 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 West Carroll Parish as all of the adjacent parishes, the entire planning area for West Carroll Parish is equally at risk for winter storms.

Previous Occurrences / Extents

The NCEI Storm Events Database reports two winter weather events occurring within the boundaries of West Carroll Parish between the years 1990 and 2020. Since the last West Carroll Parish HMP Update in 2015, there have been no major winter weather events to impact the parish. The worse-case scenario for West Carroll Parish and all of its jurisdictions is a level 2 on the Sperry-Piltz Ice Accumulation Index.

Frequency / Probability

Based on historical records, there have been two significant winter weather events within the boundaries of West Carroll Parish and the jurisdictions of Epps, Forest, Kilbourne, Oak Grove, and Pioneer; therefore, the annual chance of occurrence for winter weather is estimated at 7%.

Estimated Potential Loses

Since 1990, there have been two winter weather events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately $10,000. To estimate the potential losses of a winter weather event on an annual basis, the total damages recorded for winter weather was divided by the total number of years of available winter weather in the NCEI Storm Events Database (1990 - 2020). This provides an annual estimated potential loss of $333 and $5,000 per event. The table on the next page provides an estimate of potential property losses for West Carroll Parish.

Table 2-68: Estimated Annual Losses West Carroll Parish and its Jurisdictions Resulting from Winter Weather.

Estimated Annual Potential Losses From Winter Weather					
Unincorporated Area	Epps	Forest	Kilbourne	Oak Grove	Pioneer
$233	$25	$10	$12	$50	$4

There have been no reported injuries or fatalities as a result of winter weather over the 30-year record.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality building exposure to winter weather.

This Page Left Intentionally Blank

3. Capability Assessment

This section summarizes the results of efforts by each jurisdiction and other agency 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, West Carroll Parish and the incorporated jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the communities. 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

These capabilities are unique to the parish and jurisdictions, including planning, regulatory, administrative, technical, financial, and education 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, and take an integrated and strategic look holistically at hazard mitigation in West Carroll 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 include the following:

Table 3-1: Planning and Regulatory Capabilities

Capability Assessment Worksheet							
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.							
	West Carroll Unincorporated	Village of Epps	Village of Forest	Village of Kilbourne	Town of Oak Grove	Village of Pioneer	Comments
Plans	Yes / No						
Comprehensive / Master Plan	No	No	No	No	No	No	
Capital Improvements Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Economic Development Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Local Emergency Operations Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Continuity of Operations Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Transportation Plan	Yes	Yes	Yes	Yes	Yes	Yes	
Stormwater Management Plan	No	No	No	No	No	No	
Community Wildfire Protection Plan	No	No	No	No	No	No	
Other plans (redevelopment, recovery, coastal zone management)	No	No	No	No	No	No	
Building Code, Permitting and Inspections	Yes / No						
Building Code	Yes	Yes	Yes	Yes	Yes	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	No	No	No	No	No	
Fire Department ISO/PIAL rating	Yes	Yes	Yes	Yes	Yes	Yes	
Site plan review requirements	Yes	Yes	Yes	Yes	Yes	Yes	
Land Use Planning and Ordinances	Yes / No						
Zoning Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	
Subdivision Ordinance	No	No	No	No	No	No	
Floodplain Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	No	No	No	No	No	
Flood Insurance Rate Maps	Yes	Yes	Yes	Yes	Yes	Yes	
Acquisition of land for open space and public recreation uses	Yes	Yes	Yes	Yes	Yes	Yes	
Other	No	No	No	No	No	No	

All jurisdictions within West Carroll Parish will work to expand their capabilities by adding to these plans, as well as work to create new plans that will address a long-term recovery and resiliency framework. In instances where there are no existing plans, there will be a concerted effort to explore opportunities to create new plans that will address long-term recovery and resiliency framework as parish and local resources allow.

Building Codes, Permitting, Land Use Planning and Ordinances

As of the 2021 update, the Office of Floodplain Management & the 911 Addressing Office make sure that new construction and / or mobile home setups follow the state codes for electrical service. If anything is located in a flood zone, they must elevate to at least one foot above the BFE for their location.

The West Carroll Parish Government is responsible for enforcing the Parish Ordinances relating to health and safety, property maintenance standards, condemnation of unsafe structures, and zoning compliance. Additionally, the Parish Health Officer checks for compliance for sewer or septic system use.

While local capabilities for mitigation can vary from community to community, West Carroll Parish as a whole has a system in place to coordinate and share these capabilities through West Carroll 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.

Administration, Technical, and Financial

The jurisdictions within West Carroll Parish have 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. The table on the following page shows examples of resources in place.

Table 3-2: Administration 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.							
	West Carroll Unincorporated	Village of Epps	Village of Forest	Village of Kilbourne	Town of Oak Grove	Village of Pioneer	Comments
Administration	Yes / No						
Planning Commission	No	No	No	No	No	No	
Mitigation Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Yes	Yes	Yes	Yes	Yes	
Staff	Yes / No						
Chief Building Official	No	No	No	No	No	No	
Floodplain Administrator	Yes	Yes	Yes	Yes	Yes	Yes	
Emergency Manager	Yes	Yes	Yes	Yes	Yes	Yes	
Community Planner	No	No	No	No	No	No	
Civil Engineer	No	No	No	No	Yes	No	
GIS Coordinator	No	No	No	No	No	No	
Grant Writer	No	No	No	No	No	No	
Other	No	No	No	No	No	No	
Technical	Yes / No						
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Yes	Yes	Yes	Yes	Yes	
Hazard Data & Information	Yes	Yes	Yes	Yes	Yes	Yes	
Grant Writing	No	No	No	No	No	No	
Hazus Analysis	No	No	No	No	No	No	
Other	No	No	No	No	No	No	

Financial capabilities are the resources that West Carroll 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 parish may vary from little to no cost actions, such as outreach efforts, or substantial action costs such acquisition of flood prone properties.

The following financial resources are available to fund mitigation actions in West Carroll Parish:

Table 3-3: Financial Capabilities

Financial							
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.							
	West Carroll Unincorporated	Village of Epps	Village of Forest	Village of Kilbourne	Town of Oak Grove	Village of Pioneer	Comments
Funding Resource	Yes / No						
Capital Improvements project funding	No	No	No	No	Yes	No	
Authority to levy taxes for specific purposes	No	No	No	No	Yes	No	
Fees for water, sewer, gas, or electric services	No	No	No	No	Yes	No	
Impact fees for new development	No	No	No	No	No	No	
Stormwater Utility Fee	No	No	No	No	No	No	
Community Development Block Grant (CDBG)	Yes	Yes	Yes	Yes	Yes	Yes	
Other Funding Programs	Yes	Yes	Yes	Yes	Yes	Yes	

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 communities and the parish as a whole to maximize opportunities for implementation of activities through greater acceptance and consensus of the community.

The jurisdictions within West Carroll Parish have existing education and outreach programs to implement mitigation activities, as well as 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 are as follows:

Table 3-4: 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.							
	West Carroll Unincorporated	Village of Epps	Village of Forest	Village of Kilbourne	Town of Oak Grove	Village of Pioneer	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	No	No	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	Yes	Yes	Yes	Yes	
Natural Disaster or safety related school program	Yes	Yes	Yes	Yes	Yes	Yes	
Storm Ready certification	No	No	No	No	No	No	
Firewise Communities certification	Yes	Yes	Yes	Yes	Yes	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	Yes	Yes	Yes	Yes	Yes	
Other	No	No	No	No	No	No	

As reflected with the above existing regulatory mechanisms, programs and resources within the parish, the jurisdictions within West Carroll Parish remain committed to expanding and improving on the existing capabilities within the parish. Communities will work together along with West Carroll Parish 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 parish, will enhance and expand overall risk reduction for the entirety of West Carroll Parish.

Flood Insurance and Community Rating System

Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements. As noted in the CRS Eligible Communities List effective October 1, 2021, neither West Carroll Parish nor any of its incorporated jurisdictions participate in the CRS program.

The Federal Emergency Management Agency's National Flood Insurance Program (NFIP) administers the Community Rating System (CRS). 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.

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.

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

As of April 2021, 352 communities in the State of Louisiana participate in the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). Of these communities, 46 (or 13%) participate in the Community Rating System (CRS). Jefferson Parish leads the state with a rating of Class 5, followed by three cities with a rating of Class 6: the Cities of Gretna and Kenner in Jefferson Parish and the City of Mandeville in St. Tammany Parish. 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.

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. Once the parish has obtained a CRS rating and is a participant, 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 1 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 (CRS) that resulted 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 to evaluate the CRS and refine the program to meet its stated goals. The changes helped to 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.

Since the revision of the 2013 Coordinator's Manual, FEMA released the 2017 CRS Coordinator's Manual which continued the evolution of the CRS program and its mission to reward communities that prioritize mindful floodplain regulations. As with the 2013 manual, the changes made in the 2017 manual impact each CRS community differently. Some communities see an increase in the points they receive since points for certain activities have increased (e.g., Activity 420 Open Space Preservation). Other communities receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is

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

likely that some communities with marginal CRS Class 9 programs have to identify new CRS credits in order to remain in the CRS class. Most notably, as it relates to this hazard mitigation plan, more credit was made available for Activity 410 Floodplain Mapping.

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 2017 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 the 2017 manual will impact their community and when.

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 program 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.

NFIP Worksheets

Parish NFIP worksheets can be found in *Appendix E: State Required Worksheets*.

4. Mitigation Strategies

Introduction

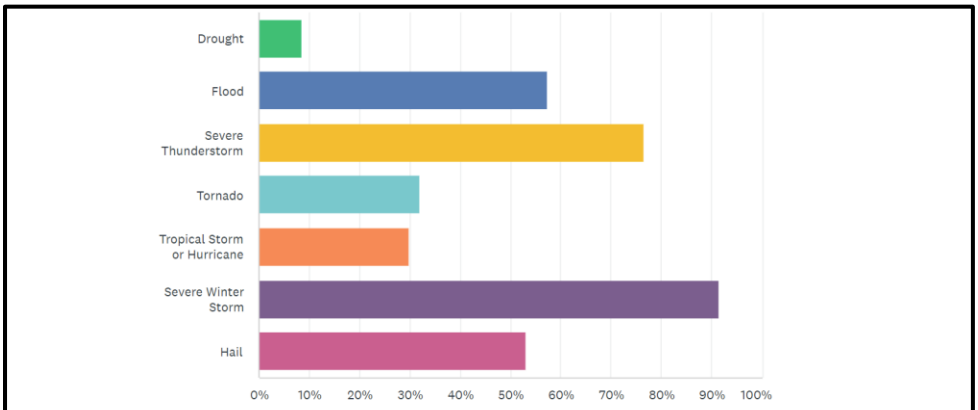
The Hazard Mitigation Strategy for West Carroll Parish and its incorporated communities have a common guiding principle and is the demonstration of the parish's commitment to reduce risks from hazards. The strategy also serves as a guide for parish and local decision makers as they commit resources to reducing the effects of hazards.

Officials from all jurisdictions within the planning area confirmed the goals, objectives, actions and projects over the period of the hazard mitigation plan update process. The mitigation actions and projects in this 2021 HMP update are a product of analysis and review of the West Carroll Parish Hazard Mitigation Plan Planning Committee under the coordination of the West Carroll Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2015 plan, for review from April 2021 – June 2021.

An online public opinion survey of West Carroll Parish residents was conducted between April and July 2021. The survey was designed to capture public perceptions and opinions regarding natural hazards in the West Carroll Parish planning area. 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 which natural disasters citizens or someone in their household had experienced in the last five years, the following responses were recorded:

1. Severe Winter Storms
2. Severe Thunderstorms
3. Flooding



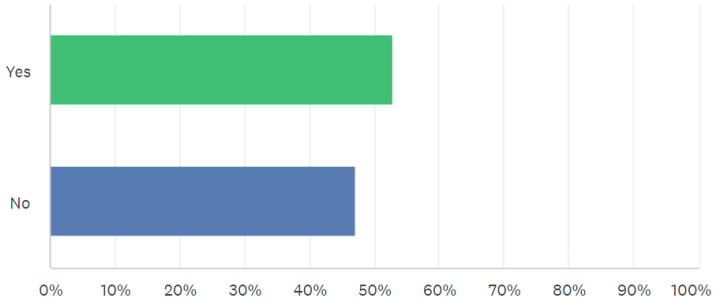
ANSWER CHOICES	RESPONSES	
Drought	8.51%	4
Flood	57.45%	27
Severe Thunderstorm	76.60%	36
Tornado	31.91%	15
Tropical Storm or Hurricane	29.79%	14
Severe Winter Storm	91.49%	43
Hail	53.19%	25
Total Respondents: 47		

The survey results also indicated which natural disasters citizens were *concerned* with being affected by in the West Carroll Parish area. The top three natural disasters selected for "very concerned" were:

1. Tornadoes
2. Severe Thunderstorms
3. Flooding

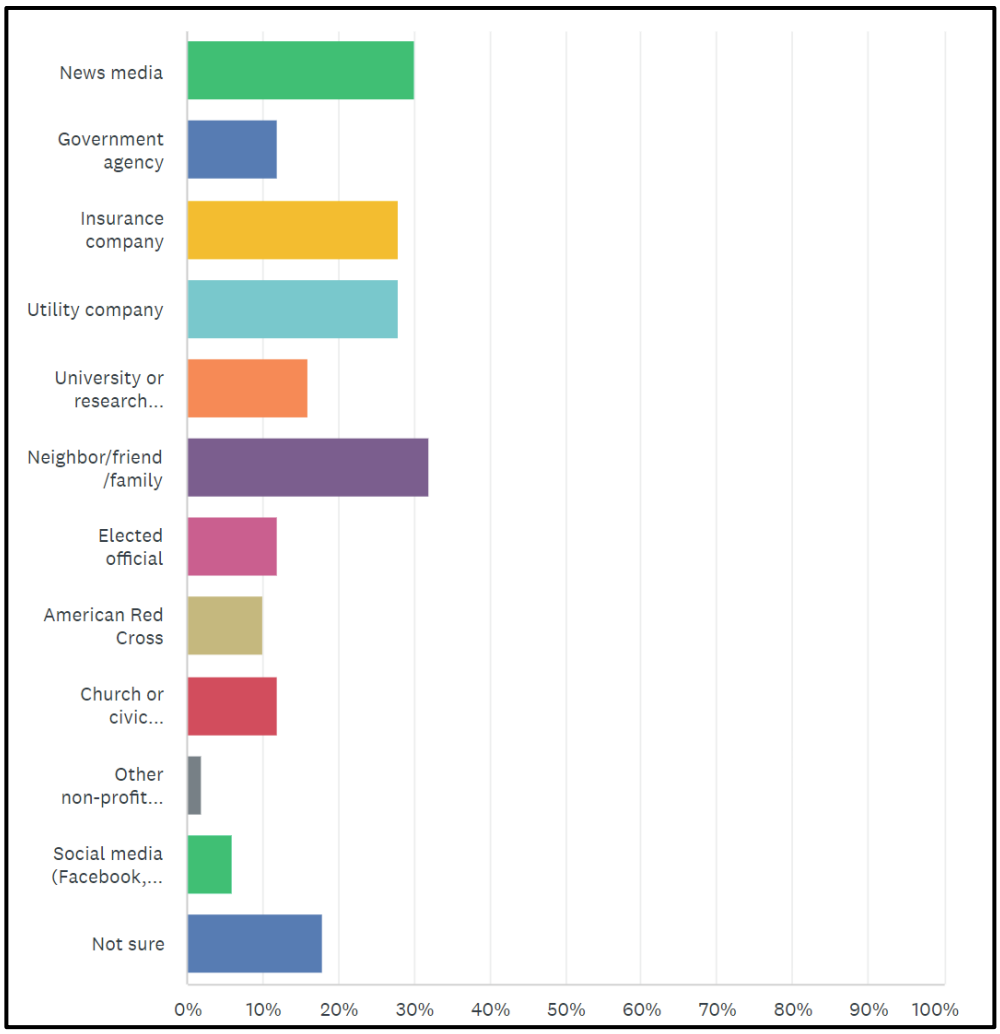
	NOT CONCERNED	NOT VERY CONCERNED	NEUTRAL	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Drought	4.08% 2	22.45% 11	32.65% 16	26.53% 13	14.29% 7	49	3.24
Flood	2.00% 1	4.00% 2	20.00% 10	44.00% 22	30.00% 15	50	3.96
Severe Thunderstorm	0.00% 0	4.00% 2	24.00% 12	38.00% 19	34.00% 17	50	4.02
Tornado	2.00% 1	0.00% 0	12.00% 6	36.00% 18	50.00% 25	50	4.32
Tropical Storm or Hurricane	4.00% 2	12.00% 6	28.00% 14	46.00% 23	10.00% 5	50	3.46
Severe Winter Storm	2.00% 1	6.00% 3	14.00% 7	50.00% 25	28.00% 14	50	3.96
Hail	0.00% 0	6.00% 3	20.00% 10	50.00% 25	24.00% 12	50	3.92

The survey also asked if citizens had received information about making their homes safer from disasters. The following responses were recorded:



ANSWER CHOICES	RESPONSES	
Yes	52.94%	27
No	47.06%	24
TOTAL		51

Always important to decision makers is how citizens best receive emergency information. According to the survey, the citizens within the West Carroll Parish MOST trust the following entities in the dissemination of emergency related information:



The results shown above are related to the manner in which the general population receives information on how to make their home safer from natural disasters. These results are encouraging because it shows that the public has high confidence in the information being disseminated by local government agencies. Implementation of the outreach activities put forth by parish officials and offices seem to have been executed in a successful manner.

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

https://www.surveymonkey.com/results/SM-LG37K9T29/

Goals

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 was focused on identifying and quantifying the risks faced by the residents and property owners in West Carroll Parish from natural and manmade hazards. By articulating goals and objectives based on the previous plans, the risk assessment results, and intending 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, West Carroll Parish 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.

The current goals of the West Carroll Parish Hazard Mitigation Plan Update Planning Committee represent long-term commitments by the parish. After assessing these goals, the committee decided that the current remain valid.

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 and mitigation
3. Reduce repetitive losses in the parish and municipalities
4. Facilitate sound development in the parish and municipalities so as to reduce or eliminate the potential impact of hazards

The Mitigation Action Plan focuses on actions to be taken by West Carroll Parish and its communities. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its communities 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 Planning Committee 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.

2021 Mitigation Actions and Update on Previous Plan Actions

The West Carroll Parish Hazard Mitigation Plan Planning Committee identified new actions that would reduce and/or prevent future damage within the West Carroll Parish planning area. In that effort, the committee focused on a comprehensive range of specific mitigation actions. These actions were identified in thorough fashion by the consultant team and the committee by way of frequent and open communications and meetings held throughout the planning process. The addition of these new actions, coupled with any ongoing and/or carried over projects from their previous update, provide West Carroll Parish with a solid mitigation strategy through which risk and losses will be reduced throughout the parish and its communities.

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.

Status updates for actions included in the previous plan can be found on the following pages. Additionally, new mitigation actions agreed upon by the parish and its jurisdictions are included.

Unincorporated West Carroll Parish Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
WC1: 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	West Carroll Parish OHSEP	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
WC2: 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	West Carroll Parish OHSEP	Flooding	1,3,4	Not Started/ Carried Over
WC3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	West Carroll Parish OHSEP	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
WC4: Safe Room Projects	Construction of a safe room for first responders located in West Carroll Parish. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	West Carroll Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

WC5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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	West Carroll Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
WC6: 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	West Carroll Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
WC7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA, Local	1-5 years	West Carroll Parish OHSEP	Thunderstorms	1,4	Not Started/ Carried Over
WC8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	West Carroll Parish OHSEP	Drought	1,4	Not Started/ Carried Over
WC9: Enlarging Drainage Culverts and Canals	Improve parish drainage capacity by improving and/or enlarging drainage culverts and canals along the major drainage laterals and/or other flood-prone locations within each jurisdiction.	Federal	1-5 years	US Army Corps of Engineers (USACE)	Flooding, Tropical Cyclones	1,3,4	Ongoing
WC10: Harden Critical Facilities	Harden all West Carroll Parish critical facilities by utilizing FEMA-approved wind and floodproofing techniques and add back up power supply/generators at all locations. **NOTE:** West Carroll Parish Care Center, West Carroll Parish Hospital, and the Parish Courthouse have new generators funded through 1603 funding.	Parish Budget	1-5 years	OHLS/EP Director	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	In Progress
WC11: Public Notification System	Expand the public notification system to reach all citizens in the parish, such as a siren or a call down system with a backup communication system. **NOTE:** The system is now in place at the EOC, Parish Police Jury and School Board buildings, Sheriff's Office and hospital.	Parish Budget	1-5 years	Parish School Board and Parish Emergency Manager	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Not Started/ Carried Over

WC12: Localized Interior Drainage Projects	Implement localized interior drainage projects throughout the parish such as Louisiana Highways 2, 585, and/or those parish roads in flood-prone areas to reduce the potential impact of flooding.	CDBG, FMA HMGP, SBA, USACE, State & Local Funds	1-5 years	Parish and Town Floodplain Managers/ Public Works Director	Flooding, Tropical Cyclones	1,3,4	Ongoing
WC13: Floodplain Management Ordinance Standards	Continue to enhance/improve the parish's existing Floodplain Management Ordinance standards. **NOTE:** Current ordinance is set at one foot above the Base Flood Elevation.	Parish Budget	1-5 years	Floodplain Manager	Flooding, Tropical Cyclones	1,3,4	Ongoing
WC14: Building Ordinances	Adopt building ordinances which exceed the requirements of the International Building Code (IBC). **NOTE:** The Parish has adopted ordinances which exceed the current requirements of the 2006 IBC.	Parish Budget	1-5 years	Parish Police Jury	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Ongoing
WC15: Improve Regulations	Improve existing land-use regulations and implement additional development regulations that would help reduce flooding through improved drainage methods such as adequate sloping; stormwater retention ponds; dikes, and floodwalls. Encourage new developments to install underground utilities, which would help reduce the chances of power outages during high winds and other severe storms.	Parish Budget	1-5 years	Planning Director	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 1	Drainage Improvement
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 2	Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Type of Mitigation Action	Structure and Infrastructure
How Action Aligns with Risk Reduction	Eliminates repetitive flooding problems of identified properties.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 3	Safe Room Project
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in West Carroll Parish. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 5	Lightning Mitigation
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 6	Drought Ordinances
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 7	Public Notification System
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Expand the public notification system to reach all citizens in the parish, such as a siren or a call down system with a backup communication system. **NOTE:** The system is now in place at the EOC, Parish Police Jury and School Board buildings, Sheriff's Office and hospital.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for immediate public notice during critical incidents, allowing for public safety measures to be broadcast.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 8	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayor of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 9	Procurement and Installation of Generator and Electrical Controls for Water Well and Water Storage Facilities
LEAD AGENCY	Director - West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayor of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in West Carroll Parish.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
WEST CARROLL ACTION 10	Water Efficient Fixtures
LEAD AGENCY	West Carroll Parish Police Jury
SUPPORTING AGENCIES	West Carroll Parish Public Works
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Village of Epps Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
E1: 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	Village of Epps	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
E2: 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	Village of Epps	Flooding	1,3,4	Not Started/ Carried Over
E3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	Village of Epps	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
E4: Safe Room Projects	Construction of a safe room for first responders located in Village of Epps. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	Village of Epps	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

E5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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	Village of Epps	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
E6: 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	Village of Epps	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
E7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA, Local	1-5 years	Village of Epps	Thunderstorms	1,4	Not Started/ Carried Over
E8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	Village of Epps	Drought	1,4	Not Started/ Carried Over

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 1	Drainage Improvement
LEAD AGENCY	Mayor – Village of Epps
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 2	Flood mitigation of repetitive loss properties and other flood prone structures
LEAD AGENCY	Mayor – Village of Epps
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of flooding for at risk properties. Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 3	Safe Room Project
LEAD AGENCY	Mayor – Village of Epps
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Town of Oak Grove Parish. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Topical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS WEST CARROLL PARISH	
	DESCRIPTION
EPPS ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Director, West Carroll Parish OHSEP
SUPPORTING AGENCIES	Mayors of Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, Village of Pioneer
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 5	Lightning Mitigation
LEAD AGENCY	Mayor – Village of Epps
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 6	Drought Ordinances
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 7	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	Mayor Village of Epps
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 8	Procurement and installation of generator and electrical controls for water well and water storage facility
LEAD AGENCY	Mayor Village of Epps
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in Epps.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF EPPS	
	DESCRIPTION
EPPS ACTION 9	Water Efficient Fixtures
LEAD AGENCY	Mayor – Village of Epps
SUPPORTING AGENCIES	West Carroll Parish Public Works, West Carroll Parish Police Jury
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Village of Forest Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
F1: 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	Village of Forest	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
F2: 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	Village of Forest	Flooding	1,3,4	Not Started/ Carried Over
F3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	Village of Forest	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
F4: Safe Room Projects	Construction of a safe room for first responders located in Village of Epps. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	Village of Forest	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

E5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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	Village of Forest	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
F6: 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	Village of Forest	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
F7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA, Local	1-5 years	Village of Forest	Thunderstorms	1,4	Not Started/ Carried Over
F8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	Village of Forest	Drought	1,4	Not Started/ Carried Over

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 1	Drainage Improvement
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 2	Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of flooding for at risk properties. Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 3	Safe Room Project
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Forest. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Topical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 5	Lightning Mitigation
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 6	Drought Ordinances
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 7	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	Mayor Village of Forest
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 8	Procurement and Installation of Generator and Electrical Controls for Water Well and Water Storage Facilities
LEAD AGENCY	Mayor Village of Forest
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in FOREST.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF FOREST	
	DESCRIPTION
FOREST ACTION 9	Water Efficient Fixtures
LEAD AGENCY	Mayor – Village of Forest
SUPPORTING AGENCIES	West Carroll Parish Public Works, West Carroll Parish Police Jury
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Village of Kilbourne Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
K1: 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	Village of Kilbourne	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
K2: 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	Village of Kilbourne	Flooding	1,3,4	Not Started/ Carried Over
K3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	Village of Kilbourne	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
K4: Safe Room Projects	Construction of a safe room for first responders located in Village of Kilbourne. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	Village of Kilbourne	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

K5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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	Village of Kilbourne	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
K6: 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	Village of Kilbourne	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
K7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA, Local	1-5 years	Village of Kilbourne	Thunderstorms	1,4	Not Started/ Carried Over
K8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	Village of Kilbourne	Drought	1,4	Not Started/ Carried Over

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 1	Drainage Improvement
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 2	Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of flooding for at risk properties. Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 3	Safe Room Project
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Kilbourne. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Topical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 5	Lightning Mitigation
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 6	Drought Ordinances
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 7	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 8	Procurement and Installation of Generator and Electrical Controls for Water Well and Water Storage Facilities
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in KILBOURNE.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF KILBOURNE	
	DESCRIPTION
KILBOURNE ACTION 9	Water Efficient Fixtures
LEAD AGENCY	Mayor – Village of Kilbourne
SUPPORTING AGENCIES	West Carroll Parish Public Works, West Carroll Parish Police Jury
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Town of Oak Grove Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
OG1: 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 Oak Grove	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
OG 2: 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 Oak Grove	Flooding	1,3,4	Not Started/ Carried Over
OG 3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	Town of Oak Grove	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
OG 4: Safe Room Projects	Construction of a safe room for first responders located in Town of Oak Grove. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	Town of Oak Grove	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

OG 5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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 Oak Grove	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
OG6: 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 Oak Grove	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
OG 7: 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 Oak Grove	Thunderstorms	1,4	Not Started/ Carried Over
OG 8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	Town of Oak Grove	Drought	1,4	Not Started/ Carried Over

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 1	Drainage Improvement
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 2	Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of flooding for at risk properties. Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 3	Safe Room Project
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Oak Grove. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Topical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 5	Lightning Mitigation
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 6	Drought Ordinances
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 7	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 8	Procurement and Installation of Generator and Electrical Controls for Water Well and Water Storage Facilities
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in OAK GROVE.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS TOWN OF OAK GROVE	
	DESCRIPTION
OAK GROVE ACTION 9	Water Efficient Fixtures
LEAD AGENCY	Mayor – Town of Oak Grove
SUPPORTING AGENCIES	West Carroll Parish Public Works, West Carroll Parish Police Jury
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Village of Pioneer Mitigation Actions

Previous Action Update

Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Goal	Status
P1: 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	Village of Pioneer	Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,3,4	Ongoing
P2: 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	Village of Pioneer	Flooding	1,3,4	Not Started/ Carried Over
P3: Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties. Benefits: Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.	FEMA, Local	1-5 years	Village of Pioneer	Flooding, Tropical Cyclones	1,3,4	Not Started/ Carried Over
P4: Safe Room Projects	Construction of a safe room for first responders located in Village of Pioneer. Other locations will be identified based on funding availability.	FEMA, Local	1-10 years	Village of Pioneer	Flooding, Thunderstorms, Tornadoes, Winter Weather	1,4	Not Started/ Carried Over

P5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather 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	Village of Pioneer	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,2	Ongoing
P6: 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	Village of Pioneer	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	1,4	Not Started/ Carried Over
P7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA, Local	1-5 years	Village of Pioneer	Thunderstorms	1,4	Not Started/ Carried Over
P8: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought	FEMA, Local	1-5 years	Village of Pioneer	Drought	1,4	Not Started/ Carried Over

New Mitigation Actions

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 1	Drainage Improvement
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	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.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of high water in areas, reduces potential for high water and flooding. Will allow for roadways to stay passable during high rain events allowing for continued operations within the parish.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 2	Flood Mitigation of Repetitive Loss Properties and Other Flood Prone Structures
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 3) Reduce repetitive losses in the parish and municipalities 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flood prone properties.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Minimizes impacts of flooding for at risk properties. Relieves property owners of the continual flooding problems. Saves flood relief and damage repayment for each property.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Tropical Cyclones

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 3	Safe Room Project
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Construction of a safe room for first responders located in Pioneer. Other locations will be identified based on funding availability.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Also allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Topical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 4	Generators for Continuity of Operations and Government
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Allows for continued operations for first responders during and after events. Power allows for continuity of government and essential services.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 5	Lightning Mitigation
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Preserves life and property from lightning damage impacting public facilities
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Thunderstorms

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 6	Drought Ordinances
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director, West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/State/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards
PRIORITY	Medium
Action Description	Adopt ordinance requiring water-saving measures in time of drought
Type of Mitigation Action	Local Planning and Regulations
How Action Aligns with Risk Reduction	Allows for Town to set preventative measures that will allow for better management of water consumption during critical times.
Current Status of Action	New (Not Stated/Carried Over from 2016 Plan)
Hazard Addressed	Drought

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 7	Procure All-Weather Radios/ Emergency Alert Radios
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 Years
COST ESTIMATE	$250,000
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 2) Enhance public awareness and understanding of disaster preparedness
PRIORITY	Medium
Action Description	Purchase weather radios for public, to be used for emergency notification.
Type of Mitigation Action	Education and Awareness Programs
How Action Aligns with Risk Reduction	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 8	Procurement and Installation of Generator and Electrical Controls for Water Well and Water Storage Facilities
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	Director - West Carroll Parish OHSEP
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HMPG/Local/Parish/Federal
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Medium
Action Description	Procure and install a 150KW generator and electrical controls for the main water well and water storage facility in PIONEER.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	This generator is essential for maintaining water pressure within West Carroll Parish at a high enough level to serve the residents and businesses with potable water.
Current Status of Action	New
Hazard Addressed	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather

Additional Supporting Information:

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF PIONEER	
	DESCRIPTION
PIONEER ACTION 9	Water Efficient Fixtures
LEAD AGENCY	Mayor – Village of Pioneer
SUPPORTING AGENCIES	West Carroll Parish Public Works, West Carroll Parish Police Jury
TIMELINE	1-5 years
COST ESTIMATE	TBD
POSSIBLE FUNDING SOURCE(S)	HGMP/Parish/Local
ASSOCIATED GOALS	1) Identify and pursue preventative measures that will reduce future damages from hazards 4) Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impacts of hazards
PRIORITY	Low
Action Description	Coordinate with water districts to establish incentives for installing water efficient fixtures and landscaping in new construction. Institute general parish policy to consider water efficiency in construction of new infrastructure and facilities.
Type of Mitigation Action	Structure and Infrastructure Projects
How Action Aligns with Risk Reduction	Installation of water efficient fixtures and landscaping will help to reduce the over usage of water in times of drought
Current Status of Action	New
Hazard Addressed	Drought

Action Prioritization

During the prioritization process, the Planning 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. Therefore, many projects were prioritized with these factors in mind. In addition, prioritization of the mitigation actions was performed based on the following economic criteria: i) whether the action can be performed with the existing parish resources; ii) whether the action requires additional funding from external sources; and iii) relative costs of the mitigation actions.

In all cases, the committee 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 Committee prioritized the possible activities that could be pursued. Planning Committee members consulted appropriate agencies in order to assist with the prioritizations. The results were items that address the major hazards, are appropriate for those hazards, are cost-effective, and are affordable. The Committee met internally for mitigation action meetings to review and approve mitigation actions for West Carroll Parish and the incorporated jurisdictions. On-going actions, as well as actions which will provide maximum benefit that can be undertaken by existing parish staff with or without additional external funding were given high priority. The actions with medium benefit and relatively 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 and would result in limited benefit to the community were given low priority.

West Carroll Parish and the incorporated jurisdictions will implement and administer the identified actions based off 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. This plan is intended to offer priorities based on an examination of hazards.

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 Planning 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 West Carroll Parish Hazard Mitigation Plan Update

The West Carroll Parish Hazard Mitigation Plan Update process began in February 2021 with a series of emails, phone calls, meetings, and collaborations between the contractor (SDMI) and a diverse group of participating agencies and stakeholders. Update activities were intended to give each participating agency and stakeholder the opportunity to shape the plan to best fit their community's mitigation goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

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

Date	Meeting or Outreach	Location	Public Invited	Purpose
2/23/2021	Kick Off Email	Email	No	Schedule kick off call with Parish OHSEP and SDMI Staff.
3/2/2021	Kick Off Meeting	Phone Conference	No	Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.
3/25/2021	Initial Planning Meeting	Oak Grove, LA	No	Discussion with West Carroll Parish Hazard Mitigation Planning Committee the process and expectations of plan participants. Discuss timeline and action items of each jurisdiction and parish.
5/4/2021	Mitigation Action Workshop	Oak Grove, LA	No	Discussion with West Carroll Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update. Continued timeline discussions.
7/1/2021	Risk Assessment Review with Planning Committee	Oak Grove, LA	Yes	Presentation of Risk Assessment Hazards and maps to Planning Committee.
7/1/2021	Public Meeting	Oak Grove, LA	Yes	Presentation of Risk Assessment Hazards and maps to Public. Presentation also includes current mitigation project highlights within communities and public survey discussion.
2/23/2021 – 7/14/2021	Public Opinion Survey	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in West Carroll Parish. In addition, questions covered the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: https://www.surveymonkey.com/results/SM-LG37K9T29/

Planning

The plan update process consisted of several phases:

	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								
Plan Review by GOHSEP and FEMA								
FEMA APA								
Plan Adoptions								
Final Plan Approval								

Coordination

The West Carroll Parish Office of Homeland Security and Emergency Preparedness (OHSEP) and West Carroll Police Jury oversaw the coordination of the 2021 Hazard Mitigation Plan Update Planning Committee during the update process. The parish OHSEP was responsible for identifying members for the committee.

The Parish OHSEP Director was responsible for inviting the Planning Committee and key stakeholders to planned meetings and activities. SDMI assisted the Parish Director with press releases and social media statements for notification to the media and general public for public meetings and public outreach activities.

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

Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the Planning Committee encouraged participation from a broad range of parish 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 planning meetings at the local and parish level
- Sharing local data and information with jurisdictions
- Incorporation of other planning documents, studies and efforts
- Action item development and action progress from 2015 update
- Risk Assessment review
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan

SDMI assisted West Carroll Parish with encouraging the collaboration with neighboring communities by inviting the neighboring parish of East Carroll in the planning process. This neighboring parish was invited via letter and had open invitations to attend any of the planning meetings. West Carroll Parish is aligned with East Carroll on future mitigation strategies as a region. The participation of the GOHSEP Region 8 Coordinator during the process also contributed to neighboring community representation.

As part of the coordination and planning process, the parish was provided the State Required Hazard Mitigation Plan Update Worksheet. The completed worksheets can be found in Appendix E – State Required Plan Update Worksheets.

The 2021 Hazard Mitigation Plan Update Planning Committee consisted of representatives from the following parish, municipal or community stakeholders. Below is a detailed list of the 2021 HMPU Planning Committee:

West Carroll Parish Hazard Mitigation Planning Committee			
Name	**Title**	**Agency**	**Email**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury	directorwcpoep@yahoo.com
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury	wcpj@bellsouth.net
Roosevelt Porter	Town Chief	Village of Epps	r.porter@oakgrovepolice.com
James Otwell	Town Chief	Village of Forest	jamesotwell40@gmail.com
Toni Shumate	Mayor	Village of Kilbourne	shumate.toni@yahoo.com
Adam Holland	Mayor	Town of Oak Grove	adam@townofoakgrove.com
Sonya Reiter	Mayor	Village of Pioneer	villageofpioneer@yahoo.com
Christy Boyte	Superintendent	West Carroll Parish School Board	cwidmer@wcpsb.com
Lewis Russell	Police Chief	Oak Grove Police Dept	lbrussell@aokgrovepolice.com
Myrl Sistrunk	Fire Chief	West Carroll VFD	myrldianne@bellsouth.com
Logan Pippins	Director	West Carroll EMS Service	loganwcems@bellsouth.net
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury	billellerbe28@gmail.com
Molly Cooper	Town Clerk	Village of Epps	eppsvillage@gmail.com
Scott Matthews	Sheriff	West Carroll Parish Sheriff	sheriff@westcarrollsheriff.net
Stacey Martin	Parish Manager	West Carroll Policy Jury	wccowden@yahoo.com
Todd Nevels	Councilman	West Carroll Planning & Development	nevelstodd@yahoo.com
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury	wccowden@yahoo.com

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 the West Carroll Parish programs and planning efforts.

A measure of integration and coordination is achieved through the HMPU participation of Planning Committee members and community stakeholders who administer programs such as: floodplain management under the National Flood Insurance Program (NFIP), Community Rating System, parish planning and zoning and building code enforcement.

West Carroll will continue to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms that are to be identified through future meetings of the parish, and through the five-year review process described in *Appendix B: Plan Maintenance*. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of any individual municipal plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the West Carroll Parish Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their communities 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 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 2015 Hazard Mitigation Plan was also used in the planning process. Other existing data and plans used in the planning process include those listed below.

- Parish Emergency Operations Plan
- Stormwater Management Plan
- Flood Insurance Rate Maps
- State of Louisiana Hazard Mitigation Plan

Further information on the plans can be found in *Section 3: Capability Assessment*.

Meeting Documentation and Public Outreach Activities

The following pages contain documentation of the meetings and public outreach activities conducted during this hazard mitigation plan update.

Meeting #1: Hazard Mitigation Plan Update Kick-Off

Date: February 23, 2021

Location: Conference Call

Purpose: Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.

Public Invitation: No

Meeting Invitees:

West Carroll Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury
Lauren Morgan	Associate Director	LSU-SDMI
Chris Rippetoe	Program Manager	LSU-SDMI

Meeting #2: Hazard Mitigation Plan Planning Committee Meeting – Initial Planning Meeting

Date: March 25, 2021

Location: Oak Grove, LA

Purpose: Discuss with the West Carroll Hazard Mitigation Planning Committee the expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.

Public Invitation: No

Meeting Invitees:

West Carroll Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury
Roosevelt Porter	Town Chief	Village of Epps
James Otwell	Town Chief	Village of Forest
Toni Shumate	Mayor	Village of Kilbourne
Adam Holland	Mayor	Town of Oak Grove
Sonya Reiter	Mayor	Village of Pioneer
Christy Boyte	Superintendent	West Carroll Parish School Board
Lewis Russell	Police Chief	Oak Grove Police Dept
Myrl Sistrunk	Fire Chief	West Carroll VFD
Logan Pippins	Director	West Carroll EMS Service
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury
Molly Cooper	Town Clerk	Village of Epps
Scott Matthews	Sheriff	West Carroll Parish Sheriff
Stacey Martin	Parish Manager	West Carroll Policy Jury
Todd Nevels	Councilman	West Carroll Planning & Development
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury

Meeting #3: Hazard Mitigation Plan Planning Committee Meeting – Mitigation Actions

Date: May 4, 2021

Location: Oak Grove, LA

Purpose: Discussion with West Carroll Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update. Continued timeline discussions.

Public Invitation: No

Meeting Invitees:

West Carroll Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury
Roosevelt Porter	Town Chief	Village of Epps
James Otwell	Town Chief	Village of Forest
Toni Shumate	Mayor	Village of Kilbourne
Adam Holland	Mayor	Town of Oak Grove
Sonya Reiter	Mayor	Village of Pioneer
Christy Boyte	Superintendent	West Carroll Parish School Board
Lewis Russell	Police Chief	Oak Grove Police Dept
Myrl Sistrunk	Fire Chief	West Carroll VFD
Logan Pippins	Director	West Carroll EMS Service
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury
Molly Cooper	Town Clerk	Village of Epps
Scott Matthews	Sheriff	West Carroll Parish Sheriff
Stacey Martin	Parish Manager	West Carroll Policy Jury
Todd Nevels	Councilman	West Carroll Planning & Development
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury

Meeting #4: Risk Assessment Presentation to Planning Committee

Date: July 1, 2021
Location: West Carroll Parish Police Jury
Purpose: Presentation of Risk Assessment hazards and maps to Planning Committee
Public Invitation: No
Meeting Invitees:

West Carroll Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury
Roosevelt Porter	Town Chief	Village of Epps
James Otwell	Town Chief	Village of Forest
Toni Shumate	Mayor	Village of Kilbourne
Adam Holland	Mayor	Town of Oak Grove
Sonya Reiter	Mayor	Village of Pioneer
Christy Boyte	Superintendent	West Carroll Parish School Board
Lewis Russell	Police Chief	Oak Grove Police Dept
Myrl Sistrunk	Fire Chief	West Carroll VFD
Logan Pippins	Director	West Carroll EMS Service
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury
Molly Cooper	Town Clerk	Village of Epps
Scott Matthews	Sheriff	West Carroll Parish Sheriff
Stacey Martin	Parish Manager	West Carroll Policy Jury
Todd Nevels	Councilman	West Carroll Planning & Development
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury

Meeting #5: Public Meeting

Date: July 1, 2021

Location: West Carroll Parish Police Jury

Purpose: The Public Meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the West Carroll Parish planning area were provided for the meeting attendees to identify specific areas where localized hazards occur.

Public Invitation: Yes

Meeting Invitees:

West Carroll Parish Hazard Mitigation Planning Committee		
Name	**Title**	**Agency**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury
Roosevelt Porter	Town Chief	Village of Epps
James Otwell	Town Chief	Village of Forest
Toni Shumate	Mayor	Village of Kilbourne
Adam Holland	Mayor	Town of Oak Grove
Sonya Reiter	Mayor	Village of Pioneer
Christy Boyte	Superintendent	West Carroll Parish School Board
Lewis Russell	Police Chief	Oak Grove Police Dept
Myrl Sistrunk	Fire Chief	West Carroll VFD
Logan Pippins	Director	West Carroll EMS Service
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury
Molly Cooper	Town Clerk	Village of Epps
Scott Matthews	Sheriff	West Carroll Parish Sheriff
Stacey Martin	Parish Manager	West Carroll Policy Jury
Todd Nevels	Councilman	West Carroll Planning & Development
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury

Meeting Announcement:

WEST CARROLL PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

PUBLIC MEETING ANNOUNCEMENT

West Carroll Parish and its partners are seeking community input for the 2021 West Carroll Parish Hazard Mitigation Plan update!

West Carroll Parish OHSEP, in partnership with The Louisiana Governor's Office of Homeland Security and Emergency Preparedness and the Stephenson Disaster Management Institute at LSU, is leading the process to update the plan. The West Carroll Parish Hazard Mitigation Multi-Jurisdictional Plan describes the **naturally occurring** risks to the region and outlines strategies to reduce these risks to save lives, reduce property damage, and lessen the impact of future disasters.

Are you passionate about building a more resilient future for your parish? Do you have questions about the natural hazards your community is at risk to? Please join us on Thursday, July 1st, for a public meeting at 2:00pm to learn more about the plan and share your input on the risks and vulnerabilities that most impact you and your community.

Meeting Location:
West Carroll Police Jury Meeting Room

Residents of West Carroll Parish are asked to participate in a survey about public perceptions and opinions regarding natural hazards in the parish. The survey results will be used in the development of the plan. This short web-based survey can be found at the following link:

https://www.surveymonkey.com/r/westcarrollhm2021

The Parish appreciates your input.

If you have questions, please contact: Myrtle Green, Director, West Carroll OHSEP

Outreach Activity #1: Public Opinion Survey

Date: Ongoing throughout planning process
Location: Web survey
Public Invitation: Yes

As referenced in the Mitigation Strategies**Error! Reference source not found.** section of this document, an online public opinion survey of West Carroll Parish residents was conducted between March and July 2021. The survey was designed to capture public perceptions and opinions regarding natural hazards in West Carroll 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. As of July 30, 2021, there have 72 responses to the West Carroll Parish Hazard Mitigation Public Opinion Survey. Full survey results can be found here: https://www.surveymonkey.com/results/SM-LG37K9T29/

Outreach Activity #2: Incident Questionnaire

Date: July 1, 2021; Public Meeting Activity
Location: Public Meeting
Public Invitation: Yes

An incident/issue questionnaire was provided at the public meeting in an effort to collect additional information from residents of West Carroll Parish regarding hazard events and their localized impacts. While the information collected via the questionnaire was to be integrated into this planning document, public did not opt to fill out the form, therefore no results were collected. A copy of the incident questionnaire can be found on the next page.

WEST CARROLL PARISH PUBLIC MEETING

PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

1. HAZARD TYPE(S):

A. FLOODING
I. RIVERINE
II. STORM SURGE
III. STREET
IV. OTHER (DESCRIBE):
B. HIGH WINDS (NOT TROPICAL)
C. COASTAL
I. SALTWATER INTRUSION
II. EROSION
III. OTHER (DESCRIBE):
D. TROPICAL SYSTEMS
E. WINTER WEATHER

F. OTHER:

2. DESCRIBE INCIDENT OR ISSUE:

3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

C. LOCALIZED OR DISPERSED:

4. INTENSITY:

A. DEPTH (FLOODING) OR SIZE (HAIL, ETC):

B. WIND STRENGTH

5. RE-OCCURRING OR ONE-TIME

A. IF RE-OCCURRING, HOW OFTEN?

6. WHAT TYPE OF INTERRUPTIONS DOES/DID THE INCIDENT OR ISSUE CAUSE? (BUSINESS CLOSURE, DAMAGE, EVACUATION, ETC.)

7. HOW LONG WAS THE INTERRUPTION (HOURS, DAYS, WEEKS, ETC.)?

8. HOW COULD THIS PROBLEM OR IMPACT BE PREVENTED, FIXED OR ALLEVIATED?

Outreach Activity #3: 2021 West Carroll Parish Hazard Mitigation Plan Public Review

Date: Ongoing
Location: SDMI Hazard Mitigation Website
Public Initiation: Yes

After an initial review by West Carroll Parish Planning Committee was completed, the 2021 West Carroll Parish Hazard Mitigation Plan was made available for public review and comment. The plan was hosted on SDMI's Hazard Mitigation website: https://hmplans.sdmi.lsu.edu/Home/Parish/west-carroll

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

The West Carroll Parish Hazard Mitigation Planning Committee will be responsible for monitoring, evaluating, and documenting the plan's progress throughout the year. Part of the plan maintenance process should include a system by which local governing bodies incorporate the HMP into the parish's other applicable plans. This process provides for continued public participation through the diverse resources of the parish to help in achieving the goals and objectives of the plan. Public participation will be achieved through availability of copies of HMP in parish public buildings and the SDMI website. This section describes the whole update process which includes the following:

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

Responsible Parties

West Carroll 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 Planning 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 committee members in this plan will remain active in the Planning Committee.

Although the people filling the positions may change from year to year, the parish and its stakeholders will have representatives on the Planning Committee. The future Planning Committee will continue to be comprised of the same job functions as currently evident in the Committee. However, the decision of specific job duties will be left to the Parish OHSEP Director to be assigned as deemed appropriate.

Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

West Carroll Parish Police Jury has developed a method to ensure monitoring, evaluating, and updating of the HMP occurs during the five-year cycle of the plan. The Planning Committee will become a permanent body and will be responsible for monitoring, evaluating, and updating of the plan. The Planning Committee meeting will be held annually in order to monitor, evaluate, and update the plan. The West Carroll Parish OHSEP Director will be responsible for conducting the annual Planning Committee meetings.

The lead person of the agency responsible for the implementation of a specific mitigation action will submit a progress report to the Director at least thirty days prior to the planning committee meeting. The progress report will provide project status monitoring to include the following: whether the project has started; if not started, reason for not starting; if started, status of the project; if the project is completed, whether it has eliminated the problem; and any changes recommended to improve the implementation of the project etc. In addition, the progress report will provide status monitoring on the plan evaluation, changes to the hazard profile, changes to the risk assessment, and public input on the Hazard Mitigation Plan updates and reviews.

Progress on the mitigation action items and projects will be reviewed during the annual planning committee meeting. The criteria that would be utilized in the project review will include the following:

1) Whether the action was implemented and reasons, if the action was not implemented

2) What were the results of the implemented action

3) Were the outcomes as expected, and reasons if the outcomes were not as expected

4) Did the results achieve the stated goals and objectives

5) Was the action cost-effective

6) What were the losses avoided after completion of the project

7) In case of a structural project, did it change the hazard profile

In addition to monitoring and evaluating the progress of the mitigation plan actions and projects, the mitigation plan is required to be maintained and monitored annually, and fully updated every five years. The annual maintenance, monitoring and evaluation of the plan will be conducted in the annual Planning Committee meeting. The Planning Committee will review each goal to determine their relevance to changing situations in the parish, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The Planning Committee will evaluate if any change in hazard profile and risk in the parish occurred during the past year. In addition, the evaluation will include the following criteria in respect of plan implementation:

1) Any local staffing changes that would warrant inviting different members to the planning committee

2) Any new organizations that would be valuable in the planning process or project implementation need to be included in the planning committee

3) Any new or existing procedures that can be done more efficiently

4) Any additional ways to gain more diverse and widespread cooperation

5) Any different or additional funding sources available for mitigation planning and implementation

The HMP will be updated every five years to remain eligible for continued HMGP funding. The Planning Committee will be responsible for updating the HMP. The OHSEP Director will be the lead person for the HMP update. The HMP update process will commence at least one year prior to the expiration of the plan. The HMP will be updated after a major disaster if an annual evaluation of the plan indicates a substantial change in hazard profile and risk assessment in the parish.

Additionally, the public will be canvassed to solicit public input to continue West Carroll's dedication to involving the public directly in review and updates of the Hazard Mitigation Plan. Meetings will be scheduled as needed by the plan administrator to provide a forum for which the public can express their concerns, opinions, and/or ideas about the plan. The plan administrator will be responsible for using parish resources to publicize the annual public meetings and maintain public involvement through the newspapers, radio, and public access television channels. Copies of the plan will be catalogued and kept at all appropriate agencies in the city government, as well as at the SDMI website

The review by the Planning Committee and input from the public will determine whether a plan update is needed prior to the required five-year update.

Annual reports on the progress of actions, plan maintenance, monitoring, evaluation, incorporation into existing planning programs, and continued public involvement will be documented at each annual meeting of the committee and kept by the Parish OHSEP Director. The Planning Committee will work together as a team, with each member sharing responsibility for completing the monitoring, evaluation and updates. It is the responsibility of the Parish OHSEP Director for contacting committee members, organizing the meeting and providing public noticing for the meeting to solicit public input.

2021 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 2021 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 West Carroll Parish Hazard Mitigation Plan Planning Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the West Carroll Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Capital Improvement Plans
- Economic Development Plans
- Emergency Operations Plans
- Continuity of Operations Plans
- Transportation Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the West Carroll Parish Hazard Mitigation Planning 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.). While there have been no instances of the mitigation strategy being incorporated into other planning documents since the adoption of the 2016 West Carroll Hazard Mitigation Plan, the committee members recognize the importance of a holistic approach across all planning efforts and will use their standing to integrate the mitigation strategy outlined in the 2021 West Carroll Hazard Mitigation Plan into other

planning documents when appropriate. The members of the Planning 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 West Carroll 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, capital improvements 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 Committee to be the most effective and appropriate method to ensure implementation of Parish and local hazard mitigation actions.

On behalf of the Village of Epps, Village of Forest, Village of Kilbourne, Town of Oak Grove, and Village of Pioneer, West Carroll 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 Planning Committee member and jurisdiction representation throughout the planning process as described above:

Unincorporated West Carroll Parish

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury	✓

Village of Epps

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Epps	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Epps	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Epps	✓

Village of Forest

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Forest	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Forest	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Forest	✓

Village of Kilbourne

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Kilbourne	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Kilbourne	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Kilbourne	✓

Town of Oak Grove

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Oak Grove	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Oak Grove	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Oak Grove	✓

Village of Pioneer

Capital Improvements Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Pioneer	✓
Continuity of Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Local Emergency Operations Plan	Updated as needed	West Carroll Parish OHSEP	✓
Transportation Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Pioneer	✓
Economic Development Plan	Updated as needed	West Carroll Parish Police Jury and Mayor of Pioneer	✓

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. These efforts may include:

- Advertising meetings of the Mitigation Planning Committee in the local newspaper, public bulletin boards, and/or city and county office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the Mitigation Committee
- Utilizing local media to update the public of any maintenance and/or periodic review activities taking place
- Utilizing city and Parish web sites to advertise any maintenance and/or periodic review activities taking place
- Keeping copies of the plan in appropriate public locations.

Appendix C: Critical Facilities

Critical Facilities within the West Carroll Parish Planning Area

West Carroll Parish Planning Area Critical Facilities									
Type	Name	Drought	Flooding	Hail	Lightning	High Wind	Tornadoes	Tropical Cyclones	Winter Weather
Government	Chamber of Commerce			X	X	X	X	X	X
	Department Social Services & Dept. of Health			X	X	X	X	X	X
	Dept of Veterans Affairs & West Carroll Housing			X	X	X	X	X	X
	DOTD Maintenance Unit			X	X	X	X	X	X
	Epps Town Hall and Community Center			X	X	X	X	X	X
	Family Literacy Center			X	X	X	X	X	X
	Forest City Hall/Community Center/Water Dept.			X	X	X	X	X	X
	LDAF			X	X	X	X	X	X
	Louisiana Workforce Commission			X	X	X	X	X	X
	Oak Grove Senior Center			X	X	X	X	X	X
	Office of Motor Vehicles			X	X	X	X	X	X
	Parish Courthouse			X	X	X	X	X	X
	Pioneer Town Hall			X	X	X	X	X	X
	Social Services			X	X	X	X	X	X
	Town of Oak Grove Town Hall			X	X	X	X	X	X
	USDA Service Center			X	X	X	X	X	X
	West Carroll Parish Sanitary Landfill			X	X	X	X	X	X

Fire & SAR	Concord Fire District 1			X	X	X	X	X	X
	Fire Departement			X	X	X	X	X	X
	Fire Station			X	X	X	X	X	X
	Fiske Union Volunteer Fire Department			X	X	X	X	X	X
	Fiske Union Volunteer Fire Department			X	X	X	X	X	X
	Fiske Union Volunteer Fire Department			X	X	X	X	X	X
	Forest Central Station 1			X	X	X	X	X	X
	Forest Volunteer Fire Department 2			X	X	X	X	X	X
	Goodwill Volunteer Fire Department			X	X	X	X	X	X
	Goodwill Volunteer Fire Department 2			X	X	X	X	X	X
	Unknown			X	X	X	X	X	X
	Unknown Fire Department			X	X	X	X	X	X
	Unknown Fire Department			X	X	X	X	X	X
	Unknown Fire Department			X	X	X	X	X	X
	Ward 1 Fire Department			X	X	X	X	X	X
	Ward II Volunteer Fire Dept Clear Lake			X	X	X	X	X	X
	Ward II Volunteer Fire Dept Darnell			X	X	X	X	X	X
	Ward Two Volunteer Fire Department			X	X	X	X	X	X
Law Enforcement	West Carroll Police Jury Office			X	X	X	X	X	X
	Oak Grove Police Department			X	X	X	X	X	X
	Epps Police Department/Sheriff Substation			X	X	X	X	X	X
Public Health	West Carroll Hospital			X	X	X	X	X	X
	Oak Grove Medical Clinic			X	X	X	X	X	X
Schools	Epps High School			X	X	X	X	X	X
	Fiske Union School			X	X	X	X	X	X
	Forest High School			X	X	X	X	X	X
	Goodwill Elementary School			X	X	X	X	X	X
	Kilbourne High School			X	X	X	X	X	X
	Mary Biggs Day Development Center			X	X	X	X	X	X
	MCIO/Oak Grove Headstart			X	X	X	X	X	X
	Oak Grove High School			X	X	X	X	X	X
	Pioneer Elementary			X	X	X	X	X	X
	Professional Headstart Development			X	X	X	X	X	X
	West Carroll Parish School Board			X	X	X	X	X	X

Appendix D: Plan Adoption

Unincorporated West Carroll Parish

WEST CARROLL PARISH

LOUISIANA

RESOLUTION NO. 282022

A RESOLUTION OF THE WEST CARROLL PARISH POLICE JURY

WEST CARROLL PARISH HAZARD MITIGATION PLAN DATE: 2/08/2022

WHEREAS the WEST CARROLL PARISH POLICE JURY recognizes the threat that natural hazards pose to people and property within WEST CARROLL and

WHEREAS the WEST CARROLL PARISH has prepared a multi-hazard mitigation plan, hereby known as WEST CARROLL PARISH HAZARD MITIGATION PLAN DATE: 2/8/22 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS WEST CARROLL PARISH HAZARD MITIGATION PLAN DATE: 2/8/2022 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in WEST CARROLL PARISH from the impacts of future hazards and disasters; and

WHEREAS adoption by the WEST CARROLL PARISH POLICE JURY demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the WEST CARROLL PARISH HAZARD MITIGATION PLAN DATE: 2/8/2022

NOW THEREFORE, BE IT RESOLVED BY THE WEST CARROLL PARISH, LOUISIANA, THAT:

Section 1. In accordance with [ENTER LOCAL RULE FOR ADOPTING RESOLUTIONS], THE WEST CARROLL PARISH POLICE JURY adopts the WEST CARROLL PARISH HAZARD MITIGATION PLAN.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 8th day of February, 2022.

By: Jack L Madden

(print name) Jack L. madden

ATTEST:

By: Angela Griffis

(print name) Angela Griffis

APPROVED AS TO FORM:

By: Angela Griffis

(print name) Angela Griffis

Village of Epps

Village of Epps, Louisiana

Resolution 021422

A Resolution of the Village of Epps

2022 Hazardous Mitigation Plan

WHEREAS the Village of Epps recognizes the threat that natural hazards pose to people and property within the Village of Epps; and

WHEREAS the Village of Epps has prepared a multi-hazard mitigation plan, hereby known as 2022 Hazardous Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2022 Hazardous Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Village of Epps from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Epps demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2022 Hazardous Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF EPPS, LOUISIANA THAT;

The Village of Epps council adopts the 2022 Hazardous Mitigation Plan.

Adopted by a vote of 3 in favor and 0 against, and 0 abstaining, this 14th day of February, 2022.

Brittney Clark-Mayor

Molly M Cooper-Clerk

Village of Forest

VILLAGE OF FOREST
FOREST, LOUISIANA

RESOLUTION NO. 314-2

A RESOLUTION OF THE VILLAGE OF FOREST, WEST CARROLL HAZARD MITIGATION PLAN, FEBRUARY 7, 2022,
WHERAS, THE VILLAGE OF FOREST recognizes the threat that natural hazards pose to people and property within Village of Forest; and
WHEREAS THE VILLAGE OF FOREST has prepared a multi-hazard mitigation plan, hereby known as West Carroll Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the WEST CARROLL HAZARD MITIGATION PLAN, FEBRUARY 7, 2022 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in VILLAGE OF FOREST from the impacts of future hazards and disasters; and
WHEREAS adoption by the VILLAGE OF FOREST demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the WEST CARROLL HAZARD MITIGATION PLAN, FEBRUARY 7, 2022.

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF FOREST, LOUISIANA, THAT:

Section 1. In accordance with a SCHEDULED PUBLIC MEETING, ALDERMEN CAST VOTE, THE VILLAGE OF FOREST ALDERMEN, adopts the West Carroll Hazard Mitigation Plan.

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 7th day of February, 2022.

By: Larry Denmon
Larry Denmon

ATTEST: Peggy Harris
BY: PEGGY HARRIS

APPROVED AS TO FORM:
By:_____

Village of Kilbourne

Village of Kilbourne

Kilbourne, LOUISIANA

RESOLUTION NO. 31722

A RESOLUTION OF THE Village of Kilbourne

March 14, 2022,

WHEREAS the Village of Kilbourne recognizes the threat that natural hazards pose to people and property within Village of Kilbourne; and

WHEREAS the Village of Kilbourne has prepared a multi-hazard mitigation plan, hereby known as 2022 Hazardous Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2022 Hazardous Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Village of Kilbourne from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Kilbourne demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2022 Hazardous Mitigation plan.

NOW THEREFORE, BE IT RESOLVED BY THE Village of Kilbourne, LOUISIANA, THAT:

Section 1. The Village of Kilbourne adopts the Multi- Hazard Mitigation Plan.

ADOPTED by a vote of _3_ in favor and _0_ against, and _0_ abstaining, this 14th day of March, 2022.

By: Toni Shumate

Toni Shumate - Mayor

ATTEST:

By: Susan Hodgkins

Susan Hodgkins – Clerk

Town of Oak Grove

MAYOR
ADAM T. HOLLAND

TOWN CLERK
MELLISSA CORLEY

ATTORNEY
JOHN M. LANCASTER

OAK GROVE
The North Gate to Poverty Point
407 East Main Street
Oak Grove, La. 71263
318-428-3276 (Phone)
318-428-4556 (Fax)
www.townofoakgrove.com

MAYOR PRO TEM
RICHIE ALLEN

TOWN
COUNCIL
MIKE GAMMILL
TODD NEVELS
ROBIN DUNNAHOE
GARLAND WALKER

TOWN OF OAK GROVE

LOUISIANA

A RESOLUTION OF THE TOWN OF OAK GROVE

MULTI-HAZARD MITIGATION PLAN

WHEREAS the Town of Oak Grove recognizes the threat that natural hazards pose to people and property within the Town of Oak Grove; and

WHEREAS the Town of Oak Grove has prepared a multi-hazard mitigation plan, hereby known as 2022 Multi-Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the 2022 Multi-Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Town of Oak Grove from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Oak Grove demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the2022 Multi-Hazard Mitigation Plan; and

NOW THEREFORE, BE IT RESOLVED BY THE Town of Oak Grove Louisiana, THAT:

Section 1. The Town of Oak Grove hereby adopts this Multi-Hazard Mitigation Plan.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 8th day of March, 2022.

By: _____

Adam T. Holland, Mayor

ATTEST:

By: Mellissa Corley

Mellissa Corley, Clerk

Village of Pioneer

Mar 10 2022 9:34pm Pioneer 13184282719 1

Village of Pioneer

LOUISIANA

RESOLUTION NO. _____

A RESOLUTION OF THE Village of Pioneer

West Carroll Parish Hazard Mitigation Plan

WHEREAS the Village of Pioneer recognizes the threat that natural hazards pose to people and property within Pioneer; and

WHEREAS the Village of Pioneer has prepared/adopted a multi-hazard mitigation plan, hereby known as West Carroll Parish Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS West Carroll Parish Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Village of Pioneer from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Pioneer demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the West Carroll Parish Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY THE Village of Pioneer, Pioneer, LOUISIANA, THAT:

Section 1. In accordance with [ENTER LOCAL RULE FOR ADOPTING RESOLUTIONS], THE Village of Pioneer adopts the [ENTER TITLE AND DATE OF MITIGATION PLAN].

ADOPTED by a vote of ___3___ in favor and ___0___ against, and ___0___ abstaining, this___7____ day of ____February____, 20_22_.

APPROVED AS TO FORM:

Sonia Reiter, Mayor

This Page Left Intentionally Blank

Appendix E: State Required Worksheets

During the planning process (Appendix A: Planning Process), the Hazard Mitigation Plan Update Planning Committee was provided state-required plan update process worksheets to be filled out. The worksheets were presented at the Initial Planning Meeting by SDMI as tools for assisting in the update of the Hazard Mitigation Plan, but also as a state requirement for the update. The plan update worksheets allowed for collection of information such as planning team members, community capabilities, community infrastructure, vulnerable populations and NFIP information. The following pages contain documentation of the state required worksheets.

Mitigation Planning Team

West Carroll Parish Hazard Mitigation Planning Committee			
Name	**Title**	**Agency**	**Email**
Myrtle Green	OEP Director/911 Director	West Carroll Policy Jury	directorwcpoep@yahoo.com
Angela Griffis	Secretary/Treasurer	West Carroll Policy Jury	wcpj@bellsouth.net
Roosevelt Porter	Town Chief	Village of Epps	r.porter@oakgrovepolice.com
James Otwell	Town Chief	Village of Forest	jamesotwell40@gmail.com
Toni Shumate	Mayor	Village of Kilbourne	shumate.toni@yahoo.com
Adam Holland	Mayor	Town of Oak Grove	adam@townofoakgrove.com
Sonya Reiter	Mayor	Village of Pioneer	villageofpioneer@yahoo.com
Christy Boyte	Superintendent	West Carroll Parish School Board	cwidmer@wcpsb.com
Lewis Russell	Police Chief	Oak Grove Police Dept	lbrussell@aokgrovepolice.com
Myrl Sistrunk	Fire Chief	West Carroll VFD	myrldianne@bellsouth.com
Logan Pippins	Director	West Carroll EMS Service	loganwcems@bellsouth.net
Bill Ellerbe	Committee Vice Chairman	West Carroll Police Jury	billellerbe28@gmail.com
Molly Cooper	Town Clerk	Village of Epps	eppsvillage@gmail.com
Scott Matthews	Sheriff	West Carroll Parish Sheriff	sheriff@westcarrollsheriff.net
Stacey Martin	Parish Manager	West Carroll Policy Jury	wccowden@yahoo.com
Todd Nevels	Councilman	West Carroll Planning & Development	nevelstodd@yahoo.com
Wesley Copland	Asst. Parish Manager	West Carroll Police Jury	wccowden@yahoo.com

Capability Assessment

Unincorporated West Carroll Parish

Capability Assessment Worksheet – Unincorporated West Carroll Parish		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Vision/year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating-8 VFD each one have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	Yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	Yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	Yes
Acquisition of land for open space and public recreation uses	Yes	Yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	Public Works & Drainage Depts
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	We have MAA w/ every agency in parish & adjoining
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	No	Parish Police Jury hires engineers for projects
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in a certain event
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	Maybe
Other Funding Programs	Yes	Maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	Schools
Natural Disaster or safety related school program	Yes	Schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Epps

Capability Assessment Worksheet – Village of Epps		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Version / Year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating - 8 VFD each have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	yes
Acquisition of land for open space and public recreation uses	Yes	yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public Works & Drainage Depts
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	No	Parish Police jury hires Engineers for projects
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in certain evernt)
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	maybe
Other Funding Programs	Yes	maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	schools
Natural Disaster or safety related school program	Yes	schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Forest

Capability Assessment Worksheet – Village of Forest		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Version / Year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating - 8 VFD each have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	yes
Acquisition of land for open space and public recreation uses	Yes	yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public Works & Drainage Depts
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	No	Parish Police jury hires Engineers for projects
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in certain evernt)
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	maybe
Other Funding Programs	Yes	maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	schools
Natural Disaster or safety related school program	Yes	schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Kilbourne

Capability Assessment Worksheet – Village of Kilbourne		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Version / Year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating - 8 VFD each have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	yes
Acquisition of land for open space and public recreation uses	Yes	yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public Works & Drainage Depts
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	No	Parish Police jury hires Engineers for projects
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in certain evernt)
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	maybe
Other Funding Programs	Yes	maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	schools
Natural Disaster or safety related school program	Yes	schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Town of Oak Grove

Capability Assessment Worksheet – Town of Oak Grove		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Version / Year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating - 8 VFD each have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	yes
Acquisition of land for open space and public recreation uses	Yes	yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public Works & Drainage Depts
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	Yes	Denmon Engineer
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in certain evernt)
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
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	maybe
Other Funding Programs	Yes	maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	needs improvements/restructuring schools
Natural Disaster or safety related school program	Yes	schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Pioneer

Capability Assessment Worksheet – Village of Pioneer		
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	No	
Capital Improvements Plan	Yes	Annual
Economic Development Plan	Yes	Annual
Local Emergency Operations Plan	Yes	5 years
Continuity of Operations Plan	Yes	Annual
Transportation Plan	Yes	As needed
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	**Yes / No**	**Comments**
Building Code	Yes	Version / Year
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	Score
Fire Department ISO/PIAL rating	Yes	Rating - 8 VFD each have own rating
Site plan review requirements	Yes	yes
Land Use Planning and Ordinances	**Yes / No**	**Comments**
Zoning Ordinance	Yes	yes
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	yes
Acquisition of land for open space and public recreation uses	Yes	yes
Other	No	

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.		
Administration	**Yes / No**	**Comments**
Planning Commission	No	Use North Delta Regional Planning Commission
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public Works & Drainage Depts
Staff	**Yes / No**	**Comments**
Chief Building Official	No	Have an approved Bldg inspector/official in Monroe
Floodplain Administrator	Yes	50%
Emergency Manager	Yes	50%
Community Planner	No	
Civil Engineer	No	Parish Police jury hires Engineers for projects
GIS Coordinator	No	
Grant Writer	No	We in-house do most of our grants
Other	No	
Technical	**Yes / No**	**Comments**
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Alert FM, One-Call, IPAWS (each is used in certain evernt)
Hazard Data & Information	Yes	GOHSEP, NWS
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	**Yes / No**	**Comments**
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	maybe
Other Funding Programs	Yes	maybe

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.		
Program / Organization	**Yes / No**	**Comments**
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 education)	Yes	schools
Natural Disaster or safety related school program	Yes	schools
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Building Inventory

West Carroll Parish Planning Area Building Information								
West Carroll Unincorporated								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
West Carroll Parish Courthouse (Original)	Gov't Offices & Sheriff Dept	305 E. Main St	Oak Grove	32.8604	-91.3874	$3,500,000.00	1916	Reinforced Masonry
West Carroll Parish Courthouse (new addition)	Gov't Offices	305 E. Main St	Oak Grove	32.8605	-91.3872	$1,000,000	1960	Reinforced Masonry
West Carroll Courthouse Annex	Gov't Offices	310 Skinner Ln.	Oak Grove	32.8682	-91.3834	$590,000	1963	Reinforced Masonry
West Carroll Health Unit	Public Health Nurse & Officer	416 Beale St.	Oak Grove	32.8591	-91.3861	$80,000	1956	Reinforced Masonry
West Carroll Police Jury Office	Police Jury Administrative offices	107 S. Briggs St	Oak Grove	32.8601	-91.3883	$409,000	2012	Reinforced Masonry
West Carroll Parish Library	Library	101 Marietta At	Oak Grove	32.8595	-91.3901	$925,000	1977	Reinforced Masonry
Combs-McIntyre School	Head-Start Program	410 Combs St	Oak Grove	32.8691	-91.3885	$700,000	1950	Reinforced Masonry
Combs-McIntyre cafeteria	Head-Start Program-feeding	410 Combs St	Oak Grove	32.8689	-91.3888	$235,000	1955	Reinforced Masonry
West Carroll Parish Road Dept	Parish Road Maintenance	8770 Hwy 17	Oak Grove	32.8061	-91.4085	$290,000	1973	Metal
West Carroll Parish Garbage & Recycling Dept	Parish Garbage pick-up & Recycling	451 & 461 Landfill Rd	Oak Grove	32.7641	-91.3438	$492,000	1991	Metal
West Carroll Parish Landfill Office	Landfill Management	448 Landfill Rd	Oak Grove	32.7628	-91.3445	$65,000	1987	Metal
West Carroll Landfill Shop	Vehicle Maintenance	470 Landfill Rd	Oak Grove	32.7627	-91.3445	$175,480.00	2009	Metal
West Carroll Memorial Hospital	Patient Care and Rehabilitation	706 Ross St	Oak Grove	32.8681	-91.3823	$2,258,095.00	1964	Reinforced Masonry
West Carroll Medical Clinic	Doctors' Office	502 Ross St	Oak Grove	32.8652	-91.3826	$200,000.00	1956	Reinforced Masonry
West Carroll Parish Fair Exhibit Bldg	4-H Exhibit & Livestock Showing	1218 N. Old Kilbourne Rd	Oak Grove	32.8847	-91.3988	$64,327.00	1981	Concrete
West Carroll Parish Jail	Houses Prisoners	309 E. Main St.	Oak Grove	32.8603	-91.3874	$230,293.00	1973	Concrete
Kelly-Dumas Airport Bldg & Flight Facility	Offices for WC Airport	530 S. Old Kilbourne Rd.	Oak Grove	32.8525	-91.4004	$515,000.00	2002	Metal
Kelly-Dumas Airport Hangers	Hangers for local airplanes	580 S. Old Kilbourne Rd.	Oak Grove	32.8504	-91.4013	$490,000.00	2010	Metal
Fiske-Union Fire Station	Houses Fire Equipment	229 Hwy 879	Oak Grove	32.8869	-91.4898	$94,000.00	1996	Metal
Epps Fire Station	Houses Fire Equipment	4150 Hwy 134	Epps	32.6039	-91.4761	$135,485.00	1996	Metal

Village of Epps								
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Assessed Value**	**Date Built**	**Construction Type**
Administrative Building	Former Detention Center	180 Capital Bank Dr.	Epps	32.5964	-91.4823	$1,000,000	2004	Metal
Epps Town Hall	Municipal Gov't Offices	120 Maple St.	Epps	32.6031	-91.4781	$140,000	1981	Reinforced Masonry
Epps Police Department	Law Enforcement Office	128 Maple St.	Epps	32.6031	-91.4778	$85,000	1986	Wood
Town Mtc Building	Maintenance Equipment	980 Hwy 17	Epps	32.6047	-91.4786	$15,000	2009	Metal
Village of Forest								
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Assessed Value**	**Date Built**	**Construction Type**
Forest Community Center	Water/Town Hall/police	137 Walnut st	Forest	32.7943	-91.4114	$100,000	2008	Steel
Forest Town Hall/Former Bldg	Rental	117 Clover St	Forest	32.7915	-91.4113	$10,000	1980	Concrete
Village of Kilbourne								
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Assessed Value**	**Date Built**	**Construction Type**
Kilbourne City Hall	City Government office	125 Carnell St	Kilbourne	32.9946	-91.3161	$60,000	1976	Reinforced Masonry
Rental Property	Income for City	463 Kilbourne Ave	Kilbourne	32.9951	-91.3158	$1,000,000	1960	Reinforced Masonry
Town of Oak Grove								
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Assessed Value**	**Date Built**	**Construction Type**
Town of Oak Grove City Hall	Municipal gov't offices	407 E. Main St.	Oak Grove	32.8606	-91.3861	$300,000	1964	Concrete
Town of Oak Grove Mtc. Barn	Town Mtc Equipment	400 Lamont St.	Oak Grove	32.8629	-91.3965	$100,000	1975	Metal
American Legion Hut	Rental Community Meetings	414 James St	Oak Grove	32.8651	-91.3849	$500,000	1932	Wood
Industrial Factory Bldg	Economic Development	710 W. Jefferson St.	Oak Grove	32.8619	-91.3975	$1,000,000	1963	Concrete
Old Water Plant	Equipment Storage	311 W. Noble St.	Oak Grove	32.8626	-91.3926	$30,000	1972	Metal
New Water Plant	Water treatment	221 Newman St.	Oak Grove	32.8513	-91.3969	$100,000	1997	Metal
Sewer Treatment Plant	Sewer treatment	503 Lamont St.	Oak Grove	32.8641	-91.3951	$50,000	2000	Metal
Park Pavilion	Community Gatherings	James Street	Oak Grove					
Village of Pioneer								
Name of Building	**Purpose of Building**	**Address**	**City**	**Latitude**	**Longitude**	**Assessed Value**	**Date Built**	**Construction Type**
Pioneer Town Hall	Gov't office & meeting room	318 Cherry St	Pioneer	32.7377	-91.4359	$30,000	1999	Wood
Old Pioneer School	Needs torn down	5877 Broadway St.	Pioneer	32.7328	-91.4352	$30,000	1942	Unreinforced Masonry

Vulnerable Populations

Vulnerable Populations Worksheet – West Carroll Parish			
All Hospitals (Private or Public)	**Address**	**City**	**Zip Code**
West Carroll Hospital	Ross St	Oak Grove	71263
Nursing Homes (Private or Public)	**Address**	**City**	**Zip Code**
West Carroll Care Center	706 Ross St	Oak Grove	71263
Carroll Health Clinic & Rehab LLC	307 N Castleman St	Oak Grove	71263
Mobile Home Parks	**Address**	**City**	**Zip Code**
Claude Adams, JR Trailer Park	550 Hankins Lane	Oak Grove	71263
J.T.'s Trailer Park	211 West Jefferson St	Oak Grove	71263
James Welch Trailer Park	703 Oak St	Oak Grove	71263
Dion Auger Trailer Park	404 Skinner Lane	Oak Grove	71263
Thomas W. Auger III Trailer Park	1010 West Jefferson St	Oak Grove	71263
TWA Investments, Inc.	308 E Jefferson St	Oak Grove	71263
Dion Auger Trailer Park	201 Old Kilbourne Rd N	Oak Grove	71263
Need Foundation RV Park	10284 LA Hwy 17	Oak Grove	71263

National Flood Insurance Program (NFIP)

National Flood Insurance Program (NFIP)						
	West Carroll Unincorporated	Village of Epps	Village of Forest	Village of Kilbourne	Town of Oak Grove	Village of Pioneer
Insurance Summary						
How many NFIP polices are in the community? What is the total premium and coverage?	130; $20,578,100	4; $471,000	N/A	Not a participant	N/A	N/A
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?	19; $286,809	1; $8,223	N/A	Not a participant	N/A	N/A
How many structures are exposed to flood risk within the community?	11,604	854	355	416	1727	156
Describe any areas of flood risk with limited NFIP policy coverage.	None	None	None	None	None	None
Staff Resources						
Is the Community FPA or NFIP Coordinator certified?	No	No	No	No	No	No
Is flood plain management an auxiliary function?	Conducted in the same office as the 911 addressing & Emergency Management	Conducted in the same office as the 911 addressing & Emergency Management	Conducted in the same office as the 911 addressing & Emergency Management	Conducted in the same office as the 911 addressing & Emergency Management	Conducted in the same office as the 911 addressing & Emergency Management	Conducted in the same office as the 911 addressing & Emergency Management

Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	When a parish calls for a new 911 address we locate the proposed site on our Floodplain maps and determine if it will or will not be in a flood zone. If it is we obtain a BFE for the location from the Corps of Engineers and require an Elevation Certificate of the location before issuing a building permit.	When a parish calls for a new 911 address we locate the proposed site on our Floodplain maps and determine if it will or will not be in a flood zone. If it is we obtain a BFE for the location from the Corps of Engineers and require an Elevation Certificate of the location before issuing a building permit.	When a parish calls for a new 911 address we locate the proposed site on our Floodplain maps and determine if it will or will not be in a flood zone. If it is we obtain a BFE for the location from the Corps of Engineers and require an Elevation Certificate of the location before issuing a building permit.	Not a participant	When a parish calls for a new 911 address we locate the proposed site on our Floodplain maps and determine if it will or will not be in a flood zone. If it is we obtain a BFE for the location from the Corps of Engineers and require an Elevation Certificate of the location before issuing a building permit.	When a parish calls for a new 911 address we locate the proposed site on our Floodplain maps and determine if it will or will not be in a flood zone. If it is we obtain a BFE for the location from the Corps of Engineers and require an Elevation Certificate of the location before issuing a building permit.
What are the barriers to running an effective NFIP program in the community, if any?	Funding and staff resources	Funding	Funding	Funding, Staffing	Funding	Funding
Compliance History						
Is the community in good standing with the NFIP?	Yes; our parish ordinance adopted on 10/9/97 any structures to be at least 1 feet above BFE as designated by Corps of Engineers	Yes; State NFIP Coordinator, FEMA NFIP Specialist, community records	Yes; State NFIP Coordinator, FEMA NFIP Specialist, community records	No, the community of Kilbourne does not participate in the NFIP	Yes; State NFIP Coordinator, FEMA NFIP Specialist, community records	Yes; State NFIP Coordinator, FEMA NFIP Specialist, community records
Are there any outstanding compliance issues(i.e., current violations)?	No	No	No	No	No	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	2014	2014	2014	2014	2014	2014
Is a CAV or CAC scheduled or needed? If so when?	No	No	No	No	No	No
Regulation						
When did the community enter the NFIP?	7/8/1997	7/8/1997	7/8/1997	Not a participant	7/8/1997	7/8/1997
Are the FIRMs digital or paper?	Paper	Paper	Paper	Paper	Paper	Paper

Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Yes; our parish ordinance adopted on 10/9/97 any structures to be at least 1 feet above BFE as designated by Corps of Engineers	Yes	Yes	Not a participant	Yes	Yes
Community Rating System (CRS)						
Does the community participate in CRS?	No	No	No	No	No	No
What is the community's CRS Class Ranking?	N/A	N/A	N/A	N/A	N/A	N/A
Does the plan include CRS planning requirements?	N/A	N/A	N/A	N/A	N/A	N/A