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PARISH HAZARD MITIGATION UPDATE – 2016

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DESOTO PARISH

HAZARD MITIGATION PLAN UPDATE

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DeSoto Parish

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December 20, 2016

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ACKNOWLEDGMENTS

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

DeSoto Parish
Village of Grand Cane
Town of Keachi
Town of Logansport
Village of Longstreet
City of Mansfield
Village of South Mansfield
Village of Stanley
Town of Stonewall

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

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Contents

1. Introduction

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

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

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

- Unincorporated DeSoto Parish
- Village of Grand Cane
- Town of Keachi
- Town of Logansport
- Village of Longstreet
- City of Mansfield
- Village of South Mansfield
- Village of Stanley
- Town of Stonewall

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

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

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

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

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

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

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

Location, Demography, and Economy

Location

Located in the northwestern portion of Louisiana, DeSoto Parish is an irregular-shaped parish and is located about twenty miles south of Shreveport (*Figure 1-1*). Caddo Parish borders it to the north, Red River and Natchitoches Parishes to the east, Sabine Parish to the south, and Panola County, Texas to the west. The total area of the parish is 466,996 acres, of which 6,769 acres is water.

Figure 1-1: Location of DeSoto Parish within the State of Louisiana

DeSoto Parish geography is typified by substantial topographic relief with the exception of wide floodplains along major streams. Floodplains are low and several thousand feet wide but rise quickly at their boundaries. Toledo Bend Reservoir forms 15 miles of the parish western boundary. Other waterways include Bayou Castor, Bayou Grand Cane, Bayou Pierre, Bayou San Patricio, Clear Lake, Cow Bayou, Smithport Lake, and Wallace Lake.

Major highways within DeSoto Parish include Interstate 49, US Highways 84 and 171 and State Highways 5, 175, 191, 481, 509, 512, 513, 763, 764 and 765. Interstate 49, U.S. 84, and U.S. 171 are designated emergency evacuation routes. The main transportation hub is Mansfield, located on U.S. Highways 171 and 84, and connecting to three state highways. Interstate 49 connects DeSoto Parish with destinations north and south. DeSoto Airport is located north of Mansfield on US Highway 171, constructed as an auxiliary field for Barksdale Air Force Base in 1943. Both Kansas City Southern and Union Pacific railroads are located in the parish. There are 7 major freight lines, many with terminal facilities within the parish.

DeSoto Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 7.

As noted above, DeSoto Parish is located in the northwestern region of Louisiana.

Figure 1-2: Louisiana Homeland Security Regions

Table 1-1: DeSoto Parish Population
(Source: U.S. Census Bureau)

	2010 Census	2013 Census	(Current Yr) Estimate	Percent Change 2010 -2013	Percent Change 2010 -(Current Year)
Total Population	26,656	27,112	27,142	1.70%	1.80%
Population Density (Pop/Sq Mi)	30.4	____	____	____	____
Total Households	10,270	10,270	____	____	____

Economy

DeSoto Parish has an educated, active work force of people who value an outdoor environment. Hunting, fishing, and sports are a key part of the life-style. The parish is primarily divided into farm/dairy land and timber land. Until recently the economy was mostly agricultural. Beef cattle production and the dairy industry are still important, and timber production is a significant contributor to the economy, but industrial development is proceeding at a rapid pace.

A one-half billion dollar paper mill was completed several years ago and is now one of the major employers in the parish. A similar investment was made in a lignite fueled power plant completed in 1986. Lignite mining

contributes heavily to the economy and now, oil and gas activity is the biggest player because of the discovery of the Haynesville shale in Northwest Louisiana.

Industry data for business patterns in DeSoto Parish can be found in the table below:

Table 1-2: Business Patterns in DeSoto Parish
(Source: http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl)

Business Description	Number of Employees	Number of Establishments	Annual Payroll ($1,000)
Retail Trade	829	70	21,288
Manufacturing	500-999	10	___
Health Care and Social Assistance	621	29	19,034
Mining, Quarrying, Oil and Gas Extraction	965	21	64,957
Transportation and Warehousing	250-499	24	___
Construction	339	46	15,026
Administration and Support and Waste Management and Remediation Services	61	12	3,849
Real Estate and Rental and Leasing	100-249	12	___
Wholesale Trade	44	12	1,535
Other Services (except Public Administration)	261	58	4,088
Accommodation and Food Services	339	32	4,235
Financial and Insurance	193	36	6,213
Professional, Scientific, and Technical Services	113	22	7,950
Information	20-99	6	___
Educational Services	20-99	1	___
Arts, Entertainment, and Recreation	17	4	222
Management of Companies and Enterprises	0-19	2	___
Agriculture, Forestry, Fishing and Hunting	27	9	557
Utilities	177	12	14,190

While nature has presented the parish with a variety of hazards, the parish has the human resources that can face those hazards and manage the impact they have on people and property. This plan will discuss hazards affecting DeSoto Parish. Hazard Profiles (see Section Two) contain detailed information on the likelihood of occurrence, possible magnitude or intensity, areas of the parish that could be affected, and conditions that could influence the manifestation of the hazard.

Hazard Mitigation

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

The four phases are as follows:

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

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

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

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

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

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

General Strategy

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

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

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

- Section One Prerequisites
- Section Two Planning Process
- Section Three Risk Assessment
- Section Four Mitigation Strategy
- Section Five Plan Maintenance
- Appendices

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

2016 Plan Update

This 2016 plan update proceeds with the previous goals of the DeSoto Parish Hazard Mitigation Plan. Goal six has been modified to reflect the current focus of the parish. The current goals are as follows:

- Reduce or prevent injury and loss of life
- Reduce or prevent damage to property and material assets
- Reduce or prevent damage to critical facilities essential for public safety including: fire, rescue, law enforcement communications, command and control
- Reduce or prevent damage to special facilities including: schools, nursing homes, hospitals and clinics, prisons, historical and cultural resources
- Reduce or prevent damage to infrastructure and loss of function
- Reduce or prevent damage to high risk facilities

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the Spatial Hazard Events and Losses Database for the United States (SHELDUS) was used as a data source for hazard identification because it incorporates all storm event data from the National Climatic Data Center (NCDC) Storm Events Database used in previous plans, as well as storm event data from other sources including the NOAA Storm Prediction Center, National Hurricane Center, and U.S. Fire Administration. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. Second, instead of eleven, separate sections for numerous tables, maps, and appendices, the present plan update has four sections and five appendices. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of repetition between sections from the previous plan updates. The 2016 plan update is organized generally as follows:

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

Table 1-4: Plan Crosswalk

2011 Plan	Revised Plan (2016)
Section 1: Prerequisites	Section 1: Introduction
Section 2: Planning Process	Appendix A: Planning Process
Section 3: Risk Assessment	Section 2: Hazard Identification and Risk Assessment; Section 3: Capability Assessment
Section 4: Mitigation Strategy	Section 4: Mitigation Strategy
Section 5: Plan Maintenance	Appendix B: Plan Maintenance
Appendices	Appendices

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

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

2. Hazard Identification and Parish-Wide Risk Assessment

This section assesses the various hazard risks that DeSoto 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 DeSoto Parish Hazard Mitigation Plan published in 2011, as well as the hazards that were identified in the State's 2014 Hazard Mitigation Plan that were considered to be of high or medium risk for the parish by the state. Those hazards identified as high or medium risk by the state or previously identified as a risk by the parish, have been determined to provide a risk to the parish and will be profiled in this section.

Table 2-1: Hazard Profile Summary

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

*Hazard was discounted

+ Data deficiency

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 hazard of earthquakes, dam failure, and levee failure were discounted due to having minimal impact on the parish.

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

a) Drought
b) Earthquakes
c) Extreme Heat
d) Flooding (backwater, riverine, localized stormwater event)
e) Thunderstorms (hail, lightning, wind)
f) Tornadoes
g) Tropical Cyclones (flooding and high winds)
h) Wildfires
i) Winter Storms
j) Dam Failure
k) Levee Failure

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)
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property and crop damage resulting from drought, extreme heat, and wildfires

The potential destructive power of tropical cyclones and flooding were determined to be the most prevalent hazards to the parish. Seven of the eleven Presidential Declarations that DeSoto Parish has received resulted from either tropical cyclones (4 declarations) or flooding (3 declarations), which validates these as the most significant hazards. Therefore, the issues of hurricanes and floods will both serve as the main focus during the mitigation planning process. Hurricanes present risks from the potential for flooding, primarily resulting from storm surge, and high wind speeds. While storm surge is considered the hazard with the most destructive potential, the risk assessment will also asses non-storm surge flooding as well. Flooding can also occur from non-hurricane events, as flash floods are a common occurrence due to heavy rainfall.

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

DeSoto Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass through DeSoto 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

On the next page, *Table 2-2* summarizes federal disaster declarations for DeSoto Parish since 1965. Information includes names, dates, and types of disaster.

Table 2-2: DeSoto Parish Major Disaster Declarations

Disaster Declaration Number	Date	Type of Disaster
902	4/23/1991	Severe Storms & Flooding
1012	2/28/1994	Severe Winter Ice Storm
1264	1/21/1999	Severe Ice Storm
1269	4/9/1999	Severe Storms, Tornadoes, and Flooding
2337	9/11/2000	Western Louisiana Fire
3172	2/1/2003	Loss of Space Shuttle Columbia
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita
1786	9/2/2208	Tropical Cyclone – Hurricane Gustav
1792	9/13/2008	Tropical Cyclone – Hurricane Ike
1863	12/10/2009	Severe Storms, Tornadoes, and Flooding

Probability of Future Hazard Events

The probability of a hazard event occurring in DeSoto 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 Spatial Hazards Events and Losses Database (SHELDUS), which provides historical hazard data from 1960 to 2014. In staying consistent with the state plan, the SHELDUS database was evaluated for the last twenty-five years (1990 – 2015) in order to determine future probability of a hazard occurring. While the 25-year record used by the State was adopted for the purpose of determining the overall probability, in order to assist with determining estimated losses, unless otherwise stated, the full 54-year record was used when Hazus-Multi-Hazard (MH) wasn't available to determine losses. This full record was used to provide a more extensive record to determine losses. All assessed damages were adjusted for inflation in order to reflect the equivalent amount of damages with the value of the U.S. dollar today. In addition, the National Climatic Data Center (NCDC) was also used to help identify hazard data specific to the municipalities. This was used due to it containing specific data for cities, whereas the data within SHELDUS is limited to parishes.

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

Table 2-3: Probability of Future Hazard Reoccurrence

Hazard	Probability				
	DeSoto (Unincorporated)	Grand Cane	Keachi	Logansport	Longstreet
Drought	8%	8%	8%	8%	8%
Earthquakes	<1%	<1%	<1%	<1%	<1%
Extreme Heat	8%	8%	8%	8%	8%
Flooding	36%	16%	16%	12%	8%
Thunderstorms (Hail)	8%	8%	8%	8%	8%
Thunderstorms (Lightning)	12%	12%	12%	12%	12%
Thunderstorms (Wind)	100%	100%	100%	100%	100%
Tornadoes	56%	56%	56%	56%	56%
Tropical Cyclones	12%	12%	12%	12%	12%
Wildfires	8%	8%	8%	8%	8%
Winter Storms	24%	24%	24%	24%	24%
Dam Failure	<1%	<1%	<1%	<1%	<1%
Levee Failure	<1%	<1%	<1%	<1%	<1%

Table 2-4: Probability of Future Hazard Reoccurrence (Continued)

Hazard	Probability			
	Mansfield	South Mansfield	Stanley	Stonewall
Drought	8%	8%	8%	8%
Earthquakes	<1%	<1%	<1%	<1%
Extreme Heat	8%	8%	8%	8%
Flooding	48%	8%	8%	32%
Thunderstorms (Hail)	8%	8%	8%	8%
Thunderstorms (Lightning)	12%	12%	12%	12%
Thunderstorms (Wind)	100%	100%	100%	100%
Tornadoes	56%	56%	56%	56%
Tropical Cyclones	12%	12%	12%	12%
Wildfires	8%	8%	8%	8%
Winter Storms	24%	24%	24%	24%
Dam Failure	<1%	<1%	< 1%	< 1%
Levee Failure	<1%	<1%	< 1%	< 1%

As shown in *Table 2-3* and *Table 2-4*, thunderstorm winds for the entire planning area have the highest annual chance of occurrence in the parish (100%), followed by tornadoes (56%) and flooding for the incorporated area of Mansfield (48%). Flood events in the remaining incorporated areas and unincorporated areas have a slightly lower chance of occurring annually. Winter storms have a 24% annual chance of reoccurrence, followed by tropical cyclones and lightning (12%). Drought, extreme heat, hail, and wildfires all have an 8% annual chance of occurrence. Earthquakes, dam failure, and levee failure were discounted since they have no impact on DeSoto Parish and the annual chance of occurrence were calculated at less than 1% for the hazards.

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 $3,448,229,000 in structures throughout the parish. The tables below provide the total estimated value for each type of structure by occupancy.

Table 2-5: Estimated Total of Potential Losses throughout DeSoto Parish

Occupancy	DeSoto Parish	Unincorporated DeSoto	Grand Cane	Keachi	Logansport
Agricultural	$18,160,000	$14,888,000	$420,000	$1,204,000	$0
Commercial	$377,050,000	$112,330,000	$1,582,000	$0	$19,320,000
Government	$39,616,000	$11,057,000	$916,000	$6,039,000	$0
Industrial	$173,017,000	$116,893,000	$732,000	$775,000	$918,000
Religion	$156,960,000	$101,802,000	$912,000	$1,736,000	$7,290,000
Residential	$2,632,840,000	$1,696,709,000	$40,232,000	$37,876,000	$145,328,000
Education	$50,586,000	$13,006,000	$3,600,000	$0	$5,616,000
Total	**$3,448,229,000**	**$2,066,685,000**	**$48,394,000**	**$47,630,000**	**$178,472,000**

Table 2-6: Estimated Total of Potential Losses (Continued)

Occupancy	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall
Agricultural	$0	$420,000	$0	$192,000	$1,036,000
Commercial	$0	$213,173,000	$1,644,000	$3,706,000	$25,295,000
Government	$0	$17,337,000	$844,000	$0	$3,423,000
Industrial	$0	$44,457,000	$1,280,000	$0	$7,962,000
Religion	$0	$33,428,000	$0	$1,416,000	$10,376,000
Residential	$21,286,000	$466,638,000	$31,564,000	$12,455,000	$180,752,000
Education	$0	$18,904,000	$306,000	$0	$9,154,000
Total	**$21,286,000**	**$794,357,000**	**$35,638,000**	**$17,769,000**	**$237,998,000**

Essential Facilities of the Parish

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

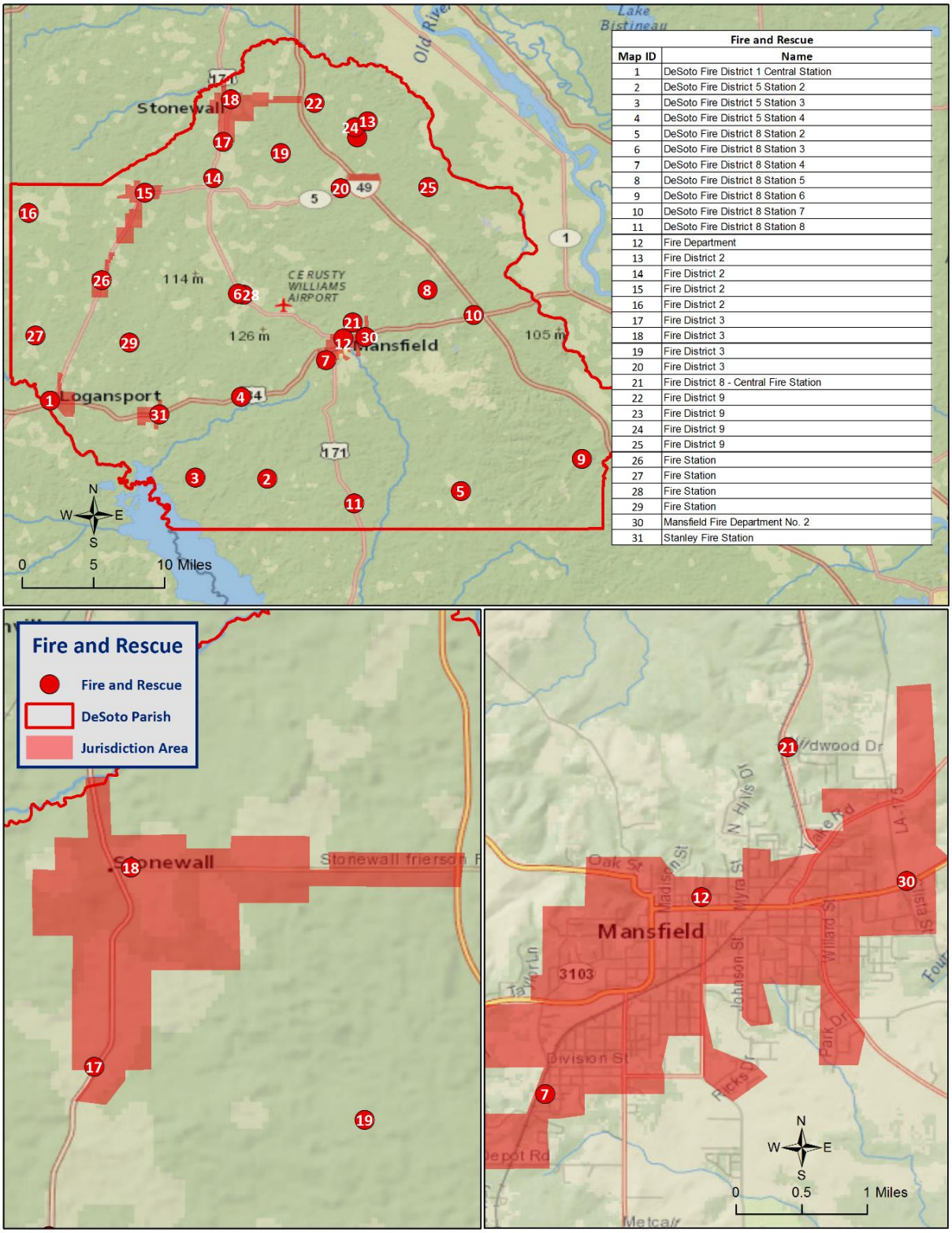
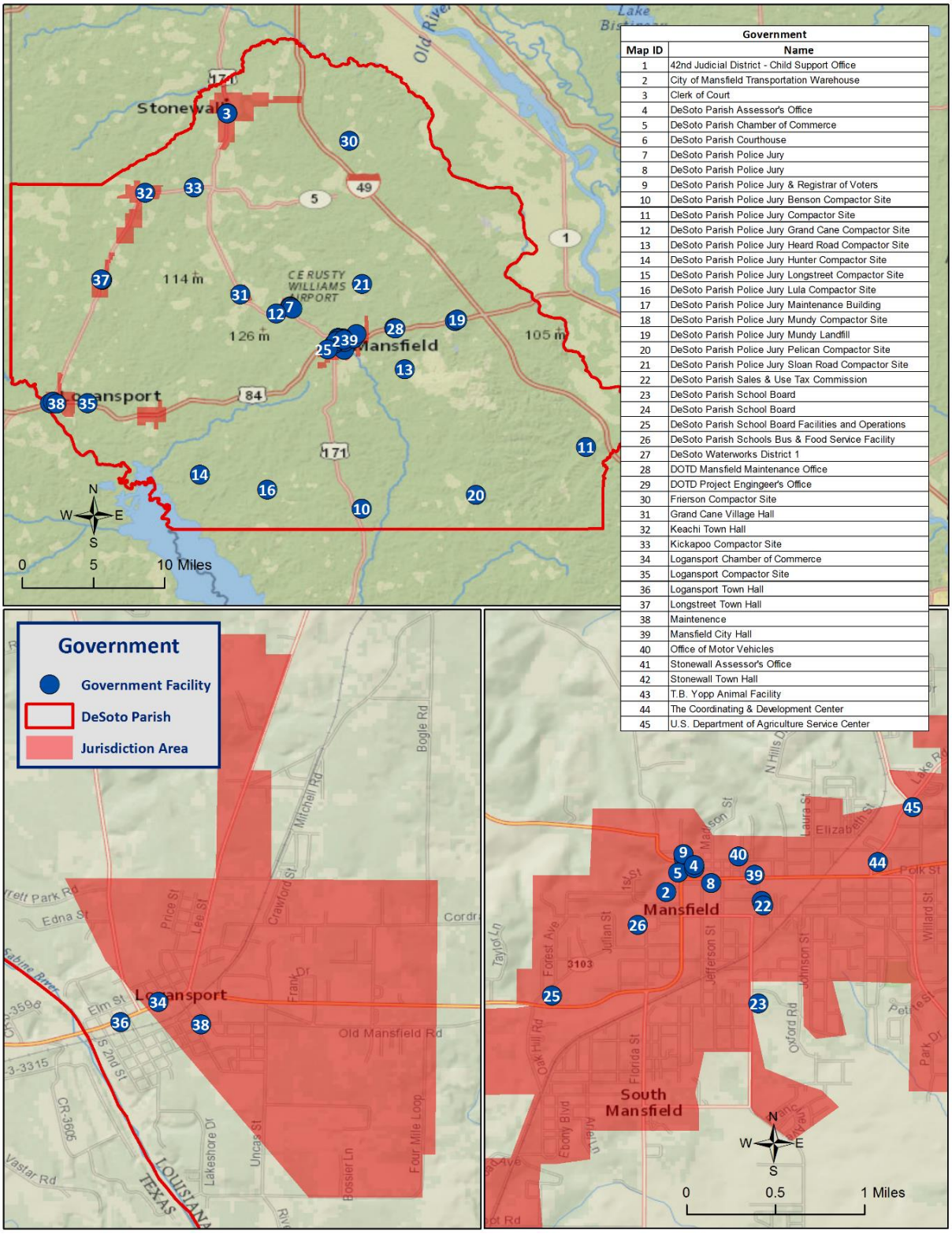


Figure 2-1: Fire and Rescue Buildings in DeSoto Parish



Government	
Map ID	Name
1	42nd Judicial District - Child Support Office
2	City of Mansfield Transportation Warehouse
3	Clerk of Court
4	DeSoto Parish Assessor's Office
5	DeSoto Parish Chamber of Commerce
6	DeSoto Parish Courthouse
7	DeSoto Parish Police Jury
8	DeSoto Parish Police Jury
9	DeSoto Parish Police Jury & Registrar of Voters
10	DeSoto Parish Police Jury Benson Compactor Site
11	DeSoto Parish Police Jury Compactor Site
12	DeSoto Parish Police Jury Grand Cane Compactor Site
13	DeSoto Parish Police Jury Heard Road Compactor Site
14	DeSoto Parish Police Jury Hunter Compactor Site
15	DeSoto Parish Police Jury Longstreet Compactor Site
16	DeSoto Parish Police Jury Lula Compactor Site
17	DeSoto Parish Police Jury Maintenance Building
18	DeSoto Parish Police Jury Mundy Compactor Site
19	DeSoto Parish Police Jury Mundy Landfill
20	DeSoto Parish Police Jury Pelican Compactor Site
21	DeSoto Parish Police Jury Sloan Road Compactor Site
22	DeSoto Parish Sales & Use Tax Commission
23	DeSoto Parish School Board
24	DeSoto Parish School Board
25	DeSoto Parish School Board Facilities and Operations
26	DeSoto Parish Schools Bus & Food Service Facility
27	DeSoto Waterworks District 1
28	DOTD Mansfield Maintenance Office
29	DOTD Project Engingeer's Office
30	Frierson Compactor Site
31	Grand Cane Village Hall
32	Keachi Town Hall
33	Kickapoo Compactor Site
34	Logansport Chamber of Commerce
35	Logansport Compactor Site
36	Logansport Town Hall
37	Longstreet Town Hall
38	Maintenence
39	Mansfield City Hall
40	Office of Motor Vehicles
41	Stonewall Assessor's Office
42	Stonewall Town Hall
43	T.B. Yopp Animal Facility
44	The Coordinating & Development Center
45	U.S. Department of Agriculture Service Center

Figure 2-2: Government Buildings in DeSoto Parish

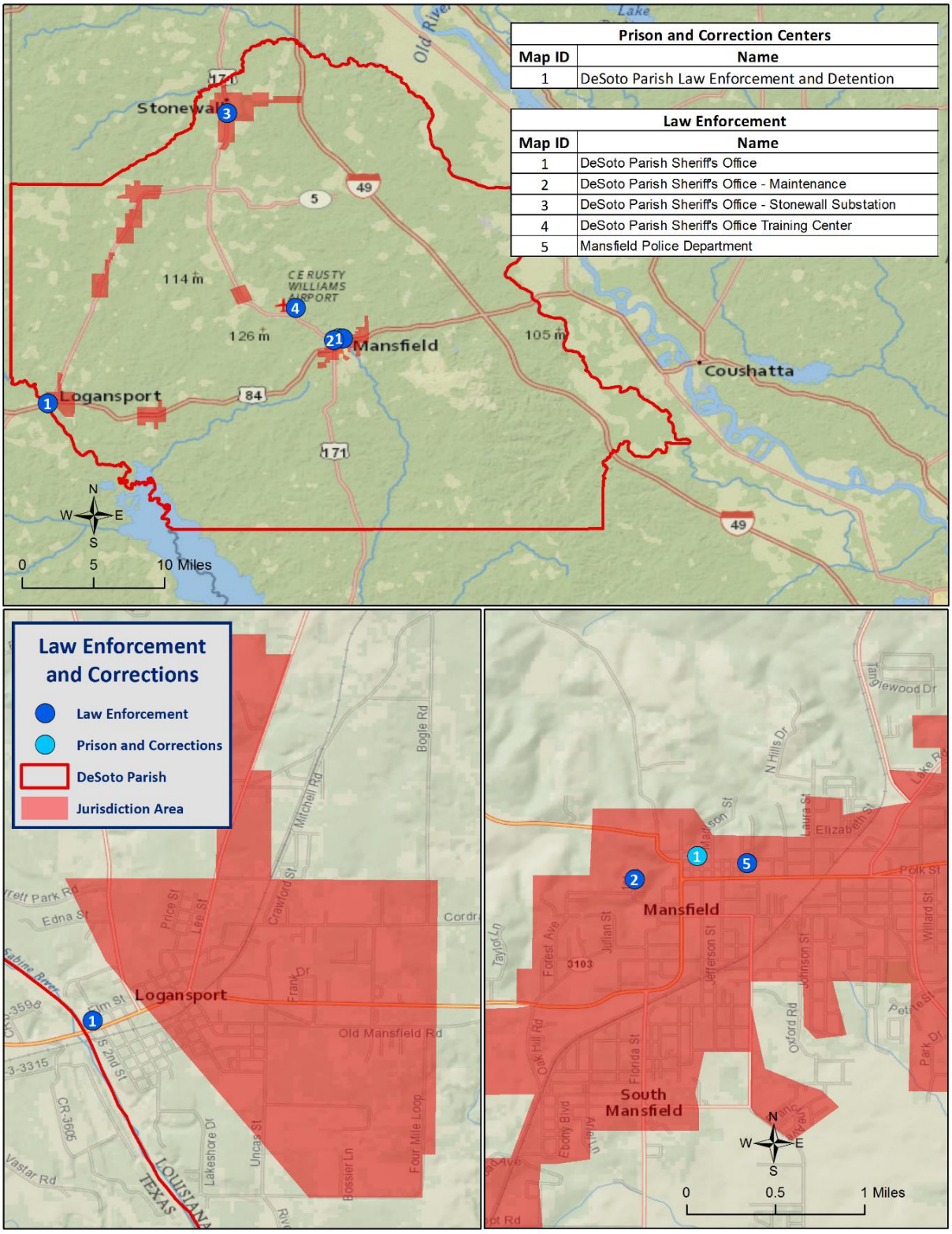


Figure 2-3: Law Enforcement Buildings in DeSoto Parish

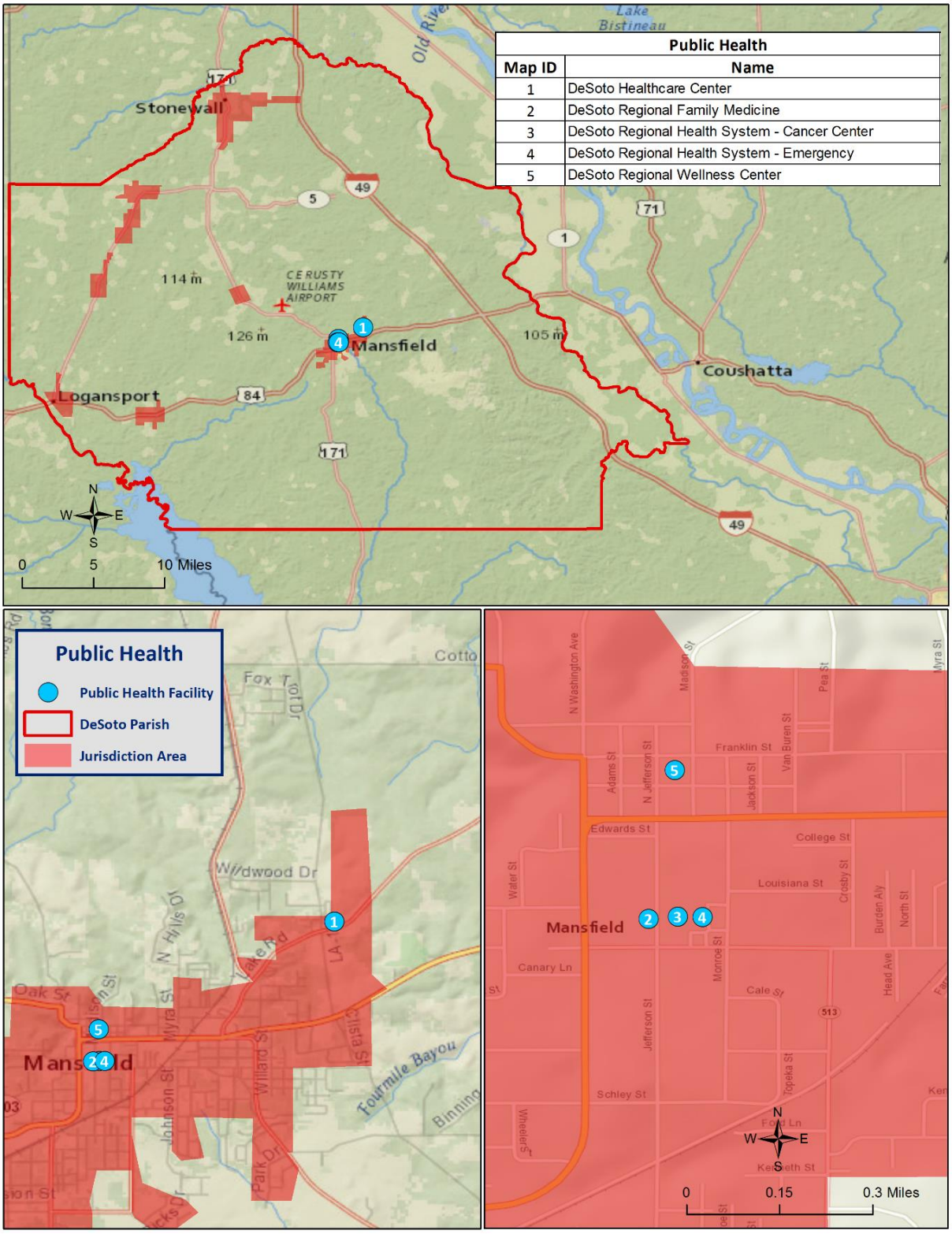


Figure 2-4: Public Health Buildings in DeSoto Parish

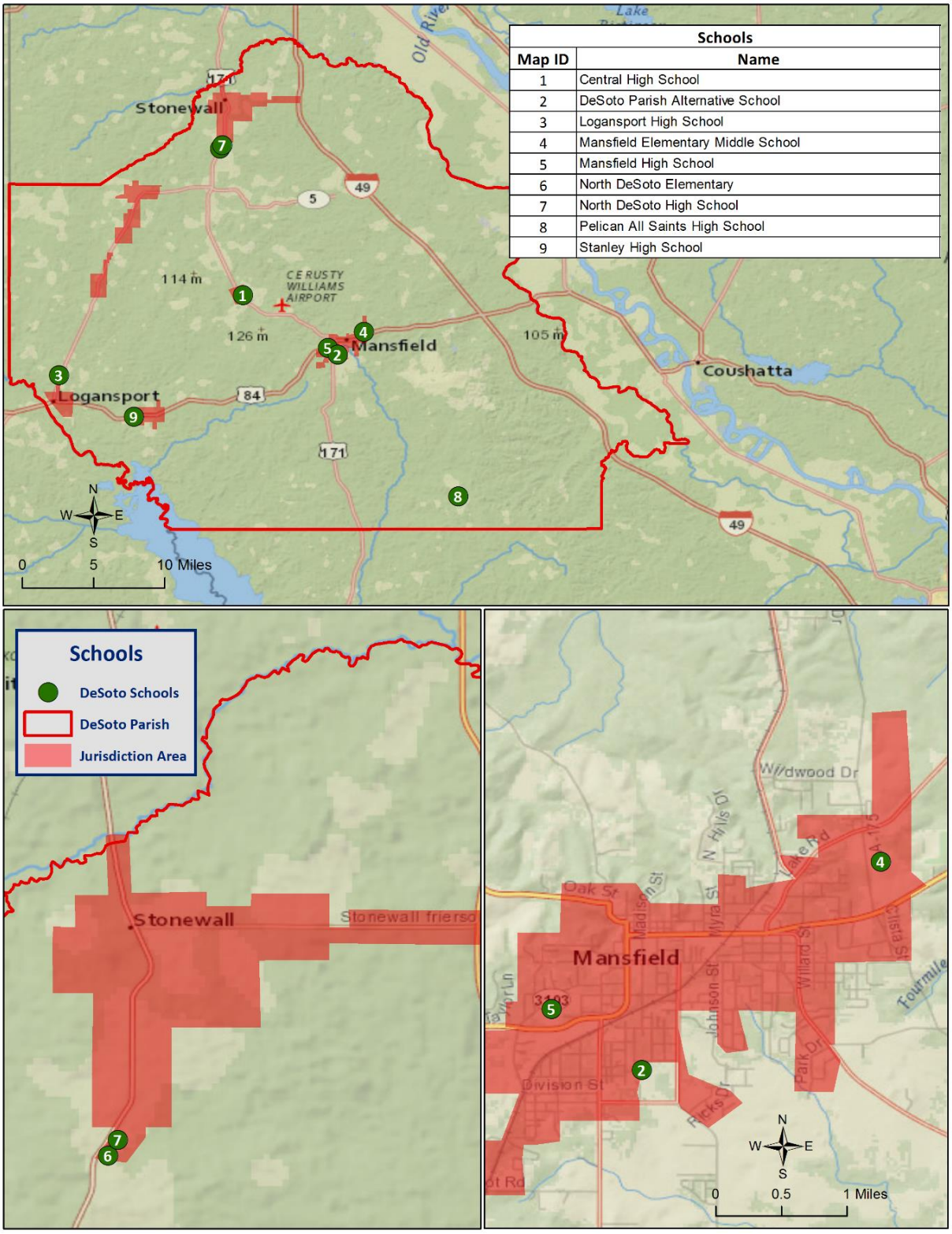


Figure 2-5: School Buildings in DeSoto Parish

Future Development Trends

DeSoto Parish experienced a small growth in population and housing between the years of 2000 and 2014, growing from a population of 25,502 with 11,204 housing units in 2000 to a population of 27,142 with 12,322 housing units in 2014. This growth was largely in the unincorporated areas of DeSoto Parish, and in the incorporated area of Grand Cane from the years 2000 to 2010, and in the incorporated areas of Stonewall from 2010 to 2014. 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 2014:

Table 2-7: Population Growth Rate for DeSoto Parish

Total Population	DeSoto Parish	DeSoto Parish (Unincorporated)	Grand Cane	Keachi	Logansport
1-Apr-00	25,502	15,028	215	311	1,616
1-Apr-10	26,734	17,190	243	296	1,560
1-Jul-14	27,142	17,391	244	294	1,573
Population Growth between 2000 – 2010	4.8%	14.4%	13.0%	-4.8%	-3.5%
Average Annual Growth Rate between 2000 – 2010	0.5%	1.4%	1.3%	-0.5%	-0.3%
Population Growth between 2010 – 2014	1.5%	1.2%	0.4%	-0.7%	0.8%
Average Annual Growth Rate between 2010 – 2014	0.38%	0.29%	0.10%	-0.17%	0.21%

Table 2-8: Population Growth Rate for DeSoto Parish (Continued)

Total Population	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall
1-Apr-00	188	5,937	366	150	1,691
1-Apr-10	157	5,015	347	107	1,819
1-Jul-14	158	5,006	349	108	2,019
Population Growth between 2000 – 2010	-16.5%	-15.5%	-5.2%	-28.7%	7.6%
Average Annual Growth Rate between 2000 – 2010	-1.6%	-1.6%	-0.5%	-2.9%	0.8%
Population Growth between 2010 – 2014	0.6%	-0.2%	0.6%	0.9%	11.0%
Average Annual Growth Rate between 2010 – 2014	0.16%	-0.04%	0.14%	0.23%	2.75%

Table 2-9: Housing Growth Rate for DeSoto Parish

Total Housing Units	DeSoto Parish	DeSoto Parish (Unincorporated)	Grand Cane	Keachi	Logansport
1-Apr-00	11,204	6,842	107	147	787
1-Apr-10	12,290	7,926	124	146	746
1-Jul-14	12,322	7,803	137	156	870
Housing Growth between 2000 – 2010	9.7%	15.8%	15.9%	-0.7%	-5.2%
Average Annual Growth Rate between 2000 – 2010	1.0%	1.6%	1.6%	-0.1%	-0.5%
Housing Growth between 2010 – 2014	0.3%	-1.6%	10.5%	6.8%	16.6%
Average Annual Growth Rate between 2010 – 2014	0.1%	-0.4%	2.6%	1.7%	4.2%

Table 2-10: Housing Growth Rate for DeSoto Parish (Continued)

Total Housing Units	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall
1-Apr-00	84	2,298	166	63	710
1-Apr-10	85	2,228	191	59	785
1-Jul-14	106	2,140	260	64	786
Housing Growth between 2000 – 2010	1.2%	-3.0%	15.1%	-6.3%	10.6%
Average Annual Growth Rate between 2000 – 2010	0.1%	-0.3%	1.5%	-0.6%	1.1%
Housing Growth between 2010 – 2014	24.7%	-3.9%	36.1%	8.5%	0.1%
Average Annual Growth Rate between 2010 – 2014	6.2%	-1.0%	9.0%	2.1%	0.0%

As shown in the previous tables, DeSoto Parish has experienced slight growth in both population and housing units. Housing growth rates grew at 1% annually from 2000 to 2010, and at 0.1% annually from 2010 to 2014. Population growth rates for the parish were slightly lower at 0.5% annually from 2000 to 2010, and 0.38% annually from 2010 to 2014. From 2000 to 2010, the unincorporated area of DeSoto Parish had the largest increase in population overall at 14.4%, followed by the incorporated area of Grand Cane at 13%. The incorporated area of Stanley had the largest decrease in population during this time period at -28.7%. From 2010 to 2014, Stonewall experienced the largest growth in population at 11% followed by the unincorporated area of DeSoto Parish at 1.2%.

The incorporated area of Grand Cane experienced the largest increase in housing units from 2000 to 2010 at 15.9%, followed by the unincorporated area of DeSoto Parish at 15.8%. From 2010 to 2014, South Mansfield experienced the largest increase in housing units at 36.1% followed by Logansport at 16.6%. The incorporated areas of Mansfield experienced the largest decline in housing units during this time period.

Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2019 and 2024). Yearly population and housing growth rates were applied to parish inventory assets for composite flood and tropical cyclones. Based on a review of available information, it is assumed that population and housing units will continue to grow slightly within DeSoto Parish from the present until 2024. A summary of estimated future impacts is shown in the table on the following page. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%. No changes in development have impacted the community's vulnerability since the plan's last update.

Table 2-11: Estimated Future Impacts, 2019-2024
(Source: Hazus, US Census Bureau)

Hazard / Impact	Total in Parish (2014)	Hazard Area (2014)	Hazard Area (2019)	Hazard Area (2024)
Flood Damage				
Structures	12,330	2,608	2,616	2,623
Value of Structures	$3,485,668,406	$737,252,344	$778,154,820	$812,504,719
# of People	27,246	5,763	5,873	5,964
Tropical Cyclone Damage				
Structures	12,330	12,330	12,370	12,402
Value of Structures	$3,485,668,406	$3,485,668,406	$3,679,051,947	$3,841,455,441
# of People	27,246	27,246	27,769	28,196

Land Use

The DeSoto Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 5% of the parish's land use. Forested land is the largest category at 290,557 acres, accounting for 62% of parish land. At 93,048 acres, wetlands account for 20% of parish lands, while 54,210 acres of agricultural areas account for 12% of parish lands. The parish also consists of 6,769 acres of water areas, accounting for 1% of all parish lands.

Table 2-12: DeSoto Parish Land Use
(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	54,210	12%
Wetlands	93,048	20%
Forest Land (not including forested wetlands)	290,557	62%
Urban/Development	22,412	5%
Water	6,769	1%

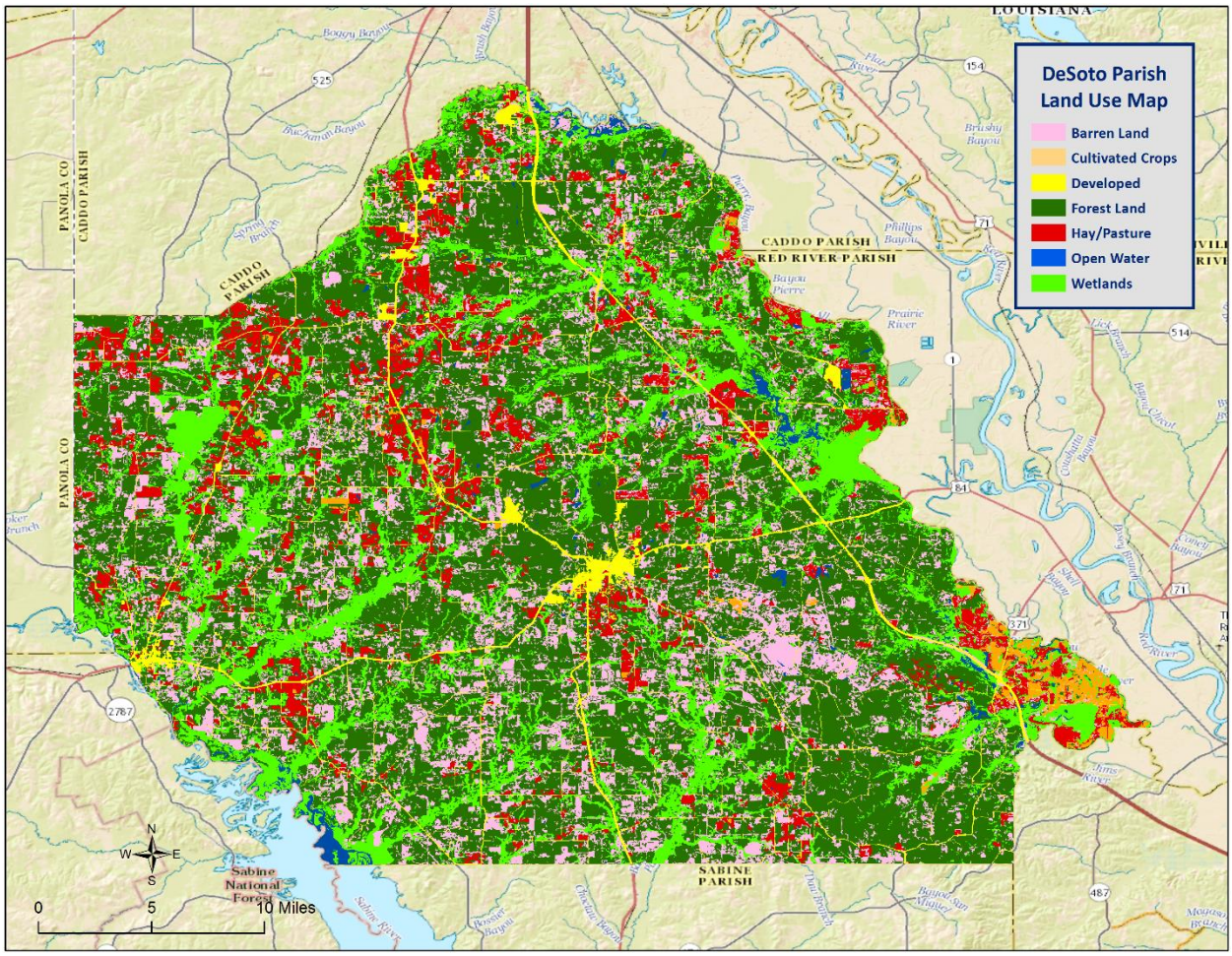


Figure 2-6: DeSoto Parish Land Use Map
(Source: USGS Land Use Map)

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. Drought can occur anywhere, triggered by changes in the local-to-regional-scale atmospheric circulation over an area, or by broader-scale circulation variations such as the expansion of semi-permanent oceanic high-pressure systems or the stalling of an upper-level atmospheric ridge in place over a region. The severity of a drought depends upon the degree and duration of moisture deficiency, as well as the size of the affected area. Periods of drought also tend to be associated with other hazards, such as wildfires and/or heat waves. Lastly, drought is a slow onset event, causing less direct—but tremendous indirect—damage. Depletion of aquifers, crop loss, and livestock and wildlife mortality rates are examples of direct impacts. Since the groundwater found in aquifers is the source of about 38% of all county and city water supplied to households (and comprises 97% of the water for all rural populations that are not already supplied by cities and counties), droughts can potentially have direct, disastrous effects on human populations. The indirect consequences of drought, such as unemployment, reduced tax revenues, increased food prices, reduced outdoor recreation opportunities, higher energy costs as water levels in reservoirs decrease and consumption increases, and water rationing, are not often fully known. This complex web of impacts causes drought to affect people and economies well beyond the area physically experiencing the drought.

This hazard is often measured using the Palmer Drought Severity Index (PDSI, also known operationally as the Palmer Drought Index). The PDSI, first developed by Wayne Palmer in a 1965 paper for the U.S. Weather Bureau, measures drought through recent precipitation and temperature data with regard to a basic supply-and-demand model of soil moisture. It is most effective in long-term calculations. Three other indices used to measure drought are the Palmer Hydrologic Drought Index (PHDI), the Crop Moisture Index (CMI), which is derived from the PDSI, and the Keetch-Byram Drought Index (KBDI), created by John Keetch and George Byram in 1968 for the U.S. Forest Service. The KBDI is used mainly for predicting the likelihood of wildfire outbreaks. As a compromise, the PDSI is used most often for droughts since it is a medium-response drought indicator. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. *Table 2-13* displays the range and Palmer classifications of the PDSI index. *Figure 2-7* 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 normal conditions exist in most of DeSoto Parish at the time this plan went to publication. However, the southeastern corner of the parish is experiencing abnormally dry conditions (*Figure 2-7*).

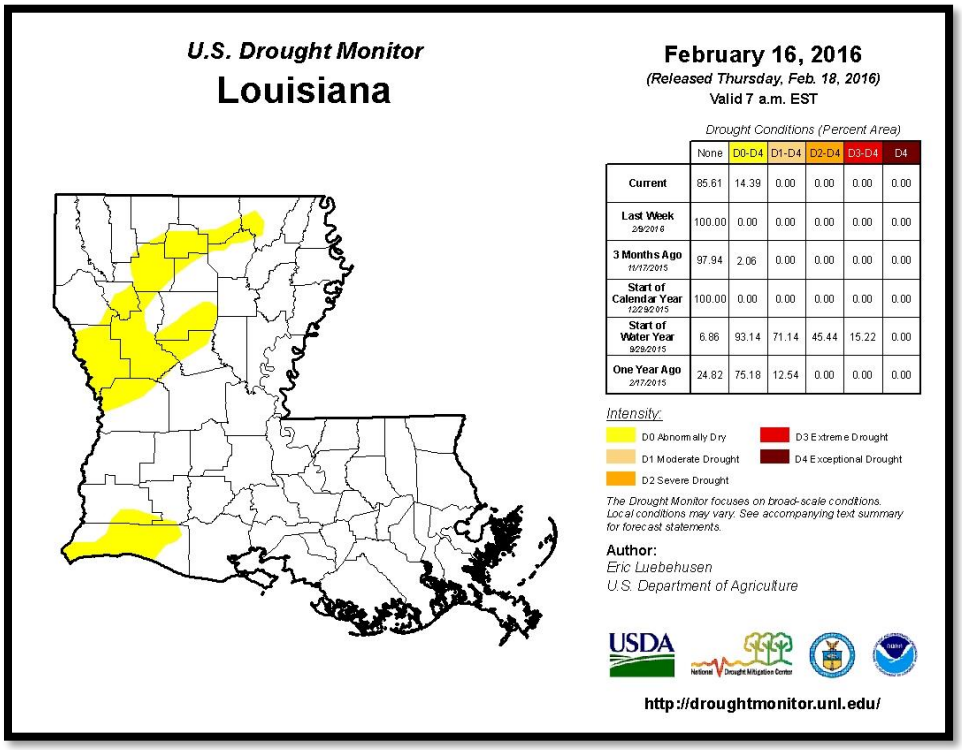


Figure 2-7: United States Drought Monitor for the State of Louisiana and its Parishes (Source: The National Drought Mitigation Center)

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 DeSoto Parish is on the agricultural community.

Previous Occurrences / Extents

The SHELDUS database reports a total of two drought events occurring within the boundaries of DeSoto Parish between the years of 1990 to 2015. Below, *Table 2-14* identifies the date of occurrence, estimated crop damage, and severity of the events that have occurred in DeSoto Parish. Based on previous occurrences, and in accordance with the Palmer Drought Index, the worst case scenario for drought in DeSoto Parish would be a severe drought event.

Table 2-14: Drought Events with Crop Damage Totals for DeSoto Parish
(Source: SHELDUS)

Date	Crop Damage	Palmer Classification
May 1996	$1,508,834	Severe Drought
June 1998	$1,281,497	Severe Drought

Frequency / Probability

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

Estimated Potential Losses

According to the SHELDUS database, there have been two drought events that have caused some level of crop damage. The total agricultural damage from these events is $2,790,331, with an average cost of $1,395,166 per drought event. When annualizing the total cost over the 25-year record, total annual losses based on drought is estimated to be $111,613. *Table 2-15* presents an analysis of agricultural exposure that is susceptible to drought by major crop type for DeSoto Parish.

Table 2-15: Agricultural Exposure by Crop Type for Droughts in DeSoto Parish
(Source: LSU Ag Center 2014 Parish Totals)

Agricultural Exposure by Type for Drought						
Forestry	**Hay**	**Cotton**	**Blueberries**	**Soybeans**	**Tomatoes**	**Total**
$31,832,716	$1,632,000	$645,265	$486,750	$377,071	$135,000	$35,108,802

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

Earthquakes

An earthquake is a sudden motion or trembling of the Earth caused by an abrupt release of stored energy in the rocks beneath the Earth's surface. The energy released results in vibrations which are known as seismic waves. Ground motion from seismic waves is expressed as peak ground acceleration (PGA), the fastest measured change in speed for a particle at ground level that is moving because of an earthquake. PGA is commonly measured as a percentage of acceleration due to Earth's gravity (%g). This measurement is relied upon to determine seismic load engineering design and construction requirements. Earthquakes are typically described in terms of magnitude and intensity. Magnitude is the measure of the amplitude of the seismic wave and is often expressed by the Richter scale, and intensity is a measure of how strong the shock was felt at a particular location, indexed by the Modified Mercalli Intensity (MMI) scale. The Richter scale is a logarithmic measurement whereby an increase in the scale by one whole number represents a tenfold increase in measured ground motion of the earthquake (and an increase in energy released of more than 30 times). An increase by two whole numbers represents a 102 (or 100-fold) increase in ground motion, and thus more than 302 (or 900) times the energy released. On the next page, *Table 2-16* shows the rough correlation between the Richter scale, PGA, and the MMI. The relationship between these is approximate and depends upon such specifics as the depth of the focus (the location of the actual rock movement) and distance from the epicenter (the location on the Earth's surface above the earthquake focus) of the earthquake.

Table 2-16: Comparison of Earthquake Magnitudes for PGA, Richter, and MMI
(Source: USGS Earthquake Hazards Program)

COMPARISON OF EARTHQUAKE METRICS			
PGA (%g)	**Magnitude (Richter)**	**Intensity (MMI)**	**Description (MMI)**
<0.17	1.0 - 3.0	I	**I**. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	**II**. Felt only by a few persons at rest, especially on upper floors of buildings. **III**. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	**IV**. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rock noticeably. **V**. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	**VI**. Felt by all. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. **VII**. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

COMPARISON OF EARTHQUAKE METRICS			
PGA (%g)	**Magnitude (Richter)**	**Intensity (MMI)**	**Description (MMI)**
34 - 124	6.0 - 6.9	VII - IX	**VIII**. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. **IX**. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	**VIII** or higher	**X**. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **XI**. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. **XII**. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

The system of subsidence faults in southern Louisiana developed due to accelerated land subsidence and rapid sediment deposition from the Mississippi River. The system stretches across the southern portion of the state from Beauregard Parish in the west to West Baton Rouge Parish in the east and it includes every parish south of this line. This system is thought to be responsible for many of the recorded earthquakes from 1843 to the present. All of the earthquakes that occurred over this period of time were of low magnitude, resulting mostly in limited property damage (such as broken windows, damaged chimneys, and cracked plaster). While faults throughout the northwestern parishes are thought to be inactive, the New Madrid seismic zone lies just to the north of Louisiana and originates in the region of New Madrid, Missouri. The magnitude of historic earthquakes originating in the New Madrid seismic zone is far greater than that generated by the subsidence fault system in coastal Louisiana. A significant seismic event from the New Madrid seismic zone is more likely to have a greater impact on Louisiana than a seismic event from the subsidence fault system.

Location

An earthquake event is a geological hazard that occurs along fault lines. DeSoto Parish has no fault lines running directly through the parish borders; however, there are several fault lines located in neighboring parishes (*Figure 2-8*).

Previous Occurrences / Extents

Both the SHELDUS and National Climatic Data Center report no earthquake events occurring within the boundaries of DeSoto Parish between the years of 1990 – 2015. The National Oceanic and Atmospheric Administration's National Geophysical Data Center reports no earthquake event occurring within the boundaries of DeSoto Parish between the years 1811 – 2014. *Figure 2-8* displays the location and intensity of each earthquake event in DeSoto Parish and surrounding parishes. Based on the previous earthquake events in the neighboring parishes, an earthquake with an intensity level of MMI 3 could be felt within the planning area. This intensity of an earthquake would be noticeable by those indoors, but very few people would recognize it as an earthquake.

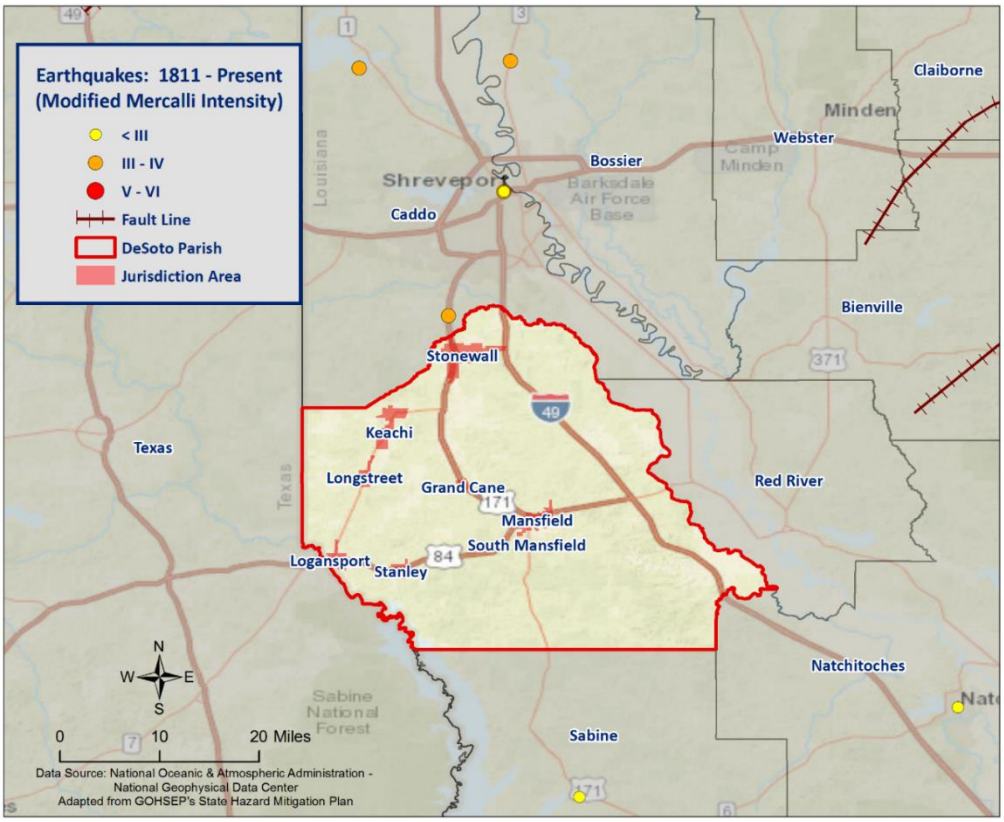


Figure 2-8: Location and Intensity (MMI) of Earthquakes in DeSoto Parish

Frequency / Probability

Earthquakes are an extremely rare occurrence in the State of Louisiana and DeSoto Parish, with no occurrences of an earthquake event within the boundaries of the parish from the years 1811 – 2014. Based on this historical record and Louisiana's State Hazard Mitigation Plan, it is determined that an earthquake event has less than a 1% annual chance of occurrence in the DeSoto Parish planning area and they have no impact on the parish. As a result, earthquakes are discounted and not carried forward into risk assessment.

Extreme Heat

There is no operational definition for defining heat or a heat wave. Heat waves are the consequence of the same weather pattern as drought, and therefore both hazards often occur concurrently. A heat wave is an extended period of oppressive and above normal temperatures over a given period of time. The World Meteorological Organization recommends the declaration of a heat wave when the daily maximum temperature exceeds the average maximum temperatures by 9 °F and lasts for a period of at least five days.

However, temperature alone is insufficient to describe the stress placed on humans (as well as flora and fauna) in hot weather. It is crucial to consider the effect of relative humidity since it is essential to the body's ability to perspire and cool. Once air temperature reaches 95 °F, perspiration becomes a very significant biophysical mechanism to ensure heat loss. Perspiration is ineffective as a cooling mechanism if the water cannot evaporate (i.e., sweating in high relative humidity is reduced as compared to during dry conditions). To communicate this relationship between temperature and humidity, the National Weather Service (NWS) developed the Heat Index (HI), which provides a warning system based on a combination of air temperature and relative humidity. The HI is presented in *Table 2-17* and *Table 2-18* summarizes the HI risk levels and protective measures. The NWS devised the index for shady, light wind conditions, and thus advises that the HI value can be increased by as much as 15 °F if a person is in direct sunlight with strong, hot winds present.

Most heat disorders (e.g., sunburn, heat cramps, heat exhaustion, and heat stroke) occur because the victim has been overexposed to heat, or has over-exercised in relation to their age and physical condition. Other circumstances that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Seniors and children are most at risk from adverse heat effects.

Extreme heat can also damage roads, bridges, utilities, and railroads. Extreme heat can cause pavement to soften, creating the buckling of roads and highways, which can result in potholes and rutting. These damaged roads can create hazardous conditions, causing motorists to find alternate transportation routes. Old water and sewer lines can deteriorate, increasing the likelihood of line ruptures during extreme heat. The demands on water supplies can result in water rationing, shortages, and restrictions. Extreme heat can also cause strain on several power grids, causing people to minimize the consumption of power during the hottest parts of the day due to overheating. The overwhelming demand of excess electrical power usage can also cause a strain on power capacities, resulting in blackout and /or brown outs. vehicles can overheat, and tires will deteriorate. High temperatures can be partially responsible for the expansion, buckling, or deflection of rails requiring track repairs or speed restrictions to avoid derailments.

Extreme heat can also be detrimental to the agricultural community. Extreme heat stress can reduce plant photosynthetic and transpiration efficiencies and negatively impact plant root development, which collectively can negatively impact yield. Heat injury in plants includes scalding and scorching of leaves and stems, sunburn on fruits and stems, leaf drop, rapid leaf death, and reduction in growth and yield. Extreme heat is particularly impactful when extreme heat is accompanied by drought conditions. The reduced moisture in the soil further exacerbates the effects of extreme temperatures.

The agrarian issues associated with extreme heat are relevant throughout the state, but are particularly significant in rural and agricultural parishes. A reduction of crop yield will diminish the incomes of farmers and producers in the area. If the reduced crop yield lasts over an extended period of time, the resulting reduction in disposable income could have a negative impact on businesses in the affected communities. People wouldn't have any extra money to spend at local establishments, and businesses would be forced to close for good.

Table 2-17: Heat Index Advisor Based on Air Temperature (°F) and Relative Humidity (Source: National Weather Service)

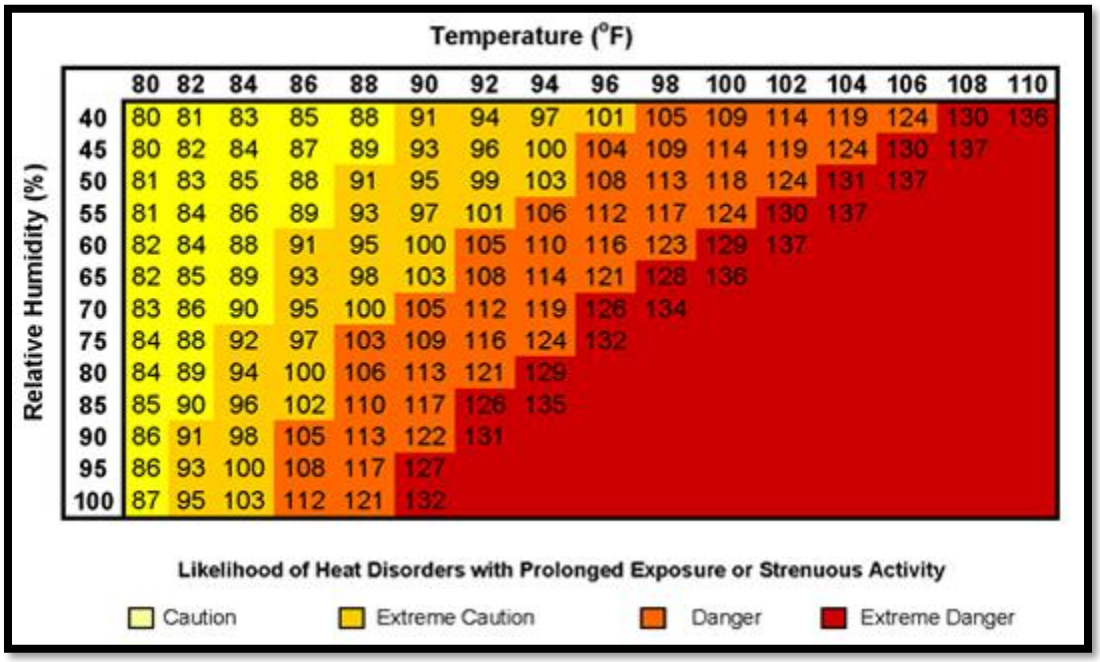


Table 2-18: Summary of Heat Index Risk Levels with Protective Measures (Source: National Weather Service)

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning.
91°F to 103°F	Moderate	Implement precautions and heighten awareness.
103°F to 115°F	High	Additional precautions to protect workers.
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures.

Location

Extreme heat typically impacts a region and not one specific parish or jurisdiction. Because extreme heat is a climatological based hazard and has the same probability of occurring in DeSoto Parish as all of the adjacent parishes, the entire planning area for DeSoto Parish is equally at risk for extreme heat.

Previous Occurrences / Extents

The SHELDUS database reports a total of two significant extreme heat events occurring within the boundaries of DeSoto Parish between the years of 1990 to 2015 that have caused loss of life and/or injury or crop damage. *Table 2-19* provides an overview of extreme heat events that have impacted the DeSoto Parish planning area since 2010. Based on historical data, the worst case scenario for DeSoto Parish involving extreme heat would be a high risk level event on the HI scale with temperatures ranging from 103 °F to 115 °F.

Table 2-19: Previous Occurrences of Extreme Heat in DeSoto Parish (Source: NOAA)

Date	Temperature (°F)
Aug 8, 2011	103
August 14, 2015	103

Frequency / Probability

Based on the geographical location of the State of Louisiana, and DeSoto Parish in particular, extreme heat events occur frequently. The probability of occurrence is estimated at approximately 8%.

Estimated Potential Losses

According to the SHELDUS database, crop damage due to extreme heat in DeSoto Parish has totaled approximately $22,445 since 1990. To estimate the potential losses of an extreme heat event on an annual basis, the total damages recorded for an extreme event is divided by the total number of years of available extreme heat data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $898. The following table, based on the 2010 Census data, provides an estimate of potential crop losses for DeSoto Parish:

Table 2-20: Estimated Annual Property Losses in DeSoto Parish from Extreme Heat

Estimated Annual Potential Losses from Extreme Heat for DeSoto Parish				
Unincorporated DeSoto Parish (97.3% of Parish land)	Grand Cane (0.1% of Parish land)	Keachi (0.5% of Parish land)	Logansport (0.3% of Parish land)	Longstreet (0.2% of Parish land)
$874	$1	$4	$2	$2

Table 2-21: Estimated Annual Property Losses in DeSoto Parish from Extreme Heat (Continued)

Estimated Annual Potential Losses from Extreme Heat for DeSoto Parish			
Mansfield (0.4% of Parish land)	South Mansfield (0.1% of Parish land)	Stanley (0.2% of Parish land)	Stonewall (0.8% of Parish land)
$4	$1	$2	$8

There have been no reported injuries or deaths as a direct result of extreme heat in DeSoto Parish.

Vulnerability

See Appendix C for parish and municipality agricultural exposure to extreme heat hazards.

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.

For purposes of this assessment, ponding, flash flood, and urban flooding are considered to be flooding as a result of storm water from heavy precipitation thunderstorms

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

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

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

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

Floods are measured mainly by probability of occurrence. A 10-year flood event, for example, is an event of small magnitude (in terms of stream flow or precipitation) but with a relatively high annual probability of recurrence (10%). A 100-year flood event is larger in magnitude, but it has a smaller chance of recurrence (1%). A 500-year flood is significantly larger than both a 100-year event and a 10-year event, but it has a lower probability than both to occur in any given year (0.2%). It is important to understand that an X-year flood event does not mean an event of that magnitude occurs only once in X years. Instead, it means that on average, we can expect a flood event of that magnitude to occur once every X years. Given that such statistical probability terms are inherently difficult for the general population to understand, the Association of State Floodplain Managers (ASFPM) promotes the use of more tangible expressions of flood probability. As such, the ASFPM also expresses the 100-year flood event as having a 25% chance of occurring over the life of a 30-year mortgage.

It is essential to understand that the magnitude of an X-year flood event for a particular area depends on the source of flooding and the area's location. The size of a specific flood event is defined through historic data of precipitation, flow, and discharge rates. Consequently, different 100-year flood events can have very different impacts. The 100-year flood event in two separate locations have the same likelihood to occur, but they do not necessarily have the same magnitude. For example, a 100-year event for the Mississippi River means something completely different in terms of discharge values (ft^3/s) than for the Amite River. Not only are the magnitudes of 100-year events different between rivers, they can be different along any given river. A 100-year event upstream is different from one downstream due to the variation 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 temporally fluctuate. 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 2-9*.

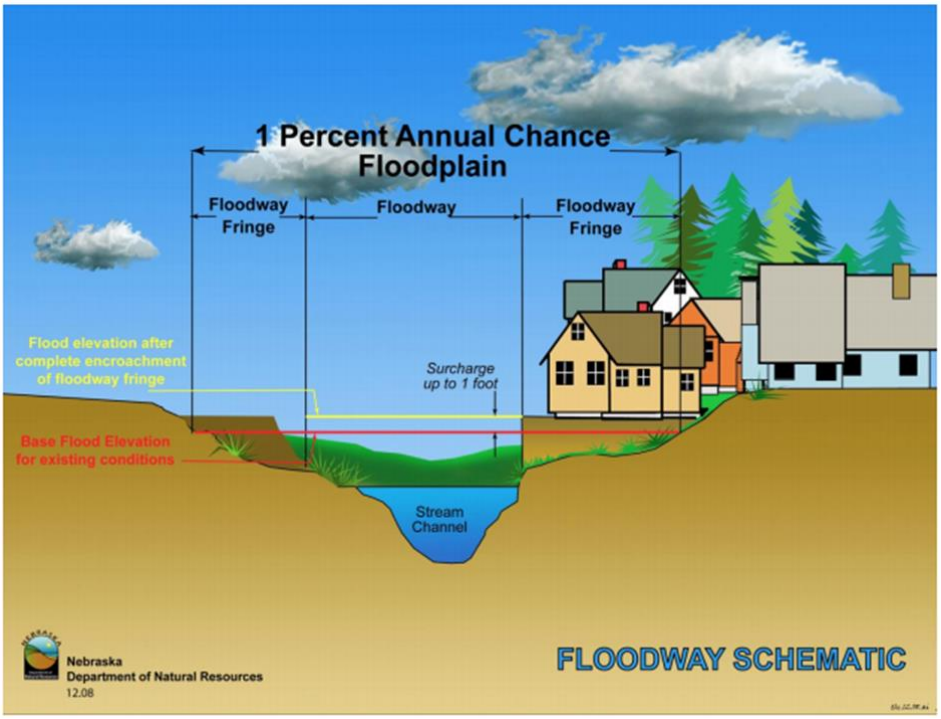


Figure 2-9: Schematic of 100-Year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.
(Source: Nebraska Department of Natural Resources)

A SFHA is the land area covered by the floodwaters of the base flood (red line in *Figure 2-9*), where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Property Damage

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

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

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

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

Repetitive Loss Properties

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

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

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

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

Figures regarding repetitive loss structures for DeSoto Parish are provided in the table below:

Table 2-22: Repetitive Loss Structures for DeSoto Parish

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
DeSoto Parish (Unincorporated)	2	2	0	0	6	$116,143	$19,357
Grand Cane	0	0	0	0	0	$0	$0
Keachi	0	0	0	0	0	$0	$0
Logansport	0	0	0	0	0	$0	$0
Longstreet	0	0	0	0	0	$0	$0
Mansfield	2	1	0	1	4	$198,067	$49,517
South Mansfield	0	0	0	0	0	$0	$0
Stanley	0	0	0	0	0	$0	$0
Stonewall	0	0	0	0	0	$0	$0
Total	**4**	**3**	**0**	**1**	**10**	**$314,210**	**$31,431**

All 4 repetitive loss structures were able to be geocoded in order to provide an overview of where the repetitive loss structures were located throughout the parish. *Figure 2-10* shows the approximate location of the 4 structures, while *Figure 2-11* shows where the highest concentration of repetitive loss structures are located. Through the repetitive loss map, it is clear that the primary concentrated area of repetitive loss structures is the incorporated area of Mansfield.

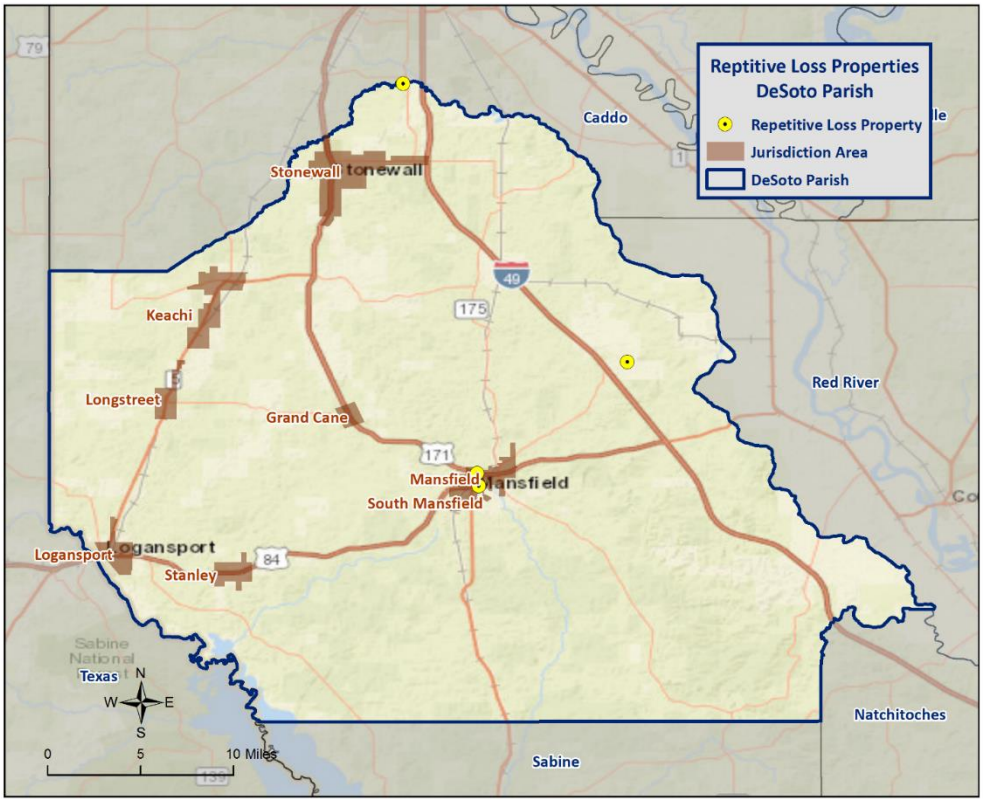


Figure 2-10: Repetitive Loss Properties in DeSoto Parish

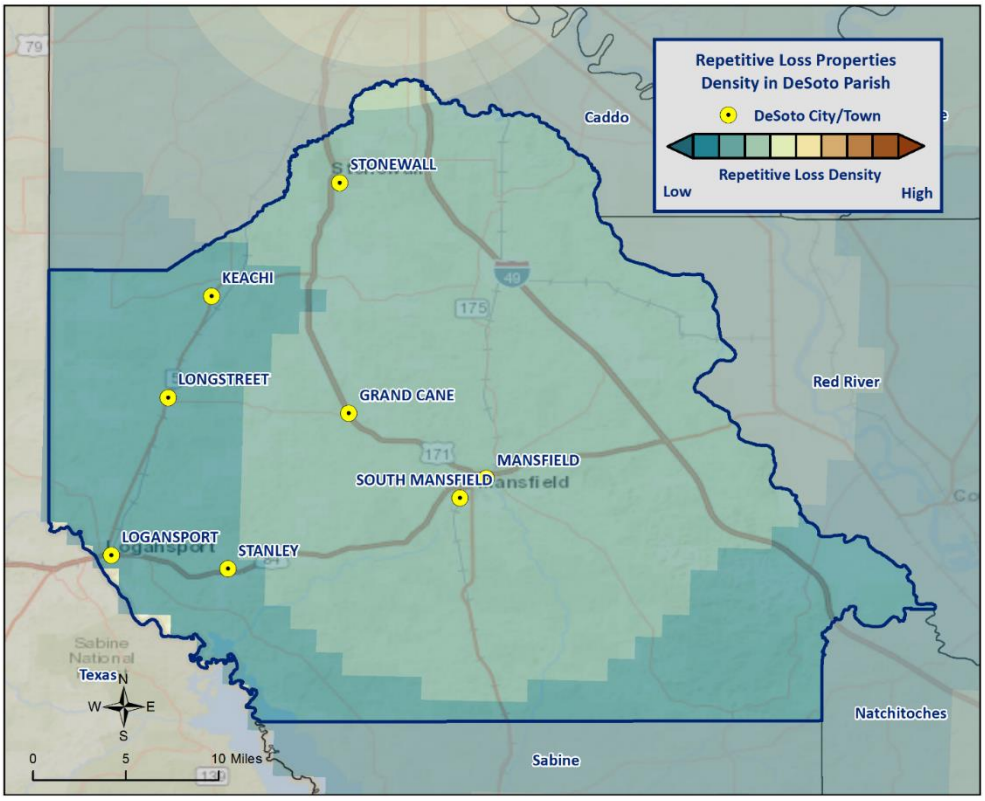


Figure 2-11: Repetitive Loss Property Densities in DeSoto Parish

National Flood Insurance Program

Flood insurance statistics indicate that DeSoto Parish has 78 flood insurance policies with the NFIP, with total annual premiums of $69,588. DeSoto Parish and the incorporated areas of Grand Cane, Logansport, Mansfield, South Mansfield, and Stonewall are participants in the NFIP. The incorporated area of Keachi, Longstreet, and Stanley do not participate in the NFIP. All of these jurisdictions are very limited when it comes to personnel, funding, and resources needed to administer the NFIP program. These jurisdictions have determined that participation in the NFIP has little or no large benefit or impact for the residents or the town's economy. DeSoto Parish and each of the incorporated jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, and will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for DeSoto Parish are provided in the tables to follow.

DeSoto Parish and the communities listed above will continue their active participation in the NFIP through various education and outreach activities. These activities will include community outreach on the availability of flood insurance within the parish and incorporated municipalities, as well as flood safe building initiatives throughout the parish. The Parish Floodplain Manager will continue to work in coordination with each community to ensure floodplain management regulations are adopted and enforced. The Parish Floodplain Manager and floodplain managers for the jurisdictions of Grand Cane, Logansport, Mansfield, and South Mansfield will continue to seek and attend floodplain management and NFIP continuing education.

Table 2-23: Summary of NFIP Policies for DeSoto Parish

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
DeSoto Parish (Unincorporated)	57	$8,274,200	$41,463	17	$202,140
Grand Cane	0	$0	$0	0	$0
Keachi	0	$0	$0	0	$0
Logansport	2	$135,500	$1,405	1	$938
Longstreet	0	$0	$0	0	$0
Mansfield	15	$3,461,100	$23,498	10	$227,426
South Mansfield	1	$210,000	$317	0	$0
Stanley	0	$0	$0	0	$0
Stonewall	3	$1,255,000	$2,905	0	$0
Total	**78**	**$13,335,800**	**$69,588**	**28**	**$430,504**

*While the Village of Grand Cane, the Town of Keachi, the Village of Longstreet, and Village of Stanley either do not participate in the NFIP or do not have any active NFIP policies, the parish will continue to promote NFIP participation through education and outreach.

Table 2-24: Summary of Community Flood Maps for DeSoto Parish

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220363#	DeSoto Parish*	1/10/1978	5/1/1987	12/16/2003 (L)	5/1/1987	No
220291#	Grand Cane	5/2/1975	3/23/1982	12/16/2003 (M)	3/23/1982	No
220336#	Logansport	8/15/1975	1/1/1992	12/16/2003 (L)	1/1/1992	No
-	Longstreet	-	-	-	Not in NFIP	-
220337#	Mansfield	9/19/1975	7/4/1988	12/16/2003	7/4/1988	No
220313#	South Mansfield	3/26/1976	2/1/1987	12/16/2003 (L)	2/1/1987	No
-	Stanley	-	-	-	Not in NFIP	-
220411#	Stonewall	-	12/16/2003	12/16/2003	6/21/2006	No
220297#	Keachi	11/12/1976	12/16/2003	12/16/2003	Not in NFIP	No

According to the Community Rating System (CRS) list of eligible communities, DeSoto Parish and its jurisdictions do not participate in the CRS.

Threat to People

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

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

Flooding in DeSoto 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 DeSoto Parish experiences.

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

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

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

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

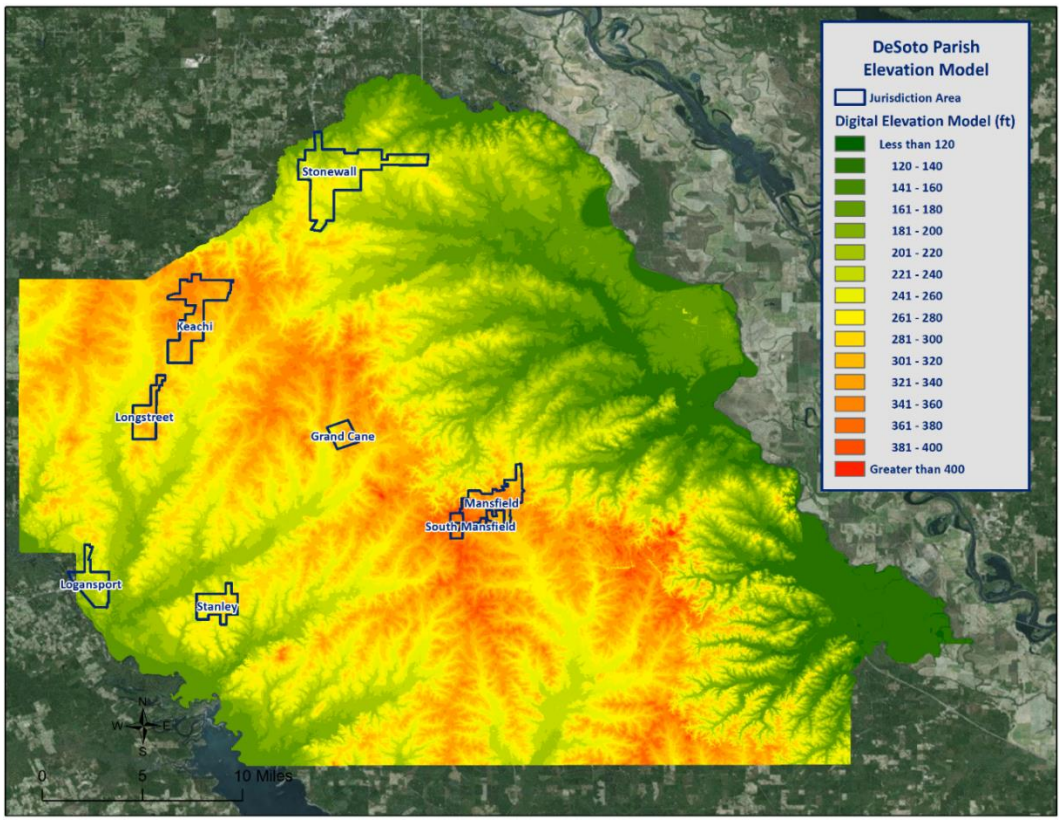


Figure 2-12: Elevation throughout DeSoto Parish

Looking at the digital elevation model (DEM) in the figure above for DeSoto Parish is instructive in visualizing where the low lying and high risk areas are for the parish. Elevations in the parish range from less than 120 feet to more than 400 feet. The highest elevations in the parish are approximately 400 feet, located in the unincorporated areas of the parish. The incorporated areas range in elevation from 213 feet to 361 feet, with Logansport and Stonewall averaging 213 feet, Grand Cane averaging 299 feet, Stanley averaging 312 feet, Longstreet averaging 322 feet, Keachi and Mansfield averaging 335 feet, and South Mansfield averaging 361 feet.

Location

DeSoto Parish has experienced significant flooding in its history and can expect more in the future. There are two primary watersheds within DeSoto Parish. The western half of the parish drains to the Sabine River and the eastern half drains to Bayou Pierre. Each watershed possesses unique flooding characteristics due to topography, vegetative cover, soil type and the like. However, riverine flooding from the Sabine River and Toledo bend Reservoir poses the largest flood hazard due to the amount of development around and near the river and reservoir.

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

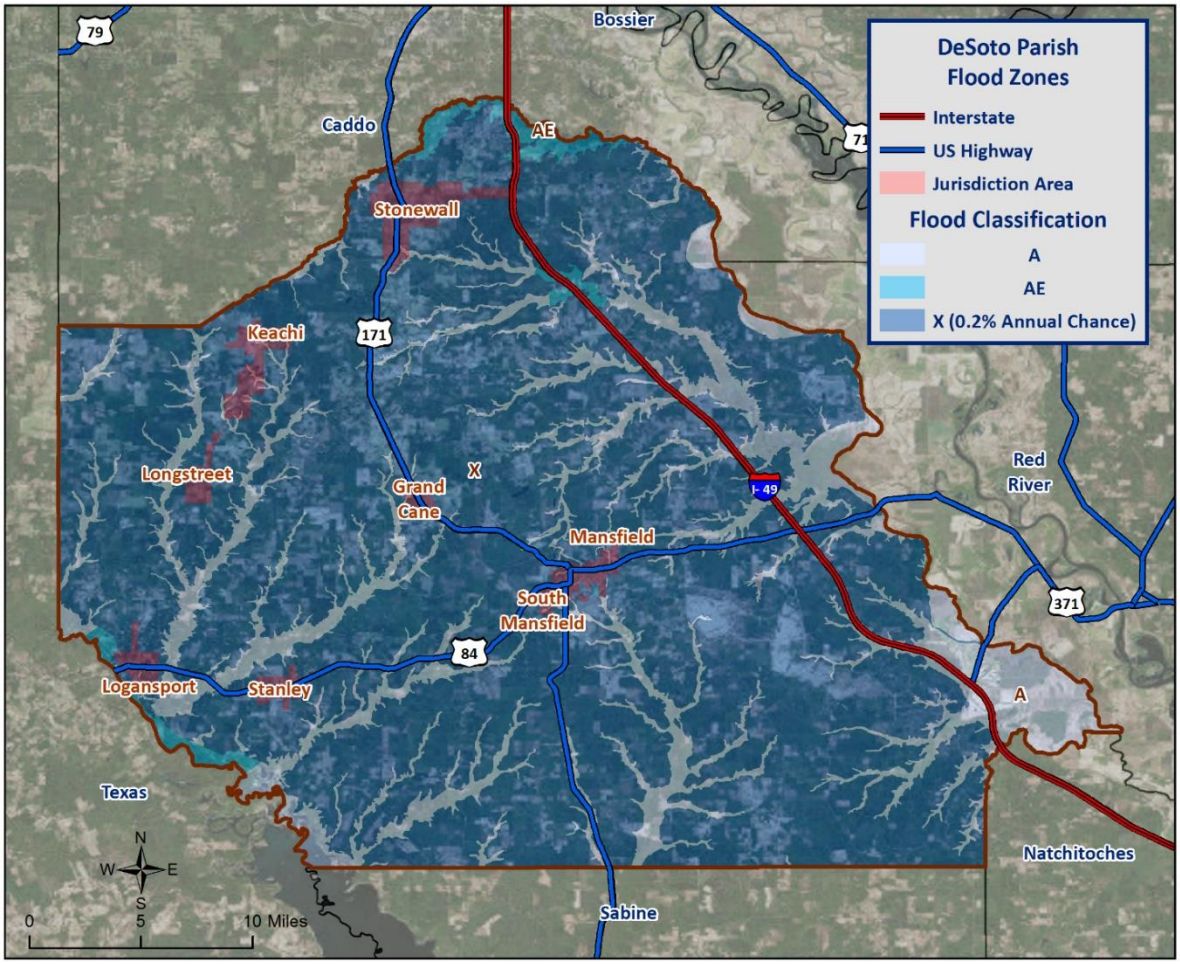


Figure 2-13: DeSoto Parish Areas within the Flood Zones

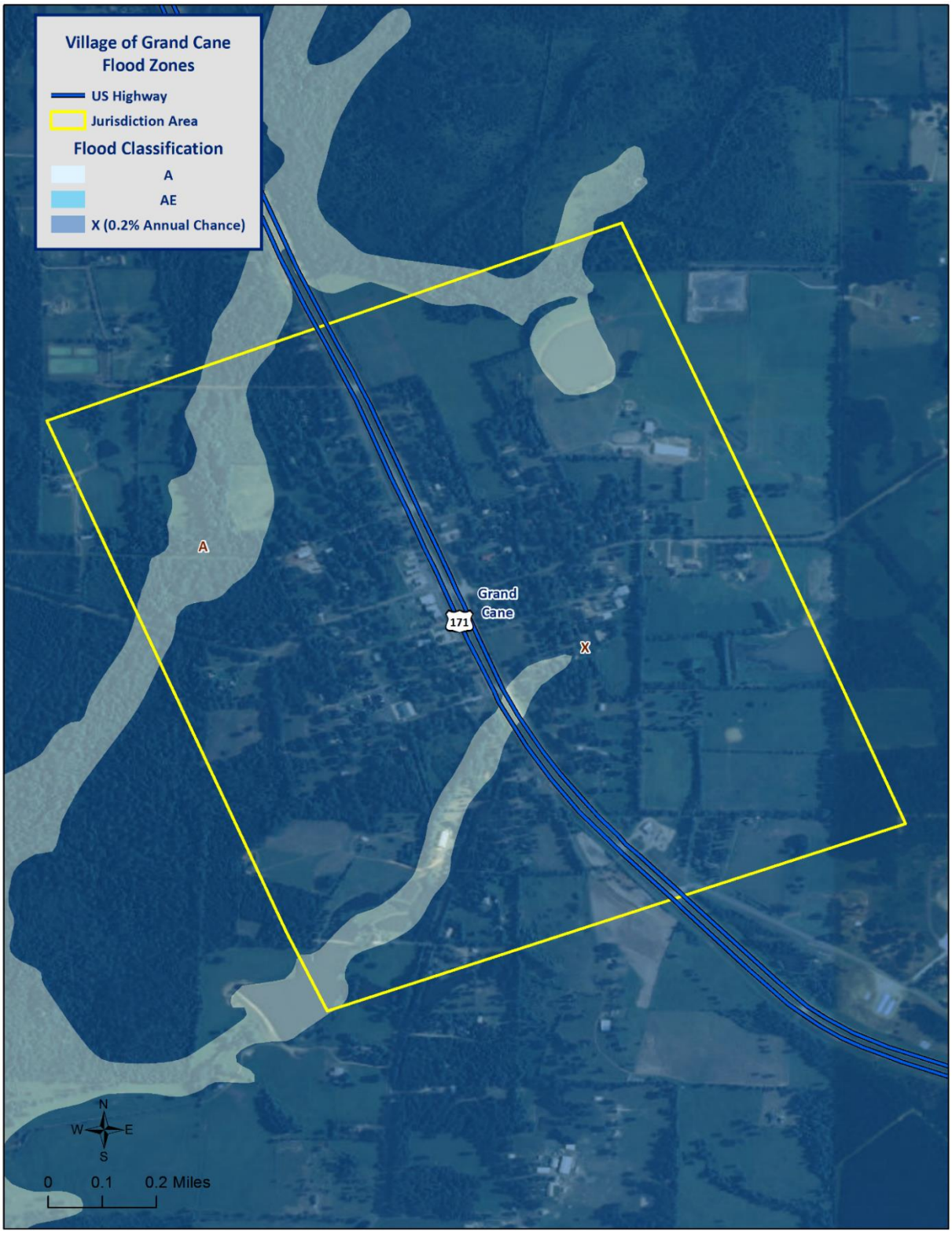


Figure 2-14: Village of Grand Cane Areas within the Flood Zones

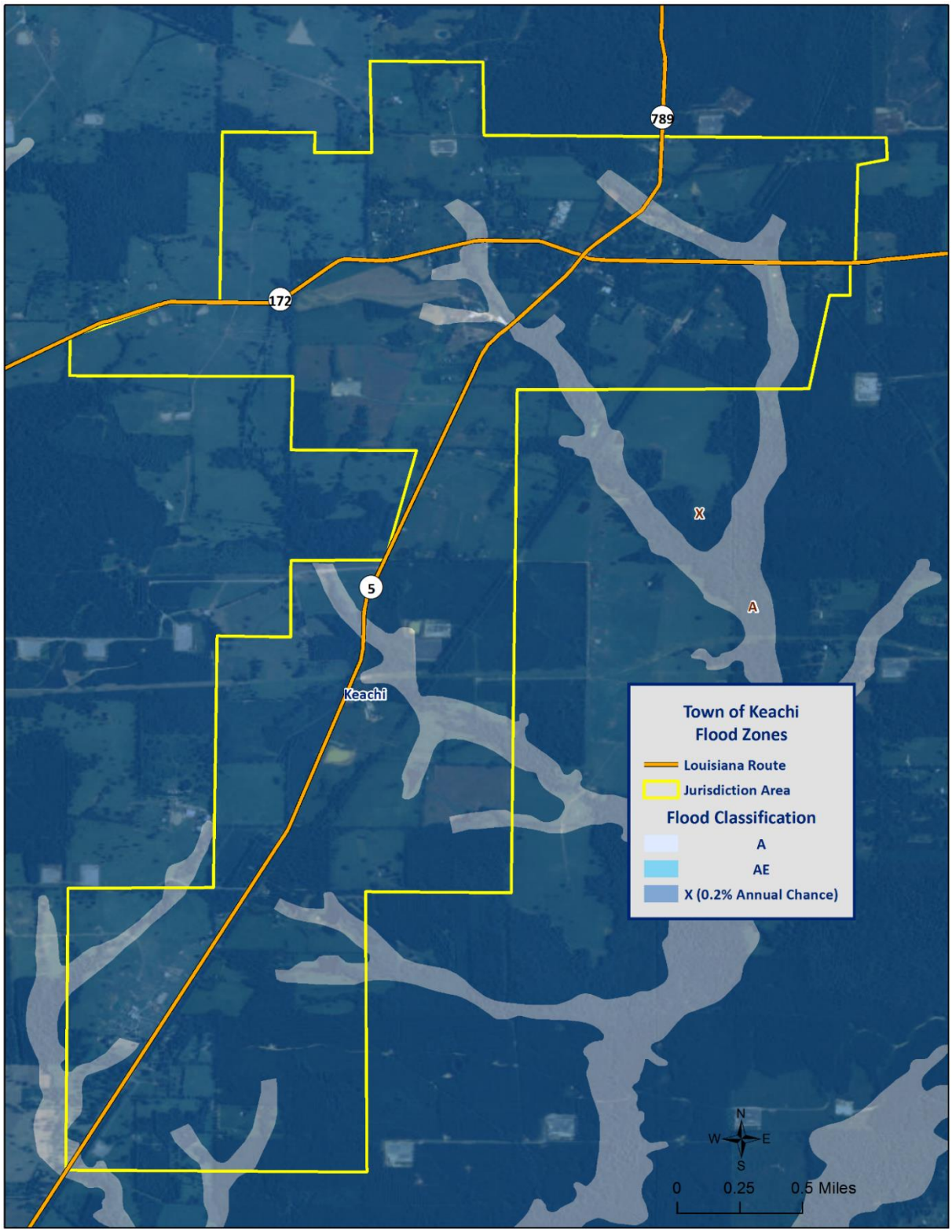


Figure 2-15: Town of Keachi Areas within the Flood Zones

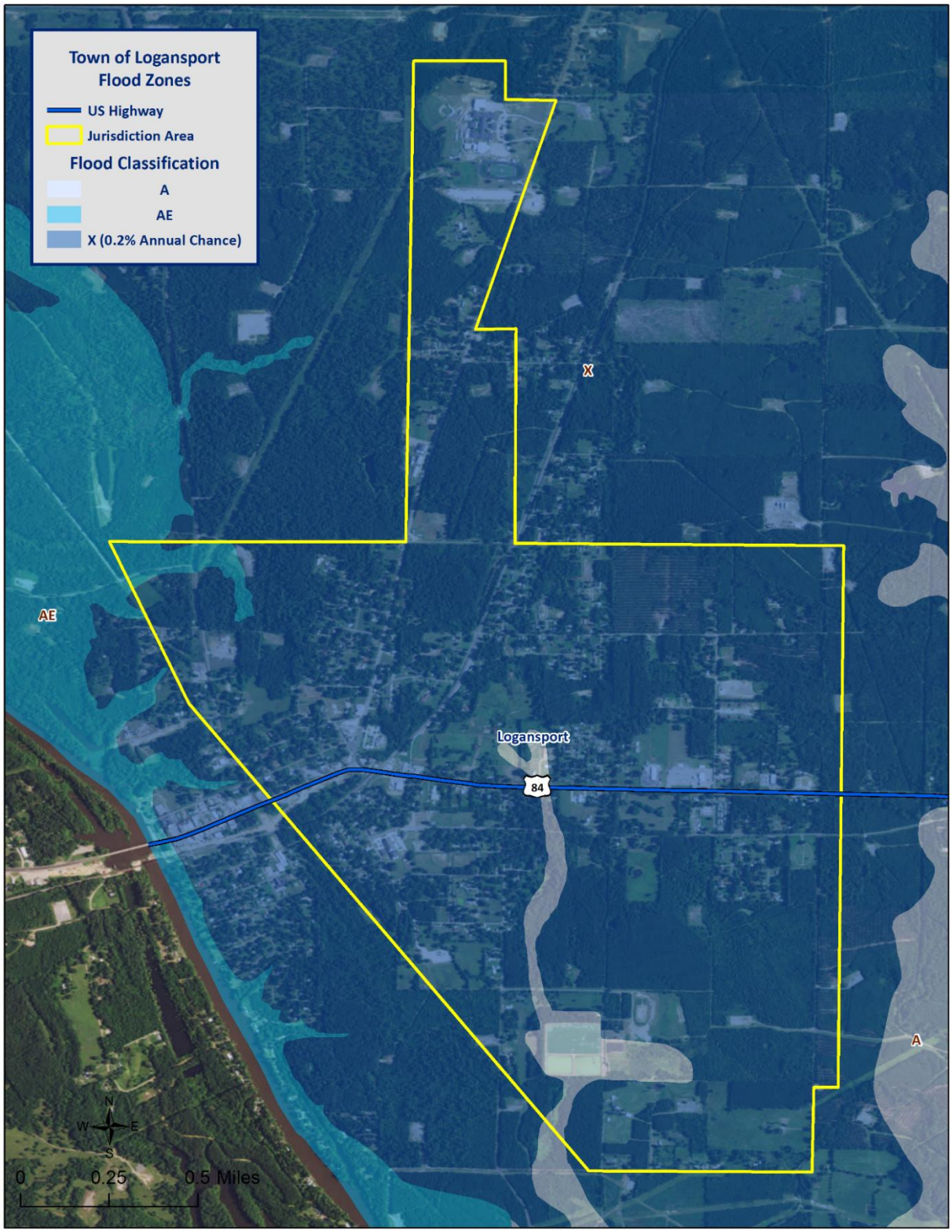


Figure 2-16: Town of Logansport Areas within the Flood Zones

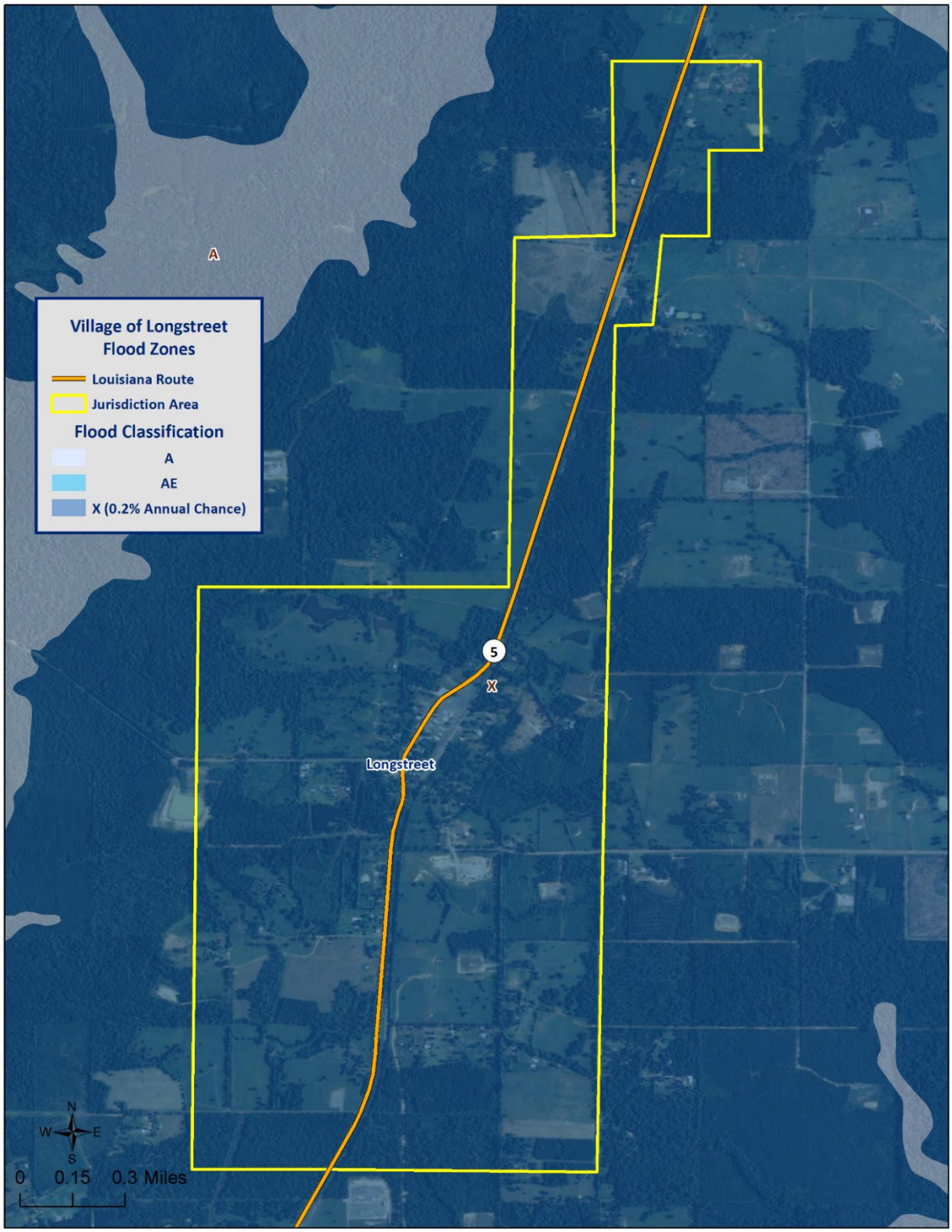


Figure 2-17: Village of Longstreet Areas within the Flood Zones

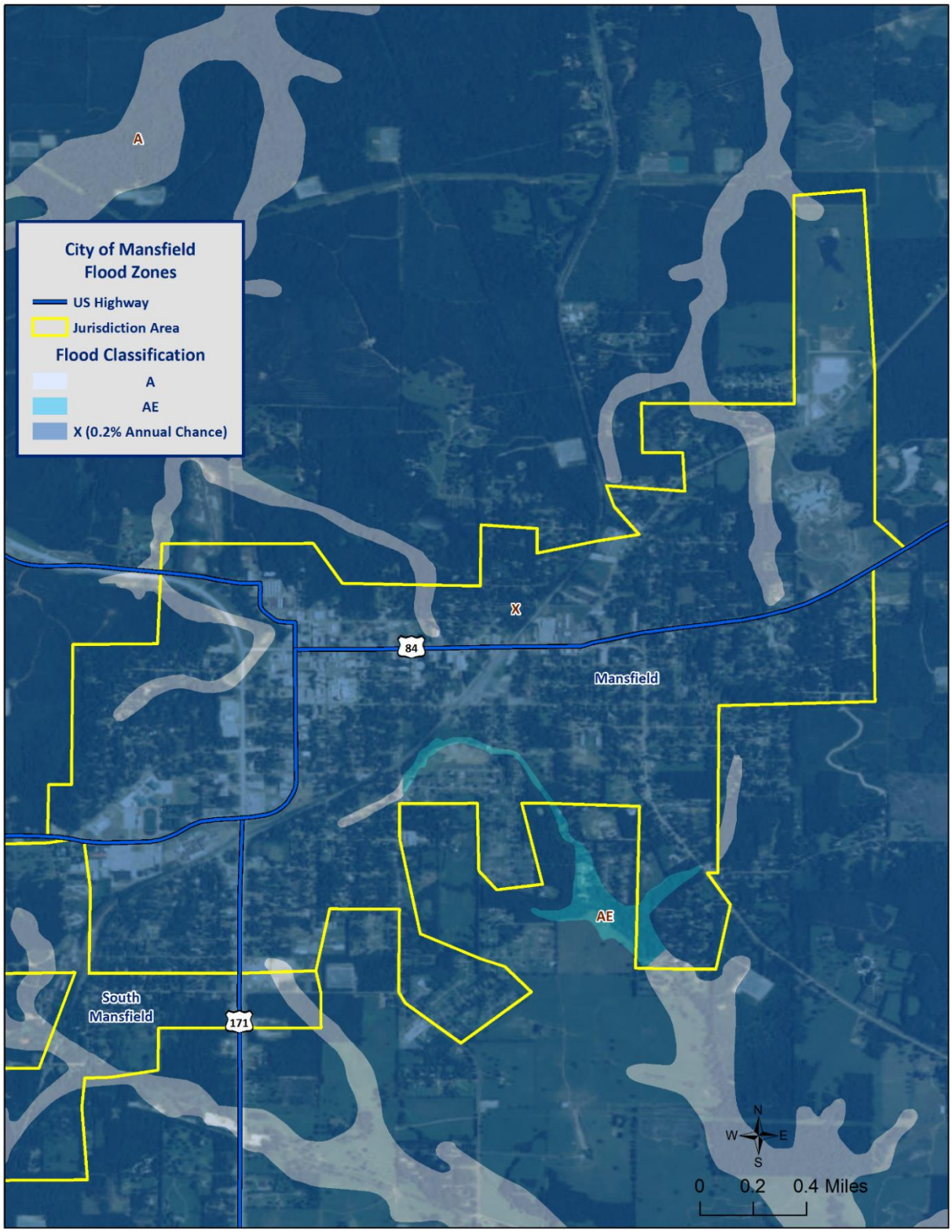


Figure 2-18: City of Mansfield Areas within the Flood Zones

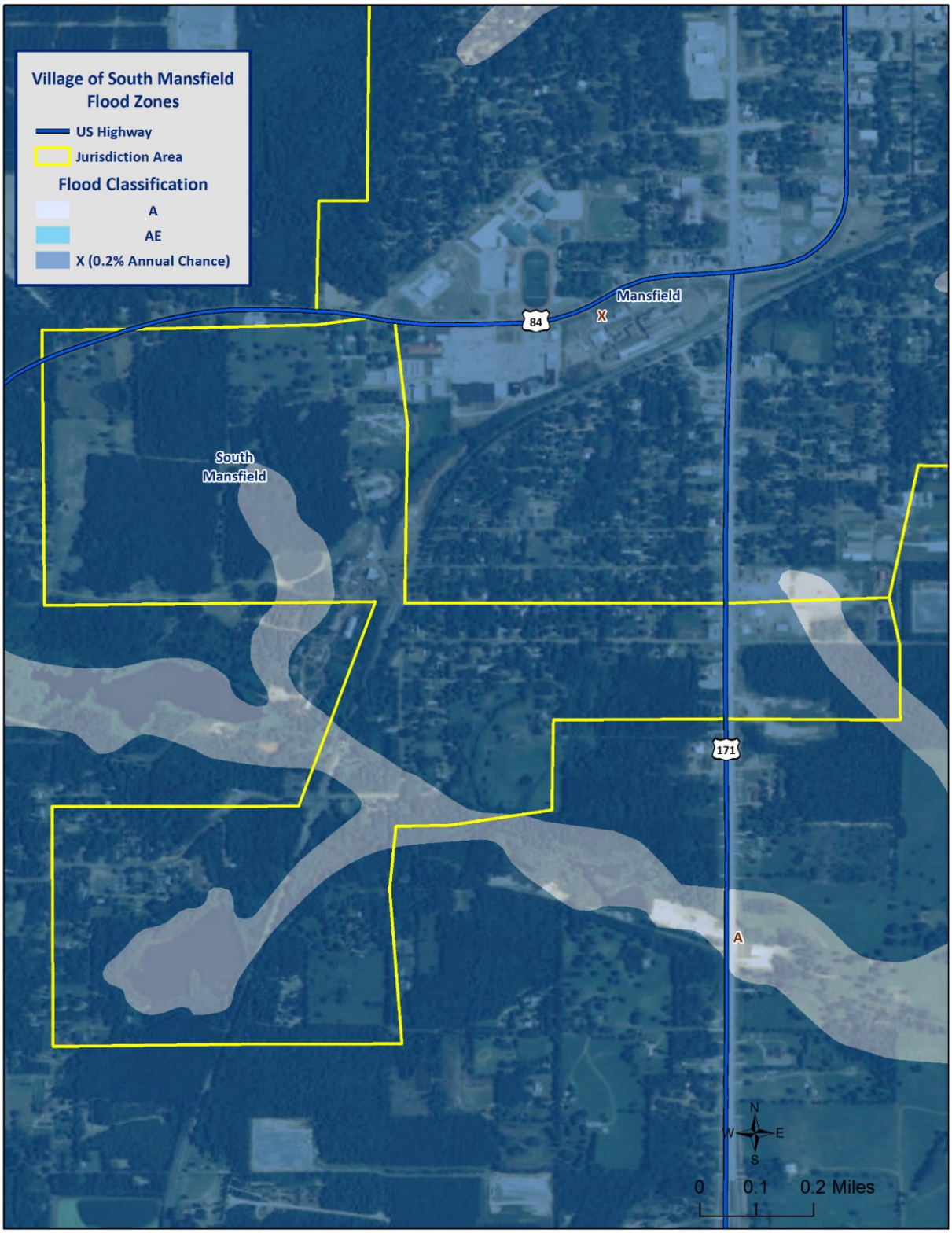


Figure 2-19: Village of South Mansfield Areas within the Flood Zones

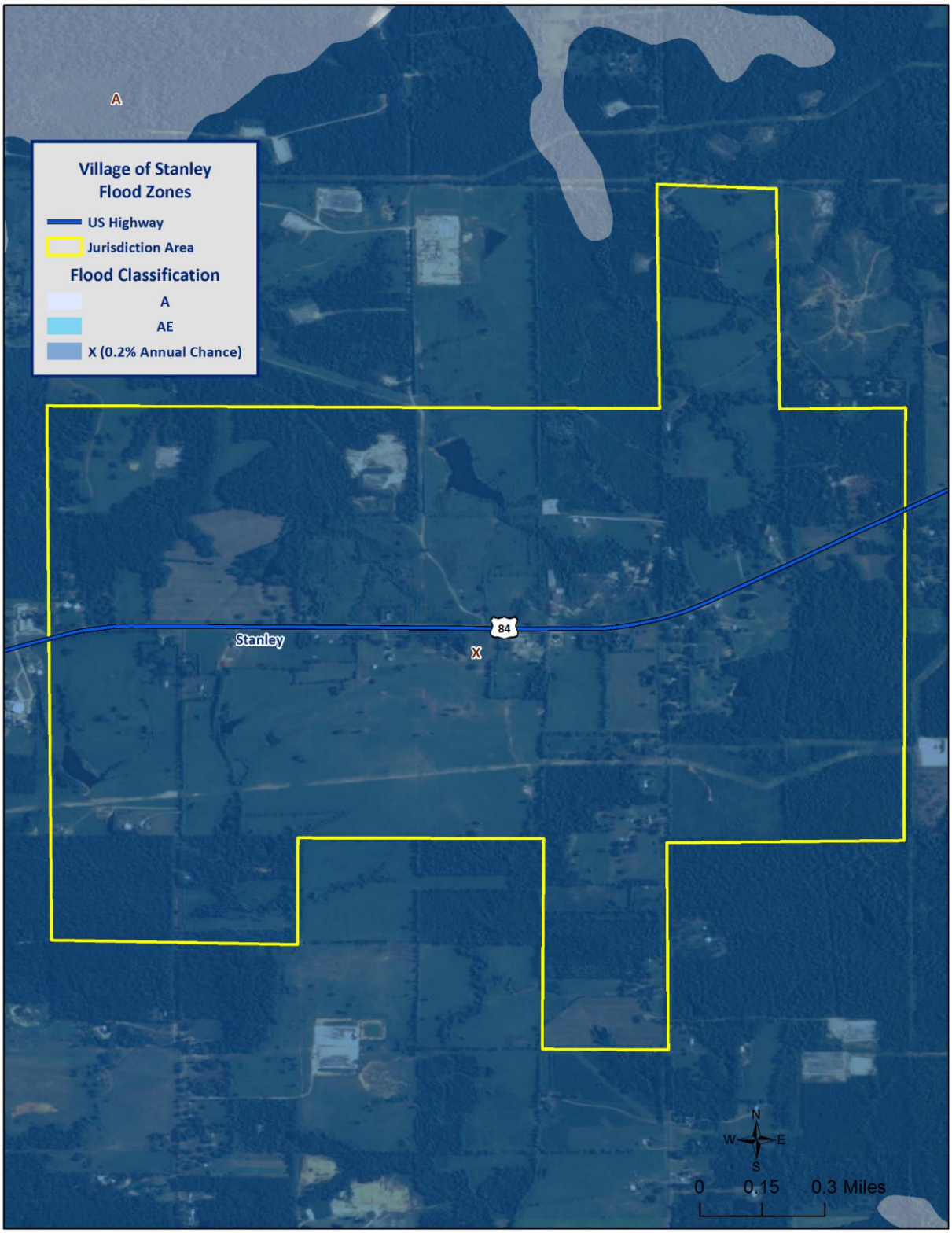


Figure 2-20: Village of Stanley Areas within the Flood Zones

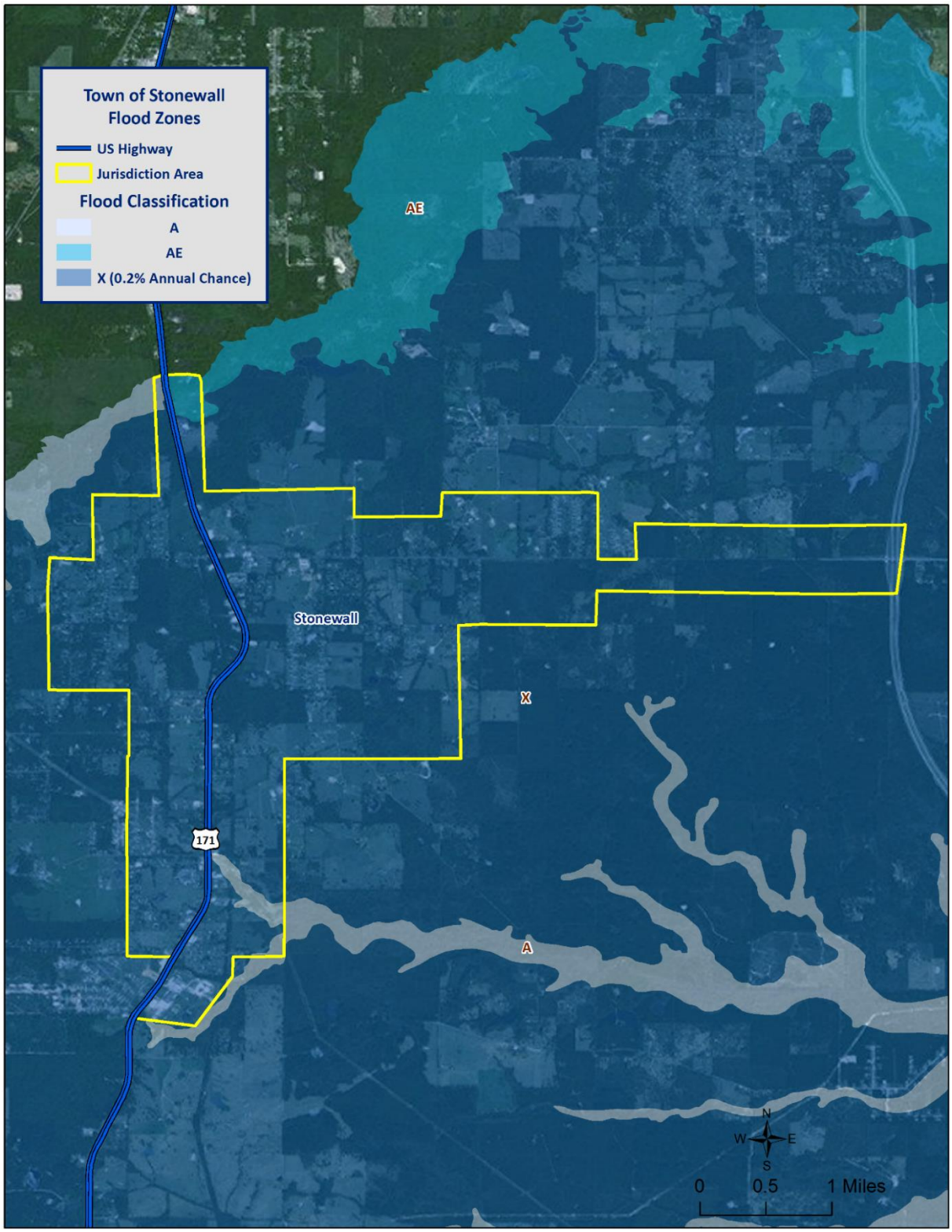


Figure 2-21: Town of Stonewall Areas within the Flood Zones

Previous Occurrences / Extents

Historically, there have been 30 flooding events that have created significant flooding in DeSoto Parish between 1990 and 2015. Below is a brief synopsis of the seven flooding events that have occurred since 2010, including flooding events that have occurred since the parish's last planning update.

Table 2-25: Historical Floods in DeSoto Parish with Locations from 2010 - 2015

Date	Extents	Type of Flooding	Estimated Damages	Location
March 20, 2012	Flooding was reported along WPA Road near Highway 171 south of Mansfield.	Flash Flood	$0	CATUNA
March 20, 2012	Flooding was reported along parts of Highway 3276 between Interstate 49 and Missile Base Road.	Flash Flood	$0	STONEWALL
July 9, 2012	Locally heavy rainfall resulted in water coming into the local hospital. Patients had to be moved to other higher floors in the hospital.	Flash Flood	$103,233	MANSFIELD
March 12, 2015	Excessive heavy rainfall resulted in the closure of Red Bluff Road just east of Jessie Latin Road southeast of Stonewall.	Flash Flood	$0	REEDS STORE
March 12, 2015	The intersection of WPA Road and Walker Road was completely under water and closed northwest of Converse.	Flash Flood	$0	LOLA
March 12, 2015	Several secondary roads were flooded and closed throughout DeSoto Parish from excessive heavy rainfall.	Flash Flood	$0	MANSFIELD
May 18, 2015	Linwood Road was flooded and closed near Stonewall.	Flash Flood	$0	STONEWALL

Since 2010, there have been no significant flooding events in the incorporated areas of Grand Cane, Keachi, Logansport, Longstreet, South Mansfield, and Stanley.

The worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to six feet can be expected in the unincorporated areas of the parish and the incorporated areas of Mansfield, South Mansfield, and Stonewall. The incorporated areas of Grand Cane, Keachi, Logansport, Longstreet, and Stanley can expect flood depths of one to three feet.

Frequency / Probability

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

Table 2-26: Annual Flood Probabilities for DeSoto Parish

Jurisdiction	Annual Probability	Return Frequency
DeSoto Parish (Unincorporated)	36%	2 – 3 years
Grand Cane	16%	6 – 7 years
Keachi	16%	6 – 7 years
Logansport	12%	8 – 9 years
Longstreet	8%	12 – 13 years
Mansfield	48%	2 – 3 years
South Mansfield	8%	12 – 13 years
Stanley	8%	12 – 13 years
Stonewall	32%	3 - 4 years

Based on historical record, the overall flooding probability for the entire DeSoto Parish planning area is 100%, with 30 events occurring over a 25-year period.

Estimated Potential Losses

Using the Hazus 2.2 Flood Model, along with the Parish DFIRM, the 100-year flood scenario was analyzed to determine losses from this worst-case scenario. *Table 2-27* shows the total economic losses that would result from this occurrence.

Table 2-27: Estimated Losses in DeSoto Parish from a 100-Year Flood Event (Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
DeSoto Parish (Unincorporated)	$38,820,000
Grand Cane	$8,000
Keachi	$4,000
Logansport	$12,000
Longstreet	$13,000
Mansfield	$11,000
South Mansfield	$14,000
Stanley	$11,000
Stonewall	$562,000
Total	**$39,455,000**

The Hazus 2.2 Flood Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the following tables. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.

Table 2-28: Estimated 100-Year Flood Losses for Unincorporated DeSoto Parish by Sector (Source: Hazus 2.2)

DeSoto Parish (Unincorporated)	Estimated Total Losses from 100-Year Flood Event
Agricultural	$280,000
Commercial	$3,208,000
Government	$189,000
Industrial	$3,888,000
Religious / Non-Profit	$2,839,000
Residential	$27,827,000
Schools	$589,000
Total	**$38,820,000**

Table 2-29: Estimated 100-Year Flood Losses for Grand Cane by Sector (Source: Hazus 2.2)

Grand Cane	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$8,000
Schools	$0
Total	**$8,000**

Table 2-30: Estimated 100-Year Flood Losses for Keachi by Sector (Source: Hazus 2.2)

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

Table 2-31: Estimated 100-Year Flood Losses for Logansport by Sector (Source: Hazus 2.2)

Logansport	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$12,000
Schools	$0
Total	**$12,000**

Table 2-32: Estimated 100-Year Flood Losses for Longstreet by Sector (Source: Hazus 2.2)

Longstreet	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$13,000
Schools	$0
Total	**$13,000**

Table 2-33: Estimated 100-Year Flood Losses for Mansfield by Sector (Source: Hazus 2.2)

Mansfield	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$1,000
Religious / Non-Profit	$0
Residential	$10,000
Schools	$0
Total	**$11,000**

Table 2-34: Estimated 100-Year Flood Losses for South Mansfield by Sector (Source: Hazus 2.2)

South Mansfield	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 2-35: Estimated 100-Year Flood Losses for Stanley by Sector (Source: Hazus 2.2)

Stonewall	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$11,000
Schools	$0
Total	**$11,000**

Table 2-36: Estimated 100-Year Flood Losses for Stonewall by Sector (Source: Hazus 2.2)

Stonewall	Estimated Total Losses from 100-Year Flood Event
Agricultural	$11,000
Commercial	$333,000
Government	$24,000
Industrial	$39,000
Religious / Non-Profit	$71,000
Residential	$84,000
Schools	$0
Total	**$562,000**

Threat to People

The total population within the parish that is susceptible to a flood hazard is shown in the table on the next page.

Table 2-37: Vulnerable Populations Susceptible to a 100-Year Flood Event
(Source: Hazus 2.2)

Number of People Exposed to Flood Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
DeSoto Parish (Unincorporated)	17,139	5,470	31.9%
Grand Cane	242	12	5.0%
Keachi	295	16	5.4%
Logansport	1,555	29	1.9%
Longstreet	157	11	7.0%
Mansfield	5,001	41	0.8%
South Mansfield	346	9	2.6%
Stanley	107	5	4.7%
Stonewall	1,814	45	2.5%
Total	**26,656**	**5,638**	**21.2%**

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

Table 2-38: Vulnerable Populations Susceptible to a 100-Year Flood Event in Unincorporated DeSoto Parish
(Source: Hazus 2.2)

Unincorporated DeSoto Parish		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	5,593	32.6%
Persons Under 5 Years	377	6.7%
Persons Under 18 Years	1,018	18.2%
Persons 65 Years and Over	808	14.4%
White	3,243	58.0%
Minority	2,350	42.0%

Table 2-39: Vulnerable Populations Susceptible to a 100-Year Flood Event in Grand Cane (Source: Hazus 2.2)

Grand Cane		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	12	5.0%
Persons Under 5 Years	0	2.1%
Persons Under 18 Years	2	14.5%
Persons 65 Years and Over	2	16.9%
White	10	85.1%
Minority	2	14.9%

Table 2-40: Vulnerable Populations Susceptible to a 100-Year Flood Event in Keachi (Source: Hazus 2.2)

Keachi		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	16	5.4%
Persons Under 5 Years	0	3.1%
Persons Under 18 Years	3	16.6%
Persons 65 Years and Over	3	17.6%
White	13	79.3%
Minority	3	20.7%

Table 2-41: Vulnerable Populations Susceptible to a 100-Year Flood Event in Logansport (Source: Hazus 2.2)

Logansport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	29	1.9%
Persons Under 5 Years	3	8.9%
Persons Under 18 Years	6	20.6%
Persons 65 Years and Over	4	15.0%
White	16	53.7%
Minority	13	46.3%

Table 2-42: Vulnerable Populations Susceptible to a 100-Year Flood Event in Longstreet (Source: Hazus 2.2)

Longstreet		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	11	7.0%
Persons Under 5 Years	0	3.2%
Persons Under 18 Years	2	14.0%
Persons 65 Years and Over	2	15.9%
White	8	76.4%
Minority	3	23.6%

Table 2-43: Vulnerable Populations Susceptible to a 100-Year Flood Event in Mansfield (Source: Hazus 2.2)

Mansfield		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	41	0.8%
Persons Under 5 Years	3	8.4%
Persons Under 18 Years	8	19.9%
Persons 65 Years and Over	6	14.4%
White	9	21.7%
Minority	32	78.3%

Table 2-44: Vulnerable Populations Susceptible to a 100-Year Flood Event in South Mansfield (Source: Hazus 2.2)

South Mansfield		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	9	2.6%
Persons Under 5 Years	1	10.4%
Persons Under 18 Years	2	17.9%
Persons 65 Years and Over	1	14.7%
White	2	21.4%
Minority	7	78.6%

Table 2-45: Vulnerable Populations Susceptible to a 100-Year Flood Event in Stanley (Source: Hazus 2.2)

Stanley		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	5	4.7%
Persons Under 5 Years	0	7.5%
Persons Under 18 Years	1	18.7%
Persons 65 Years and Over	1	13.1%
White	5	95.3%
Minority	0	4.7%

Table 2-46: Vulnerable Populations Susceptible to a 100-Year Flood Event in Stonewall (Source: Hazus 2.2)

Stonewall		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	45	2.5%
Persons Under 5 Years	2	4.9%
Persons Under 18 Years	8	16.9%
Persons 65 Years and Over	7	16.0%
White	40	90.0%
Minority	5	10.0%

Vulnerability

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

Thunderstorms

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

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

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

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

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

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

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

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

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

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

Hazard Description

Hailstorms

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

Table 2-47: 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 2-48: Spectrum of Hailstone Diameters and Their Everyday Description (Source: National Weather Service)

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

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

Hail rarely causes loss of life, although large hailstones can cause bodily injury.

High Winds

In general, high winds can occur in a number of different ways, within and without thunderstorms. The Federal Emergency Management Agency (FEMA) distinguishes these as shown in the following table.

Table 2-49: 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 hilly areas of Louisiana where they occur. Nor'easters are cyclonic events that have at most a peripheral effect on Louisiana, and none associated with high winds. Winds associated with hurricanes and tornadoes will be considered in their respective sections.

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

Table 2-50: Beaufort Wind Scale
(Source: NOAA's SPC)

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

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

Lightning

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

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

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

Table 2-51: Lightning Activity Level (LAL) Grids

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

Hazard Profile

Hailstorms

Location

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

Previous Occurrences / Extents

The SHELDUS database reports two significant hailstorm events occurring within the boundaries of DeSoto Parish between the years of 1990-2015. According to the National Climatic Data Center, hailstorm diameters experienced in DeSoto Parish have ranged from 0.5 inches to 4.5 inches since 1990. The most frequently recorded hail size has been 0.75 inch diameters. *Figure 2-22* displays the density of hailstorms in DeSoto Parish and adjacent parishes. Based on the National Climatic Data Center dataset, *Table 2-52* provides an overview of hailstorms that have impacted the DeSoto Parish planning area since 2010. DeSoto Parish can expect to experience hail up to 4.5 inches in diameter for future events.

Table 2-52: Previous Occurrences of Hailstorms in DeSoto Parish (Source: NCDC)

Date	Recorded Hail Size (inches)	Location
April 7, 2010	0.75	FRIERSON
April 24, 2010	0.75	STONEWALL
May 17, 2010	0.75	MANSFIELD
May 20, 2010	1	STONEWALL
April 26, 2011	1.75	STONEWALL
April 26, 2011	1.75	KINGSTON
April 3, 2012	1	STONEWALL
March 31, 2013	0.88	GLOSTER

Since 2010, there have been no significant hailstorm events in the incorporated areas of Grand Cane, Keachi, Logansport, Longstreet, South Mansfield, or Stanley.

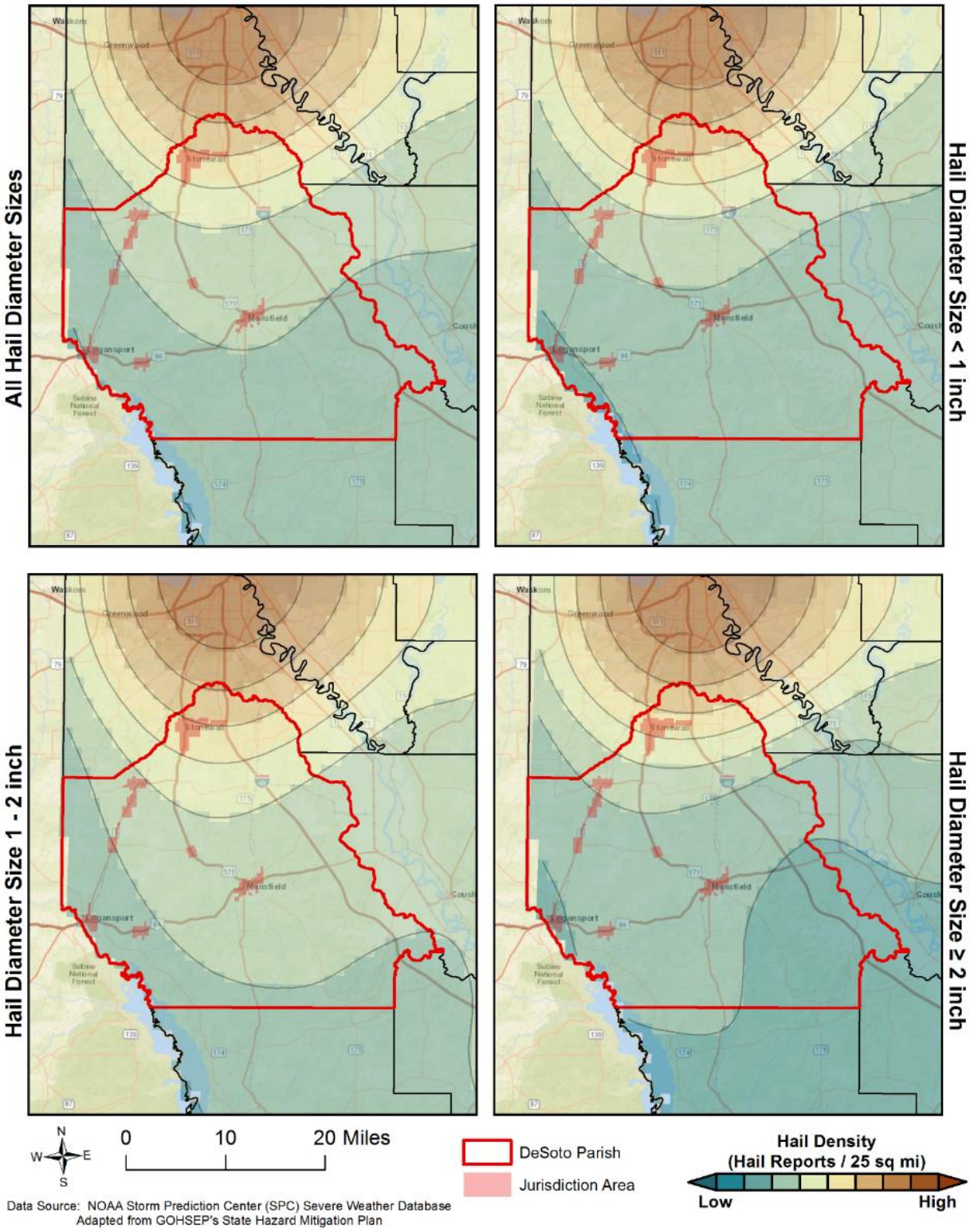


Figure 2-22: Density of Hailstorms by Diameter from 1950-2012
(Source: State of Louisiana Hazard Mitigation Plan 2014)

Frequency

Based on historical data from SHELDUS for the past 25 years, it is estimated the probability of occurrence for a significant hailstorm event is approximately 8%. The probability was determined based on a review of significant hail data that has caused damages in the last 25 years, in which DeSoto Parish has had two recorded events.

Estimated Potential Losses

According to the SHELDUS database, property damage due to hailstorms in DeSoto Parish have totaled approximately $316 since 1990. To estimate the potential losses of a hail event on an annual basis, the total damages recorded for hailstorm events was divided by the total number of years of available hailstorm data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $13. *Table 2-53* and *Table 2-54* provide an estimate of potential property losses for DeSoto Parish.

Table 2-53: Estimated Annual Property Losses in DeSoto Parish from Hailstorms

Estimated Annual Potential Losses from Hailstorms for DeSoto Parish				
Unincorporated DeSoto Parish (64.3% of Population)	Grand Cane (0.9% of Population)	Keachi (1.1% of Population)	Logansport (5.8% of Population)	Longstreet (0.6% of Population)
$8	$0	$0	$1	$0

Table 2-54: Estimated Annual Property Losses in DeSoto Parish from Hailstorms (Continued)

Estimated Annual Potential Losses from Hailstorms for DeSoto Parish			
Mansfield (18.8% of Population)	South Mansfield (1.3% of Population)	Stanley (0.4% of Population)	Stonewall (6.8% of Population)
$2	$0	$0	$1

There have been no deaths or injuries due to hailstorms from 1990 – 2015 in DeSoto Parish.

Vulnerability

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

High Winds

Location

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

Previous Occurrences / Extents

The SHELDUS database reports a total of 29 thunderstorm wind events occurring within the boundaries of DeSoto Parish between the years of 1990 to 2015. The significant thunderstorm wind events experienced in DeSoto Parish have ranged in wind speed from 57 mph to 104 mph. DeSoto Parish can expect to receive thunderstorm winds up to 104 mph for future high wind events. The table on the following page provides an overview of significant high wind events over the last five years.

Table 2-55: Previous Occurrences for Thunderstorm High Wind Events

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
FUNSTON	March 25, 2010	63	$0	$0
LOGANSPORT	May 26, 2010	58	$0	$0
LOGANSPORT	June 4, 2011	63	$0	$0
GRAND CANE	June 7, 2011	60	$0	$0
GLOSTER	June 7, 2011	60	$0	$0
KEATCHIE	June 7, 2011	60	$0	$0
PELICAN	August 23, 2011	60	$0	$0
PELICAN	August 23, 2011	62	$0	$0
KEATCHIE	November 8, 2011	60	$0	$0
MANSFIELD	January 25, 2012	62	$0	$0
FRIERSON	January 25, 2012	61	$0	$0
MANSFIELD	March 11, 2012	60	$0	$0
HOLLY	April 3, 2012	61	$0	$0
MANSFIELD	June 6, 2012	60	$0	$0
HUNTER	June 13, 2012	62	$0	$0
KINGSTON	June 15, 2012	60	$0	$0
GOSS	July 7, 2012	64	$15,000	$0
LONGSTREET	July 21, 2012	63	$0	$0
KINGSTON	July 21, 2012	60	$0	$0
MANSFIELD	July 21, 2012	62	$0	$0
CATUNA	July 21, 2012	60	$0	$0
MANSFIELD	December 20, 2012	63	$0	$0
STONEWALL	March 30, 2013	60	$0	$0
MANSFIELD	March 31, 2013	62	$0	$0
GLOSTER	March 31, 2013	62	$0	$0
GRAND CANE	May 21, 2013	62	$0	$0
MANSFIELD	July 11, 2013	63	$0	$0
NABORTON	December 21, 2013	62	$0	$0

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
MANSFIELD	December 21, 2013	64	$0	$0
MANSFIELD	March 28, 2014	63	$0	$0
STONEWALL	July 23, 2014	59	$0	$0
KEATCHIE	October 6, 2014	62	$0	$0
MANSFIELD	October 13, 2014	66	$0	$0
MANSFIELD	January 3, 2015	61	$0	$0

Since 2010, there have been no high wind events that have caused property damage or loss of life in the incorporated areas of South Mansfield, or Stanley.

Frequency

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

Estimated Potential Losses

Since 1990, there have been 29 significant wind events that have resulted in property damages according to the SHELDUS database. The total property damages associated with those storms have totaled $3,309,040. To estimate the potential losses of a wind event on an annual basis, the total damages recorded for wind events was divided by the total number of years of available wind data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $132,362. The following tables provide an estimate of potential property losses for DeSoto Parish:

Table 2-56: Estimated Annual Property Losses in DeSoto Parish from Thunderstorm Winds

Estimated Annual Potential Losses from Thunderstorm Winds for DeSoto Parish				
Unincorporated DeSoto Parish (64.3% of Population)	Grand Cane (0.9% of Population)	Keachi (1.1% of Population)	Logansport (5.8% of Population)	Longstreet (0.6% of Population)
$85,104	$1,202	$1,465	$7,721	$780

Table 2-57: Estimated Annual Property Losses in DeSoto Parish from Thunderstorm Winds (Continued)

Estimated Annual Potential Losses from Thunderstorm Winds for DeSoto Parish			
Mansfield (18.8% of Population)	South Mansfield (1.3% of Population)	Stanley (0.4% of Population)	Stonewall (6.8% of Population)
$24,833	$1,718	$531	$9,008

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

Vulnerability

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

Lightning

Location

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

Previous Occurrences / Extents

The SHELDUS database reports a total of three lightning events occurring within the boundaries of DeSoto Parish between the years of 1990-2015. The SHELDUS database only records lightning events that cause death, injuries, crop damage, and/or property damage, so these numbers do not accurately reflect the number of lightning events in DeSoto Parish, which occur on a nearly monthly basis. The planning area can expect to have a lightning density of 11-12 flashes per sq. mile per year. The table below provides an overview of significant lightning strikes over the last ten years:

Table 2-58: Previous Occurrences of Significant Lightning Strikes in DeSoto Parish from 2005 – 2015 (Source: NCDC and SHELDUS)

Location	Date	Summary	Property Damage
LOGANSPORT	April 17, 2007	A lightning strike along Highway 84 near Logansport hit a storage tank owned by British Petroleum on the Southern Natural Gas Road. The fiberglass tank exploded and the local fire department was called in to extinguish the fire.	$34,253

Since 2010, there have been no significant lightning events in DeSoto Parish and its jurisdictions.

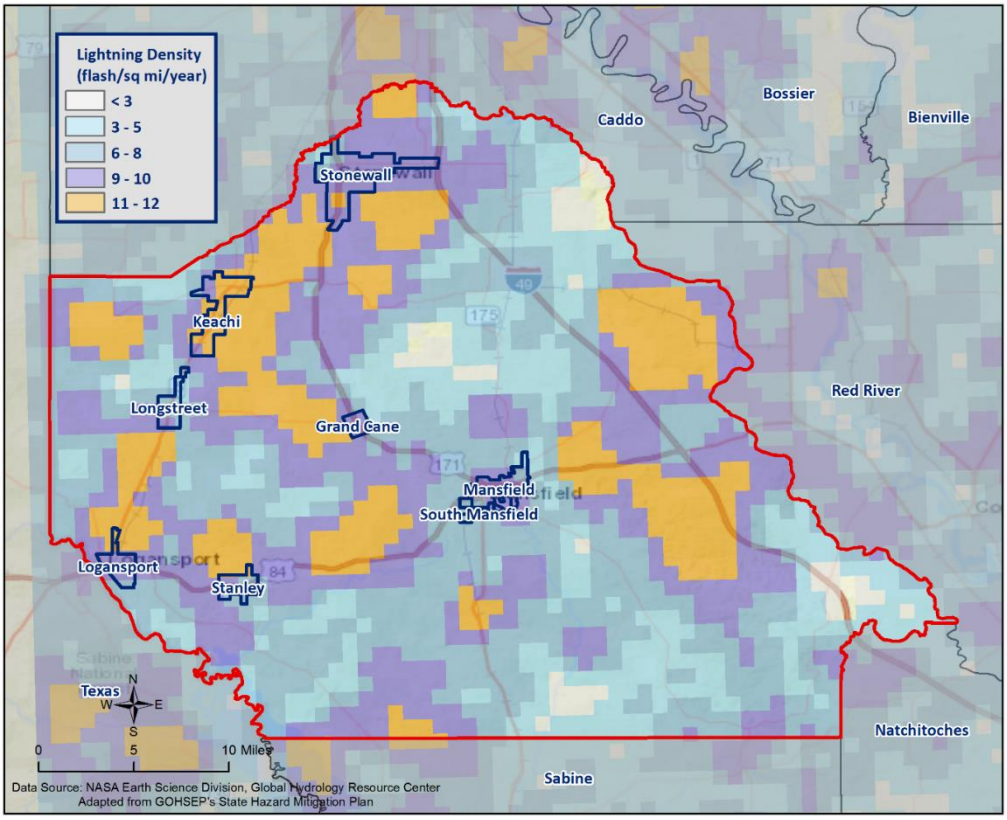


Figure 2-23: Lightning Density Reports for DeSoto Parish

Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in DeSoto Parish is high. However, lightning that meets the definition that is used by SHELDUS and the NCDC that actually results in damages to property and injury or death is a less likely event. According to SHELDUS, there have been three lightning events that have caused property damages or injuries over the last 25 years, establishing an annual probability of 12%.

Estimated Potential Losses

Since 1990, there have been three significant lightning events that have resulted in property damages according to the SHELDUS database. The total property damages associated with lightning events totaled $43,309. To estimate the potential losses of a lightning event on an annual basis, the total damages recorded for lightning events was divided by the total number of years of available major lightning strike data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $1,732. The tables below provide an estimate of potential property losses for DeSoto Parish.

Table 2-59: Estimated Annual Property Losses in DeSoto Parish from Lightning

Estimated Annual Potential Losses from Lightning for DeSoto Parish				
Unincorporated DeSoto Parish (64.3% of Population)	**Grand Cane (0.9% of Population)**	**Keachi (1.1% of Population)**	**Logansport (5.8% of Population)**	**Longstreet (0.6% of Population)**
$1,114	$16	$19	$101	$10

Table 2-60: Estimated Annual Property Losses in DeSoto Parish from Lightning (Continued)

Estimated Annual Potential Losses from Lightning for DeSoto Parish			
Mansfield (18.8% of Population)	**South Mansfield (1.3% of Population)**	**Stanley (0.4% of Population)**	**Stonewall (6.8% of Population)**
$325	$22	$7	$118

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

Vulnerability

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

Tornadoes

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

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. *Table 2-61* 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 2-61: 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 2-62: Fujita and Enhanced Fujita Tornado Damage Scale

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

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

- ***Tornado Watch*:** Issued to alert people to the possibility of a tornado developing in the area. A tornado has not been spotted but the conditions are favorable for tornadoes to occur.

- ***Tornado Warning*:** Issued when a tornado has been spotted or when radar identifies a distinctive "hook-shaped" area within a thunderstorm line.

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

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

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

Location

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

Previous Occurrences / Extents

SHELDUS reports a total of 14 tornadoes or waterspouts occurring within the boundaries of DeSoto Parish between the years of 1990-2015. The tornadoes experienced in DeSoto Parish have from ranged EF0 to EF2 on the EF scale, and ranged from F0 to F3 on the F scale. The worst case scenario DeSoto Parish can expect in the future is an EF2 tornado.

The tornado that caused the most damage to property occurred on April 26, 2011. The EF2 tornado first touched down in Panola County, Texas before moving into western DeSoto Parish. Trees were snapped and uprooted. As many as 3 dozen homes sustained minor damage with a few moderately damaged homes where carports were peeled back or trees fell on them. Several barns were knocked over or destroyed as well. The heaviest damage was located in the community of Frierson where widespread tree damage occurred and the tornado was at its widest point. Along State Route 3015, trees were snapped off 4 to 6 feet from the ground and two tanks from a gas well were overturned. The tornado ultimately continued into Caddo Parish. Maximum winds were estimated at 110-115 mph.

Table 2-63: Historical Tornadoes in DeSoto Parish with Locations from 1990-2015

Date	Impacts	Property Damage	Location	Magnitude
February 15, 1990	2 mile path with a width of 40 yards. Several large electrical transmission towers were toppled. Other damage occurred to fences and trees.	$90,565	GRAND CANE	F1
April 27, 1990	0.2 mile path with a width of 30 yards. A small tornado damaged a few trees and outbuildings.	$906	LONGSTREET	F1
May 12, 1990	4 mile path with a width of 125 yards. A tornado uprooted trees and utility poles but caused no damage to man-made structures.	$906	LONGSTREET	F1
December 21, 1990	1.5 mile path with a width of 200 yards. Tornadoes touched down in open country or forested areas, and damage was confined to trees and power lines.	$906	GRAND CANE	F1
November 3, 1992	2 mile path with a width of 80 yards. Destroyed many trees in open country and demolished three barns.	$8,437	MANSFIELD	F1
November 7, 1996	10 mile path with a width of 150 yards. Two roofs were damaged in Carmel while three other homes suffered major damage. A roof rafter from one of the homes was driven several feet into the ground.	$150,884	CARMEL	F1
November 30, 1996	1.9 mile path with a width of 150 yards. Four homes suffered minor damage including a mobile home that was completely blown away. A tractor trailer was tossed around as well. Several trees were twisted off including one tree that was tossed through the roof of a home.	$105,618	GLOSTER	F1
April 3, 1999	2.6 mile path with a width of 150 yards. Numerous homes suffered moderate to severe damage. Some roofs were removed or partially removed. A church steeple was knocked over and a portion of the roof was missing.	$710,492	LOGANSPORT	F3
April 23, 2000	8.5 mile path with a width of 150 yards. Large pine and oak trees were uprooted or snapped. A mobile home was split in half from a fallen oak. A number of outbuildings were damaged by fallen trees and wind.	$1,031,080	MANSFIELD	F2

Date	Impacts	Property Damage	Location	Magnitude
April 23, 2000	4.3 mile path with a width of 200 yards. Large pine and oak trees were uprooted or snapped. A mobile home was split in half from a fallen oak. A number of outbuildings were damaged by fallen trees and wind.	$687,387	EVELYN	F3
February 11, 2009	1.5 mile path with a width of 150 yards. A metal barn was mostly destroyed and portions of the metal frame were pulled out of the ground. Several trailers were overturned and damaged. Two homes sustained minor damage.	$165,521	KOLTER	EF1
April 26, 2011	26.85 mile path with a width of 850 yards. As many as 3 dozen homes sustained minor damage with a few moderately damaged homes. Several barns were knocked over or destroyed.	$10,524,453	LONGSTREET	EF2
September 2, 2014	3.6 mile path with a width of 350 yards. An EF1 tornado peeled back the metal roof of a barn. It also peeled back the roof of the International Paper plant. One car was flipped over and numerous windows were blown out.	$250,000	CARMEL	EF1
June 18, 2015	0.56 mile path with a width of 126 yards. A few trees were snapped or uprooted. One home sustained significant roof damage due to a tree falling on the house.	$50,000	MANSFIELD	EF1
June 18, 2015	3.49 mile path with a width of 190 yards. Damage consisted of several trees uprooted and snapped along the tornado's path. One home had major damage to its roof. A couple of storage buildings were also damaged.	$75,000	KICKAPOO	EF1

The incorporated areas of Grand Cane, Keachi, Logansport, South Mansfield, Stanley, and Stonewall have not experienced a tornado event from 2010 to the present. Since 2010, the year in which the last update to this hazard mitigation plan was written, DeSoto Parish has had four tornadoes touch down in the unincorporated areas of the parish, as well as the incorporated areas of Longstreet and Mansfield. The following is a brief synopsis of these events:

April 26, 2011 – EF2 Tornado in Longstreet

The EF2 tornado first touched down in Panola County, Texas before moving into western DeSoto Parish. Trees were snapped and uprooted. As many as 3 dozen homes sustained minor damage with a few moderately damaged homes where carports were peeled back or trees fell on them. Several barns were knocked over or destroyed as well. The heaviest damage was located in the community of Frierson where widespread tree damage occurred and the tornado was at its widest point. Along State Route 3015, trees were snapped off 4 to 6 feet from the ground and two tanks from a gas well were overturned. The tornado ultimately continued into Caddo Parish. Maximum winds were estimated at 110-115 mph.

September 2, 2014 – EF1 Tornado in Carmel

An EF1 tornado touched down on La Coupe Road where it peeled back the metal roof of a barn. This tornado also snapped numerous large limbs, some of which landed on a home before continuing east across the International Paper Plant. Portions of the metal walls and roof at the plant were peeled back with several trees snapped. One car was flipped over and numerous car windows were blown out.

June 18, 2015 – EF1 Tornado in Mansfield

An EF1 tornado touched down in the town of Mansfield near the intersection of Polk and Laura Streets. The storm traveled north then lifted near North Hills Drive. Damage consisted of a few snapped and/or uprooted trees. One home sustained significant roof damage due to a tree falling on the house.

June 18, 2015 – EF1 Tornado in Kickapoo

An EF1 tornado touched down near Kickapoo. The tornado then tracked 3.5 miles to the northeast before dissipating on Red Bluff Road. Damage mainly consisted of several trees uprooted and snapped along the path. One home had major damage to its roof. A couple of storage buildings were also damaged by the tornado.

Frequency / Probability

Tornadoes are a sporadic occurrence within DeSoto Parish, with an annual chance of occurrence calculated at 56% based on the records for the past 25 years (1990-2015). The figure on the next page displays the density of tornado touch downs in DeSoto Parish and neighboring parishes.

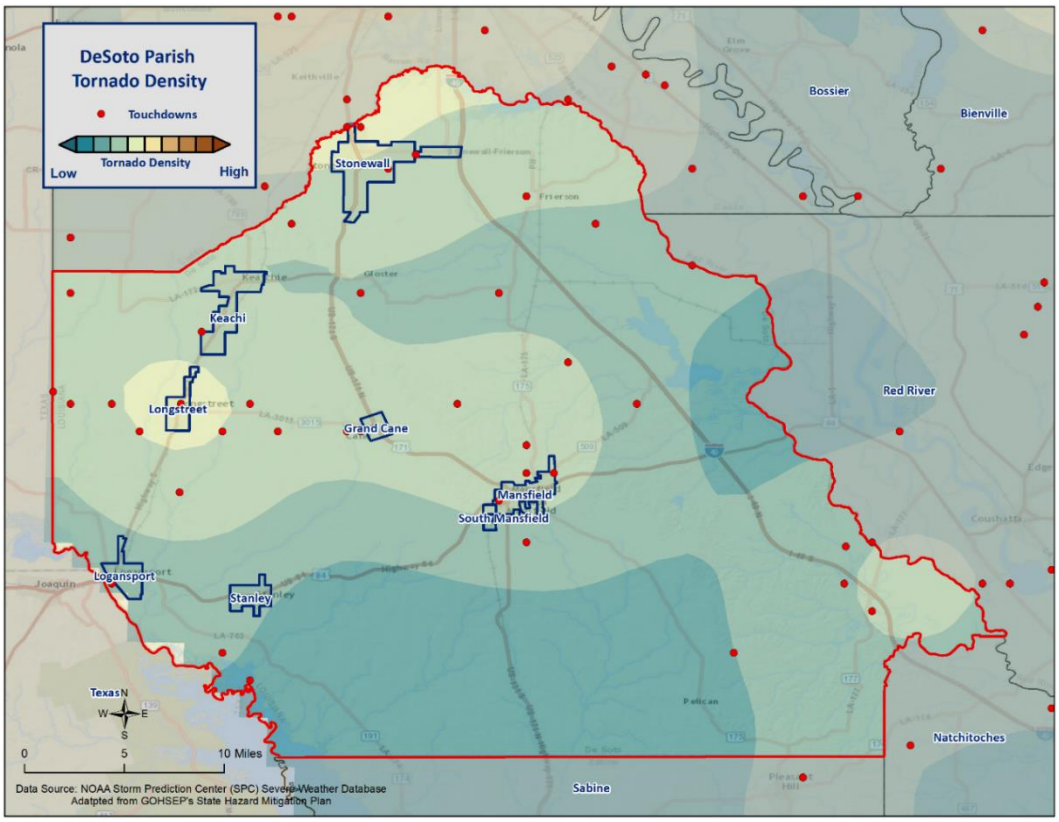


Figure 2-24: Location and Density of Tornadoes to Touch Down in DeSoto Parish (Source: NOAA/SPC Severe Weather Database)

Estimated Potential Losses

According to the SHELDUS database, there have been 14 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is $13,852,154, with an average cost of $989,440 per tornado strike. When annualizing the total cost over the 25-year record, total annual loses based on tornadoes are estimated to be $554,086. To provide an estimated annual potential loss per jurisdiction, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. Based on the 2010 Census data, the following table provides an annual estimate of potential losses for DeSoto Parish.

Table 2-64: Estimated Annual Property Losses in DeSoto Parish from Tornadoes

Estimated Annual Potential Losses from Tornadoes for DeSoto Parish				
Unincorporated DeSoto Parish (64.3% of Population)	Grand Cane (0.9% of Population)	Keachi (1.1% of Population)	Logansport (5.8% of Population)	Longstreet (0.6% of Population)
$356,261	$5,030	$6,132	$32,323	$3,263

Table 2-65: Estimated Annual Property Losses in DeSoto Parish from Tornadoes (Continued)

Estimated Annual Potential Losses from Tornadoes for DeSoto Parish			
Mansfield (18.8% of Population)	South Mansfield (1.3% of Population)	Stanley (0.4% of Population)	Stonewall (6.8% of Population)
$103,954	$7,192	$2,224	$37,707

Table 2-66 presents an analysis of building exposure that is susceptible to tornadoes by general occupancy type for DeSoto Parish, along with the percentage of building stock that are mobile homes.

Table 2-66: Building Exposure by General Occupancy Type for Tornadoes in DeSoto Parish (Source: FEMA's Hazus 2.2)

Building Exposure by General Occupancy Type for Tornadoes Exposure Types ($1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
2,632,840	377,050	173,017	18,160	156,960	39,616	50,586	19.2%

The parish has suffered through a total of one day in which tornadoes or waterspouts have accounted for one injury and no fatalities during this 25-year period (*Table 2-67*). The average number of injuries per event for DeSoto Parish is 0.07 per tornado, with an average of 0.04 per year for the 25-year period.

Table 2-67: Tornadoes in DeSoto Parish by Magnitude that Caused Injuries or Deaths

Date	Magnitude	Deaths	Injuries
April 3, 1999	F3	0	1

In assessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 19.2% of all housing in DeSoto Parish consists of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are 16 known locations where manufactured housing is concentrated. Each of those 16 locations have an overall number of manufactured houses ranging from two to 43. The location and density of manufactured houses can be seen in *Figure 2-25*.

Manufactured housing is more likely to sustain damage from a tornado than any other residential structure. The highest concentration of manufactured home parks is located in the unincorporated area of DeSoto Parish (*Table 2-68*). However, this does not influence the risk associated with a tornado event since they strike at random, making all structures and population within the planning area equally vulnerable.

Table 2-68: Manufactured Home Distribution throughout DeSoto Parish

Location	Number of Manufactured Home Parks	% of Manufactured Home Parks
Unincorporated Area	9	56.3%
Grand Cane	1	6.3%
Keachi	0	0.0%
Logansport	3	18.8%
Longstreet	0	0.0%
Mansfield	2	12.5%
South Mansfield	0	0.0%
Stanley	0	0.0%
Stonewall	1	6.3%

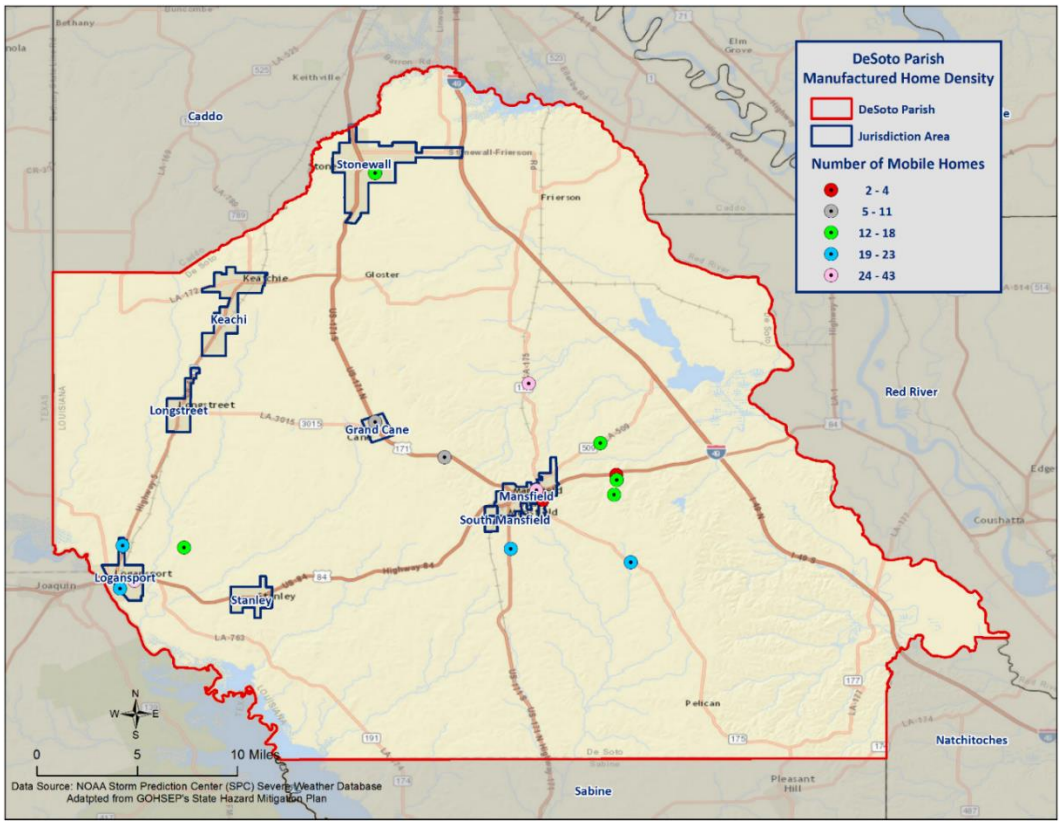


Figure 2-25: Location and Approximate Number of Units in Manufactured Housing Locations throughout DeSoto Parish

Vulnerability

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

Tropical Cyclones

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

Table 2-69: Saffir-Simpson Hurricane Wind Scale

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

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

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

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

Location

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

Previous Occurrences / Extents

The central Gulf of Mexico coastline is among the most hurricane-prone locations in the United States, and hurricanes can affect every part of the state. The SHELDUS database reports a total of three tropical cyclone events occurring within the boundaries of DeSoto Parish between the years 2002 and 2015 (*Table 2-70*). The tropical cyclone events experienced in DeSoto Parish include depressions, storms, and hurricanes. As a worst case scenario, DeSoto Parish can expect to experience hurricanes at the Category 1 level in the future.

Table 2-70: Historical Tropical Cyclone Events in DeSoto Parish from 2002 - 2015 (Source: SHELDUS)

Date	Name	Storm Type At Time of Impact
September 24, 2005	Rita	Hurricane – Category 1
September 1, 2008	Gustav	Tropical Storm
September 13, 2008	Ike	Tropical Storm

Hurricane Rita (2005)

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

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

In DeSoto Parish, the storm had weakened before producing considerable damage. However, all of Northwest Louisiana remained on the east side of the eyewall and experienced strong tropical storm force winds. Damage was sporadic across the region and was mostly confined to downed trees and power lines as well as structural damage to homes, businesses, and automobiles. Many residents lost power during the height of the storm.

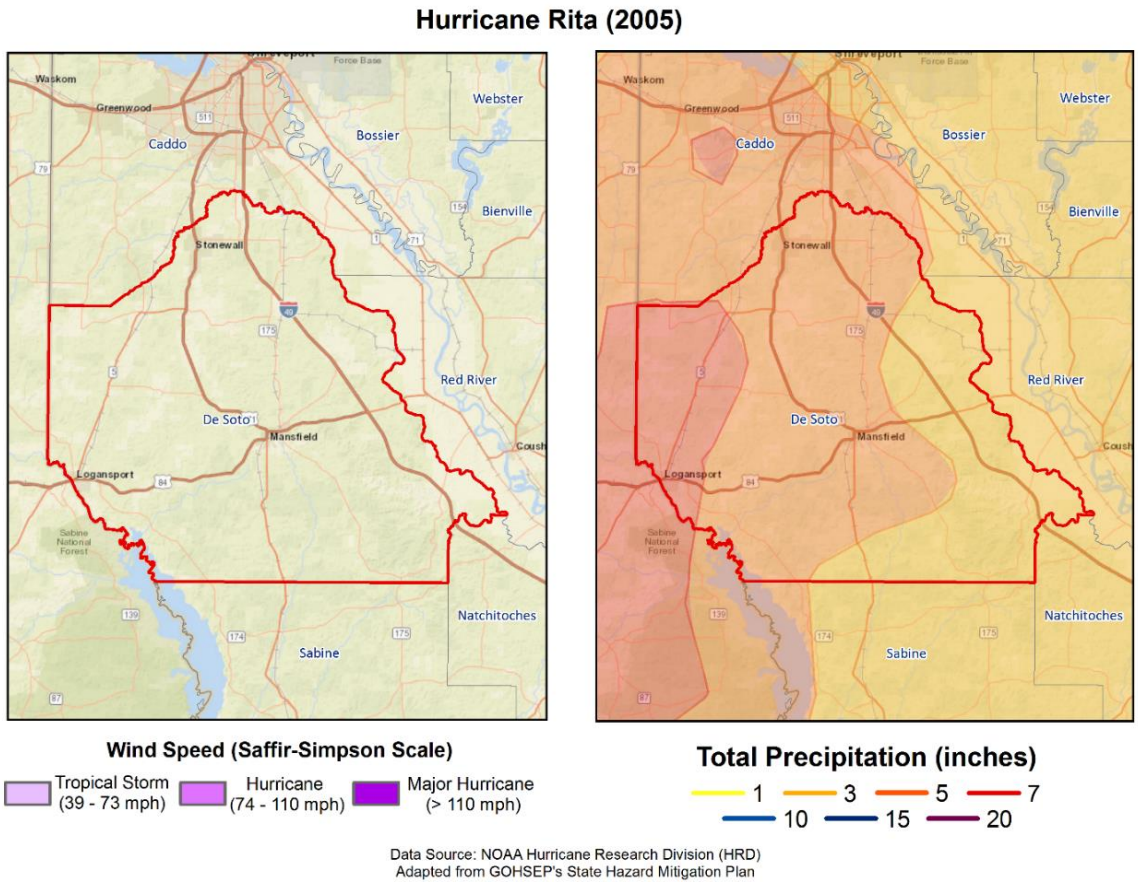


Figure 2-26: Wind Speed and Precipitation Totals in DeSoto Parish for Hurricane Rita

Hurricane Gustav (2008)

Hurricane Gustav entered the southeast Gulf of Mexico as a major Category 3 hurricane on August 31, 2008, after developing in the Caribbean Sea and moving across western Cuba. Gustav tracked northwestward across the Gulf toward Louisiana and made landfall as a Category 2 hurricane near Cocodrie, Louisiana, during the morning of September 1st. Gustav continued to move northwest across south Louisiana and weakened to a Category 1 storm over south central Louisiana later that day. The storm diminished to a tropical depression over northwestern Louisiana on September 2nd.

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

Gustav produced widespread wind damage across southeast Louisiana, especially in the area from Houma and Thibodaux through the greater Baton Rouge area. Hurricane force wind gusts occurred also across the inland areas, including the Baton Rouge area and surrounding parishes. A peak wind gust of 91 mph was recorded at the Baton Rouge (Ryan Field) Airport at 1:12 PM CST. This was only one mph less than the highest

wind gust recorded during Hurricane Betsy in 1965. After the storm, the electric utility serving most of southeast Louisiana reported 75 to 100 percent of utility customers were without power, in areas ranging from Lafourche and Terrebonne Parishes northwest through the Baton Rouge area to central Louisiana and southwest Mississippi. Considerable damage occurred to many houses and structures as large tree limbs and trees were toppled by the hurricane force winds. Preliminary estimates from the American Red Cross indicated that around 13,000 single family dwellings were damaged by the hurricane in southeast Louisiana, and several thousand more apartments and mobile homes were also damaged. Early estimates from Louisiana Economic Development indicated that Gustav caused at least $4.5 billion in property damage in Louisiana, including insured and uninsured losses.

In DeSoto Parish, tropical storm force winds resulted in numerous trees and powerlines downed throughout the parish. Numerous power outages were also reported. Wind gusts likely approached 70 mph in a few locations.

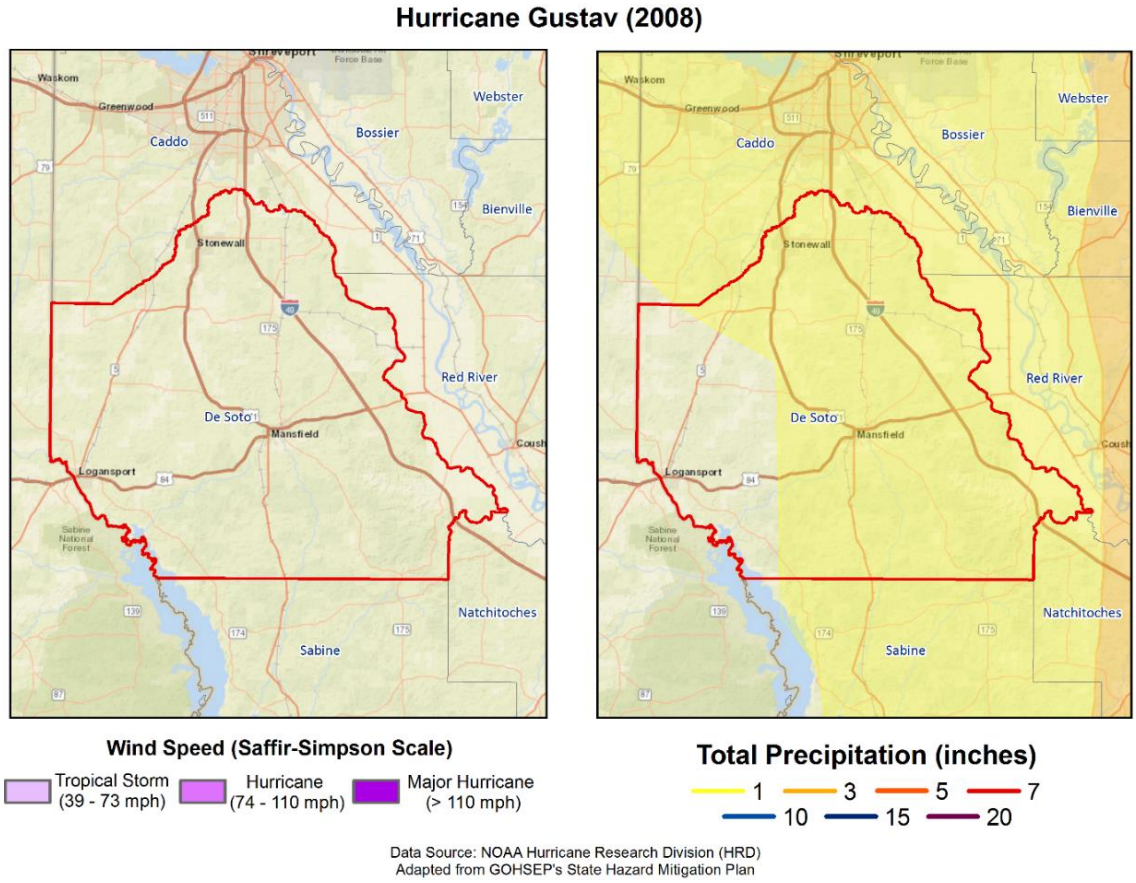


Figure 2-27: Wind Speed and Precipitation Totals in DeSoto Parish for Hurricane Gustav

Hurricane Ike (2008)

Hurricane Ike caused wind damage, storm surge flooding, and tornadoes across southwest Louisiana. Ike made landfall near Galveston, TX early in the morning on September 13, 2008, as a strong category 2 hurricane. Sustained hurricane force winds were confined to extreme western Cameron Parish. The highest recorded winds in southwest Louisiana were experienced at Lake Charles Regional Airport, with sustained winds of 53 mph (46 kts) and gusts of 77 mph (67 kts). The lowest pressure reading occurred at Southland

Field near Sulphur, LA, with a low of 994.6 millibars. Several tornadoes were reported across southwest Louisiana. The most significant one was near Mamou, where ten to fifteen homes were damaged, including one that lost its roof. Storm surge was a significant event. Water levels ranged from 14 feet in western Cameron Parish, to eight feet in St. Mary Parish. This resulted in widespread flooding of the same areas that flooded during Hurricane Rita in 2005. Most of Cameron Parish was under water. Over 3,000 homes were flooded. This extended north into Calcasieu Parish, where another 1,000 homes flooded in Lake Charles, Westlake, and Sulphur. In Vermilion Parish, at least 1,000 homes flooded in Pecan Island, Forked Island, Intracoastal City, and Henry. This extended east into Iberia Parish, where another 1,000 homes flooded south of Highway 14 and Highway 90. In St. Mary Parish, some of the worst flooding occurred in Franklin, where a man-made levee failed, flooding over 450 homes. Maximum storm total rainfall ranged from six to eight inches across Cameron, Calcasieu, and Beauregard Parishes. No fatalities were reported in southwest Louisiana. Total property damages, however, were high. Losses were estimated to be almost $420 million across southwest Louisiana. Agricultural losses were over $225 million.

In DeSoto Parish, the remnants of Hurricane Ike resulted in tropical storm force winds which downed trees and power lines throughout the parish. Power outages were widespread as well with numerous residents without power during the height of the storm and days afterward. A tree was downed on the post office in Keachi with other trees down on some homes in Mansfield. A power pole and transformer fell on a car in Mansfield as well.

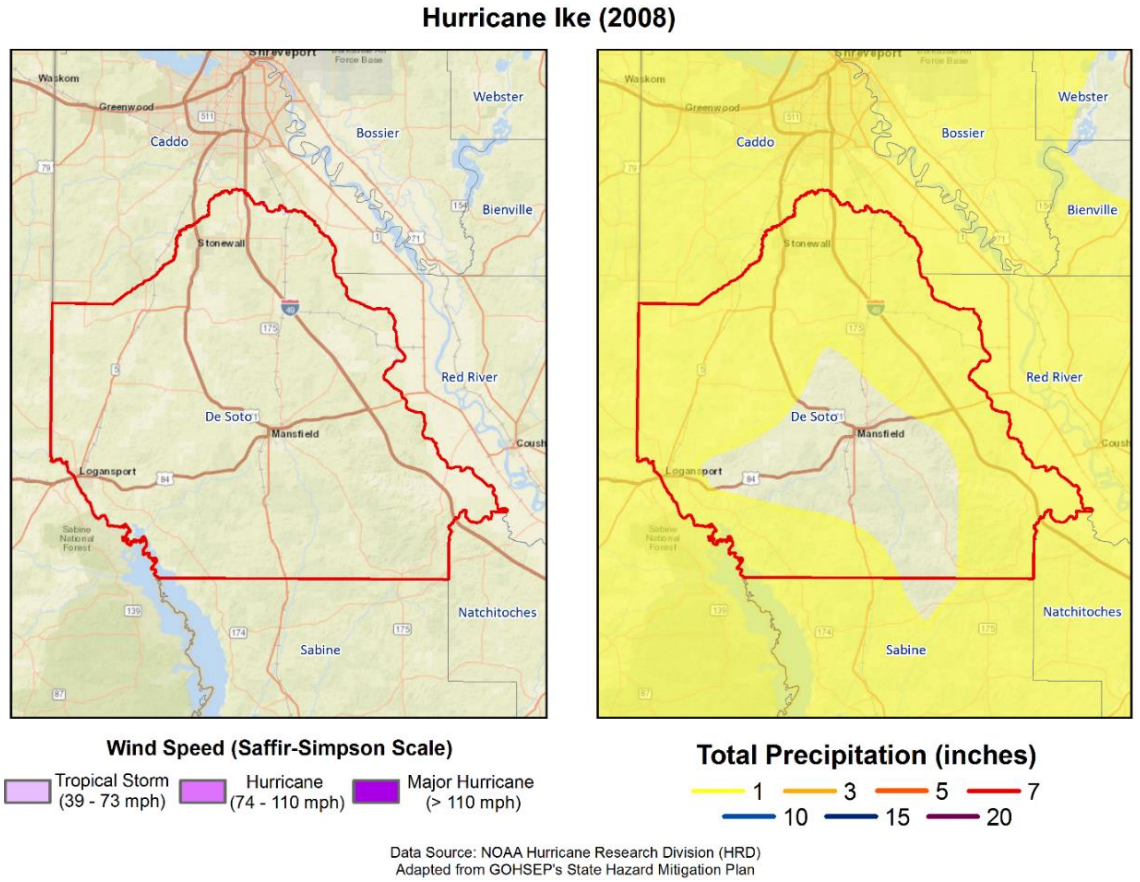


Figure 2-28: Wind Speed and Precipitation Totals in DeSoto Parish for Hurricane Ike

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

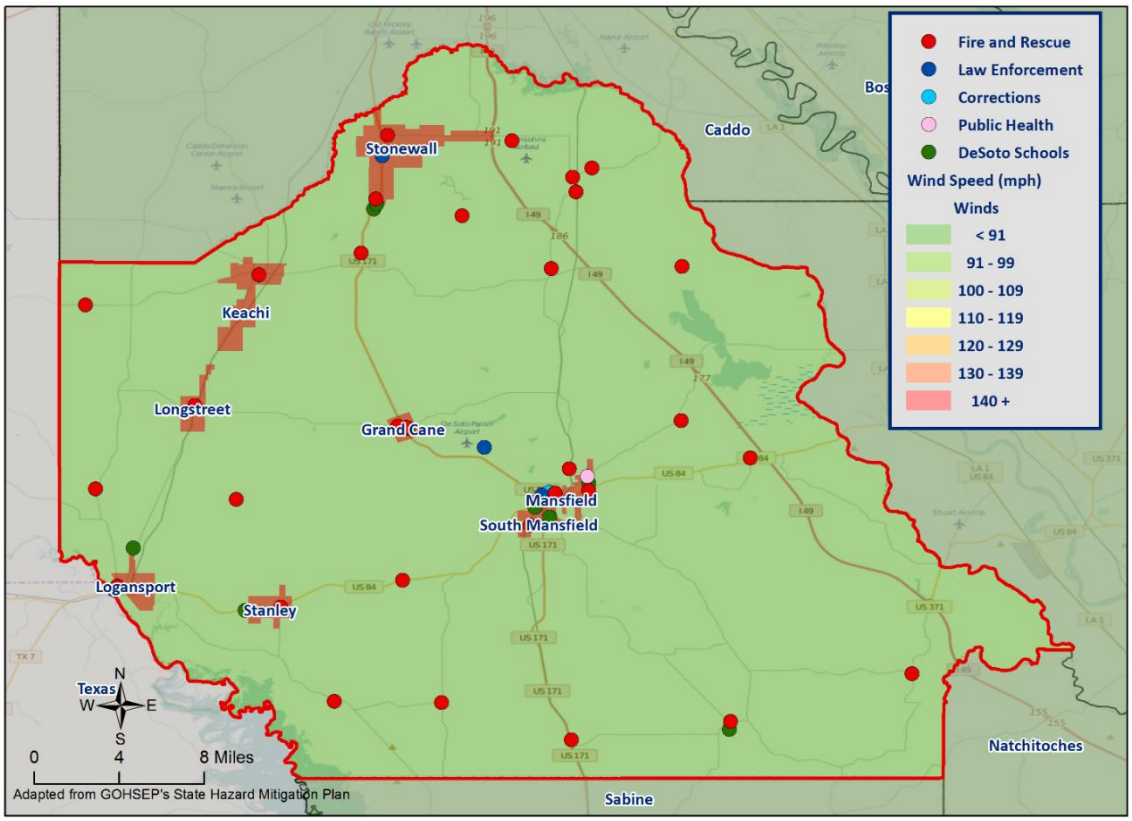


Figure 2-29: Winds Zones for DeSoto Parish in Relation to Critical Facilities

Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact DeSoto Parish. The annual chance of occurrence for a tropical cyclone is estimated at 12% for DeSoto Parish and its municipalities, with three events occurring within 25 years. The tropical cyclone season for the Atlantic Basin is from June 1st through November 30th, with most of the major hurricanes (Saffir-Simpson Categories 3, 4, & 5) occurring between the months of August and October.

Estimated Potential Losses

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

Table 2-71: Total Estimated Losses for a 100-Year Hurricane Event
(Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
DeSoto Parish (Unincorporated)	$1,051,482
Grand Cane	$14,847
Keachi	$18,098
Logansport	$95,400
Longstreet	$9,632
Mansfield	$306,813
South Mansfield	$21,227
Stanley	$6,564
Stonewall	$111,289
Total	**$1,635,352**

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

Table 2-72: Ratio of Total Losses to Total Estimated Value of Assets for Each Jurisdiction in DeSoto Parish
(Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
Unincorporated	$1,051,482	$2,066,685,000	0.1%
Grand Cane	$14,847	$48,394,000	0.0%
Keachi	$18,098	$47,630,000	0.0%
Logansport	$95,400	$178,472,000	0.1%
Longstreet	$9,632	$21,286,000	0.0%
Mansfield	$306,813	$794,357,000	0.0%
South Mansfield	$21,227	$35,638,000	0.1%
Stanley	$6,564	$17,769,000	0.0%
Stonewall	$111,289	$237,998,000	0.0%

Based on the Hazus 2.2 Hurricane Model, estimated total losses range from less than 0.1% to 0.1% of the total estimated value of all assets for the unincorporated area of DeSoto Parish, and the incorporated areas of Grand Cane, Keachi, Logansport, Longstreet, Mansfield, South Mansfield, Stanley, and Stonewall.

The Hazus 2.2 Hurricane Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the tables on the following pages. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.

Table 2-73: Estimated Losses in Unincorporated DeSoto Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)

DeSoto Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$401
Commercial	$10,455
Government	$977
Industrial	$3,545
Religious / Non-Profit	$4,248
Residential	$1,030,545
Schools	$1,311
Total	**$1,051,482**

Table 2-74: Estimated Losses in Grand Cane for a 100-Year Hurricane Event (Source: Hazus 2.2)

Grand Cane	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$6
Commercial	$148
Government	$14
Industrial	$50
Religious / Non-Profit	$60
Residential	$14,551
Schools	$19
Total	**$14,847**

Table 2-75: *Estimated Losses in Keachi for a 100-Year Hurricane Event (Source: Hazus 2.2)*

Keachi	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$7
Commercial	$180
Government	$17
Industrial	$61
Religious / Non-Profit	$73
Residential	$17,738
Schools	$23
Total	**$18,098**

Table 2-76: Estimated Losses in Logansport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Logansport	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$36
Commercial	$949
Government	$89
Industrial	$322
Religious / Non-Profit	$385
Residential	$93,500
Schools	$119
Total	**$95,400**

Table 2-77: Estimated Losses in Longstreet for a 100-Year Hurricane Event (Source: Hazus 2.2)

Longstreet	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$4
Commercial	$96
Government	$9
Industrial	$32
Religious / Non-Profit	$39
Residential	$9,440
Schools	$12
Total	**$9,632**

Table 2-78: Estimated Losses in Mansfield for a 100-Year Hurricane Event (Source: Hazus 2.2)

Mansfield	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$117
Commercial	$3,051
Government	$285
Industrial	$1,034
Religious / Non-Profit	$1,240
Residential	$300,703
Schools	$383
Total	**$306,813**

Table 2-79: Estimated Losses in South Mansfield for a 100-Year Hurricane Event (Source: Hazus 2.2)

South Mansfield	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$8
Commercial	$211
Government	$20
Industrial	$72
Religious / Non-Profit	$86
Residential	$20,805
Schools	$26
Total	**$21,227**

Table 2-80: Estimated Losses in Stanley for a 100-Year Hurricane Event (Source: Hazus 2.2)

Stanley	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$3
Commercial	$65
Government	$6
Industrial	$22
Religious / Non-Profit	$27
Residential	$6,434
Schools	$8
Total	**$6,564**

Table 2-81: Estimated Losses in Stonewall for a 100-Year Hurricane Event (Source: Hazus 2.2)

Stonewall	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$42
Commercial	$1,107
Government	$103
Industrial	$375
Religious / Non-Profit	$450
Residential	$109,073
Schools	$139
Total	**$111,289**

Threat to People

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

Table 2-82: Number of People Susceptible to a 100-Year Hurricane Event in DeSoto Parish (Source: Hazus 2.2)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Parish (Unincorporated)	17,139	17,139	100.0%
Grand Cane	242	242	100.0%
Keachi	295	295	100.0%
Logansport	1,555	1,555	100.0%
Longstreet	157	157	100.0%
Mansfield	5,001	5,001	100.0%
South Mansfield	346	346	100.0%
Stanley	107	107	100.0%
Stonewall	1,814	1,814	100.0%
Total	**26,656**	**26,656**	**100.0%**

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

Table 2-83: Vulnerable Populations in Unincorporated DeSoto Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)

DeSoto Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	17,139	100.0%
Persons Under 5 Years	1,155	6.7%
Persons Under 18 Years	3,121	18.2%
Persons 65 Years and Over	2,475	14.4%
White	9,937	58.0%
Minority	7,202	42.0%

Table 2-84: Vulnerable Populations in Grand Cane for a 100-Year Hurricane Event (Source: Hazus 2.2)

Grand Cane		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	242	100.0%
Persons Under 5 Years	5	2.1%
Persons Under 18 Years	35	14.5%
Persons 65 Years and Over	41	16.9%
White	206	85.1%
Minority	36	14.9%

Table 2-85: Vulnerable Populations in Keachi for a 100-Year Hurricane Event (Source: Hazus 2.2)

Keachi		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	295	100.0%
Persons Under 5 Years	9	3.1%
Persons Under 18 Years	58	19.7%
Persons 65 Years and Over	52	17.6%
White	234	79.3%
Minority	61	20.7%

Table 2-86: Vulnerable Populations in Logansport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Logansport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	$36	$36
Persons Under 5 Years	$949	$949
Persons Under 18 Years	$89	$89
Persons 65 Years and Over	$322	$322
White	$385	$385
Minority	$93,500	$93,500

Table 2-87: Vulnerable Populations in Longstreet for a 100-Year Hurricane Event (Source: Hazus 2.2)

Longstreet		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	157	100.0%
Persons Under 5 Years	5	3.2%
Persons Under 18 Years	27	17.2%
Persons 65 Years and Over	25	15.9%
White	120	76.4%
Minority	37	23.6%

Table 2-88: Vulnerable Populations in Mansfield for a 100-Year Hurricane Event (Source: Hazus 2.2)

Mansfield		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	5,001	100.0%
Persons Under 5 Years	421	8.4%
Persons Under 18 Years	1,416	28.3%
Persons 65 Years and Over	720	14.4%
White	1,085	21.7%
Minority	3,916	78.3%

Table 2-89: Vulnerable Populations in South Mansfield for a 100-Year Hurricane Event (Source: Hazus 2.2)

South Mansfield		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	346	100.0%
Persons Under 5 Years	36	10.4%
Persons Under 18 Years	98	28.3%
Persons 65 Years and Over	51	14.7%
White	74	21.4%
Minority	272	78.6%

Table 2-90: Vulnerable Populations in Stanley for a 100-Year Hurricane Event (Source: Hazus 2.2)

Stanley		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	107	100.0%
Persons Under 5 Years	8	7.5%
Persons Under 18 Years	20	18.7%
Persons 65 Years and Over	14	13.1%
White	102	95.3%
Minority	5	4.7%

Table 2-91: Vulnerable Populations in Stonewall for a 100-Year Hurricane Event (Source: Hazus 2.2)

Stonewall		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,814	100.0%
Persons Under 5 Years	88	4.9%
Persons Under 18 Years	395	21.8%
Persons 65 Years and Over	290	16.0%
White	1,632	90.0%
Minority	182	10.0%

Vulnerability

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

Wildfires

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

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

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger.
Figure *2-30* displays the areas of wildland-urban interaction in DeSoto Parish.

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

Table 2-92: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale (Source: Southern Wildfire Assessment Portal)

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

Location

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

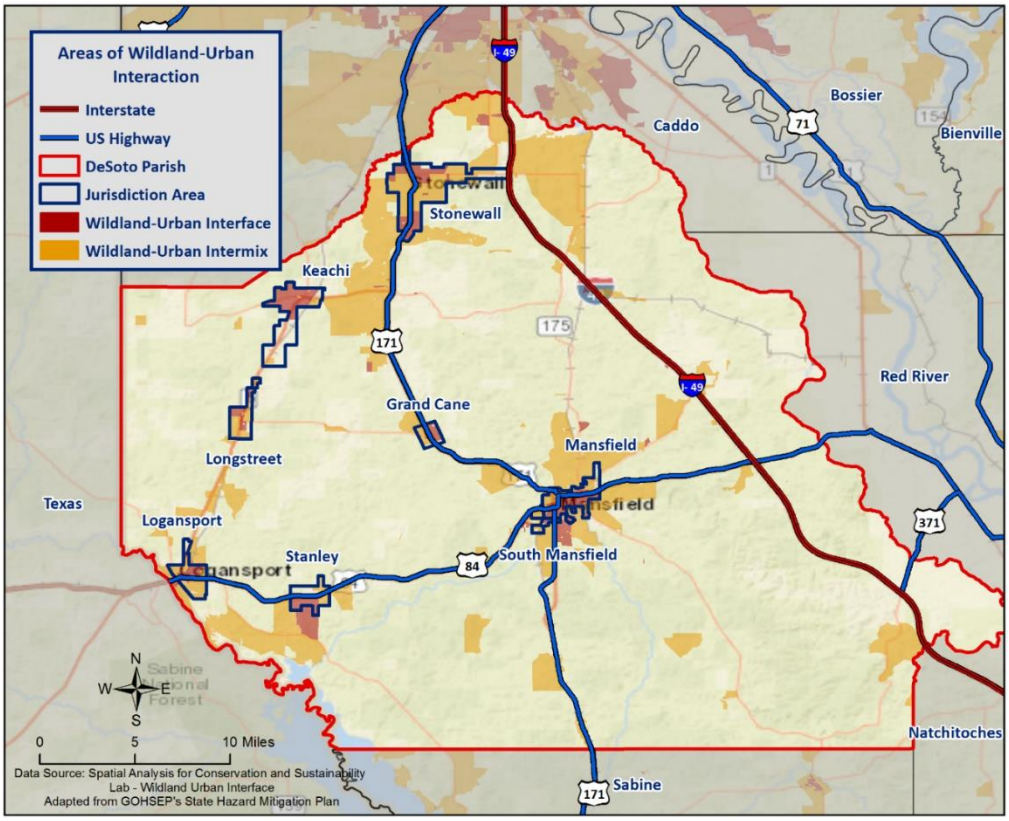


Figure 2-30: Wildland-Urban Interaction in DeSoto Parish

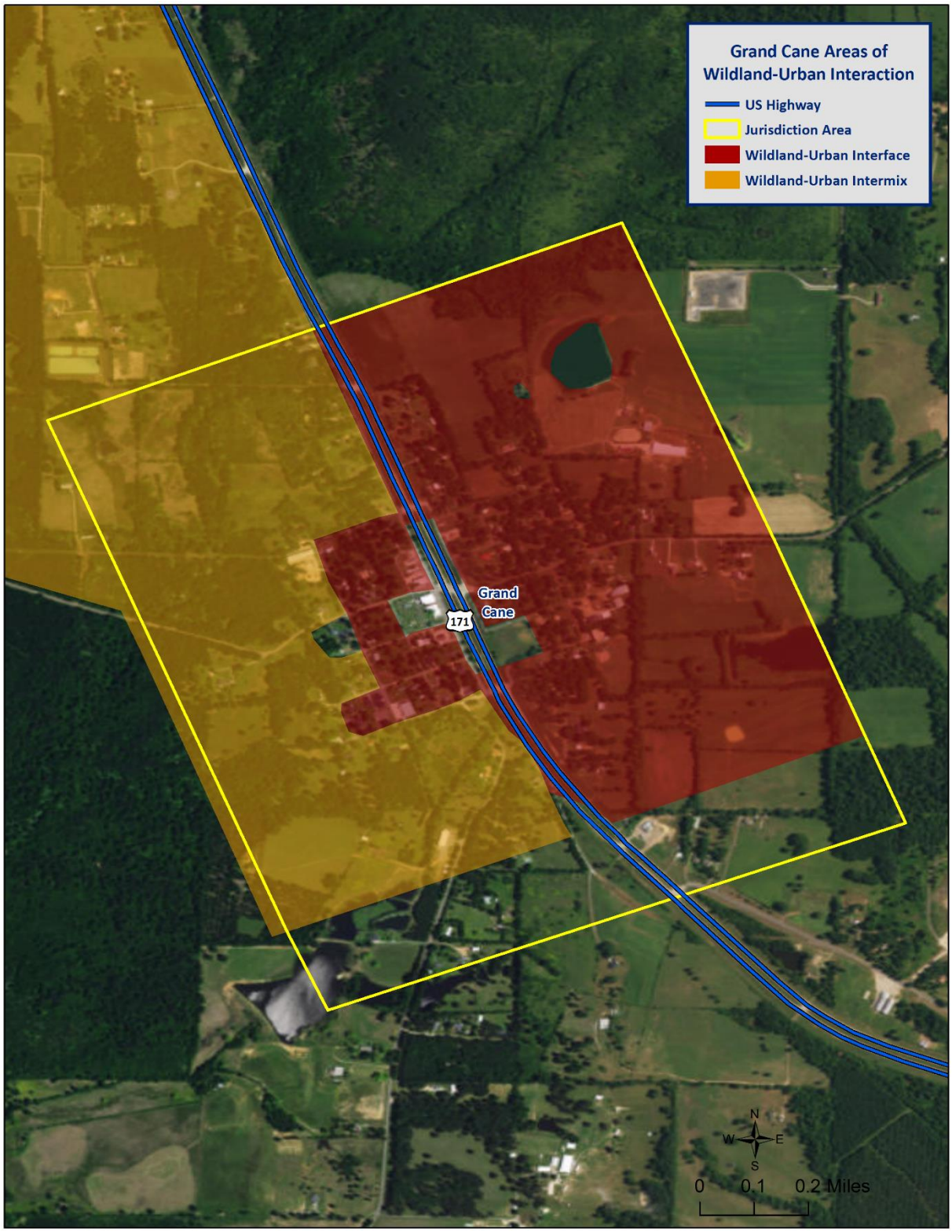


Figure 2-31: Wildland-Urban Interaction in Grand Cane

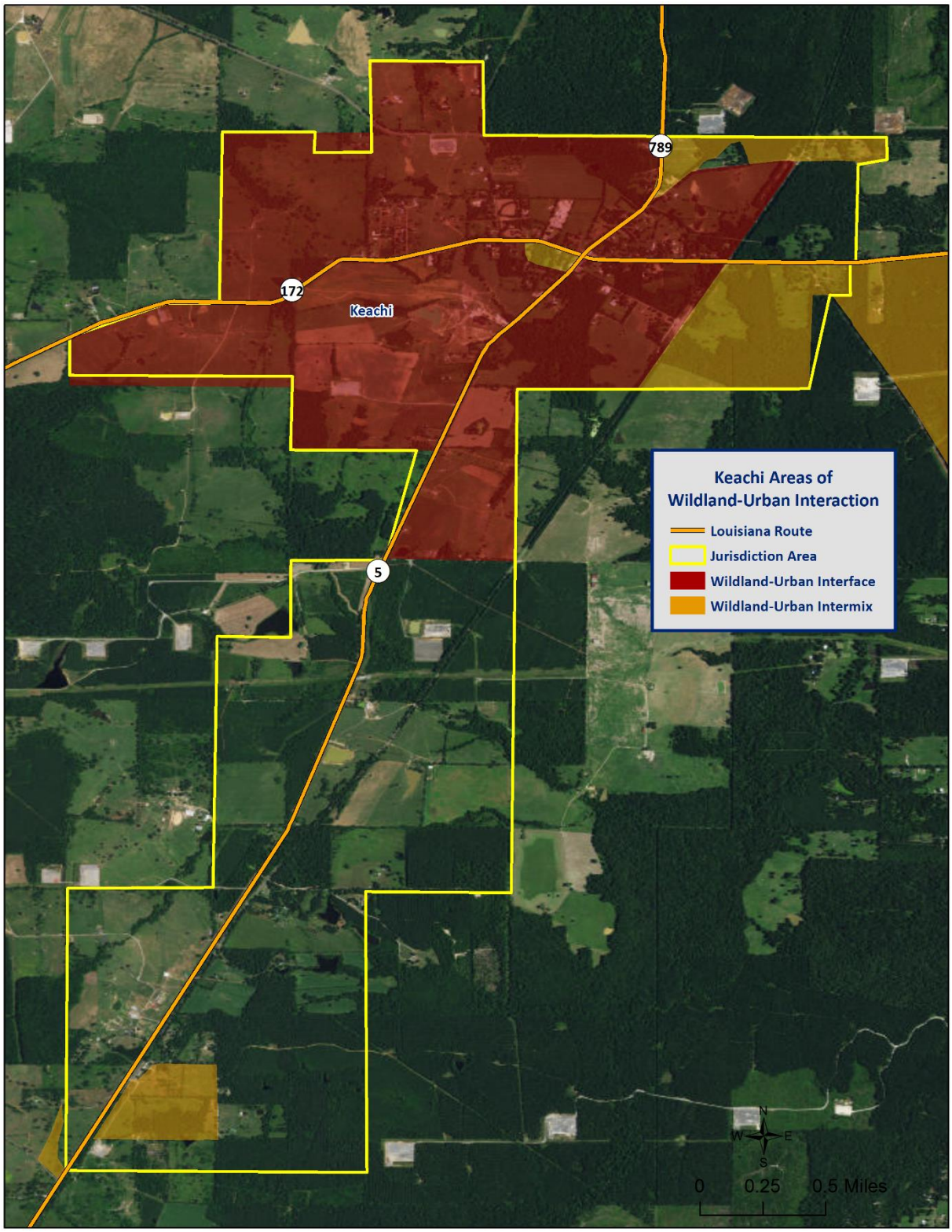


Figure 2-32: Wildland-Urban Interaction in Keachi

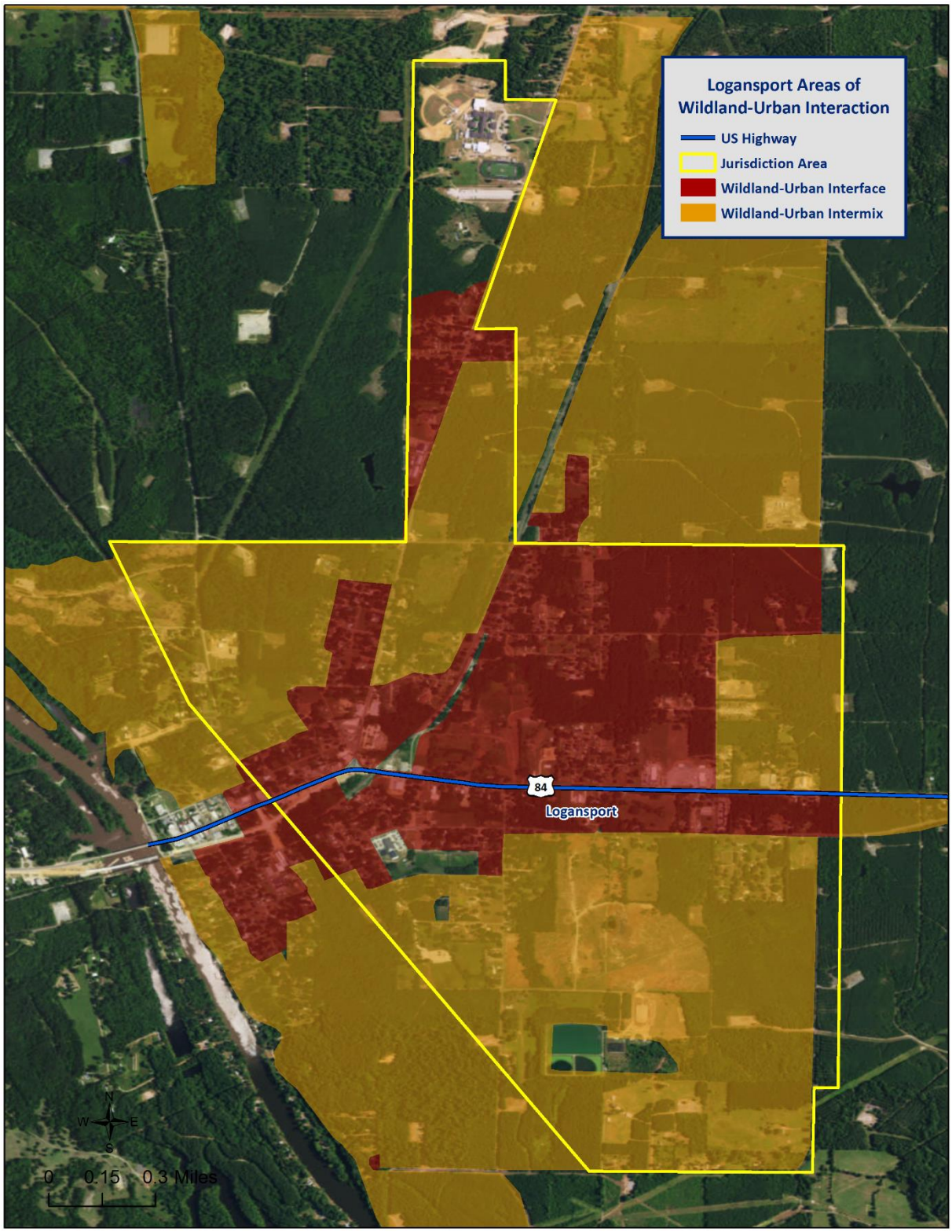


Figure 2-33: Wildland-Urban Interaction in Logansport

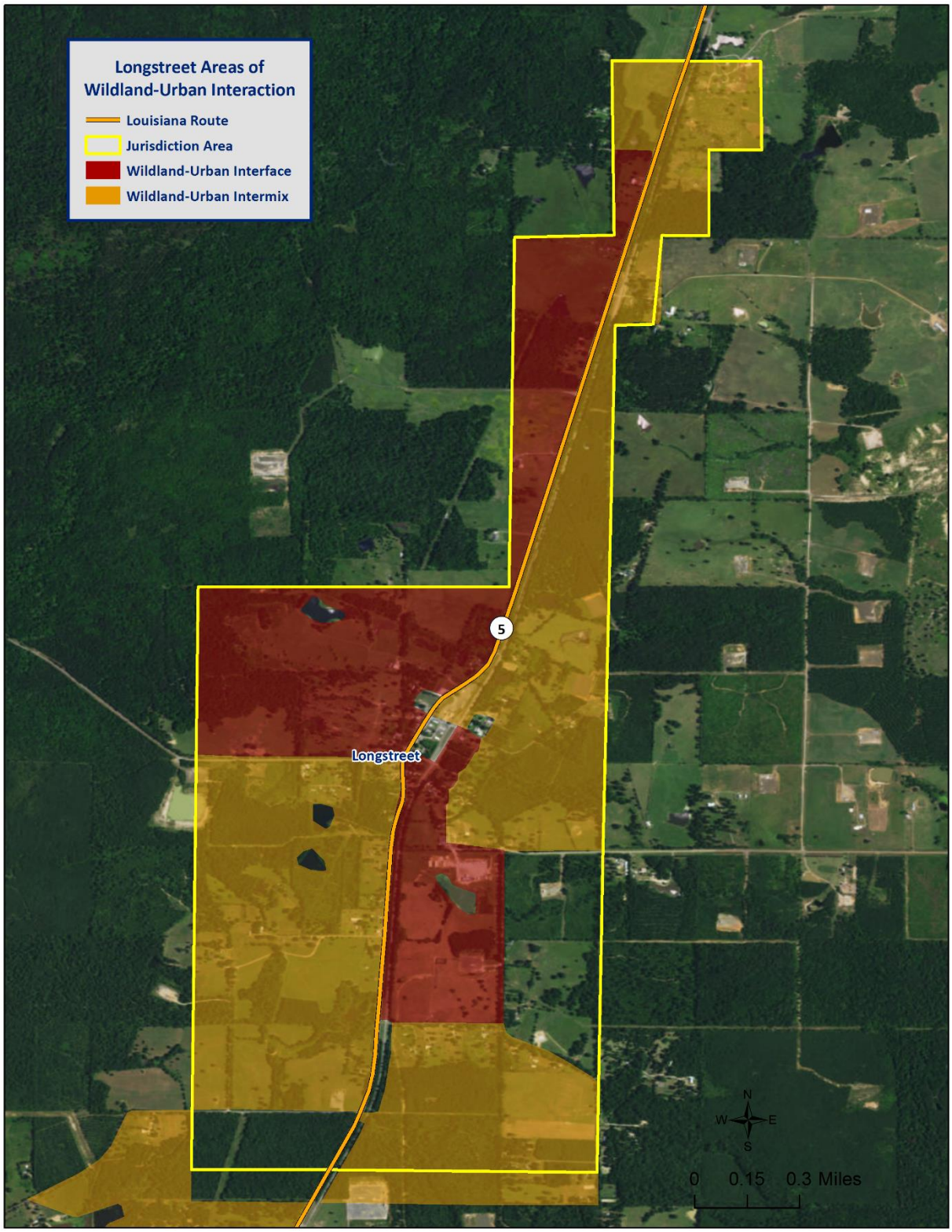


Figure 2-34: Wildland-Urban Interaction in Longstreet

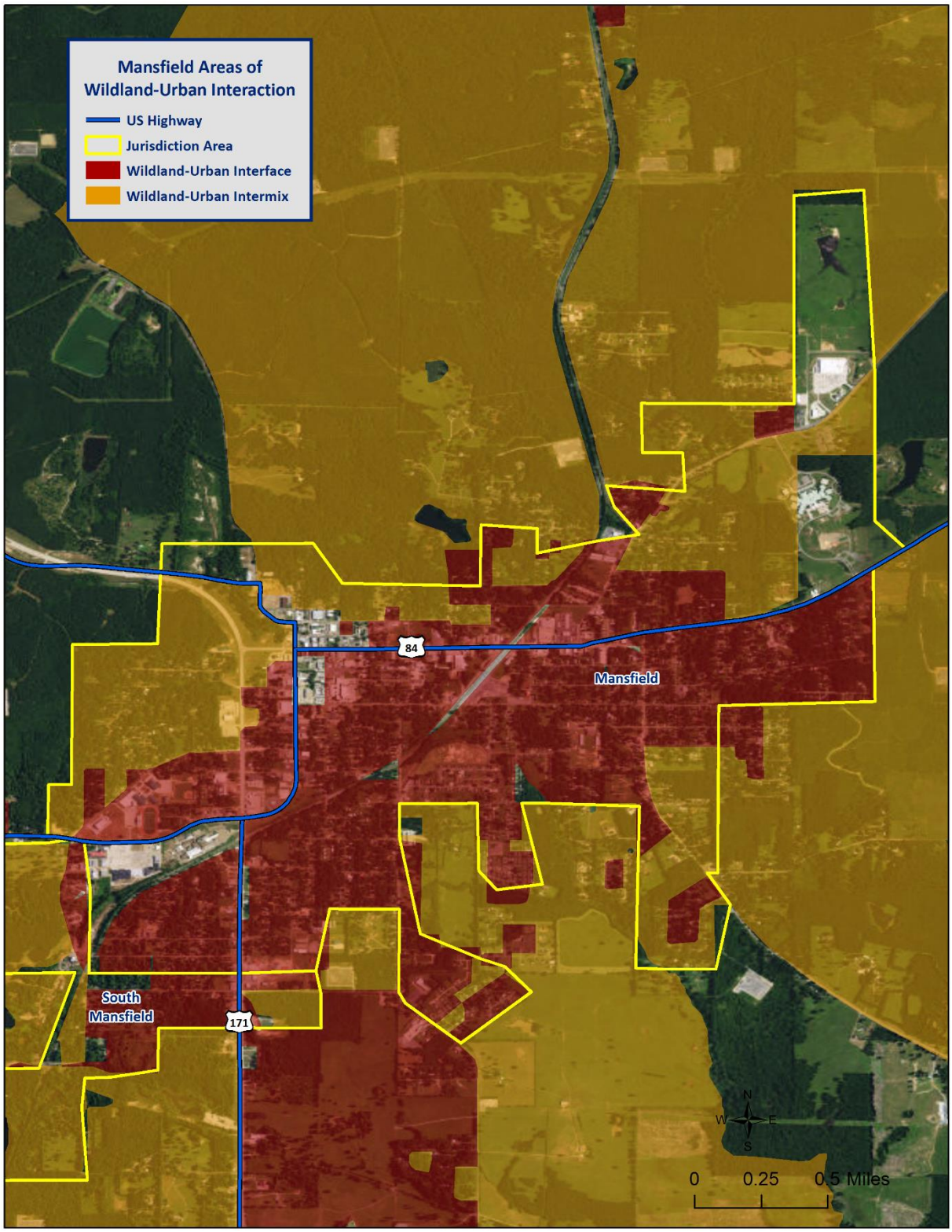


Figure 2-35: Wildland-Urban Interaction in Mansfield

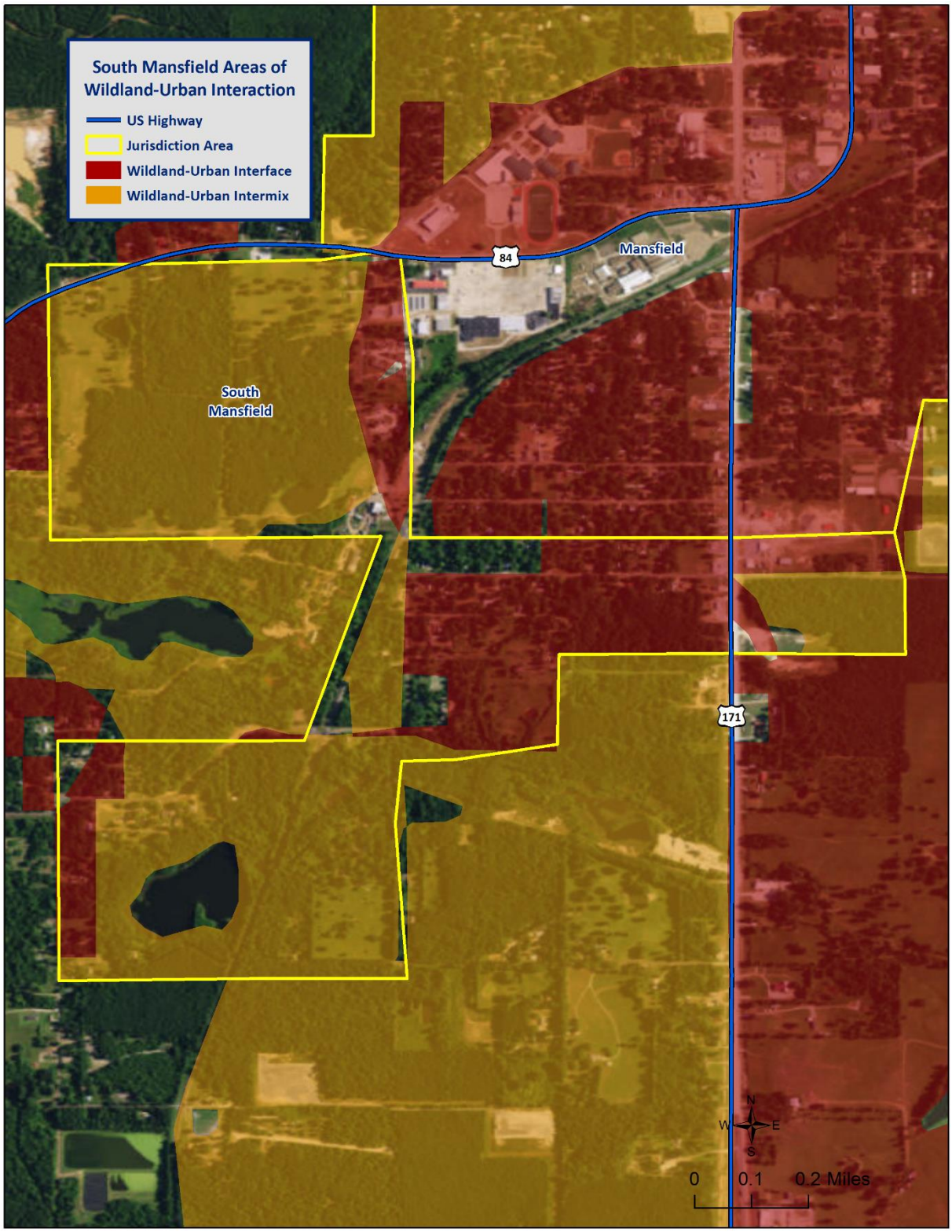


Figure 2-36: Wildland-Urban Interaction in South Mansfield

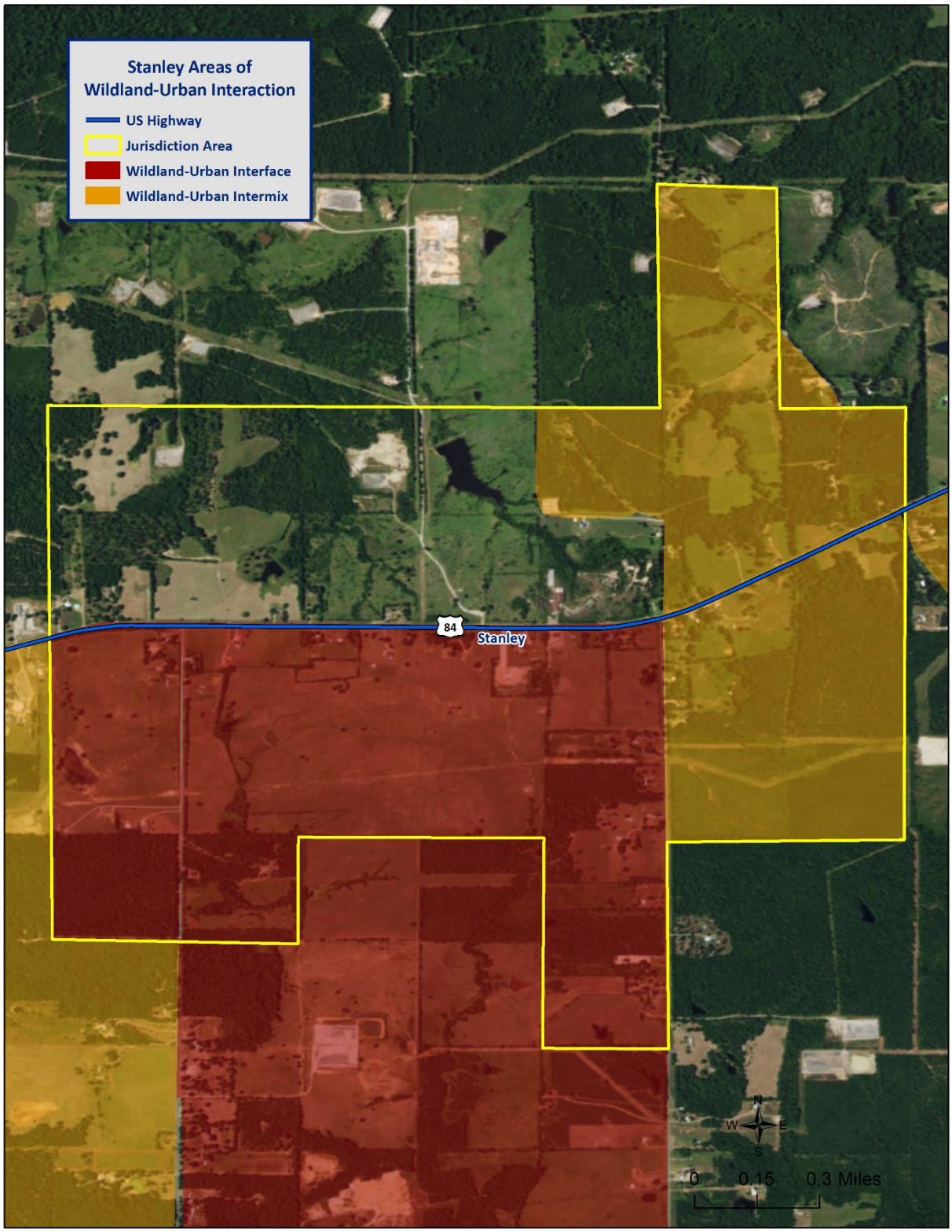


Figure 2-37: Wildland-Urban Interaction in Stanley

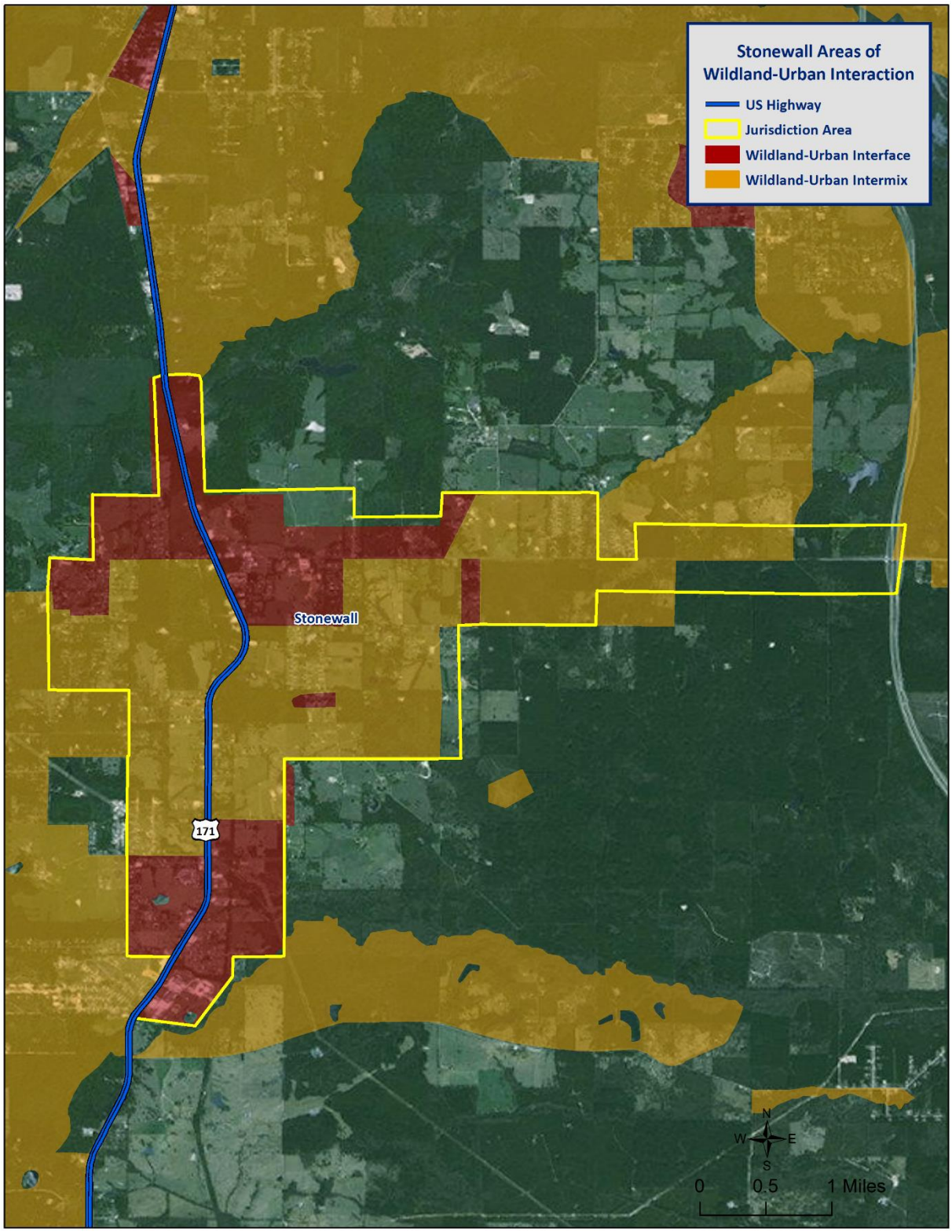


Figure 2-38: Wildland-Urban Interaction in Stonewall

Previous Occurrences / Extents

According to SHELDUS, there have been two reported wildfire events that have occurred within the boundaries of DeSoto Parish between the years of 1990 and 2015. The following table provides a brief synopsis of each event.

Table 2-93: Previous Occurrences for Wildfire Events

Date	Synopsis	Property Damage	Crop Damage
June 20, 2011	Downed power lines ignited dry fuels causing a forest fire in the southern portion of DeSoto Parish. The fire consumed several hundred acres of forest fires. One fire fighter was treated for smoke inhalation at the scene.	$0	$20,000
September 11, 2013	Drought conditions and a cigarette butt tossed outside caused a forest fire near Logansport along Hwy 191. One fire fighter was seriously injured when a tree that was being cut down struck the fire fighter causing bleeding on the brain and a C6 fracture in his neck.	$0	$0

Since 2010, there have been no reported wildfire events in the incorporated areas of Grand Cane, Keachi, Logansport, Longstreet, Mansfield, South Mansfield, Stanley, and Stonewall.

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

Table 2-94: Potential Wildfire Intensity Levels for DeSoto Parish
(Source: Southern Wildfire Assessment Portal)

Potential Wildfire Intensity	
DeSoto Parish (Unincorporated)	Highest Intensity Level 5
Grand Cane	Low Intensity Level 2
Keachi	Low Intensity Level 2
Logansport	Moderate to High Intensity Level 3.5
Longstreet	Low Intensity Level 2
Mansfield	Moderate Intensity Level 3
South Mansfield	Moderate to High Intensity Level 3.5
Stanley	Moderate to High Intensity Level 3.5
Stonewall	Low Intensity Level 2

Frequency / Probability

With two recorded events in 25 years, wildfire events within the boundaries of DeSoto Parish have an annual chance of occurrence calculated at 8% based on the SHELDUS dataset.

Estimated Potential Losses

According to the SHELDUS database, there have been two wildfire events that have caused property damage, crop damage, injuries, or fatalities in DeSoto Parish. In assessing the overall risk to population, the most vulnerable population throughout the parish consists of those residing in areas of wildland-urban interaction. Figure *2-30* displays the areas of wildland-urban interaction in DeSoto Parish.

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

Table 2-95: Total Building Exposure by Wildland-Urban Interaction Areas (Source: Hazus 2.2)

Jurisdiction	Estimated Total Building Exposure
DeSoto Parish (Unincorporated)	$1,562,832,000
Grand Cane	$53,299,000
Keachi	$44,338,000
Logansport	$178,472,000
Longstreet	$21,286,000
Mansfield	$784,728,000
South Mansfield	$33,716,000
Stanley	$17,769,000
Stonewall	$238,813,000
Total	**$2,935,253,000**

Hazus 2.2 also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. Utilizing this information with the wildland-urban interaction areas allows for identifying the total exposure by jurisdiction. The total exposure for each jurisdiction by sector is listed in the following tables. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.

Table 2-96: Estimated Exposure for Unincorporated DeSoto Parish by Sector (Source: Hazus 2.2)

DeSoto Parish (Unincorporated)	Estimated Total Building Exposure by Sector
Agricultural	$5,762,000
Commercial	$87,088,000
Government	$9,599,000
Industrial	$89,645,000
Religious / Non-Profit	$68,696,000
Residential	$1,300,004,000
Schools	$2,038,000
Total	**$1,562,832,000**

Table 2-97: Estimated Exposure for Grand Cane by Sector
(Source: Hazus 2.2)

Grand Cane	Estimated Total Building Exposure by Sector
Agricultural	$950,000
Commercial	$3,128,000
Government	$482,000
Industrial	$3,882,000
Religious / Non-Profit	$912,000
Residential	$40,345,000
Schools	$3,600,000
Total	**$53,299,000**

Table 2-98: Estimated Exposure for Keachi by Sector
(Source: Hazus 2.2)

Keachi	Estimated Total Building Exposure by Sector
Agricultural	$1,260,000
Commercial	$122,000
Government	$6,039,000
Industrial	$490,000
Religious / Non-Profit	$854,000
Residential	$35,573,000
Schools	$0
Total	**$44,338,000**

Table 2-99: Estimated Exposure for Logansport by Sector
(Source: Hazus 2.2)

Logansport	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$19,320,000
Government	$0
Industrial	$918,000
Religious / Non-Profit	$7,290,000
Residential	$145,328,000
Schools	$5,616,000
Total	**$178,472,000**

Table 2-100: Estimated Exposure for Longstreet by Sector
(Source: Hazus 2.2)

Longstreet	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$21,286,000
Schools	$0
Total	**$21,286,000**

Table 2-101: Estimated Exposure for Mansfield by Sector
(Source: Hazus 2.2)

Mansfield	Estimated Total Building Exposure by Sector
Agricultural	$420,000
Commercial	$207,293,000
Government	$17,337,000
Industrial	$42,440,000
Religious / Non-Profit	$32,184,000
Residential	$466,638,000
Schools	$18,416,000
Total	**$784,728,000**

Table 2-102: Estimated Exposure for South Mansfield by Sector
(Source: Hazus 2.2)

South Mansfield	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$1,644,000
Government	$0
Industrial	$1,280,000
Religious / Non-Profit	$0
Residential	$30,486,000
Schools	$306,000
Total	**$33,716,000**

Table 2-103: Estimated Exposure for Stanley by Sector
(Source: Hazus 2.2)

Stanley	Estimated Total Building Exposure by Sector
Agricultural	$192,000
Commercial	$3,706,000
Government	$0
Industrial	$0
Religious / Non-Profit	$1,416,000
Residential	$12,455,000
Schools	$0
Total	**$17,769,000**

Table 2-104: Estimated Exposure for Stonewall by Sector
(Source: Hazus 2.2)

Stonewall	Estimated Total Building Exposure by Sector
Agricultural	$1,036,000
Commercial	$25,295,000
Government	$3,423,000
Industrial	$7,962,000
Religious / Non-Profit	$10,376,000
Residential	$181,521,000
Schools	$9,200,000
Total	**$238,813,000**

Threat to People

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

Table 2-105: Populations Located within a Wildland-Urban Interaction Areas
(Source: 2010 U.S. Census Data)

Number of People Located in Wildland-Urban Interaction Areas			
Location	**# in Community**	**# in Area**	**% in Area**
DeSoto (Unincorporated)	17,139	9,033	52.7%
Grand Cane	242	222	91.7%
Keachi	295	235	79.7%
Logansport	1,555	1,187	76.3%
Longstreet	157	137	87.3%
Mansfield	5,001	4,785	95.7%
South Mansfield	346	281	81.2%
Stanley	107	96	89.7%
Stonewall	1,814	1,796	99.0%
Total	**26,656**	**17,772**	**66.7%**

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

Table 2-106: Population in Unincorporated DeSoto Parish Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

DeSoto Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	9,033	52.7%
Persons Under 5 Years	609	6.7%
Persons Under 18 Years	1,645	18.2%
Persons 65 Years and Over	1,304	14.4%
White	5,237	58.0%
Minority	3,796	42.0%

Table 2-107: Population in Grand Cane Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Grand Cane		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	222	91.7%
Persons Under 5 Years	5	2.1%
Persons Under 18 Years	32	14.5%
Persons 65 Years and Over	38	16.9%
White	189	85.1%
Minority	33	14.9%

Table 2-108: Population in Keachi Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Keachi		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	235	79.7%
Persons Under 5 Years	7	3.1%
Persons Under 18 Years	39	16.6%
Persons 65 Years and Over	41	17.6%
White	186	79.3%
Minority	49	20.7%

Table 2-109: Population in Logansport Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Logansport		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	1,187	76.3%
Persons Under 5 Years	105	8.9%
Persons Under 18 Years	245	20.6%
Persons 65 Years and Over	178	15.0%
White	637	53.7%
Minority	550	46.3%

Table 2-110: Population in Longstreet Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Longstreet		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	137	87.3%
Persons Under 5 Years	4	3.2%
Persons Under 18 Years	19	14.0%
Persons 65 Years and Over	22	15.9%
White	105	76.4%
Minority	32	23.6%

Table 2-111: Population in Mansfield Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Mansfield		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	4,785	95.7%
Persons Under 5 Years	403	8.4%
Persons Under 18 Years	952	19.9%
Persons 65 Years and Over	689	14.4%
White	1,038	21.7%
Minority	3,747	78.3%

Table 2-112: Population in South Mansfield Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

South Mansfield		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	281	81.2%
Persons Under 5 Years	29	10.4%
Persons Under 18 Years	50	17.9%
Persons 65 Years and Over	41	14.7%
White	60	21.4%
Minority	221	78.6%

Table 2-113: Population in Stanley Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Stanley		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	96	89.7%
Persons Under 5 Years	7	7.5%
Persons Under 18 Years	18	18.7%
Persons 65 Years and Over	13	13.1%
White	92	95.3%
Minority	4	4.7%

Table 2-114: Population in Stonewall Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Stonewall		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	1,796	99.0%
Persons Under 5 Years	87	4.9%
Persons Under 18 Years	304	16.9%
Persons 65 Years and Over	287	16.0%
White	1,616	90.0%
Minority	180	10.0%

Vulnerability

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

Winter Storms

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

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

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

In a typical winter storm event, homes and buildings are damaged by ice accumulation, either directly by the weight of the ice on the roofs or by trees and/or limbs falling on buildings. While it is not very prevalent, this type of damage can occur in Louisiana, particularly in north Louisiana. Effects of winter weather more likely to occur in Louisiana, especially 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 following 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 2-115: 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 DeSoto Parish as all of the adjacent parishes, the entire planning area for DeSoto Parish is equally at risk for winter storms.

Previous Occurrences / Extents

According to SHELDUS, there have been six reported winter storm events that have occurred within the boundaries of DeSoto Parish between the years of 1990 and 2015. The table on the following page provides a brief synopsis of each event. Based on historic data, DeSoto Parish can expect an ice damage index of 2 on the Sperry-Piltz Ice Accumulation Index.

Table 2-116: Previous Occurrences for Winter Storm Events

Date	Synopsis	Property Damage	Crop Damage
March 13, 1993	Winds associated with a rapidly strengthening extratropical storm moved quickly through Louisiana. There were numerous press reports of large trees, power lines, and power poles being blown down by these winds. Thousands of homes and businesses lost power during the storm. The blueberry crop was almost totally destroyed as a result of the freeze.	$0	$227,828
February 11, 1994	An upper level storm system moved out of the Texas Hill Country and into Northwest Louisiana bringing widespread precipitation to the area. Sleet accumulations exceeded one inch across portions of the region. Ice accumulations exceeded one quarter of an inch in northwest Louisiana. Impacts included numerous automobile accidents, downed trees and power lines, and lost power.	$1,540,359	$0
December 22, 1998	A shallow dome of arctic air spread across norther Louisiana while moisture was drawn in from the northern Gulf of Mexico. The result was widespread freezing rain, sleet, and freezing drizzle. Ice accumulated mainly across exposed surfaces such as trees and power lines as well as bridges and overpasses. Over a quarter million people were without power, some for over a week.	$85,433	$0
December 12, 2000	Ice accumulations on average of one inch were common in northwest Louisiana. An estimated 235,000 residents lost power from snapped power lines. Upwards of 29 transmission lines atop “H” shaped steel towers were snapped due to the weight of the ice.	$4,124,321	$0
January 7, 2010	Overnight and early morning low temperatures were well into the teens with daytime high temperatures struggling to make it to the freezing mark. The cold temperatures froze water pipes of many homes throughout the parish. Some city and parish water lines burst as well resulting in many residents either without water for a short period of time or with reduced water pressure.	$54,283	$0
February 11, 2014	Moderate amounts of a wintery mix fell across the parish with ice accumulations of approximately ¼ of an inch.	$0	$0

Based on previous winter storm events, the worst-case scenario for DeSoto Parish and its jurisdictions is approximately one to two inches of snow accumulation and approximately one inch of ice accumulation.

Frequency / Probability

With six recorded events in 25 years, winter storm events within the boundaries of DeSoto Parish have an annual chance of occurrence calculated at 24% based on the SHELDUS dataset.

Estimated Potential Losses

Since 1990, there have been five reported winter weather events that have resulted in property and/or crop damages according to the SHELDUS database. The total property damages associated with these storms have totaled $5,804,396. To estimate the potential losses of a winter weather event on an annual basis, the total damage recorded for winter weather events was divided by the total number of years of available winter weather data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $232,176. To assess potential losses to the participating jurisdictions, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. The following tables provide an estimate of potential property losses for DeSoto Parish based on the 2010 Census data:

Table 2-117: Estimated Annual Property Losses in DeSoto Parish from Winter Storms

Estimated Annual Potential Losses from Winter Storms for DeSoto Parish				
Unincorporated DeSoto Parish (64.3% of Population)	Grand Cane (0.9% of Population)	Keachi (1.1% of Population)	Logansport (5.8% of Population)	Longstreet (0.6% of Population)
$149,282	$2,108	$2,569	$13,544	$1,367

Table 2-118: Estimated Annual Property Losses in DeSoto Parish from Winter Storms (Continued)

Estimated Annual Potential Losses from Winter Storms for DeSoto Parish			
Mansfield (18.8% of Population)	South Mansfield (1.3% of Population)	Stanley (0.4% of Population)	Stonewall (6.8% of Population)
$43,559	$3,014	$932	$15,800

From 1990 - 2015, there have been no injuries or fatality as a result of winter weather in DeSoto Parish.

Vulnerability

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

Dam Failure

Dams are water storage, control, or diversion barriers that impound water upstream in reservoirs. Dams are a vital part of our nation's infrastructure, providing drinking water, flood protection, renewable hydroelectric power, navigation, irrigation, and recreation. These critical daily benefits are also inextricably linked to the potential harmful consequences of a dam failure.

Dam failure is a collapse or breach in the structure. A dam failure can result in severe loss of life, economic disaster, and extensive environmental damage. While most dams have storage volumes small enough that failures have few repercussions, dams with large storage volumes can cause significant flooding downstream. Dam failures often have a rapid rate of onset, leaving little time for evacuation. The first signs of the failure may go unnoticed upon visual inspection of the dam structure. However, continual maintenance and inspection of dams often provide the opportunity to identify possible deficiencies in their early stages and can prevent a possible catastrophic failure event.

The duration of the flooding event caused by the failure depends largely on the amount of water and downstream topography. Given smaller volumes of water and a topography suited for transporting the water rapidly downstream, the event may only last hours. Because of the lack of seasonality and other predictive factors, a predictive frequency or likelihood of dam failures cannot be determined. However, the National Dam Safety Program (NDSP) produces hazard rankings (high, significant, and low) and definitions of dam structures, based on potential impact.

Dam/reservoir failures can result from any one of or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which cause most failures;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including the failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway;
- Landslides into reservoirs, which cause surges that result in overtopping;
- High winds, which can cause significant wave action and result in substantial erosion; and
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments that can weaken entire structures.

Location

DeSoto Parish has no U.S. Army Corps of Engineers' dam locations within the DeSoto Parish Planning area.

Previous Occurrences / Extents

The SHELDUS, National Climatic Data Center, and parish officials report no dam failure events occurring within the boundaries of the DeSoto Parish planning area.

Frequency / Probability

Based on historical record, it is determined that a dam failure event has less than a 1% annual chance of occurrence in the DeSoto Parish planning area and they have no impact on the parish. As a result, dam failure is discounted and not carried forward into risk assessment.

Levee Failure

Levees and floodwalls are flood control barriers constructed of earth, concrete, or other materials. For the purposes of this plan, levees are distinguished from smaller flood barriers (such as berms) by their size and extent. Berms are barriers that only protect a small number of structures, or at times only a single structure. Levees and floodwalls are barriers that protect significant areas of residential, commercial, or industrial development; at a minimum, they protect a neighborhood or small community. Levee failure involves the overtopping, breach, or collapse of the levee. Levee failure is especially destructive to nearby development during flood and hurricane events.

The northern half of Louisiana is protected by levees on the Ouachita River, under the authority of the Vicksburg District of the United States Army Corp of Engineers (USACE). The Vicksburg District encompasses 68,000 mi^2 in the states of Arkansas, Mississippi and Louisiana. They manage seven drainage basins, including the Yazoo, Pearl, Big Black, Red, Ouachita, and Mississippi Rivers; 12 locks and dams on the Pearl, Red, and Ouachita Rivers; 1,808 miles of levees, including 468 miles along the Mississippi River; and multiple lakes with 1,709 miles of shoreline.

Coastal and southern Louisiana are protected by an extensive levee system under the authority of the New Orleans District of the USACE. This system includes 30,000 mi^2 of Louisiana south of Alexandria, including 961 miles of river levees in the Mississippi River and Tributaries Project, 449 miles of river levees in the Atchafalaya Basin, and 340 miles of hurricane-protection levees. Other levees have been built along stretches of rivers throughout Louisiana by local levee districts and private citizens. The data regarding these non-federal levees are managed by the individual entity responsible for construction and subsequent maintenance and are not kept in a consistent format for comprehensive hazard analysis.

The effects of a levee failure on property is similar to that of a flood, as discussed in the flooding section. One major difference is that the velocity of the water is increased in the area of the breach, so the potential for property damage is higher in these areas.

A levee failure occurs during high water events, so the populace is normally alerted to the potential danger. Levees are normally monitored during these events and the population in danger is alerted to a possible levee failure. However, if people consider themselves safe once a levee has been breached and do not evacuate, the results could be deadly.

Location

DeSoto Parish has no U.S. Army Corps of Engineers' levee locations within the DeSoto Parish Planning area.

Previous Occurrences / Extents

The SHELDUS, National Climatic Data Center, and parish officials report no levee failure events occurring within the boundaries of the DeSoto Parish planning area.

Frequency / Probability

Based on historical record, it is determined that a levee failure event has less than a 1% annual chance of occurrence in the DeSoto Parish planning area and they have no impact on the parish. As a result, levee failure is discounted and not carried forward into risk assessment.

3. Capability Assessment

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

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

Policies, Plans, and Programs

DeSoto Parish capabilities are unique to the parish, 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. They take an integrated and strategic look holistically at hazard mitigation in DeSoto Parish to propose ways to continually improve it. These tools are valuable instruments in pre- and post-disaster mitigation as they facilitate the implementation of mitigation activities through the current legal and regulatory framework. Examples of existing documents in DeSoto Parish and its jurisdictions are shown in the table below.

Table 3-1: DeSoto Parish Planning and Regulatory Capabilities

Planning and Regulatory										
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.										
	DeSoto Parish	Grand Cane	Keachi	Logansport	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall	
Plans	Yes / No									
Comprehensive / Master Plan	No	No	No	No	No	No	No	No	No	
Capital Improvements Plan	No	No	No	No	No	No	No	No	No	
Economic Development Plan	No	No	No	No	No	No	No	No	No	
Local Emergency Operations Plan	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Continuity of Operations Plan	No	No	No	No	No	No	No	No	No	
Transportation Plan	No	No	No	No	No	No	No	No	No	
Stormwater Management Plan	No	No	No	No	No	No	No	No	No	
Community Wildfire Protection Plan	No	No	No	No	No	No	No	No	No	
Other plans (redevelopment, recovery, coastal zone management)	No	No	No	No	No	No	No	No	No	
Building Code, Permitting and Inspections	Yes / No									
Building Code	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	No	No	No	No	No	No	No	No	
Fire Department ISO/PIAL rating	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Site plan review requirements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Land Use Planning and Ordinances	Yes / No									
Zoning Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Subdivision Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Floodplain Ordinance	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	No	No	No	No	No	No	No	No	
Flood Insurance Rate Maps	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	
Acquisition of land for open space and public recreation uses	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Other	No	No	No	No	No	No	No	No	No	

Building Codes, Permitting, Land Use Planning and Ordinances

The DeSoto Parish Police Jury provides oversight for building permits and codes, and all parish ordinances where applicable.

As of the 2016 update, DeSoto Parish and its jurisdictions ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. Building permits are required prior to beginning any type of construction or renovation projects, installation of electrical wiring, plumbing or gas piping, moving manufactured/modular or portable buildings, and reroofing or demolitions.

The DeSoto Parish Police Jury is also responsible for enforcing the Parish Ordinances relating to health and safety, property maintenance standards, condemnation of unsafe structures, and zoning compliance.

The DeSoto Parish Police Jury meets regularly to consider any proposed ordinance changes, and to take final actions on proposed changes.

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

Some programs and policies, such as the above described, 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

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

Table 3-2: DeSoto Parish Administrative and Technical Capabilities

Administration and Technical										
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.										
	DeSoto Parish	Grand Cane	Keachi	Logansport	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall	Comments
Administration	Yes / No									
Planning Commission	No	No	No	No	No	Yes	No	No	Yes	
Mitigation Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Mutual Aid Agreements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Staff	Yes / No									
Chief Building Official	No	No	No	No	No	Yes	No	No	Yes	
Floodplain Administrator	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Stonewall - Relies on Parish
Emergency Manager	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Community Planner	No	No	No	No	No	No	No	No	No	
Civil Engineer	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
GIS Coordinator	No	No	No	No	No	No	No	No	No	
Grant Writer	No	No	No	No	No	No	No	No	Yes	
Other	No	No	No	No	No	No	No	No	No	
Technical	Yes / No									
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	No	No	No	No	No	No	No	No	
Hazard Data & Information	No	No	No	No	No	No	No	No	No	
Grant Writing	No	No	No	No	Yes	No	No	No	Yes	
Hazus Analysis	No	No	No	No	No	No	No	No	No	
Other	No	No	No	No	No	No	No	No	No	

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

The following resources are available to fund mitigation actions in DeSoto Parish and its jurisdictions:

Table 3-3: DeSoto Parish Financial Capabilities

Financial										
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.										
	DeSoto Parish	Grand Cane	Keachi	Logansport	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall	
Funding Resource	Yes / No									
Capital Improvements project funding	No	No	No	No	No	Yes	No	No	Yes	
Authority to levy taxes for specific purposes	No	No	No	No	No	Yes	No	No	No	
Fees for water, sewer, gas, or electric services	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	
Impact fees for new development	No	No	No	No	No	Yes	No	No	No	
Stormwater Utility Fee	No	No	No	No	No	Yes	No	No	No	
Community Development Block Grant (CDBG)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
Other Funding Programs	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	

Education and Outreach

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

DeSoto Parish and its jurisdictions have existing education and outreach programs to implement mitigation activities, as well as to communicate risk and hazard related information to its communities. The existing programs are as follows:

Table 3-4: DeSoto Parish Education and Outreach Capabilities

Education and Outreach										
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.										
	DeSoto Parish	Grand Cane	Keachi	Logansport	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall	
Program / Organization	Yes / No									
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Natural Disaster or safety related school program	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	N/A	
Storm Ready certification	No	No	No	No	No	No	No	No	No	
Firewise Communities certification	No	No	No	No	No	No	No	No	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	
Other	No	No	No	No	No	No	No	No	No	

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

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

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

- Village of Grand Cane
- Town of Keachi
- Town of Logansport
- Village of Longstreet
- City of Mansfield
- Village of South Mansfield
- Village of Stanley
- Town of Stonewall

Flood Insurance and Community Rating System

DeSoto Parish is not a participant in the Community Rating System (CRS), nor are any of its jurisdictions. Obtaining the CRS rating for the parish and participating jurisdictions is recognized as an eventual goal by the Hazard Mitigation Steering Committee. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

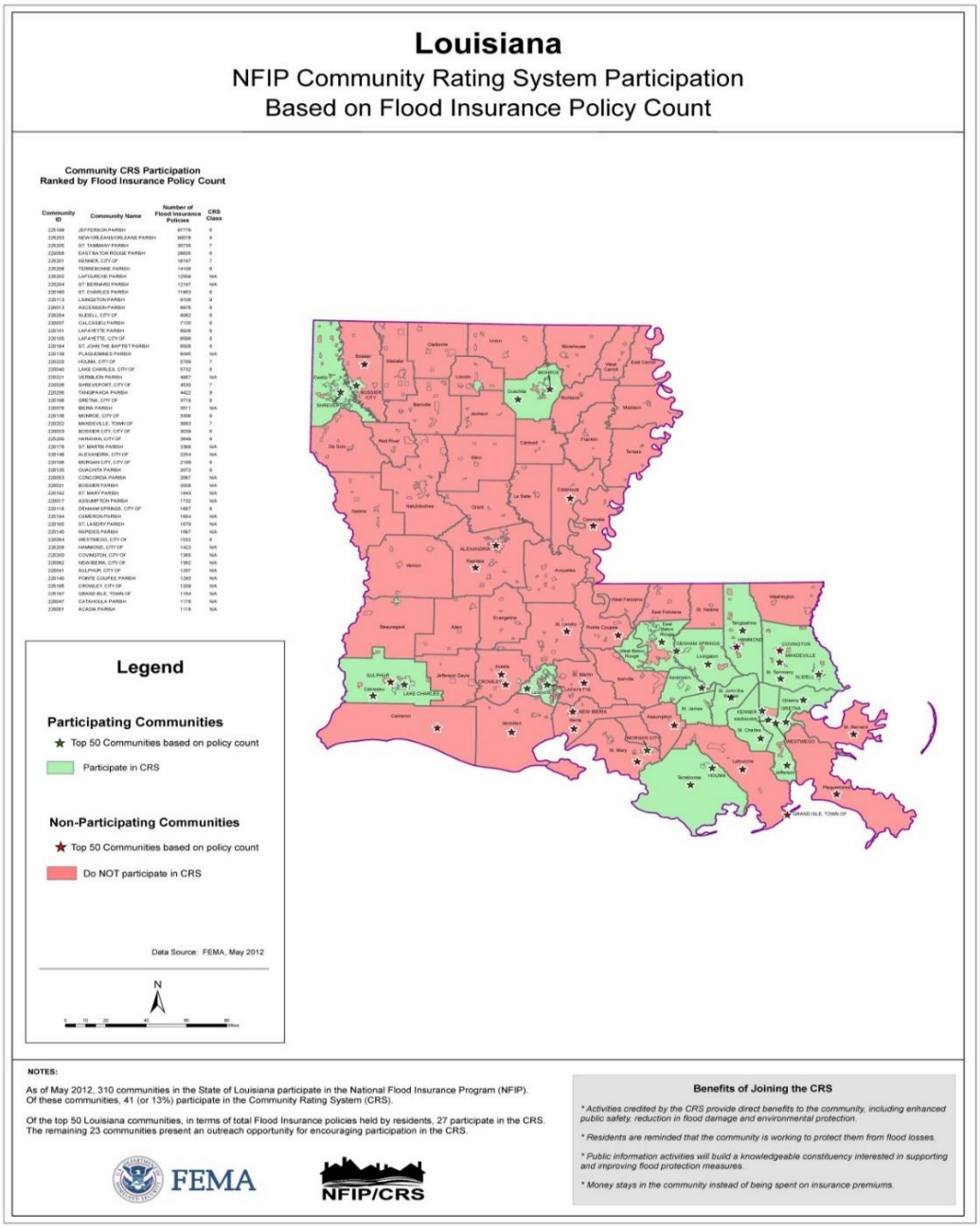


Figure 3-2: Louisiana CRS NFIP Participation
(Source: FEMA[2])

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

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

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

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

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

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

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

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

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

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

NFIP Worksheets

Parish and participating jurisdiction NFIP worksheets can be found in Appendix E: State Required Worksheets

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4. Mitigation Strategy

Introduction

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

DeSoto Parish confirmed the goals, objectives, actions, and projects over the period of the Hazard Mitigation Plan Update process. The mitigation actions and projects in this 2016 update are a product of analysis and review of the DeSoto Parish Hazard Mitigation Plan Steering Committee, under the coordination of the DeSoto Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2011 plan, for review from February 2016 – May 2016.

An online public opinion survey was conducted of DeSoto Parish residents between January and June 2016. The survey was designed to capture public perceptions and opinions regarding natural hazards in DeSoto Parish. In addition, the survey sought to collect information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

This activity was created in an effort to confirm that the goals and action items developed by the DeSoto Parish Hazard Mitigation Plan Steering Committee are representative of the outlook of the community at large. However, because there were so few responses to the survey, an accurate depiction of the public's opinion could not be gathered. Therefore, this this public feedback could not be incorporated into the plan. The full DeSoto Parish survey can be found at the following link:

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

During the public meeting in June, the committee provided a status of the projects from 2011 and the proposed actions for the 2016 update. Committee members then agreed on the submission of each project based on feasibility for funding, ease of completion and other community specific factors. The actions were later prioritized.

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 DeSoto 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, DeSoto Parish and its jurisdictions can make progress toward reducing identified risks.

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

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

The current goals of the DeSoto Parish Hazard Mitigation Plan Update Steering Committee represent long-term commitments by the parish and its jurisdictions. After assessing these goals, the committee decided that the current six goals remain valid, although the sixth goal was amended to better reflect the current focus of the parish.

The goals are as follows:

- Reduce or prevent injury and loss of life
- Reduce or prevent damage to property and material assets
- Reduce or prevent damage to critical facilities essential for public safety including: fire, rescue, law enforcement communications, command and control
- Reduce or prevent damage to special facilities including: schools, nursing homes, hospitals and clinics, prisons, historical and cultural resources
- Reduce or prevent damage to infrastructure and loss of function
- Reduce or prevent damage to high risk facilities

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

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

2016 Mitigation Actions and Update on Previous Plan Actions

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

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

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

The established and agreed upon parish and jurisdiction actions relative to the parish-wide goals are on the following pages. Additionally, action updates from the previous plan updates can be found in the table below.

DeSoto 2011 Hazard Mitigation Action Update

DeSoto Parish – Mitigation Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
D1: Elevate Roads	Elevate low sections of roads that are inundated during periods of flooding including but not limited to the following: White Springs Road; Wood Springs Road; Red Bluff Road; Cash Blackmon Road; Missile Base Road; Nash Road; (others to be identified)	HMGP, PDM	DPPJ; Public Works	Flooding	Carried Over
D2: Voluntary Acquisition of Properties	Pursue voluntary acquisition of properties prone to flooding and at risk of dam and levee failure in areas including but not limited to: Sleepy Hollow; River Road; Garrett Park Road; and others to be identified.	HMGP, RFC, SRL, FMA, PDM	DPPJ; DPSO	Flooding, Dam and Levee Failure	Ongoing
D3: Generator Installation	Install generators at critical and special facilities that lack a back-up power system.	HMGP, PDM	DPPJ; DPSO; Public Works	Hurricane, Tornado, Thunderstorm, Winter Storm, Excessive Heat, Flooding	Carried Over
D4: Shallow Pipeline Inventory	Develop inventory of pipelines that are buried too shallow for safety and that do not meet modern standards.	HMGP, PDM	DPPJ; Public Works	Hazardous Materials	Deleted

DeSoto Parish – Mitigation Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
D5: Critical Facility Retrofitting	Retrofit critical facilities to mitigate storm damage and maintain functionality during storm events. Retrofit projects can include but are not limited to installation of window shutters or glass protective film, roof anchoring devices, reinforced doors, flood protection measures, power surge protection and data back-up systems, generators for back-up power source, et al. Implement general policy to install storm hardened features on future public facilities in cases where it is cost-effective to do so. Facilities include but are not limited to: Sheriff's Office; Courthouse; Schools; Fire Stations; Hospitals and Clinics; City of Mansfield Water, 348 Water Plant Rd., Mansfield, La 71052; City of Logansport Water, 110 Water Plant Road; Water Works District # 1, 348 Water Plant Road; Mansfield Police/Fire, 700 Franklin St.; Logansport Police Substation; DeSoto Parish Road Barn, 424 Liberty Lane, Mansfield; DeSoto Parish EMS; C.E. "Rusty" Williams Airport; et al.	HMGP, PDM	DPPJ; Public Works; School Districts; DPSO	Thunderstorm, Tornado, Hurricane	carried over
D6: Emergency Shelters	Retrofit, expand, or construct facilities to serve as emergency shelters during hurricanes and major storm events.	HMGP, PDM	DPPJ; Public Works; DPSO	Thunderstorm, Tornado, Hurricane	Carried Over
D7: Safeguards for Ground Water Supplies	Review current codes and ordinances; coordinate with neighboring jurisdictions and state agencies to ensure adequate safeguards are in place to protect ground water supplies from potential contamination.	HMGP, PDM	DPPJ	Hazardous Materials	Carried Over
D8: Update Floodplain Ordinances	Review and update current floodplain ordinances and permitting process to simplify and strengthen enforcement.	HMGP, PDM	DPPJ	Flooding	ongoing
D9: Emergency Animal Shelters	Retrofit/expand facilities to serve as an emergency animal shelter during major storm events.	HMGP, PDM	DPPJ; Public Works; DPSO	Thunderstorm, Tornado, Hurricane	Carried Over
D10: Elevate Repetitive Loss Homes	Elevate flood prone/repetitive loss homes and others with potential risk from dam and levee failure impacts.	HMGP, RFC, SRL, FMA, PDM	DPPJ	Flood, Dam Failure	ongoing
D11: Fuel Reduction Projects	Implement manual/mechanized fuel reduction projects for wildfire mitigation.	HMGP, PDM	DPPJ, LA-Department of Forestry	Wildfires	Carried Over
D12: Heating or Cooling Centers	Retrofit and equip locations in each parish juror district to serve as heating or cooling centers for vulnerable populations.	HMGP, PDM	Office of Community Service	Excessive Heat; Winter Storm	Carried Over
D13: Pipeline Safety Education	Develop and distribute materials to educate the public on pipeline safety and hazardous materials.	HMGP, PDM	DPPJ	Hazardous Materials	deleted
D14: Evacuation and Re-Entry Plan	Develop evacuation and re-entry plan for parish to focus on potential hazardous materials incidents, including pipeline or compressor station accidents.	HMGP, PDM	DPPJ; DPSO	Hazardous Materials	Carried Over

DeSoto Parish – Mitigation Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
D15: Frangible Linkage Systems	Install frangible (breakaway) linkage systems for vulnerable sections of power lines.	HMGP, PDM	DPPJ; Public Works	Thunderstorm, Tornado, Hurricane; Winter Storm	Carried Over
D16: Tree Mitigation Hazards	Identify and mitigate hazardous conditions posed by trees.	HMGP, PDM	DPPJ; Public Works, Utilities Companies	Thunderstorm, Tornado, Hurricane; Winter Storm	Carried Over
D17: Water Conservation Brochures	Develop and distribute brochures to educate residents about water conservation and landscaping practices to preserve water supplies.	HMGP, PDM	DPPJ	Drought	Carried Over
D18: Water Rationing Plan	Develop enforcement plan for staged water rationing ranging from voluntary, to encouraged, to mandatory participation during periods of severe drought or water supply contamination.	HMGP, PDM	DPPJ	Drought; Hazardous Materials Incidents	Carried Over
D19: Runoff Detention Ponds	Develop on-site runoff detention ponds for future public facilities.	HMGP, PDM	DPPJ	Drought, Flood	Carried Over
D20: Excessive Heat Database	Develop database of parish residents vulnerable to excessive heat related problems.	HMGP, PDM	DPPJ, DPSO; Office of Community Services	Excessive Heat	Carried Over
D21: Electricity Reduction Brochure	Develop informational brochure for parish residents that describes actions they can take to reduce electricity demand during a heat wave and thereby reduce probability for electrical blackout caused by demand spikes.	HMGP, PDM	DPPJ	Excessive Heat	Carried Over
D22: Mobile Home Tie-Down Methods	Mandate and inspect standard tie-down methods for mobile homes	HMGP, PDM	DPPJ	Hurricane, Thunderstorm, Tornado	Carried Over
D23: Defensible Space Program	Institute a defensible space program in order to reduce fuels surrounding homes in the urban-wildland interface.	HMGP, PDM	DPPJ	Wildfires	Carried Over
D24: Dry Hydrants	Install dry hydrants at strategic locations in the planning area.	HMGP, PDM	DPPJ; Fire Districts	Wildfires	Carried Over
D25: NFIP Participation	Identify and implement necessary actions and steps to continue, initiate, and expand DeSoto Parish participation in the NFIP including but not limited to floodplain mapping, higher regulatory standards, drainage system maintenance, and flood warning programs.	HMGP, PDM, local sources	All jurisdictions	Dam Failure, Flood, Hurricane	ongoing
D26: Safe Rooms in Public Buildings	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications	PDM; HMGP	DPPJ	Tornado, Thunderstorm, Hurricane	Carried Over
D27: Safe Rooms for Homeowners	Develop incentives and provide instruction for homeowners to construct/install safe rooms capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or	PDM; HMGP	DPPJ	Tornado, Thunderstorm, Hurricane	Carried Over

DeSoto Parish – Mitigation Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
	National Performance Criteria for Tornado Shelters specifications				
D28: Dam Failure Data	Develop and implement SOP for data collection/sharing to provide extent for dam failure as funds become available. Compile and review existing and future dam failure studies and incorporate findings into future iterations of hazard mitigation plan.	N/A	DPPJ	Dam/Levee Failure	Carried Over

Town of Grand Cane			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
G1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over
G2: Retrofitting City Facilities	Retrofit city facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over
G3: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over
G4: Dam Studies	Conduct study of dams in region to evaluate potential impacts for the Village of Grand Cane.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over
G5: Mechanical Fuels Reduction	Implement mechanical fuels reduction in village limits to reduce probability and potential severity of wildfires.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over
G6: Expand Participation	Implement necessary actions and steps to continue and expand participation in the NFIP.	Mayor's Office, Town of Grand Cane/DeSoto OHSEP	Carried Over

Town of Keachi			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
K1: Warning Systems	Install thunderstorm and tornado warning system.	Mayor's Office, Town of Keachi	Carried Over
K2: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Town of Keachi	Carried Over
K3: Retrofitting City Facilities	Retrofit city facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Town of Keachi	Carried Over
K4: Local Roads	Mitigate impacts to local roads caused by heavy truck traffic.	Mayor's Office, Town of Keachi	Carried Over
K5: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, Town of Keachi	Carried Over
K6: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, Town of Keachi	Carried Over
K7: NFIP Participation	Identify and implement necessary actions to initiate participation in the NFIP.	Mayor's Office, Town of Keachi	Ongoing

Town of Logansport			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
L1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Town of Logansport, DeSoto OHSEP	Carried Over
L2: Retrofitting Critical Facilities	Retrofit critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Town of Logansport, DeSoto OHSEP	Carried Over
L3: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, Town of Logansport, DeSoto OHSEP	Carried Over
L4: Flood prone Properties	Acquire or relocate flood prone properties.	Mayor's Office, Town of Logansport, DeSoto OHSEP	Carried Over
L5: NFIP Participation	Implement necessary actions and steps to continue and expand participation in the NFIP.	Mayor's Office, Town of Logansport, DeSoto OHSEP	Ongoing

Village of Longstreet			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
L1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Village of Longstreet/DeSoto OHSEP	Carried Over
L2: Retrofitting Critical Facilities	Retrofit critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Village of Longstreet/DeSoto OHSEP	Carried Over
L3: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, Village of Longstreet/DeSoto OHSEP	Carried Over
L4: NFIP Participation	Identify and implement necessary actions to initiate participation in the NFIP.	Mayor's Office, Village of Longstreet/DeSoto OHSEP	Ongoing

City of Mansfield			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
M1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over
M2: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over
M3: Retrofitting Critical Facilities	Retrofit critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over
M4: Emergency Shelters	Retrofit, expand, or construct facilities to serve as emergency shelters during hurricanes and major storm events.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over
M5: Flood prone Properties	Acquire, relocate, or elevate flood prone properties.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over
M6: NFIP Participation	Implement necessary actions and steps to continue and expand participation in the NFIP.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Ongoing
M7: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, City of Mansfield/DeSoto OHSEP	Carried Over

Village of South Mansfield			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
S1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Village of South Mansfield/DeSoto OHSEP	Carried Over
S2: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, Village of South Mansfield/DeSoto OHSEP	Carried Over
S3: Retrofitting Critical Facilities	Retrofit critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Village of South Mansfield/DeSoto OHSEP	Carried Over
S4: NFIP Participation	Implement necessary actions and steps to continue and expand participation in the NFIP.	Mayor's Office, Village of South Mansfield/DeSoto OHSEP	Ongoing
S5: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, Village of South Mansfield/DeSoto OHSEP	Carried Over

Village of Stanley			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
S1: Retrofitting Critical Facilities	Retrofit/equip existing and future critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Village of Stanley/DeSoto OHSEP	Carried Over
S2: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Village of Stanley/DeSoto OHSEP	Carried Over
S3: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, Village of Stanley/DeSoto OHSEP	Carried Over
S4: Mechanical Fuels Reduction	Implement mechanical fuels reduction in village limits to reduce probability and potential severity of wildfires.	Mayor's Office, Village of Stanley/DeSoto OHSEP	Carried Over
S5: NFIP Participation	Identify and implement necessary actions to initiate participation in the NFIP.	Mayor's Office, Village of Stanley/DeSoto OHSEP	Ongoing

Town of Stonewall			
Jurisdiction-Specific Action	**Action Description**	**Responsible Party, Agency, or Department**	**Status**
S1: Generators	Purchase generators for emergency response to hazard events.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Carried Over
S2: Retrofitting Critical Facilities	Retrofit critical facilities to mitigate future hazard impacts and ensure continuity of operations.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Carried Over
S3: Safe Rooms	Construct/install safe rooms in public buildings capable of providing protection from severe tornados, extreme straight line winds in accordance with FEMA Publication 320 and/or National Performance Criteria for Tornado Shelters specifications.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Carried Over
S4: Storm Drainage	Implement storm drainage improvement projects that will help minimize damage to important assets.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Carried Over
S5: Mechanical Fuels Reduction	Implement mechanical fuels reduction in village limits to reduce probability and potential severity of wildfires.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Carried Over
S6: NFIP Participation	Implement necessary actions and steps to continue and expand participation in the NFIP.	Mayor's Office, Town of Stonewall/DeSoto OHSEP	Ongoing

Unincorporated DeSoto New Mitigation Actions

Desoto Unincorporated - New Mitigation Actions						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
D1: 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 HMGP, Local	1-5 years	Desoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
D2: 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 HMGP, Local	1-5 years	Desoto Parish OHSEP	Flooding, Tropical Cyclones	New
D3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Flooding, Tropical Cyclones	New
D4: Safe Room Projects	Construction of a safe room for first responders located in Desoto Parish. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
D5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

Desoto Unincorporated - New Mitigation Actions						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
D6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
D7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Lightning	New
D8: Warning Systems	Update/upgrade public warning system components throughout Desoto Parish as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
D9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
D10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Tropical Cyclones, Flooding	New
D11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Drought	New
D12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Wildfires	New
D13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Desoto Parish OHSEP	Extreme Heat	New

Village of Grand Cane - New Mitigation Actions

Town of Grand Cane						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
G1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
G2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
G3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
G4: Safe Room Projects	Construction of a safe room for first responders located in Grand Cane. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
G5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

G6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
G7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Lightning	New
G8: Warning Systems	Update/upgrade public warning system components throughout Grand Cane as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
G9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
G10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Grand Cane/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
G11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/Desoto Parish OHSEP	Drought	New
G12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Grand Cane/Desoto Parish OHSEP	Wildfires	New
G13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Grand Cane/ Desoto Parish OHSEP	Extreme Heat	New

Town of Keachi - New Mitigation Actions

Town of Keachi						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**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 HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
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 HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
K3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
K4: Safe Room Projects	Construction of a safe room for first responders located in Keachi. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
K5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

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 HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
K7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Lightning	New
K8: Warning Systems	Update/upgrade public warning system components throughout Keachi as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
K9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
K10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Keachi/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
K11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Keachi/Desoto Parish OHSEP	Drought	New
K12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Keachi/Desoto Parish OHSEP	Wildfires	New
K13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Keachi/Desoto Parish OHSEP	Extreme Heat	New

Town of Logansport - New Mitigation Actions

Town of Logansport						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
L1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
L2:Drainage Improvements	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 HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
L3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
L4: Safe Room Projects	Construction of a safe room for first responders located in Logansport. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
L5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

L6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
L7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Lightning	New
L8: Warning Systems	Update/upgrade public warning system components throughout Logansport as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
L9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
L10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Logansport/ DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
L11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Logansport/ Desoto Parish OHSEP	Drought	New
L12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Logansport/ Desoto Parish OHSEP	Wildfires	New
L13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Logansport/ Desoto Parish OHSEP	Extreme Heat	New

Village of Longstreet - New Mitigation Actions

Village of Longstreet						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
L1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
L2:Drainage Improvements	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 HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
L3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
L4: Safe Room Projects	Construction of a safe room for first responders located in Longstreet. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
L5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

L6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
L7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Lightning	New
L8: Warning Systems	Update/upgrade public warning system components throughout Longstreet as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
L9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
L10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Longstreet/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
L11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Longstreet/Desoto Parish OHSEP	Drought	New
L12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Longstreet/Desoto Parish OHSEP	Wildfires	New
L13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Longstreet/Desoto Parish OHSEP	Extreme Heat	New

City of Mansfield - New Mitigation Actions

City of Mansfield						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
M1: 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 HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
M2:Drainage Improvements	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 HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
M3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
M4: Safe Room Projects	Construction of a safe room for first responders located in Mansfield. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
M5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

M6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
M7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Lightning	New
M8: Warning Systems	Update/upgrade public warning system components throughout Mansfield as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
M9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
M10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	City of Mansfield/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
M11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	City of Mansfield/Desoto Parish OHSEP	Drought	New
M12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	City of Mansfield/Desoto Parish OHSEP	Wildfires	New
M13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	City of Mansfield/Desoto Parish OHSEP	Extreme Heat	New

Village of South Mansfield - New Mitigation Actions

Village of South Mansfield						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
S1: 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 HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
S2: Drainage Improvements	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 HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S4 Safe Room Projects	Construction of a safe room for first responders located in South Mansfield. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
S5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

S6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
S7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Lightning	New
S8: Warning Systems	Update/upgrade public warning system components throughout South Mansfield as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
S9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
S10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of South Mansfield/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
S11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	City of South Mansfield/Desoto Parish OHSEP	Drought	New
S12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	City of South Mansfield/Desoto Parish OHSEP	Wildfires	New
S13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	City of South Mansfield/Desoto Parish OHSEP	Extreme Heat	New

Village of Stanley - New Mitigation Actions

Village of Stanley						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
S1: 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 HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
S2: Drainage Improvements	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 HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S4 Safe Room Projects	Construction of a safe room for first responders located in Stanley. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
S5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

S6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
S7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Lightning	New
S8: Warning Systems	Update/upgrade public warning system components throughout Stanley as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
S9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
S10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Stanley/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
S11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Stanley/Desoto Parish OHSEP	Drought	New
S12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Stanley/Desoto Parish OHSEP	Wildfires	New
S13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Stanley/Desoto Parish OHSEP	Extreme Heat	New

Town of Stonewall - New Mitigation Actions

Town of Stonewall						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
S1: 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 HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes, Hail	New
S2: Drainage Improvements	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 HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Flooding, Tropical Cyclones	New
S4 Safe Room Projects	Construction of a safe room for first responders located in Stonewall. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
S5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Winter Storms, Drought	New

S6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
S7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Lightning	New
S8: Warning Systems	Update/upgrade public warning system components throughout Stonewall as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones	New
S9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
S10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Stonewall/DeSoto Parish OHSEP	Tropical Cyclones, Flooding	New
S11: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Stonewall/Desoto Parish OHSEP	Drought	New
S12: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Stonewall/Desoto Parish OHSEP	Wildfires	New
S13: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Stonewall/Desoto Parish OHSEP	Extreme Heat	New

Action Prioritization

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

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

The steering committee met internally for mitigation action meetings to review and approve DeSoto Parish and the jurisdiction's mitigation actions. On-going actions, as well as actions which can be undertaken by existing parish or local staff without need for additional funding, were given high priority. The actions with high benefit and low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources with relatively longer completion time were given low priority. There have been no changes in financial, legal, and political priorities within the past 5 years, with the methodology and prioritization process remaining the same.

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

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Appendix A: Planning Process

Purpose

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

The DeSoto Parish Hazard Mitigation Plan Update

The DeSoto Parish Hazard Mitigation Plan Update process began in January 2016 with a series of meetings and collaborations between the contractor (SDMI) and the participating jurisdictions. Update activities were intended to give each jurisdiction the opportunity to shape the plan to best fit their community's goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

DeSoto Parish includes the unincorporated areas of the parish, as well as eight incorporated municipalities that participated in the plan update process – the Village of Grand Cane, Town of Keachi, Town of Logansport, Village of Longstreet, City of Mansfield, Village of South Mansfield, Village of Stanley, and Town of Stonewall. DeSoto Parish Office of Homeland Security and Emergency Preparedness (OHSEP) invited communities' representatives to meetings, where they supplied critical infrastructure data and reviewed work-in-progress for the plan update.

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

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

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

Date	Meeting or Outreach	Location	Public Invited	Purpose
1/22/2016	Initial Coordination	Telephone/ Email	No	Discuss with Parish HM coordinator and any Steering Committee members expectations and requirements of the project.
2/16/2016	Kick-Off Meeting	DeSoto Parish, Grand Cane, LA	No	Discuss with the plan steering committee expectations and requirements of the project. Assign plan worksheets to jurisdictions.
6/17/2016	Risk Assessment Overview	DeSoto Parish, Grand Cane, LA	No	Discuss and review the risk assessment with the steering committee and the expectations for public meeting.
6/17/2016	Public Meeting	DeSoto Parish, Grand Cane, LA	Yes	The public meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the DeSoto Parish communities were provide for the meeting attendees to identify specific areas where localized hazards occur.
Ongoing	Public Survey Tool	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in DeSoto Parish. In addition, we asked about the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: https://www.surveymonkey.com/results/SM-MD9L5GYC/
2 Week Period	Public Plan Review (Digital)		Yes	Parish Website and DeSoto Parish OHSEP

Planning

The plan update process consisted of several phases:

Phase	Month 1-2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11
Plan Revision										
Data Collection										
Risk Assessment										
Public Input										
Mitigation Strategy and Actions										
Plan Review by GOHSEP and FEMA										
Plan Adoption										
Plan Approval										

Coordination

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

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

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

Neighboring Community, Local and Regional Planning Process Involvement

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

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

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

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

- DeSoto Parish Government
- DeSoto Office of Homeland Security and Emergency Preparedness
- Village of Grand Cane
- Town of Keachi
- Town of Logansport
- Village of Longstreet
- City of Mansfield
- Village of South Mansfield
- Village of Stanley
- Town of Stonewall

The Parishes of Red River was invited by the DeSoto Parish OHSEP via email to participate in all meetings and activities as well in an effort to collaborate with neighboring communities. In addition, the participation of the GOHSEP Region 7 Coordinator during the process contributed to neighboring community representation.

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

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

Name	Title	Agency	Address	Phone
Todd Edwards	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Mike Armstrong	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Jayson Richardson	OHSEP Director	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Marsha Lea Richardson	Mayor	Town of Grand Cane	8356 Highway 171 Grand Cane, LA	(318) 858-3251
Travis Whitfield	Mayor	Town of Keachi	9758 Highway 5 Keachi, LA	(318) 933-8881
Katherine Freeman	Mayor	Town of Logansport	P.O. Box 400 Logansport, LA	(318) 697-5321

Name	Title	Agency	Address	Phone
Wanda Sue Fields	Mayor	Village of Longstreet	13451 Highway 5 Logansport, LA	(318) 697-2008
Curtis McCoy	Mayor	City of Mansfield	705 Polk St Mansfield, LA	(318) 872-0406
Dianne Hudson	Mayor	Village of South Mansfield	131 Hudson Lane Mansfield, LA 71052	(318) 461-9428
Scott Liles	Mayor	Village of Stanley	13520 Hwy 84 Mansfield, LA 71052	(318) 697-4435
Charles Waldon	Mayor	Town of Stonewall	P.O. Box 92 1318 HWY 171 Stonewall, LA	(318) 925-9338
Shane Hubbard	Director	Red River OHSEP	615 E. Carrol Street Coushatta, LA 71019	(318) 932-8502

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 DeSoto Parish programs and planning.

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

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

The members of the DeSoto Parish Hazard Mitigation Steering Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the parish. Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA, the U.S. Army Corps of Engineers (USACE or Corps), and the U.S. Geological Survey. Much of this data was incorporated into the risk assessment component of the plan relative to plotting historical events and the magnitude of damages that occurred. The parish's 2005 Hazard Mitigation Plan was also used in the planning process.

Other existing parish and jurisdiction data and plans reviewed and/or incorporated into the planning process include those listed below:

- Emergency Operations Plans
- State of Louisiana's Hazard Mitigation Plan
- Flood Insurance Rate Maps

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

Meeting Documentation and Public Outreach Activities

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

Meeting #1: Coordination Discussion

Date: January 22,2016
Location: Email
Purpose: Discuss with the Hazard Mitigation Lead for the parish (OHSEP Director) the expectations and requirements of the Hazard Mitigation Plan Update process and to establish and initial project timeline.
Public Initiation: No
Invitees Included: DeSoto Parish OHSEP, SDMI Staff

Meeting #2: Hazard Mitigation Plan Update Kick-Off

Date: February 16, 2016

Location: Grand Cane, Louisiana

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

Public Initiation: No

Invitees Included:

Name	Title	Agency	Address	Phone
Todd Edwards	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Mike Armstrong	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Jayson Richardson	OHSEP Director	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Marsha Lea Richardson	Mayor	Town of Grand Cane	8356 Highway 171 Grand Cane, LA	(318) 858-3251
Travis Whitfield	Mayor	Town of Keachi	9758 Highway 5 Keachi, LA	(318) 933-8881
Katherine Freeman	Mayor	Town of Logansport	P.O. Box 400 Logansport, LA	(318) 697-5321
Wanda Sue Fields	Mayor	Village of Longstreet	13451 Highway 5 Logansport, LA	(318) 697-2008
Curtis McCoy	Mayor	City of Mansfield	705 Polk St Mansfield, LA	(318) 872-0406
Dianne Hudson	Mayor	Village of South Mansfield	131 Hudson Lane Mansfield, LA 71052	(318) 461-9428
Scott Liles	Mayor	Village of Stanley	13520 Hwy 84 Mansfield, LA 71052	(318) 697-4435
Charles Waldon	Mayor	Town of Stonewall	P.O. Box 92 1318 HWY 171 Stonewall, LA	(318) 925-9338
Shane Hubbard	Director	Red River OHSEP	615 E. Carrol Street Coushatta, LA 71019	(318) 932-8502

Meeting #3: Risk Assessment Overview

Date: June 17, 2016

Location: Grand Cane, LA

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

Public Initiation: No

Invitees Included:

Name	Title	Agency	Address	Phone
Todd Edwards	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Mike Armstrong	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Jayson Richardson	OHSEP Director	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Marsha Lea Richardson	Mayor	Town of Grand Cane	8356 Highway 171 Grand Cane, LA	(318) 858-3251
Travis Whitfield	Mayor	Town of Keachi	9758 Highway 5 Keachi, LA	(318) 933-8881
Katherine Freeman	Mayor	Town of Logansport	P.O. Box 400 Logansport, LA	(318) 697-5321
Wanda Sue Fields	Mayor	Village of Longstreet	13451 Highway 5 Logansport, LA	(318) 697-2008
Curtis McCoy	Mayor	City of Mansfield	705 Polk St Mansfield, LA	(318) 872-0406
Dianne Hudson	Mayor	Village of South Mansfield	131 Hudson Lane Mansfield, LA 71052	(318) 461-9428
Scott Liles	Mayor	Village of Stanley	13520 Hwy 84 Mansfield, LA 71052	(318) 697-4435
Charles Waldon	Mayor	Town of Stonewall	P.O. Box 92 1318 HWY 171 Stonewall, LA	(318) 925-9338
Shane Hubbard	Director	Red River OHSEP	615 E. Carrol Street Coushatta, LA 71019	(318) 932-8502

Meeting #4: Public Meeting

Date: June 17, 2016

Location: Grand Cane, LA

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

Public Initiation: Yes

Invitees Included:

Name	Title	Agency	Address	Phone
Todd Edwards	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Mike Armstrong	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Jayson Richardson	OHSEP Director	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Marsha Lea Richardson	Mayor	Town of Grand Cane	8356 Highway 171 Grand Cane, LA	(318) 858-3251
Travis Whitfield	Mayor	Town of Keachi	9758 Highway 5 Keachi, LA	(318) 933-8881
Katherine Freeman	Mayor	Town of Logansport	P.O. Box 400 Logansport, LA	(318) 697-5321
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Scott Liles	Mayor	Village of Stanley	13520 Hwy 84 Mansfield, LA 71052	(318) 697-4435
Charles Waldon	Mayor	Town of Stonewall	P.O. Box 92 1318 HWY 171 Stonewall, LA	(318) 925-9338
Shane Hubbard	Director	Red River OHSEP	615 E. Carrol Street Coushatta, LA 71019	(318) 932-8502

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

Meeting Public Notice

LSU STEPHENSON DISASTER MANAGEMENT INSTITUTE

DESOTO PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

MEETING NOTICE – June 17, 2016

DeSoto Parish to hold Public Meetings for Hazard Mitigation Plan Update

Grand Cane, LA – DeSoto Parish Office of Homeland Security & Emergency Preparedness is in the process of updating the DeSoto Parish Hazard Mitigation Plan and are required to hold public meetings on the plan update. The Public meeting will be held on May 19th, in the DeSoto Parish Sheriff Trainign Facility located at 120 Sprocket Lane, Grand Cane, LA, from 1:30PM to 2:30PM.

Natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery (the actions that a community takes to repair damages), an equally important aspect of emergency management involves hazard mitigation - sustained actions taken to reduce long-term risk to life and property. They are things we do today to be more protected in the future. For example, elevating buildings in flood hazard areas, installing hurricane clips and storm shutters, relocating critical facilities out of hazard areas, using fire-resistant construction materials in wildfire hazard areas, etc. Hazard mitigation actions are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, they can be long-term, cost-effective means of reducing risk and helping to create a more sustainable and disaster-resilient community.

A hazard mitigation plan describes an area's vulnerability to the various natural hazards that are typically present, along with an array of actions and projects for reducing key risks. While natural disasters cannot be prevented from occurring, the continued implementation of mitigation strategies identified in the plan will gradually, but steadily, make our communities more sustainable and disaster-resilient.

The Disaster Mitigation Act of 2000 (DMA 2000) requires all states and local governments to have a hazard mitigation plan in order to be eligible to apply for certain types of federal hazard mitigation project grants. Hazard mitigation plans must be: (a) implemented on an ongoing basis, and (b) updated every five years to ensure that they remain applicable representations of local risk and locally-preferred risk reduction strategies.

DeSoto Parish is in the stages of updating its hazard mitigation plan. Public meeting will be held on May 19th for all citizens interested in learning about and participating in discussions concerning the DeSoto Parish Hazard Mitigation Plan.

Residents of DeSoto 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 https://www.surveymonkey.com/r/DeSotoParish

For more information, please contact: DeSoto OHSEP Office

Stephenson Disaster Management Institute
Louisiana State University • 3000 Business Education Complex • Baton Rouge, Louisiana 70803

Outreach Activity #1: Public Opinion Survey

Date: Ongoing throughout planning process
Location: Web Survey
Public Initiation: Yes
No comments were collected through this activity.

Outreach Activity #2: Incident Questionnaire

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

Outreach Activity #3: Mapping Activities

Public meeting attendees were asked to identify areas on jurisdictional maps provided that were "problem areas". They were also asked to indicate any areas of new development. This activity gave the public an opportunity to interact with SDMI's GIS Mapping section, as well as provide valuable input on areas that may flood repeatedly during rain events that may not get reported to local emergency managers as significant events. However, because no members of the public attended, no comments were collected.

Public Plan Review Documentation

The DeSoto Parish Hazard Mitigation Draft Plan was placed on the DeSoto Parish website to collect comments and feedback from the public. This outreach provided the public an opportunity to comment on the plan during the drafting stage and prior to plan approval. No feedback or public comment was received during this time.

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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 DeSoto Parish 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 comprehensive or capital improvement 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 library and parish 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

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

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

Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

DeSoto Parish 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 DeSoto 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 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 and objective 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) Are there any procedures that can be done more efficiently

4) Are there more ways to gain more diverse and widespread cooperation

5) Are there 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 DeSoto Parish'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 Public Library.

The review by the steering 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 Steering 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.

2016 Plan Version Plan Method and Schedule Evaluation

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

Incorporation into Existing Planning Programs

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

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Local Emergency Operations Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the DeSoto Parish Hazard Mitigation Steering Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). The members of the steering committee will meet with Department Heads to discuss what should be included in the changes that are necessary before the changes are introduced to the city council or police jury meetings. Steering committee members 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 DeSoto 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 steering committee to be the most effective and appropriate method to ensure implementation of parish and local hazard mitigation actions.

On behalf of the jurisdictions of Unincorporated DeSoto, the Village of Grand Cane, the Town of Keachi, the Town of Logansport, the Village of Longstreet, the City of Mansfield, the Village of South Mansfield, the Village of Stanley, and the Town of Stonewall, DeSoto Parish has the authority to incorporate the contents of the Hazard Mitigation Plan into the parish's existing regulatory mechanisms. Agreements are currently in place with jurisdictions to allow for the parish incorporation mechanisms to take place.

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

DeSoto Unincorporated
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP

Village of Grand Cane
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of Grand Cane

Town of Keachi
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of Keachi

Town of Logansport
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of Logansport

Village of Longstreet
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of Longstreet

City of Mansfield
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Village of South Mansfield
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of South Mansfield

Village of Stanley
Local Emergency Operations Plan/Updated as needed/DeSoto Parish OHSEP and Mayor of Stanley

Town of Stonewall
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

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 will include at least one of the following:

- Advertising meetings of the Mitigation 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

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Appendix C: Essential Facilities

DeSoto Parish Essential Facilities – All Jurisdictions

DeSoto Unincorporated Essential Facilities											
Type	**Name**	**Drought***	**Extreme Heat***	**Flooding**	**Hail**	**Lightning**	**Wind**	**Tornado**	**Tropical Cyclone**	**Wildfire**	**Winter Storms***
Fire and Rescue	DeSoto Fire District 1 Central Station				X	X	X	X	X		
	DeSoto Fire District 5 Station 2				X	X	X	X	X		
	DeSoto Fire District 5 Station 3				X	X	X	X	X		
	DeSoto Fire District 5 Station 4				X	X	X	X	X	X	
	DeSoto Fire District 8 Station 2				X	X	X	X	X		
	DeSoto Fire District 8 Station 5				X	X	X	X	X	X	
	DeSoto Fire District 8 Station 6				X	X	X	X	X		
	DeSoto Fire District 8 Station 7				X	X	X	X	X		
	DeSoto Fire District 8 Station 8				X	X	X	X	X	X	
	Fire District 2				X	X	X	X	X		
	Fire District 2				X	X	X	X	X		
	Fire District 2				X	X	X	X	X		
	Fire District 3				X	X	X	X	X		
	Fire District 3				X	X	X	X	X	X	
	Fire District 8 - Central Fire Station				X	X	X	X	X		
	Fire District 9				X	X	X	X	X		
	Fire District 9				X	X	X	X	X		
	Fire District 9				X	X	X	X	X	X	

DeSoto Unincorporated Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
	Fire District 9				X	X	X	X	X	X	
	Fire Station				X	X	X	X	X		
	Fire Station				X	X	X	X	X	X	
Government	DeSoto Parish Police Jury			X	X	X	X	X	X		
	DeSoto Parish Police Jury Benson Compactor Site				X	X	X	X	X		
	DeSoto Police Jury Grand Cane Compactor Site				X	X	X	X	X		
	DeSoto Police Jury Heard Road Compactor Site				X	X	X	X	X		
	DeSoto Police Jury Hunter Compactor Site				X	X	X	X	X	X	
	DeSoto Police Jury Lula Compactor Site				X	X	X	X	X	X	
	DeSoto Police Jury Mundy Compactor Site				X	X	X	X	X	X	
	DeSoto Police Jury Pelican Compactor Site				X	X	X	X	X	X	
	DeSoto Police Jury Sloan Road Compactor Site				X	X	X	X	X	X	
	DeSoto Parish School Board			X	X	X	X	X	X	X	
	DeSoto Waterworks District 1			X	X	X	X	X	X	X	
	Frierson Compactor Site			X	X	X	X	X	X		
	Kickapoo Compactor Site				X	X	X	X	X		
	Logansport Compactor Site				X	X	X	X	X		
	Logansport Town Hall			X	X	X	X	X	X	X	

DeSoto Unincorporated Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
	TB Yopp Animal Facility			X	X	X	X	X	X	X	
	DeSoto Parish Police Jury Mundy Landfill				X	X	X	X	X		
Corrections	DeSoto Parish Law Enforcement and Detention				X	X	X	X	X		
Law Enforcement	DeSoto Parish Sheriff's Office				X	X	X	X	X		
	DeSoto Parish Sheriff's Office Training Center				X	X	X	X	X		
Schools	Pelican All Saints High School				X	X	X	X	X		
	Stanley High School				X	X	X	X	X	X	

Grand Cane Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	DeSoto Fire District 8 Station 3				X	X	X	X	X	X	
	Fire Station				X	X	X	X	X	X	
Government	Grand Cane Village Hall				X	X	X	X	X	X	
Schools	Central High School				X	X	X	X	X	X	

Keachi Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	Fire District 2				X	X	X	X	X	X	
Government	Keachi Town Hall				X	X	X	X	X	X	

Logansport Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Government	Maintenance				X	X	X	X	X		
Schools	Logansport High School				X	X	X	X	X		

Longstreet Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	Fire Station				X	X	X	X	X	X	
Government	DeSoto Parish Police Jury Longstreet Compactor Site				X	X	X	X	X		
	Longstreet Town Hall				X	X	X	X	X		

Mansfield Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	Fire Department				X	X	X	X	X	X	
	Mansfield Fire Department No 2				X	X	X	X	X	X	
Government	42nd Judicial District - Child Support				X	X	X	X	X	X	
	City of Mansfield Transportation Warehouse				X	X	X	X	X	X	
	DeSoto Parish Assessor's Office				X	X	X	X	X	X	
	DeSoto Parish Chamber of Commerce				X	X	X	X	X	X	
	DeSoto Parish Courthouse				X	X	X	X	X		
	DeSoto Parish Police Jury				X	X	X	X	X	X	

Mansfield Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
	DeSoto Parish Police Jury and Registrar of Voters				X	X	X	X	X	X	
	DeSoto Parish Police Jury Maintenance Building				X	X	X	X	X	X	
	DeSoto Parish Sales and Use Tax Commission				X	X	X	X	X	X	
	DeSoto Parish School Board				X	X	X	X	X	X	
	DeSoto Parish School Board Facilities and Operations				X	X	X	X	X	X	
	DeSoto Parish Schools Bus and Food Service Facility				X	X	X	X	X	X	
	Mansfield City Hall				X	X	X	X	X	X	
	The Coordinating and Development Center				X	X	X	X	X		
Law Enforcement	DeSoto Parish Sheriff's Office - Maintenance				X	X	X	X	X	X	
	Mansfield Police Department				X	X	X	X	X	X	
Schools	Mansfield Elementary Middle School				X	X	X	X	X		
	Mansfield High School				X	X	X	X	X	X	
	DeSoto Parish Alternative School				X	X	X	X	X	X	

South Mansfield Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	DeSoto Fire District 8 Station 4				X	X	X	X	X	X	

Stanley Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	Stanley Fire Station				X	X	X	X	X	X	

Stonewall Essential Facilities											
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*
Fire and Rescue	Fire District 3				X	X	X	X	X	X	
	Fire District 3				X	X	X	X	X	X	
Government	Clerk of Court			X	X	X	X	X	X	X	
	Stonewall Assessor's Office			X	X	X	X	X	X	X	
	Stonewall Town Hall			X	X	X	X	X	X	X	
Law Enforcement	DeSoto Parish Sheriff's Office - Stonewall Station				X	X	X	X	X	X	
Schools	North DeSoto Elementary				X	X	X	X	X	X	
	North DeSoto High School				X	X	X	X	X	X	

* Hazard does not impact any critical facility.

Appendix D: Plan Adoption

DeSoto Parish

UNINCORPORATED DESOTO PARISH

LOUISIANA

A RESOLUTION OF THE DESOTO PARISH POLICE JURY (UNINCORPORATED DESOTO PARISH)

DESOTO PARISH HAZARD MITIGATION UPDATE - 2016

WHEREAS the DeSoto Parish Police Jury recognizes the threat that natural hazards pose to people and property within Unincorporated DeSoto Parish; and

WHEREAS the DeSoto Parish Police Jury has prepared a multi-hazard mitigation plan, hereby known as DeSoto Parish Hazard Mitigation Update - 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS DeSoto Parish Hazard Mitigation Update - 2016 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Unincorporated DeSoto Parish from the impacts of future hazards and disasters; and

WHEREAS adoption by the DeSoto Parish Police Jury demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the DeSoto Parish Hazard Mitigation Update - 2016.

NOW THEREFORE, BE IT RESOLVED BY THE UNINCORPORATED DESOTO PARISH, LOUISIANA, THAT:

Section 1. In accordance with the Minutes of the April 9, 2016 Regular Meeting, THE DESOTO PARISH POLICE JURY adopts the DESOTO PARISH HAZARD MITIGATION UPDATE - 2016.

ADOPTED by a vote of 11 in favor and 0 against, and 0 abstaining, this 9th day of April, 2018.

By: Reggie C Roe

Reggie C. Roe, DeSoto Parish Police Jury President

ATTEST:

By: Jodi Zeigler

Jodi Zeigler, DeSoto Parish Police Jury Secretary

APPROVED AS TO FORM:

By: Jodi Zeigler

Jodi Zeigler, DeSoto Parish Police Jury Secretary

Village of Grand Cane

Mayor
Marsha Richardson
Clerk
Ann-Marie Eaves

Village of Grand Cane
P. O. Box 82
Grand Cane, La. 71032
Office: 318-858-3251
Fax: 318-858-3555

Aldermen
Rhonda Meek
Sharon Deas
Mike Rives

VILLAGE OF GRAND CANE

LOUISIANA

RESOLUTION NO. 1-18

A RESOLUTION OF THE VILLAGE OF GRAND CANE

DESOTO PARISH HAZARD MITIGATION PLAN 2018

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

WHEREAS the Village of Grand Cane has prepared a multi-hazard mitigation plan, hereby known as the DESOTO PARISH HAZARD MITIGATION PLAN 2018 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the DESOTO PARISH HAZARD MITIGATION PLAN 2018 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Village of Grand Cane from the impacts of future hazards and disasters; and

WHEREAS adoption of the Village of Grand Cane demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the DESOTO PARISH HAZARD MITIGATION PLAN 2018.

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

Section 1, in accordance with the Board of Aldermen of the Village of Grand Cane adopts the DESOTO PARISH HAZARD MITIGATION PLAN 2018.

ADOPTED by a vote of 2 in favor and 0 against, 0 abstaining and 1 absent, this 11th day of April, 2018.

By: Marsha Richardson

ATTEST:

By:

APPROVED AS TO FORM:

By:

Town of Keachi

TOWN OF KEACHI

LOUISIANA

RESOLUTION NO. 1-2018

A RESOLUTION OF THE TOWN OF KEACHI

DESOTO PARISH HAZARD MITIGATION PLAN UPDATE - 2016

WHEREAS the TOWN COUNCIL and the DESOTO PARISH POLICE JURY recognize the threat that natural hazards pose to people and property within the TOWN OF KEACHI; and

WHEREAS the DeSoto Parish Police Jury has prepared a multi-hazard mitigation plan, hereby known as the DESOTO PARISH HAZARD MITIGATION PLAN UPDATE - 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the DESOTO PARISH HAZARD MITIGATION PLAN UPDATE - 2016 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the TOWN OF KEACHI from the impacts of future hazards and disasters; and

WHEREAS adoption by the TOWN COUNCIL and DESOTO PARISH POLICE JURY demonstrate their commitment to the hazard mitigation and achieving the goals outlined in the DESOTO PARISH HAZARD MITIGATION PLAN UPDATE - 2016.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF KEACHI, LOUISIANA, THAT:

Section 1. In accordance with the minutes of the Town Council Meeting on the 7th day of July, 2018, THE TOWN COUNCIL adopts the DESOTO PARISH HAZARD MITIGATION PLAN UPDATE - 2016.

ADOPTED by a vote of 4 in favor and 0 against, and 0 abstaining, this 7th day of July, 2018.

By: Travis Whitfield

Travis Whitfield, Mayor

ATTEST:

By: Jackie W Burford

Jackie W. Burford, Town Clerk

APPROVED AS TO FORM:

By: Jackie W Burford

Jackie W. Burford, Town Clerk

Town of Logansport

TOWN OF LOGANSPORT

JUDGE CORDRAY
MAYOR

P.O. BOX 400 • LOGANSPORT, LA 71049
(318) 697-5359 Fax (318) 697-5107
www.logansportla.com

SHARON STEWART
CLERK

RESOLUTION

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

WHEREAS the Town of Logansport along with the DeSoto Parish Police Jury and participating jurisdictions have prepared a multi-hazard mitigation plan, hereby known as the DESOTO PARISH HAZARD MITIGATION UPDATE—2016 in accordance with the disaster Mitigation Act of 2000; and

WHEREAS the DESOTO PARISH HAZARD MITIGATION UPDATE—2016 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Town of Logansport and surrounding area from the impacts of future hazards and disasters; and

WHEREAS ADOPTION BY THE Logansport Town Council demonstrates their commitment to the hazard mitigation and achieving the goals outline in the DESOTO PARISH HAZARD MITIGATION UPDATE—2016.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF LOGANSPORT, LOUISIANA, THAT

Section 1. In accordance with the Lawrason Act, the Logansport Town Council adopts the DESOTO PARISH HAZARD MITIGATION UPDATE—2016.

PASSED AND ADOPTED the 11th day of July 2017, with a motion from Dwight Gatlin and second by Norman Arbuckle with the vote as follows:

YEAS: 5 NAYS: 0 ABSENT: 0 ABSTAIN: 0

Sharon Stewart

Sharon Stewart, Town Clerk

CERTIFICATE

I Sharon Stewart, Town Clerk for the Town of Logansport certify the foregoing to be an exact copy of a resolution adopted on July 11, 2017, by the governing authority of the Town of Logansport, State of Louisiana, at a meeti9ng thereof regularly convened and after proper notice thereof having been given; and I further certify the same remains in full force and effect.

Sharon Stewart

Sharon Stewart, Town Clerk

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaintfilingcust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by mail to U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

"An Equal Opportunity Employer and Provider"

Village of Longstreet

VILLAGE OF LONGSTREET
P. O. BOX 187
(13451 HIGHWAY 5, LONGSTREET)
KEATCHIE, LA 71046
318-697-2008 PHONE/FAX
LONGSTREET71050@GMAIL.COM

RESOLUTION

WHEREAS, at the regular monthly meeting of the Mayor and Board of Alderman of the Village of Longstreet, did, on this the 13th day of October, 2020, pass the following Resolution:

WHEREAS, it is the duty, responsibility, and goal of the Village of Longstreet to protect all persons and property within the Village of Longstreet, and reduce future losses wherever possible,

WHEREAS, the Village of Longstreet Supports public safety and damage prevention within its jurisdictional boundaries,

THEREFORE, the Village of Longstreet does adopt the Hazard Mitigation Plan of 2016 as approved by Region VI of the Federal Emergency Management Agency and the Louisiana Governor's Office of Homeland Security and Emergency Preparedness in accordance with La RS 29:730.2

Motion for adoption of this Resolution made by Alderman Stella Finch and seconded by Alderman Billy Lee.

Yeas: 3 (Finch, Lee, Rogers)
Nays: None Absent: None Abstain: None

THEREFORE, the above resolution is hereby adopted by the Mayor and Board of Alderman of the Village of Longstreet on this 13th day of October, 2020 in Longstreet, DeSoto Parish, Louisiana, and made part of the official public record.

Sue Fields, Mayor

Kristen Thompson, Clerk

MAYOR, SUE FIELDS
ALDERMEN: BILLY LEE, QUEENIE ROGERS, STELLA FINCH
KRISTEN THOMPSON, MUNICIPAL CLERK

City of Mansfield

City of Mansfield

RESOLUTION

A RESOLUTION ADOPTING THE 2016 DESOTO PARISH HAZARD MITIGATION PLAN UPDATE

BE IT KNOWN, That the Board of Aldermen of the **City of Mansfield** at their ***regular*** meeting held on Monday, May 14, 2018, did pass the following RESOLUTION:

WHEREAS, the **City of Mansfield** recognizes the threat that natural hazards pose to people and property within **DeSoto Parish**; and

WHEREAS, the **DeSoto Parish and Red River Parish Offices of Homeland Security and Emergency Preparedness** and the **DeSoto Parish Steering Committee** has prepared a multi-hazard mitigation plan, hereby known as the **2016 DeSoto Parish Hazard Mitigation Plan Update** in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the **2016 DeSoto Parish Hazard Mitigation Plan Update** identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in DeSoto Parish from the impacts of future hazards and disasters; and

WHEREAS adoption by the **City of Mansfield** demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the **2016 DeSoto Parish Hazard Mitigation Plan Update**.

NOW THEREFORE, BE IT FURTHER RESOLVED BY **DESOTO PARISH**, LOUISIANA, THAT:

Section 1: In accordance with LA R.S. 33:406(A)(2), the **City of Mansfield** adopts the **2016 DeSoto Parish Hazard Mitigation Plan Update**.

CERTIFICATE

I, Marvin Jackson, Clerk for the City of Mansfield, Louisiana hereby certifies that the above constitutes a true and correct copy of a Resolution, which upon MOTION of Alderwoman Mary L. Green, and SECONDED by Alderman Kervin D. Campbell, was adopted by the following Yea and Nay votes:

Yea: 3	Nay: 0	Absent: 2	Abstain: 0
M. Green		B. Hall	
M. Lewis		J. Hall, Jr.	
K. Campbell			

Seal

Marvin R. Jackson

Marvin R. Jackson, *Clerk*
Mansfield, Louisiana

Village of South Mansfield

VILLAGE OF SOUTH MANSFIELD

LOUISIANA

RESOLUTION NO. 5-10-18

A RESOLUTION OF THE VILLAGE OF SOUTH MANSFIELD

DESOTO PARISH HAZARD MITIGATION UPDATE - 2016

WHEREAS the DESOTO PARISH POLICE JURY recognizes the threat that natural hazards pose to people and property within the VILLAGE OF SOUTH MANSFIELD; and

WHEREAS the DESOTO PARISH POLICE JURY has prepared a multi-hazard mitigation plan, hereby known as the DESOTO PARISH HAZARD MITIGATION UPDATE - 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS DESOTO PARISH HAZARD MITIGATION UPDATE - 2016 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the VILLAGE OF SOUTH MANSFIELD from the impacts of future hazards and disasters; and

WHEREAS adoption by the DESOTO PARISH POLICE JURY demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the DESOTO PARISH HAZARD MITIGATION PLAN - 2016.

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

Section 1. In accordance with Minutes of the Regular Village of South Mansfield Meeting dated May 10, 2018, THE VILLAGE OF SOUTH MANSFIELD adopts the DESOTO PARISH HAZARD MITIGATION UPDATE - 2016.

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 10th day of May, 20 18

By: Glenda Thomas

(print name) Glenda Thomas

ATTEST:

By: Kim Bradford

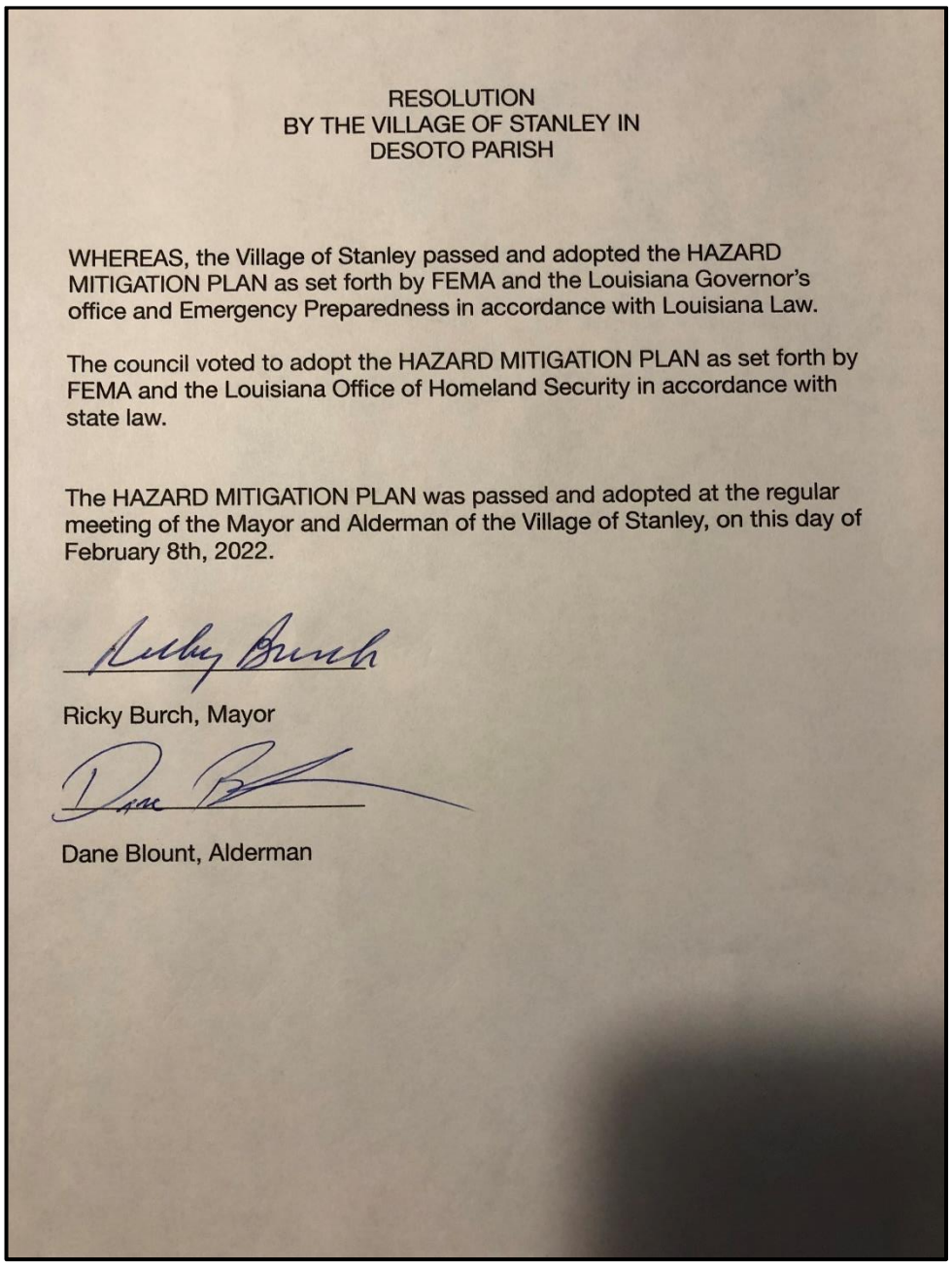
(print name) Kim Bradford

APPROVED AS TO FORM:

By: Kevin Vanzant

(print name) Kevin Vanzant

Village of Stanley



RESOLUTION
BY THE VILLAGE OF STANLEY IN
DESOTO PARISH

WHEREAS, the Village of Stanley passed and adopted the HAZARD MITIGATION PLAN as set forth by FEMA and the Louisiana Governor's office and Emergency Preparedness in accordance with Louisiana Law.

The council voted to adopt the HAZARD MITIGATION PLAN as set forth by FEMA and the Louisiana Office of Homeland Security in accordance with state law.

The HAZARD MITIGATION PLAN was passed and adopted at the regular meeting of the Mayor and Alderman of the Village of Stanley, on this day of February 8th, 2022.

Ricky Burch, Mayor

Dane Blount, Alderman

Town of Stonewall

TOWN OF STONEWALL
PARISH OF DESOTO, STATE OF LOUISIANA
RESOLUTION NO. 2017-78

TITLE: A RESOLUTION OF THE TOWN OF STONEWALL ADOPTING THE DESOTO PARISH HAZARD MITIGATION PLAN – UPDATE 2017

WHEREAS, the Board of Alderman recognizes the threat that natural hazards pose to people and property within the Town of Stonewall; and

WHEREAS, the Parish of DeSoto has prepared a multi-hazard mitigation plan, hereby known as DeSoto Parish Hazard Mitigation Plan – Update 2016, in accordance with the Disaster Mitigation Act of 2000;

WHEREAS, DeSoto Parish Hazard Mitigation Plan – Update 2016, identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the

WHEREAS, adoption by the Town of Stonewall demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the DeSoto Parish Hazard Mitigation – Update 2016.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMAN FOR THE TOWN OF STONEWALL, LOUISIANA, THAT:

Section 1. In accordance with the Lawrason Act, the Town of Stonewall adopts the DeSoto Parish Hazard Mitigation – Update 2016.

BE IT FURTHER RESOLVED that this Resolution shall become effective immediately upon execution by the Mayor of the Town of Stonewall.

First Reading: Tuesday, July 11, 2017 – Introduced and read by title and approved as read on motion by Alderman Nicholas Gasper, seconded by Alderman Dot Simmons.

4 YEAS (Council Members: Dot Simmons, Pat Loftus, Randy Rodgers & Nicholas Gasper)
0 NAYS (Council Members:)
1 ABSENT (Council Members: Margaret Dickerson)

THUS DONE, RESOLVED AND ESTABLISHED by the Board of Aldermen of the Town of Stonewall, Louisiana, at a meeting of said public body, duly held and conducted on Tuesday, July 11, 2017, in the Municipal Complex for the Town of Stonewall.

Shree' Young, Town Clerk

Date delivered to Mayor: Wednesday, July 12, 2017

Date received by Mayor: Wednesday, July 12, 2017

Approved by the Mayor of the Town of Stonewall on the 12th day of July, 2017.

Charles Waldon

Mayor, Town of Stonewall

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Appendix E: State Required Worksheets

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

Mitigation Planning Team

Name	Title	Agency	Address	Phone
Todd Edwards	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Mike Armstrong	OHSEP Administrator	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Jayson Richardson	OHSEP Director	DeSoto Parish OHSEP	205 Franklin Street Mansfield, LA	(318) 872-1877
Marsha Lea Richardson	Mayor	Town of Grand Cane	8356 Highway 171 Grand Cane, LA	(318) 858-3251
Travis Whitfield	Mayor	Town of Keachi	9758 Highway 5 Keachi, LA	(318) 933-8881
Katherine Freeman	Mayor	Town of Logansport	P.O. Box 400 Logansport, LA	(318) 697-5321
Wanda Sue Fields	Mayor	Village of Longstreet	13451 Highway 5 Logansport, LA	(318) 697-2008
Curtis McCoy	Mayor	City of Mansfield	705 Polk St Mansfield, LA	(318) 872-0406
Dianne Hudson	Mayor	Village of South Mansfield	131 Hudson Lane Mansfield, LA 71052	(318) 461-9428
Scott Liles	Mayor	Village of Stanley	13520 Hwy 84 Mansfield, LA 71052	(318) 697-4435
Charles Waldon	Mayor	Town of Stonewall	1318 HWY 171 Stonewall, LA	(318) 925-9338
Shane Hubbard	Director	Red River OHSEP	615 E. Carrol Street Coushatta, LA 71019	(318) 932-8502

Building Inventory

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Lat	Long	Assessed Value	Date Built	Constr. Type
DeSoto									
	Pelican All Saints High School	Education	Nearby: 183-273 All Saints Road	Pelican	31.8782 5026		$569,025.00	1990	Concrete
X	DeSoto Fire District 8 Station 8	Fire Search and Rescue	Nearby: Par Road 1384	Converse	31.8711 1664		$17,325.00	1985	
X	DeSoto Fire District 8 Station 8 Building	Fire Search and Rescue	Nearby: Par Road 1384	Converse	31.8711 0162		$17,325.00	1985	
X	Fire District 9	Fire Search and Rescue	365 Stonewall-Frierson Road	Frierson	32.2788 5555		$186,975.00	2012	Concrete
X	DeSoto Fire District 8 Station 2	Fire Search and Rescue	Nearby: 158-176 Washington St.	Pelican	31.8836 4702		$14,475.00	2003	
X	Courthouse	Government Civil	101 Texas Street	Mansfield			$96,120.00	1990	Concrete
X	Police Jury Annex	Government Civil	101 Franklin	Mansfield			$88,425.00	1990	Concrete
X	Coroner's Office	Government Civil	120 McEnery	Mansfield			$36,180.00	1990	Concrete
	Longstreet-Rosenwald School	Education					$27,000.00	1985	Concrete
Grand Cane									
X	Village Hall	Government Civil	8356 Hwy 171				30,000	1904	Concrete
X	Hicks & Richardson	Retail	8352 Hwy 171	Grand Cane			50,000	1904	Reinforced Masonry
X	Wilson Building	Retail	Hwy 171	Grand Cane			50,000	1904	Reinforced Masonry
X	Cook-Douglas	Retail	Hwy 171	Grand Cane			50,000	1904	Reinforced Masonry
X	Parkes Building	Retail	Hwy 171	Grand Cane			50,000	1904	Reinforced Masonry

Keachi									
X	Keachi Town Hall	Government Civil	9758 Hwy 5	Keachi	32.187546	-93.906583	$30,000	1988	Concrete
Logansport									
X	Logansport Town Hall	Government Civil	Hall Road	Logansport	31.97313307	-94.00338482	$500,000	1940	Concrete
X	Logansport Chamber of Commerce	Government Civil	Nearby: 600-698 U.S. 84	Logansport	31.97474085	-94.00034367	$100,000	1980	Concrete
X	Logansport Maintenance Warehouse	Government Civil	200 Water Plant Road	Logansport	31.97295811	-93.99692805	$100,000	1976	Metal
X	Logansport Water Tower	Government Civil	509 Tower Road	Logansport	31.9791032	-93.98875149	$400,000	1975	Metal
X	Logansport Water Plant	Government Civil	110 Water Plant Road	Logansport	31.976549	-93.00695559	$6,000,000	1958	Concrete
X	Logansport Wastewater Facility	Government Civil	2015 Berry Road	Logansport	31.9664292	-93.9917252		1966 / 1988	Concrete
Longstreet									
X	Longstreet Town Hall	Government Civil	13451 Hwy 5	Logansport	31.97418373	-93.98868252	$30,000.00	1920	Concrete
Mansfield									
X	Mansfield Fire Department No. 2	Fire Search and Rescue	1313 McArthur Drive	Mansfield	32.04064527	-93.68263988	$69,432.00	1999	Metal
X	Mansfield Police Department	Law Enforcement	Nearby: 700-702 Franklin Street	Mansfield	32.03887984	-93.70548457	$100,000.00	1980	Concrete

X	City of Mansfield Transportation Warehouse	Government Civil	None	Mansfield	32.03653151	-93.71207011	$273,000.00	2013	Metal
X	Mansfield City Hall	Government Civil	705 Polk Street	Mansfield	32.03791887	-93.70488128	$103,000.00	1980	Concrete
South Mansfield									
X	Community Center	Government Civil	120 Britney Dr	Mansfield	32.018378	-93.720106	$73,000.00	2014	Metal
X	Town Hall	Government Civil	120 Britney Dr	Mansfield	32.018378	-93.720106	$50,000.00	1958	Wood
Stanley									
X	Stanley Town Hall	Government Civil	13595 Hwy 84	Logansport			$50,000.00	1960	Concrete
X	Community Center	Government Civil	13595 Hwy 84	Logansport			$100,000.00	2011	Metal
Stonewall									
X	Stonewall Police Dept.	Law Enforcement	1287 Hwy 171	Stonewall			$50,000.00	2010	Metal
X	Stonewall Town Hall	Government Civil	1318 U.S. 171	Stonewall	32.26836062	-93.82330163	$50,000.00	1978	Concrete
X	Keachi Town Hall	Government Civil	1318 U.S. 171	Stonewall	32.18753672	-93.90658527	$250,000.00	1978	Concrete
X	Tractor Building	Government Civil	Beside Stonewall Police Dept	Stonewall			$60,000.00	1998	Metal
X	Rental Building	Government Civil	1290 Hwy 171	Stonewall			$100,000.00	2008	Metal
X	Community Center	Government Civil	5208 Hwy 171	Stonewall			$800,000.00	2011	Metal

X	Home Ec Building	Government Civil	5209 Hwy 171	Stonewall			$120,000.00	Pre 1972	Wood
X	Pavilion	Government Civil	5210 Hwy 171	Stonewall			$168,000.00	2011	Metal
X	Amp Theater	Government Civil	5211 Hwy 171	Stonewall			$342,000.00	2005	Metal
X	Stonewall Assessors Office	Government Civil	1324 Hwy 171	Stonewall			$90,000.00	2000	Metal
X	Clerk of Court	Government Civil	1324 Hwy 171	Stonewall			$90,000.00	1999	Metal

Vulnerable Populations

DeSoto Parish Vulnerable Populations Worksheet					
Name	**Street**	**City**	**Zip Code**	**Latitude**	**Longitude**
All Hospitals (Private or Public)					
DeSoto Healthcare Center, Inc	7356 Louisiana 509	Mansfield	71052	32.05031473	-93.68340601
DeSoto Regional Wellness Center	Nearby: 305 Franklin Street	Mansfield	71052	32.03872699	-93.70871939
DeSoto Regional Health System - Cancer Center	Nearby: 175-299 Jefferson Street	Mansfield	71052	32.0353076	-93.70864864
DeSoto Regional Family Medicine	130 Jefferson Street	Mansfield	71052	32.03524906	-93.70933515
DeSoto Regional Helath System - Emergency	207 Jefferson Street	Mansfield	71052	32.03529815	-93.70807462
North DeSoto Rural Health Clinic	160 Stone Creek Drive	Stonewall	71078		
Nursing Homes (Private or Public)					
Mansfield Nursing Center	Nearby: 1764-1786 U.S. 84	Mansfield	71052	32.0406085	-93.68430964
Unknown	Nearby: 553-635 Schley Street	Mansfield	71052	32.03071034	-93.71017408
Stonewall Retirement Center	899 Hwy 171	Stonewall	71078		
Mobile Home Parks					
Unknown RV Park	Nearby: 8169 West Main Street	Grand Cane	71032	32.08788723	-93.81037909
County Lane Mobile Park	Hwy 171	Grand Cane	71032		
Sabine River RV Park	17418 Louisiana 5	Logansport	71049	31.99881894	-93.99257558
Perdido Sunset RV Park	Nearby: 491-499 Stephens Road	Logansport	71049	31.9973645	-93.94820192
RV Park	17418 Louisiana 5	Logansport	71049	31.97327234	-93.98395893
Shady S RV Park	801 South Street	Logansport	71049	31.96770249	-93.99441536
Unknown Trailer Park	Nearby: 120-158 Kraemer Road	Mansfield	71032	32.06240904	-93.76016197
Heart of Haynesville RV Park	10705 Louisiana 175	Mansfield	71032	32.11570699	-93.69941565
Unknown RV Park	Nearby: 399 Metcalf Road	Mansfield	71052	31.99638234	-93.71229203
Unknown	Nearby: McLarin Trailer Park	Mansfield	71052	32.03864205	-93.69380181
Unknown	Nearby: 698 Roach Street	Mansfield	71052	32.03172063	-93.68916153
Davidson RV Park	191 Davidson Road	Mansfield	71052	32.03541233	-93.63780586
RV Park	6201 West Bert Kouns Industrial Loop	Stonewall	71129	32.26739427	-93.81023259
Twin Corner's	444 Hall Road	Stonewall	71078		
South Stonewall Mobile Estate	108 R.V. Lane	Stonewall	71078		
McCoy's Subdivision	2165 Hwy 171	Stonewall	71078		

National Flood Insurance Program (NFIP)

DeSoto Parish

National Flood Insurance Program (NFIP)									
	DeSoto Parish	Grand Cane	Keachi	Logansport	Longstreet	Mansfield	South Mansfield	Stanley	Stonewall
Insurance Summary									
How many NFIP polices are in the community? What is the total premium and coverage?	70; $49,789 Premiums; $10,558,600 Coverage	0; $0; $0	0; $0; $0	2; $2,724 Premiums; $209,700 Coverage	0; $0; $0	15; $12,983 Premiums; $3,184,000 Coverage	1; $320 Premiums; $210,000 Coverage	0; $0; $0	4; $1,294 Premiums; $945,000 Coverage
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?	22; $491,379 Claims Paid; 4 S.D.	0; $0 Claims Paid	0; $0 Claims Paid	1; $938 Claims Paid; 0 S.D.	0; $0 Claims Paid	9; $227,426 Claims Paid; 1 S.D.	0; $0 Claims Paid	0; $0 Claims Paid	0; $0 Claims Paid
How many structures are exposed to flood risk with in the community?	57	0	0	2	0	15	1	0	3
Describe any areas of flood risk with limited NFIP policy coverage.	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known
Staff Resources									
Is the Community FPA or NFIP Coordinator certified?									
Is flood plain management an auxiliary function?									
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)									
What are the barriers to running an effective NFIP program in the community, if any?									

Compliance History									
Is the community in good standing with the NFIP?	Yes	Yes	No; Sanction Date: 11/12/77	Yes	Not in NFIP	Yes	Yes	Not in NFIP	Yes
Are there any outstanding compliance issues (i.e., current violations)?	No	No		No	None Known	No	No	None Known	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	CAC: 5/22/14; CAV: 12/17/02	CAC: 8/18/08; CAV: 3/3/10		CAC: 6/14/17; CAV: 9/14/09	Unknown	CAC: 10/19/07; CAV: 3/31/11	CAC: 12/16/02; CAC: 2/21/07	Unknown	CAC: 5/14/07
Is a CAV or CAC scheduled or needed? If so when?	No	No	No	No	No	No	No	No	No
Regulation									
When did the community enter the NFIP?	5/1/1987	3/23/1982	Not in NFIP	1/1/1992	Not in NFIP	7/4/1988	2/1/1987	Not in NFIP	6/21/2006
Are the FIRMs digital or paper?	Both	Both	Both	Both	Both	Both	Both	Both	Both
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meet	Meet		Meet		Meet	Meet		Meet
Community Rating System (CRS)									
Does the community participate in CRS?	No	No	No	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	N/A	N/A	N/A
Does the plan include CRS planning requirements?	No	No	No	No	No	No	No	No	No