



# **Morehouse Parish Hazard Mitigation Plan Update Public Meeting**

February 14, 2023

Bastrop, LA

# Introductions

- **Morehouse Parish OHSEP Director/Parish Staff**
- **Stephenson Disaster Management Institute (SDMI) at LSU**
  - Chris Rippetoe – Hazard Mitigation Program Manager
  - Jason Martin – Emergency Management Analyst
- **Governor's Office of Homeland Security and Emergency Preparedness**
  - Jeffrey Giering – State Hazard Mitigation Officer
  - Marion Pearson – Hazard Mitigation Planner

# Agenda



**Introductions**



**Hazard Mitigation  
Overview**



**Planning Process**

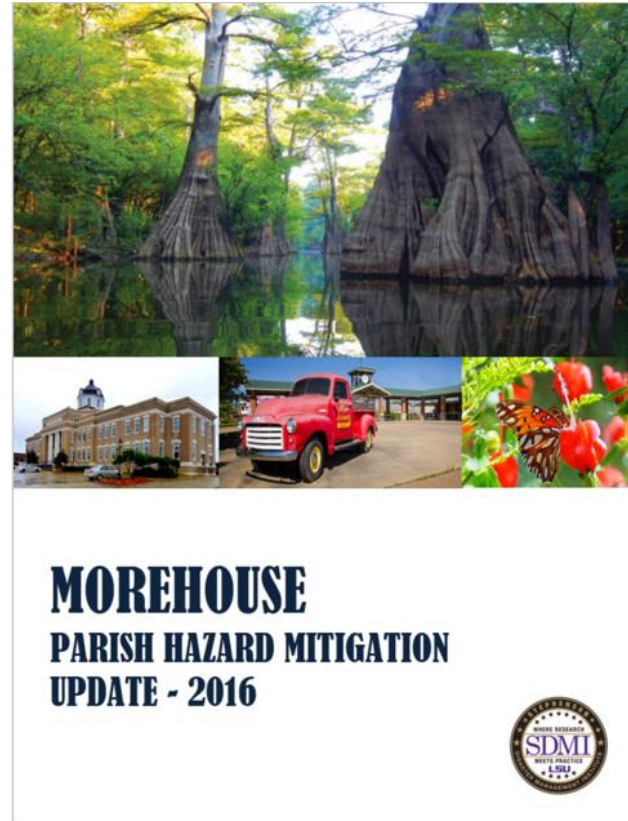


**Risk Assessment  
Maps**



**Public Outreach  
Activities**

# Why Are We Here?




STATE OF LOUISIANA

This document has been prepared by:  
Louisiana Governor's Office of Homeland Security  
and Emergency Preparedness  
7667 Independence Blvd.  
Baton Rouge, LA 70806

With Support From:  
Department of Geography and Anthropology  
Department of Construction Management  
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(UNO-CHART)  
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HAZARD MITIGATION GUIDE  
2019

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# Hazard Mitigation Is....

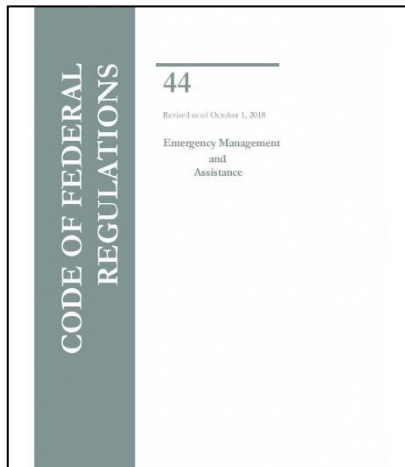
- Any action taken to reduce long term risk to life and property;
- On-going process that occurs before, during, and after disasters;
- Mitigation actions help prevent damage to a community's infrastructure, economic, cultural and environmental assets;
- Minimize operational downtime and accelerate recovery of government and the private sector after an event;
- ***Implementation of mitigation actions leads to building stronger, safer and smarter!***

# Why Are We Required To Have A Hazard Mitigation Plan?

- Disaster Mitigation Act of 2000 (DMA 2000)

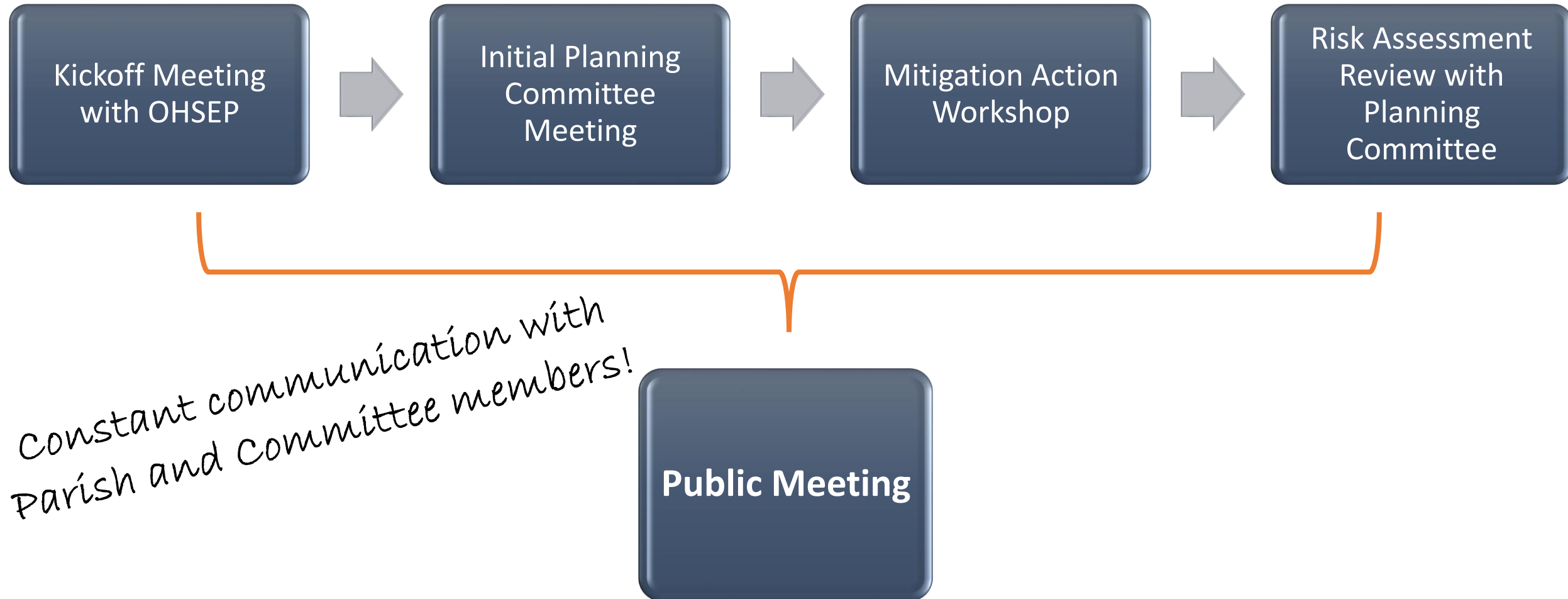
*Section 322 of the Act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard migration plans as a precondition for receiving FEMA mitigation project grants.*

- Meet federal requirements of Title 44 Code of Regulations (CFR) §201.6 for approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs.

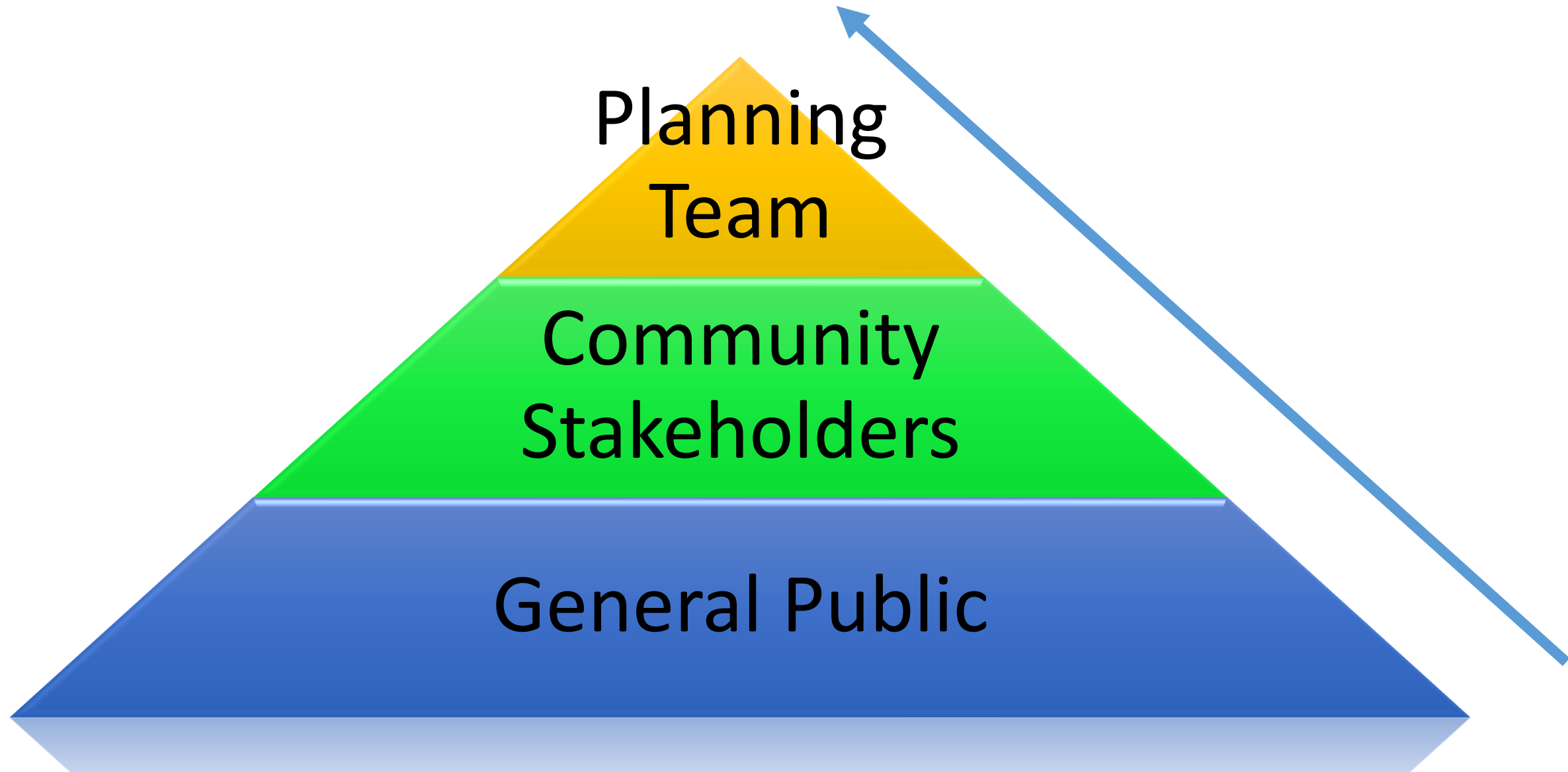


- The approved Morehouse Parish Hazard Mitigation Plan will allow for distribution of HM funding following future disasters.

# Planning Process to Date

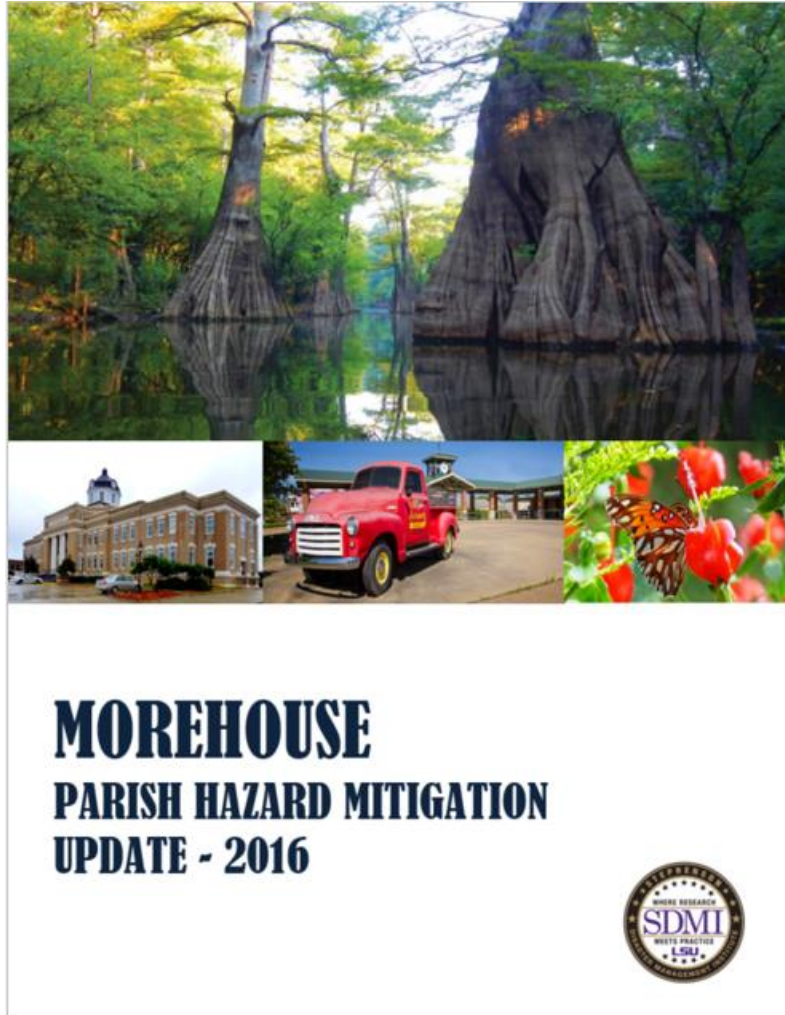


# Collaborative Planning Approach





# Planning Development



# Plan Layout

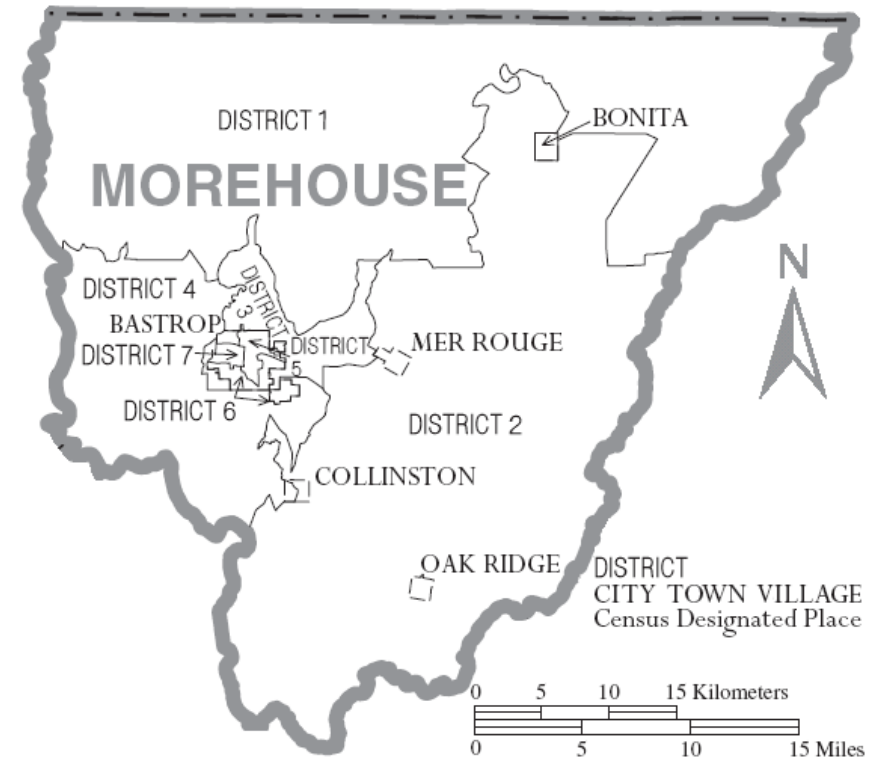
- **Section 1: Introduction**
  - Updated parish description
  - Updated demographics
  - Economics
- **Section 2: Hazard Identification and Parish-wide Risk Assessment**
- **Section 3: Capability Assessment**
- **Section 4: Mitigation Strategies**
  - New actions
  - Action updates
  - Survey results

# Plan Layout

- **Appendix A:** Planning Process
- **Appendix B:** Plan Maintenance
- **Appendix C:** Parish Critical Facilities
- **Appendix D:** Plan Adoption
- **Appendix E:** State Required Worksheets

# Hazard Identification and Risk Assessment

- The plan includes descriptions of the natural hazards that affect the jurisdictions in the planning area.
- The hazards identification includes the following:
  - *locations affected*
  - *extent or strength*
  - *previous occurrences*
  - *probability of future events*





# Hazard Identification and Risk Assessment

- Based on Currently Profiled Risks
- Any Newly Identified Risks
- Prevalent Hazards
- Previous Occurrences
- Probability of Future Events
- Assets Inventory
- Essential Facilities
- Hazard Impact
- Future Development
- Future Hazard Impacts
- Zoning and Land Use
- Hazard Profiles

# Hazard Identification and Risk Assessment

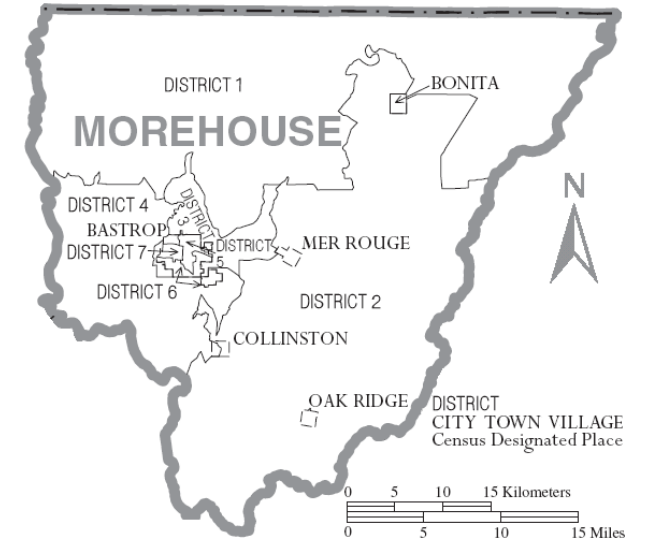
- Dam Failure
- Drought
- Excessive Heat
- Flooding
- Levee Failure
- Thunderstorms
- Tornadoes
- Tropical Cyclones
- Wildfires
- Winter Weather



# Risk Matrix for Morehouse Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Drought	3	2	4	2	3	2.8
Excessive Heat	2	1	4	1	4	2.3
Flooding	3	4	3	4	3	3.4
Thunderstorms - Hail	4	2	3	3	1	2.7
Thunderstorms - Lightning	1	2	2	3	1	1.75
Thunderstorms - Wind	4	2	3	3	1	2.7
Tornadoes	3	3	2	4	3	2.95
Tropical Cyclones	3	4	4	1	4	3.3
Wildfires	1	3	4	1	2	2.25
Winter Weather	3	2	2	4	2	2.55
Dam Failure	1	2	1	4	2	1.85
Levee Failure	1	2	1	4	2	1.85

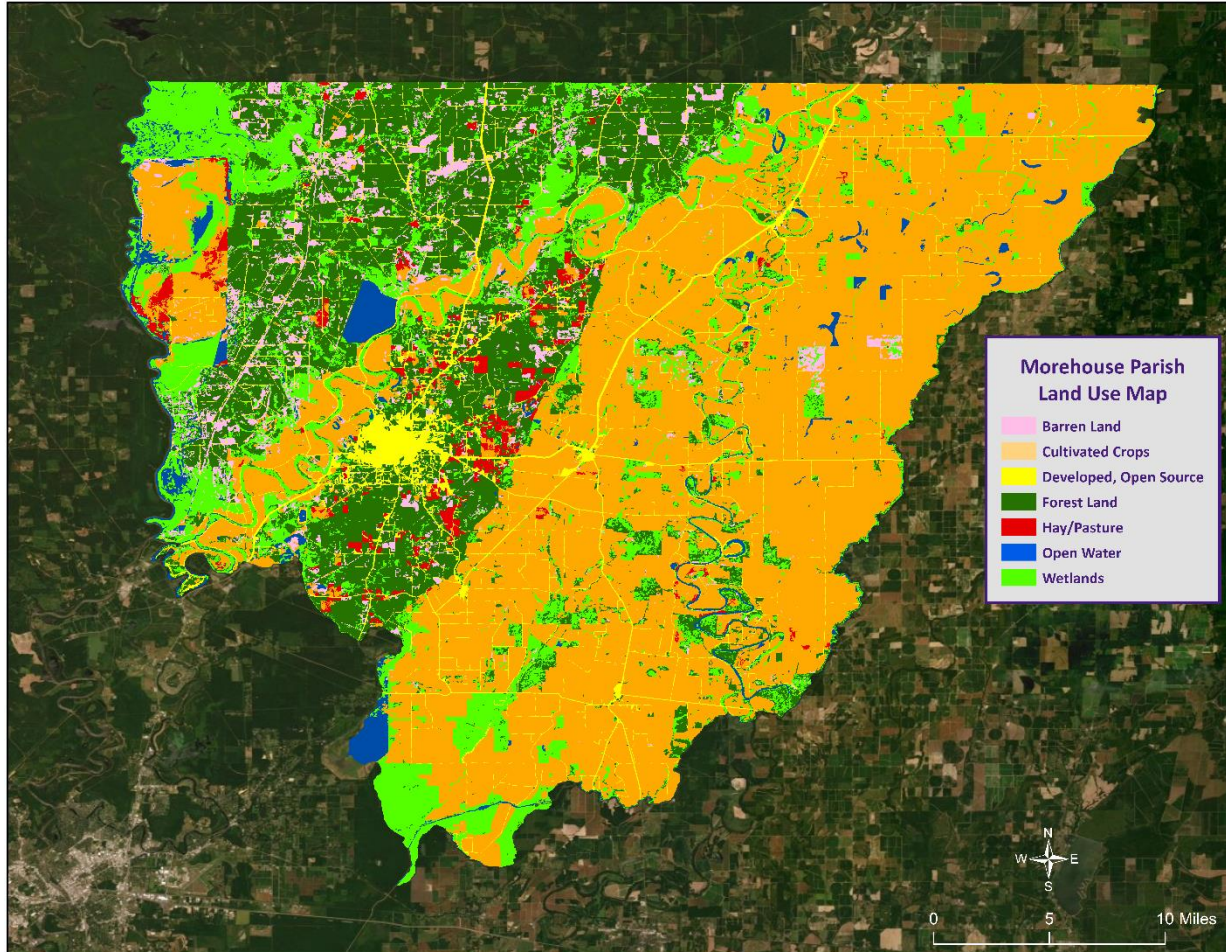
Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9



# Risk Assessment Maps

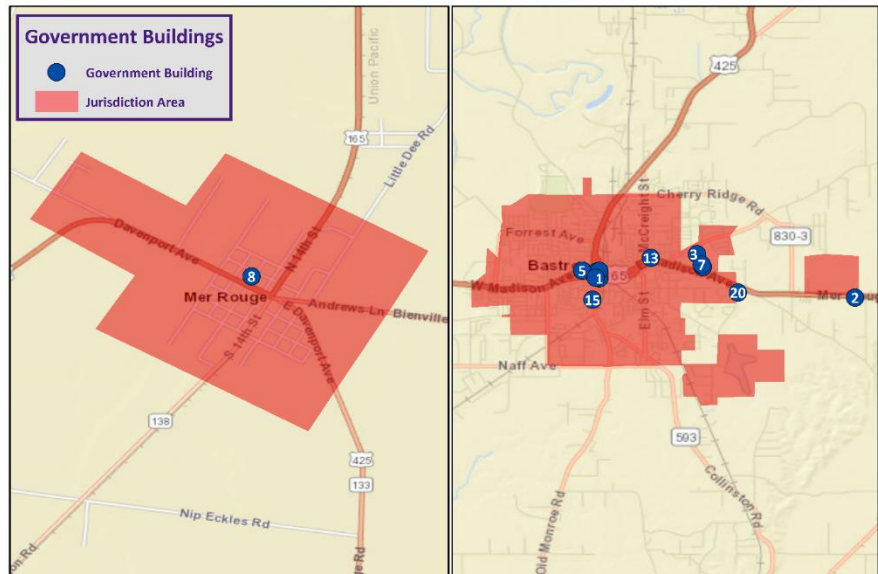
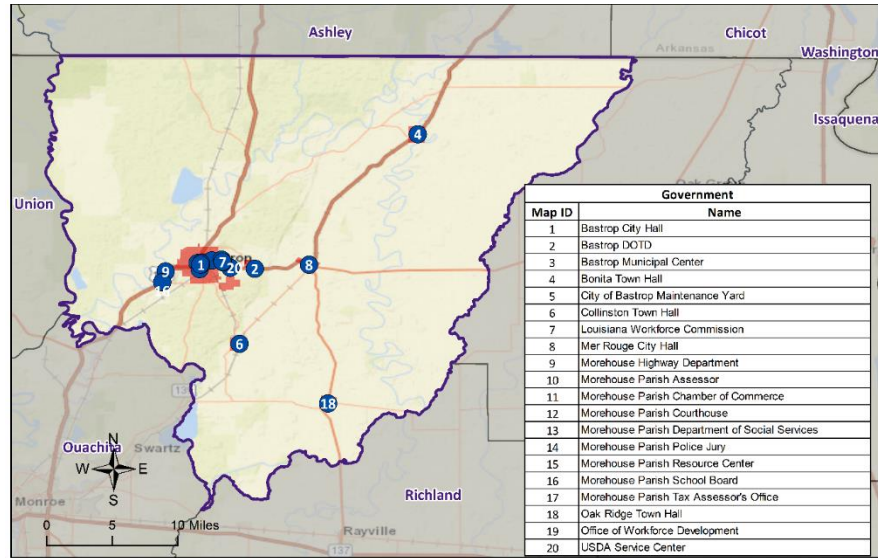


# Morehouse Parish Land Use

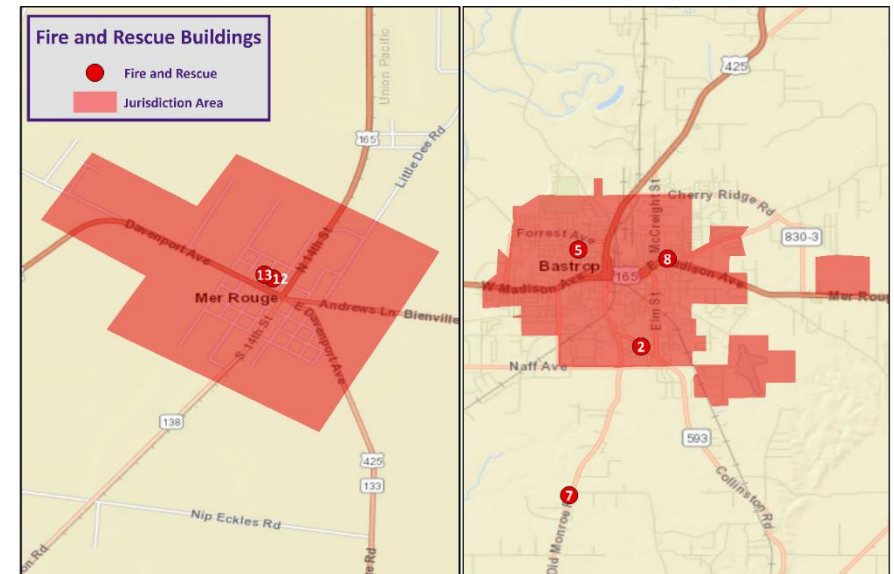
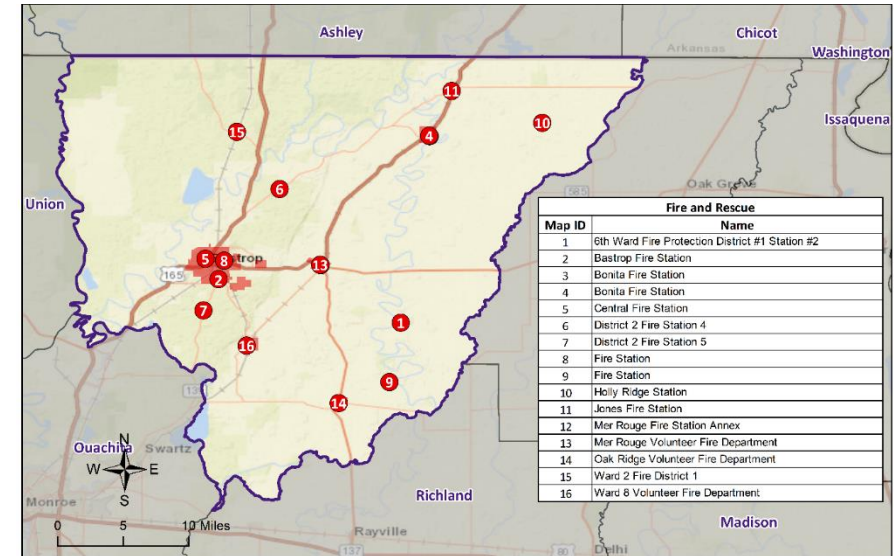


Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	289,116	56%
Wetlands	78,606	15%
Forest Land (Not including forested wetlands)	109,557	21%
Urban/Development	24,900	5%
Water	13,534	3%

# Critical Facilities: Civil Government

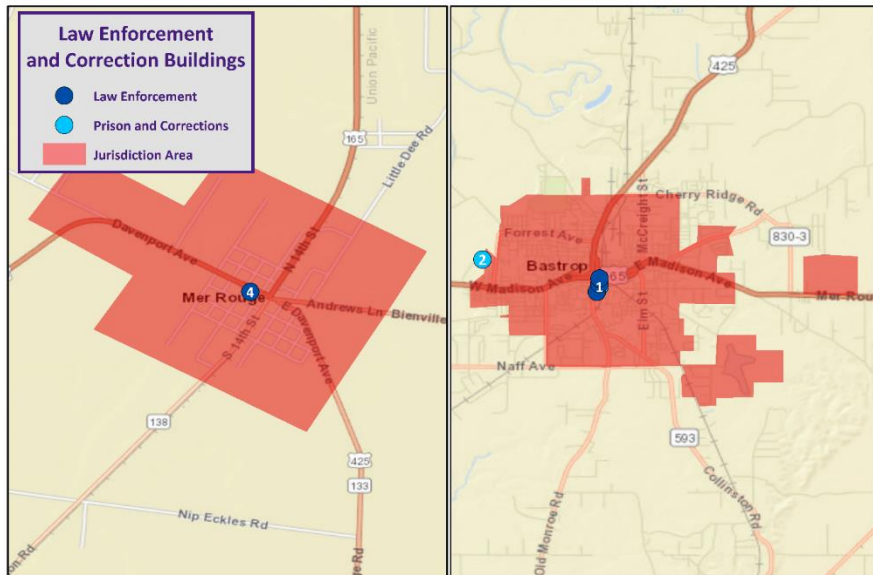
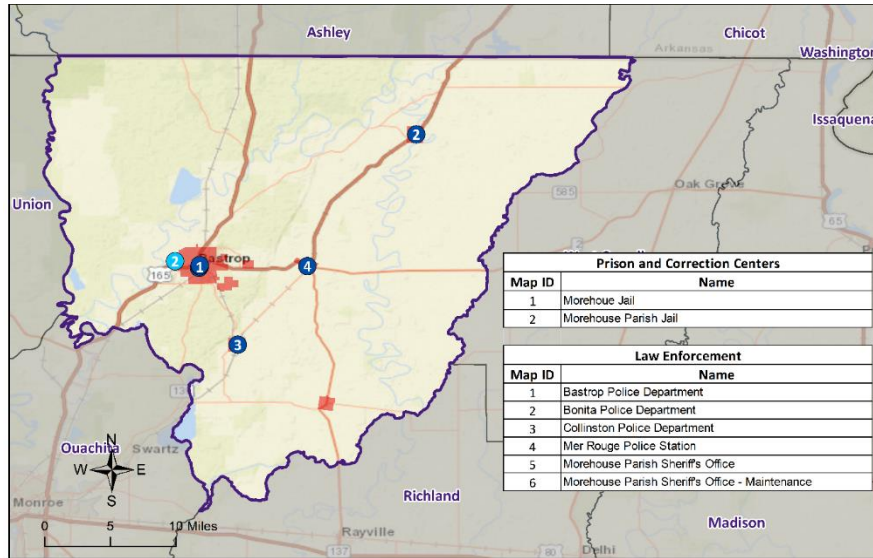


# Critical Facilities: Fire & SAR

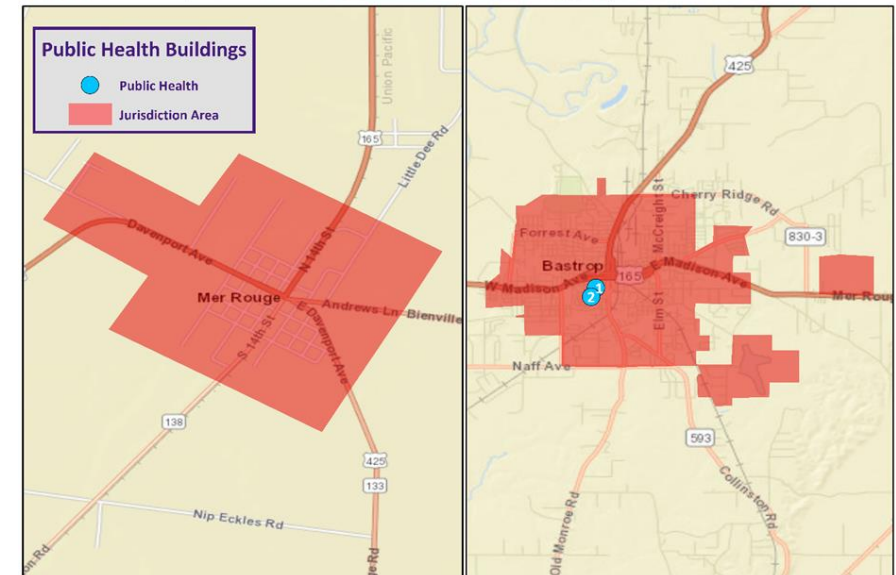
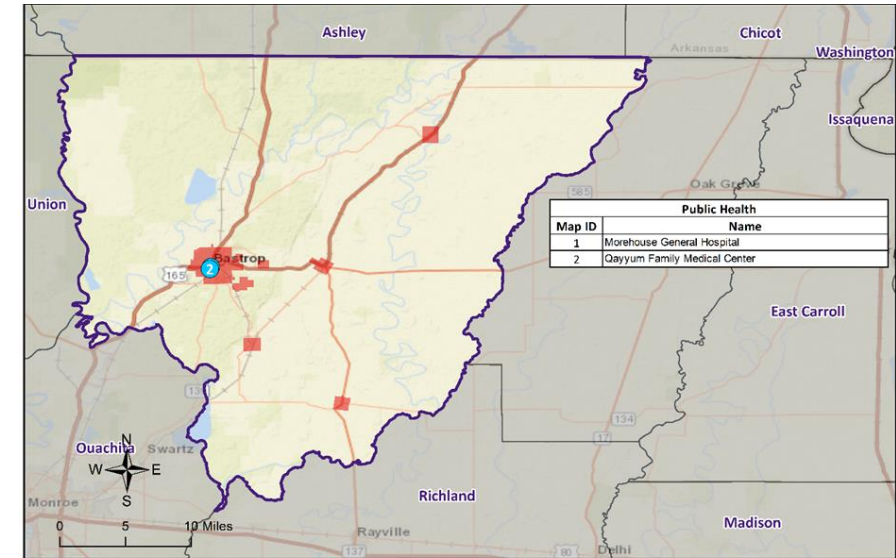




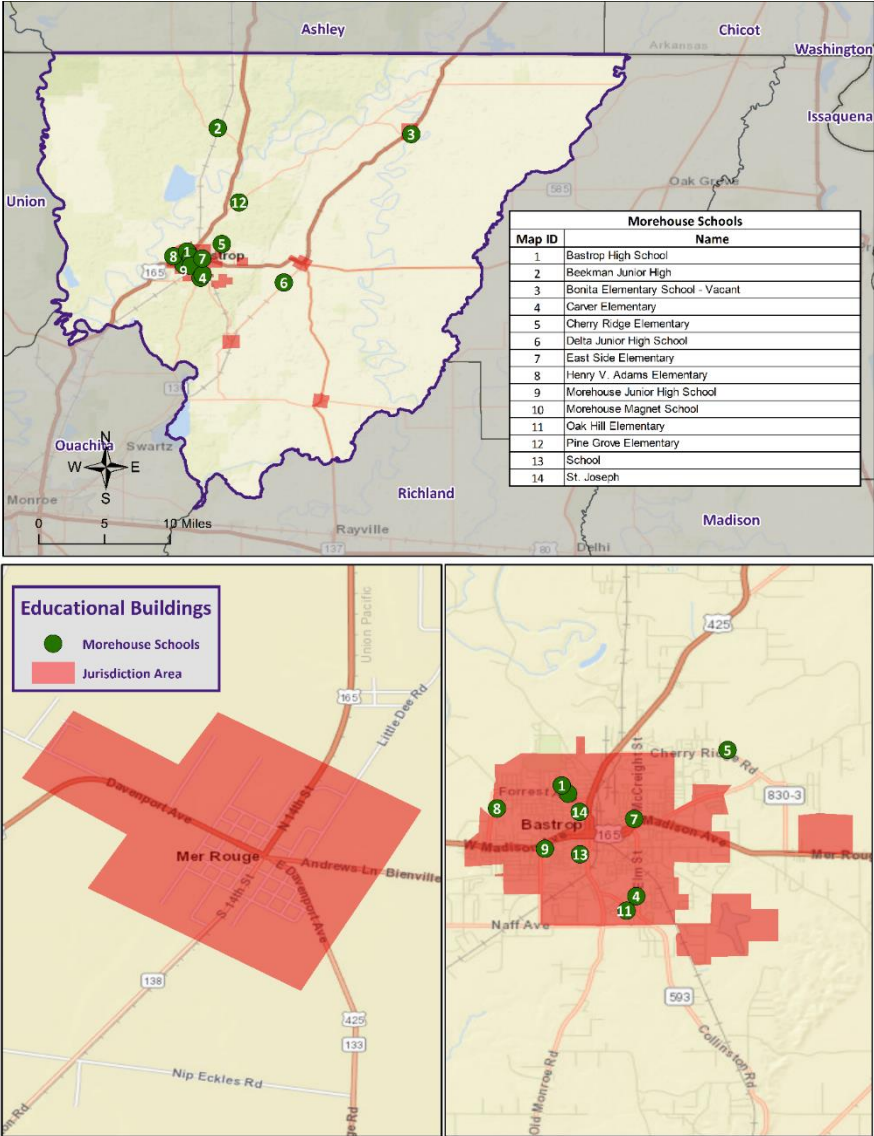
# Critical Facilities: Law Enforcement



# Critical Facilities: Public Health



# Critical Facilities: Education





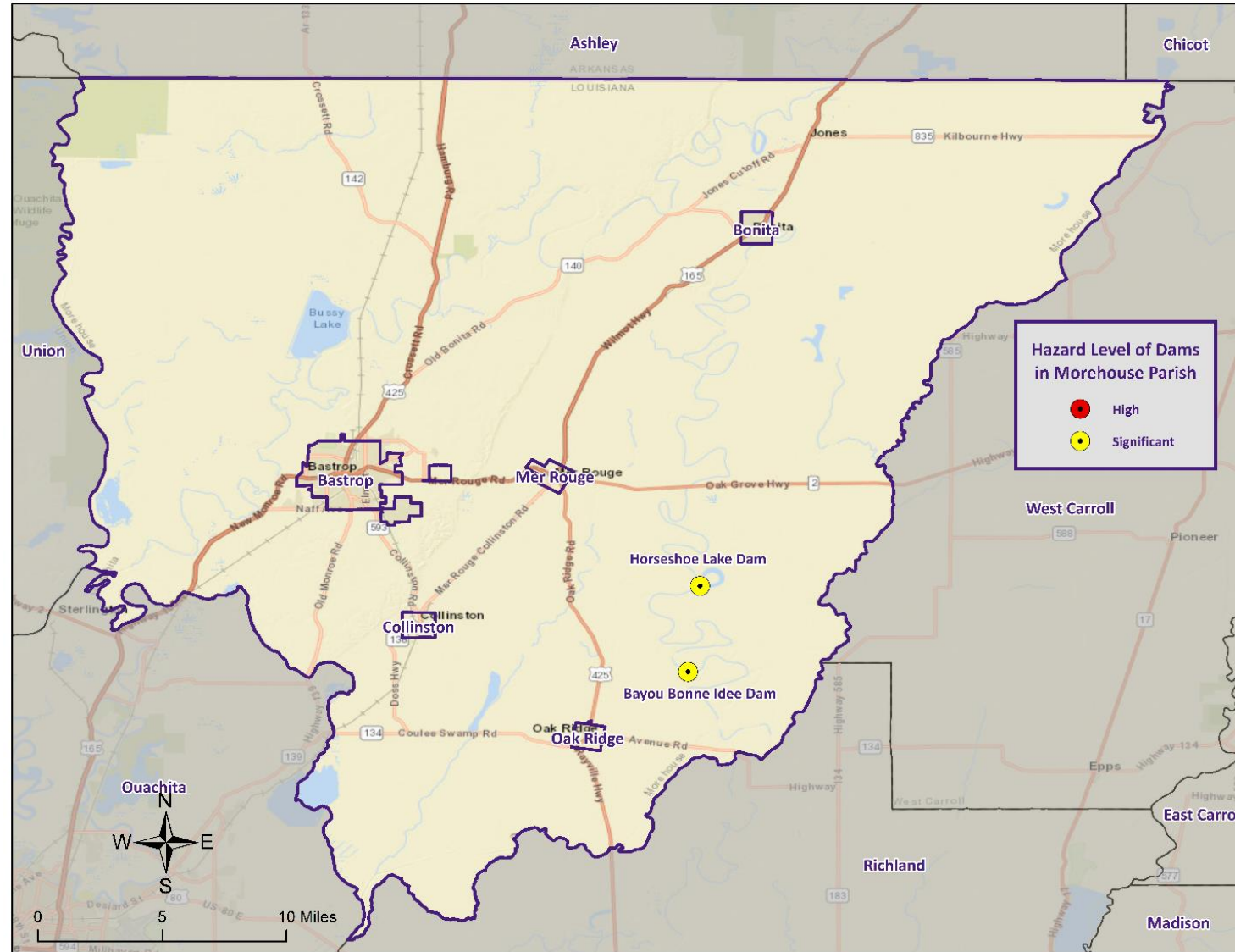
# Dam Failure



- A dam is a barrier across flowing water that obstructs, redirects, or slows the flow, often creating a reservoir or lake.
- There are five main causes of dam failure:
  - ✓ Overtopping
  - ✓ Foundation Defects
  - ✓ Cracking
  - ✓ Inadequate maintenance and upkeep
  - ✓ Piping



# Location of Dams in Morehouse Parish



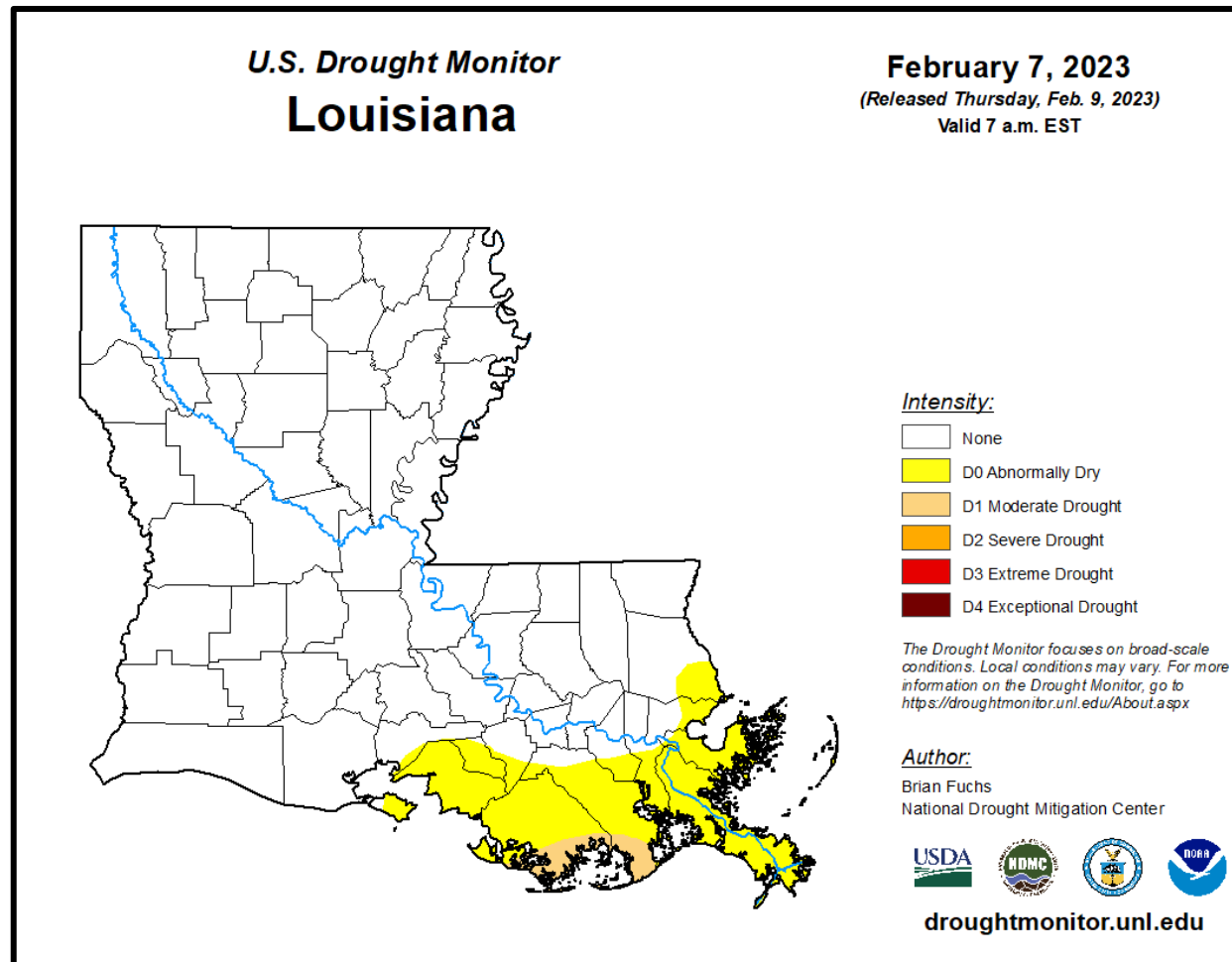
# Drought



- 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.
- There are four classes of drought:
  - ✓ Meteorological Drought
  - ✓ Hydrologic Drought
  - ✓ Agricultural Drought
  - ✓ Socioeconomic Drought
- Generally, the entire parish will be affected by drought
  - Not limited to one particular location within the parish



# Drought Monitor



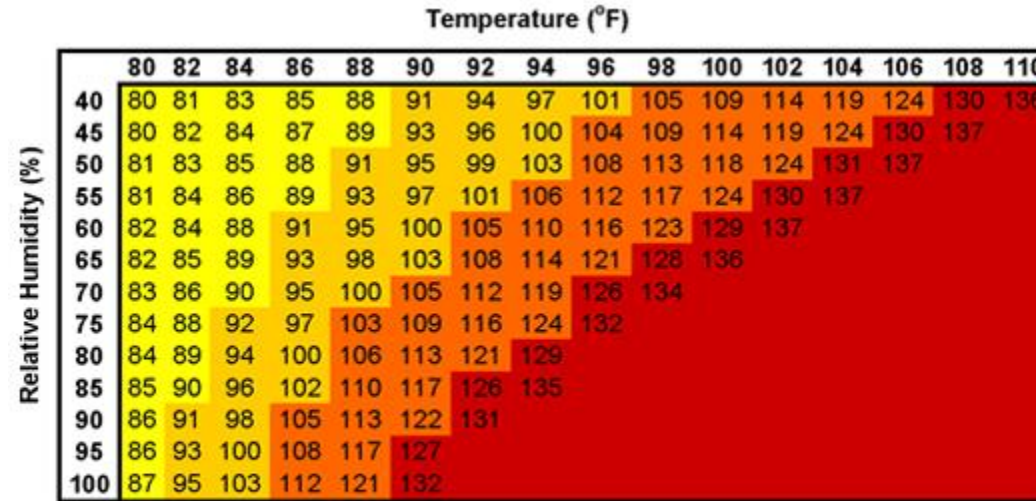
# Excessive Heat

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- No universal definition for Excessive Heat
- Often seen in conjunction with regional drought
- Heat waves are easier to define
  - At least 5 consecutive days where the daily max temperature exceeds the average max temperature by 9 degrees



# Excessive Heat



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
  Extreme Caution
  Danger
  Extreme Danger

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.



# 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.”



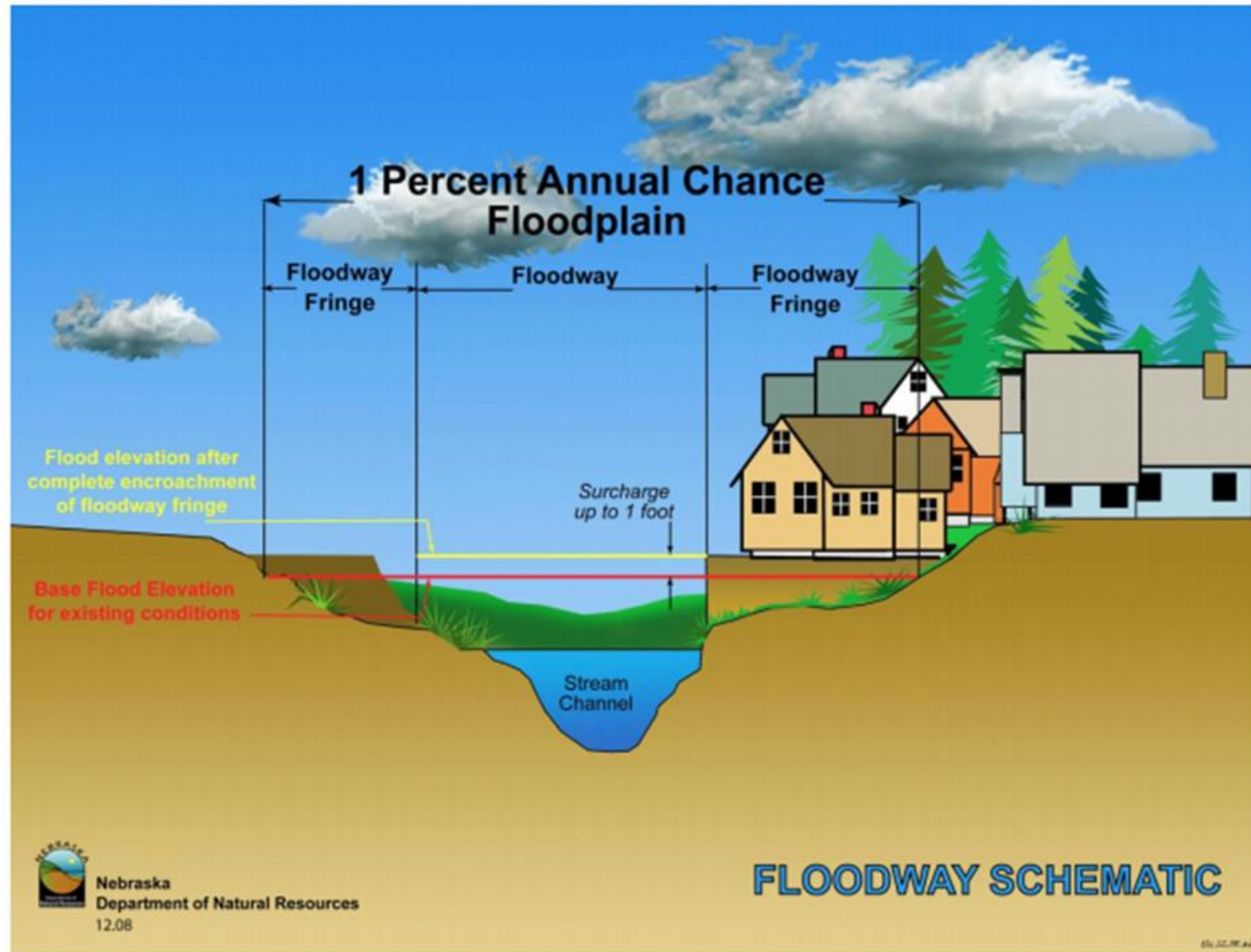


# Flooding

In Louisiana, six specific types of flooding are of main concern:

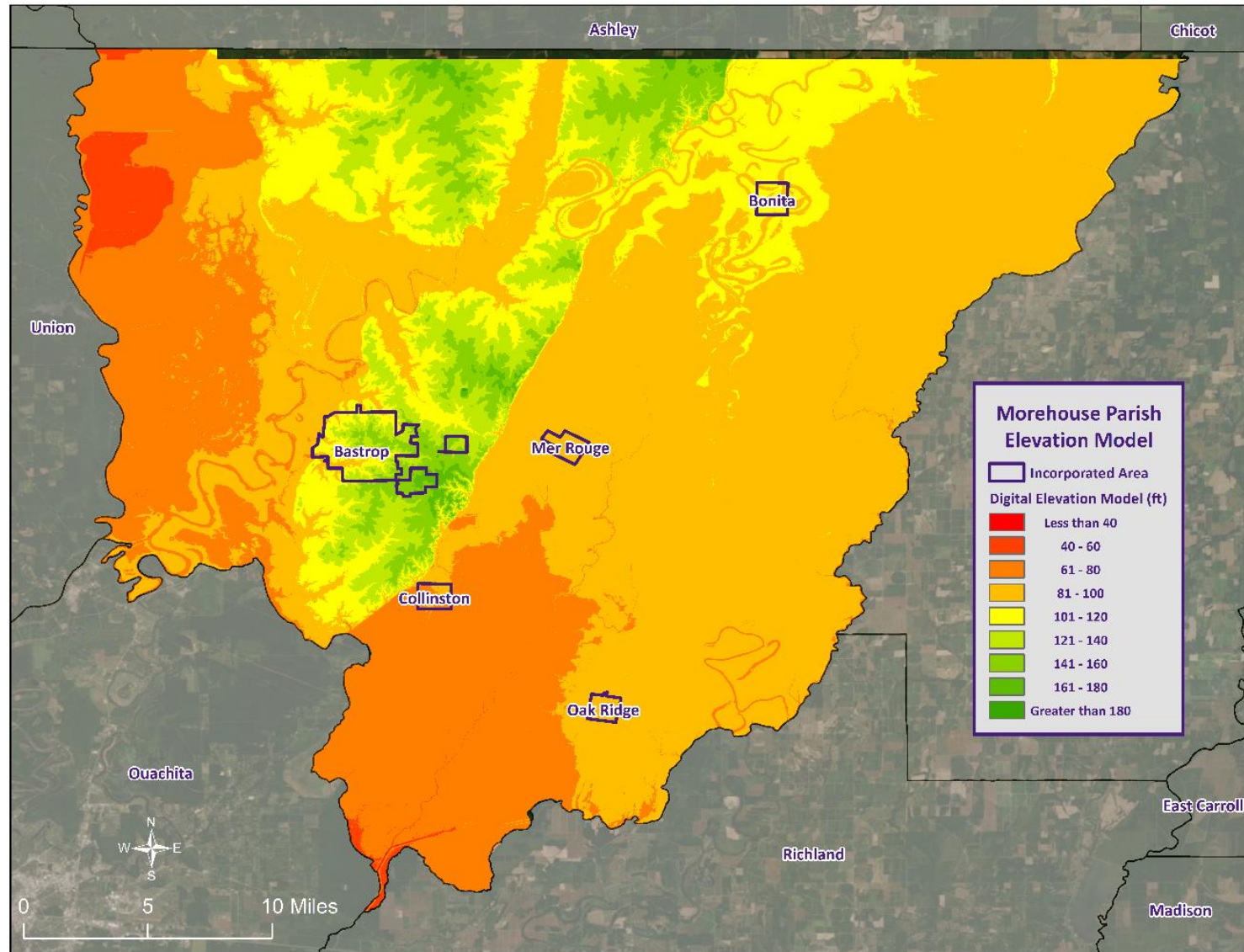
- Riverine
- Flash
- Ponding
- Backwater
- Urban
- Coastal

# Floodway Diagram

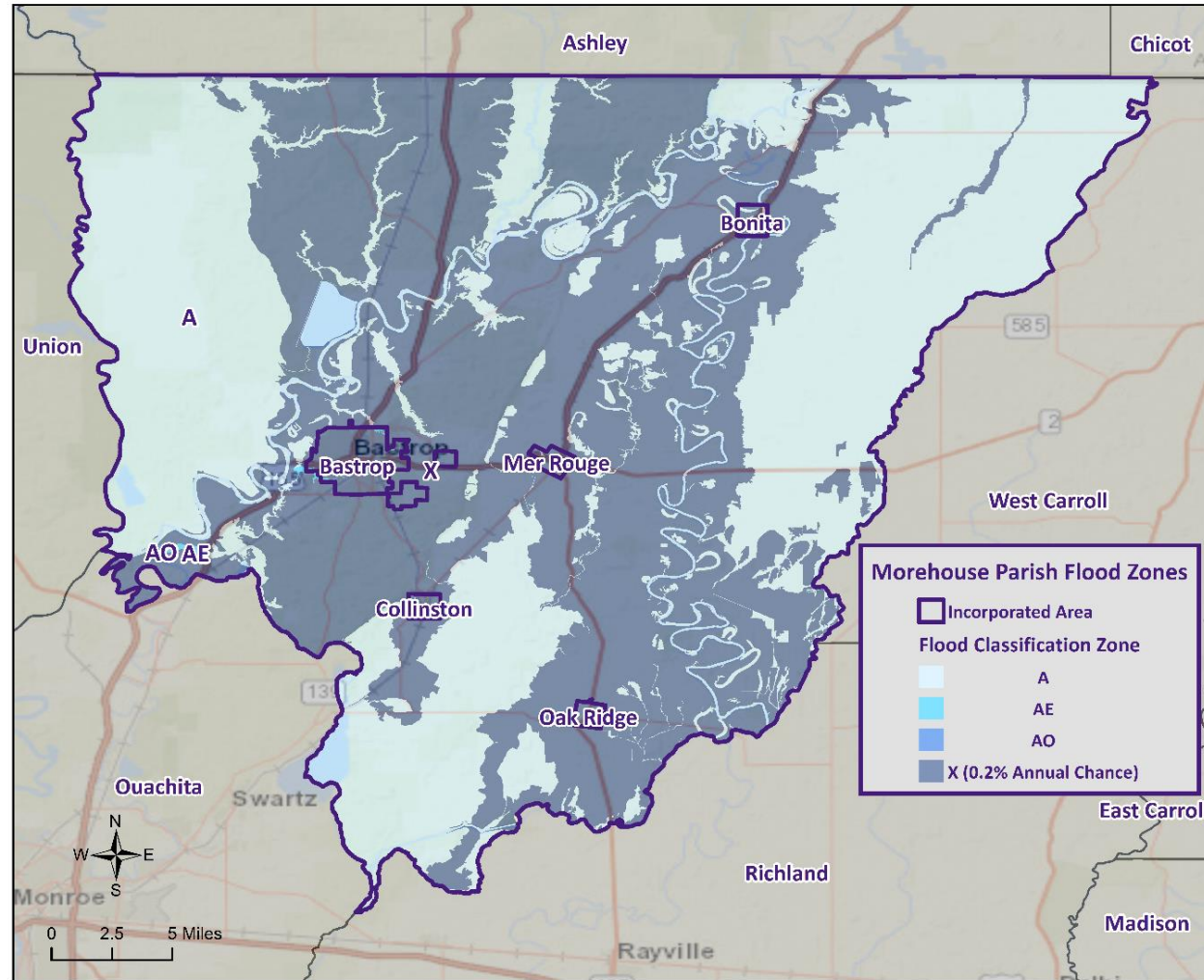




# Digital Elevation Model

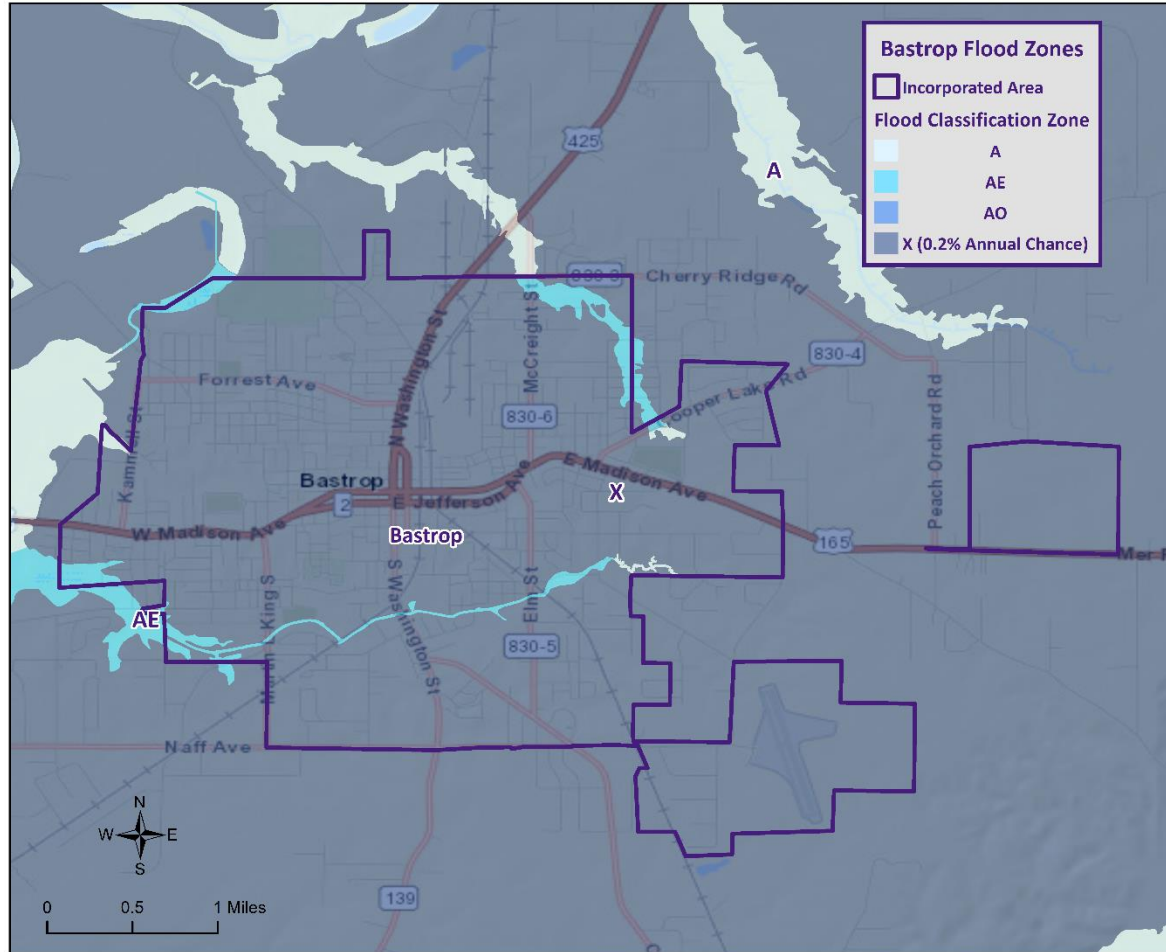


# Morehouse Parish Flood Map

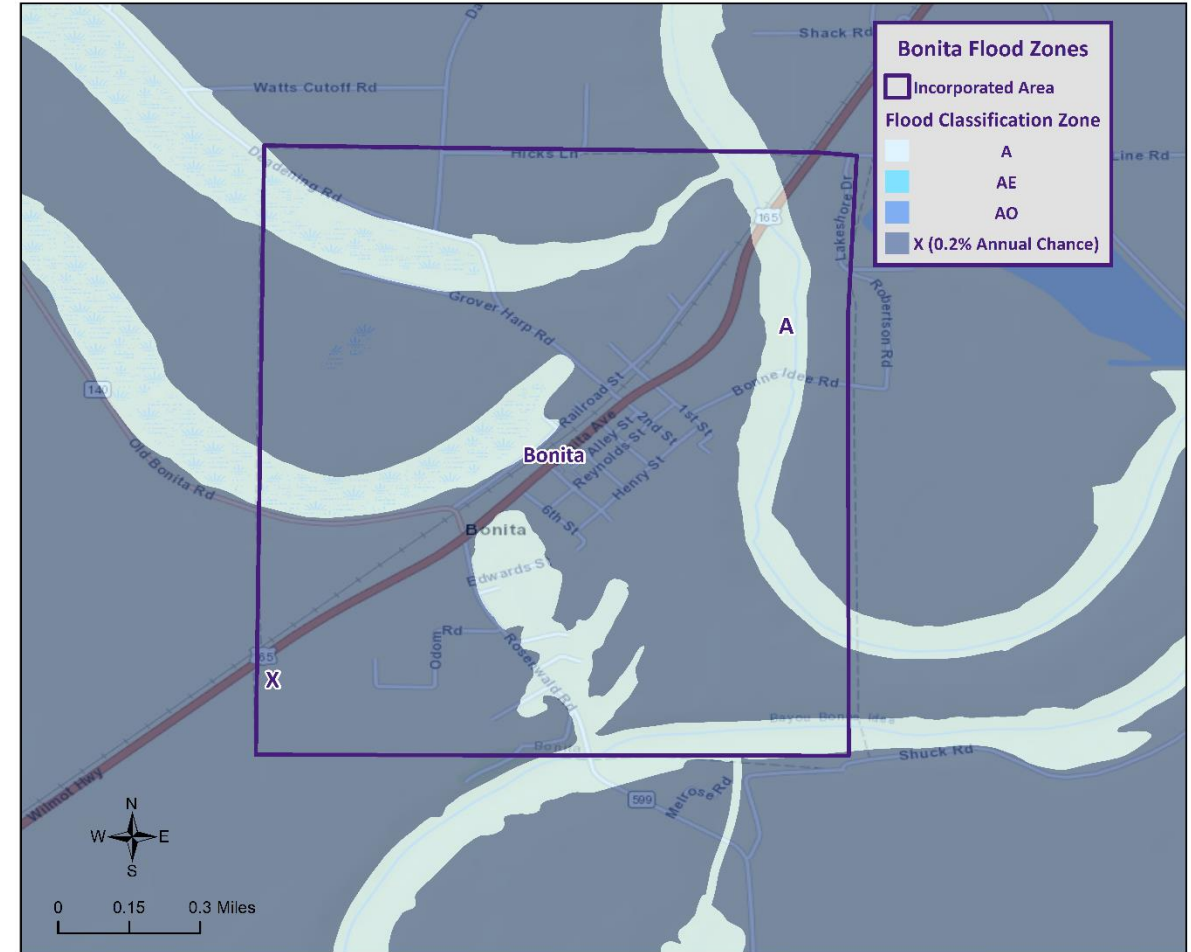




# Flood Map: Bastrop

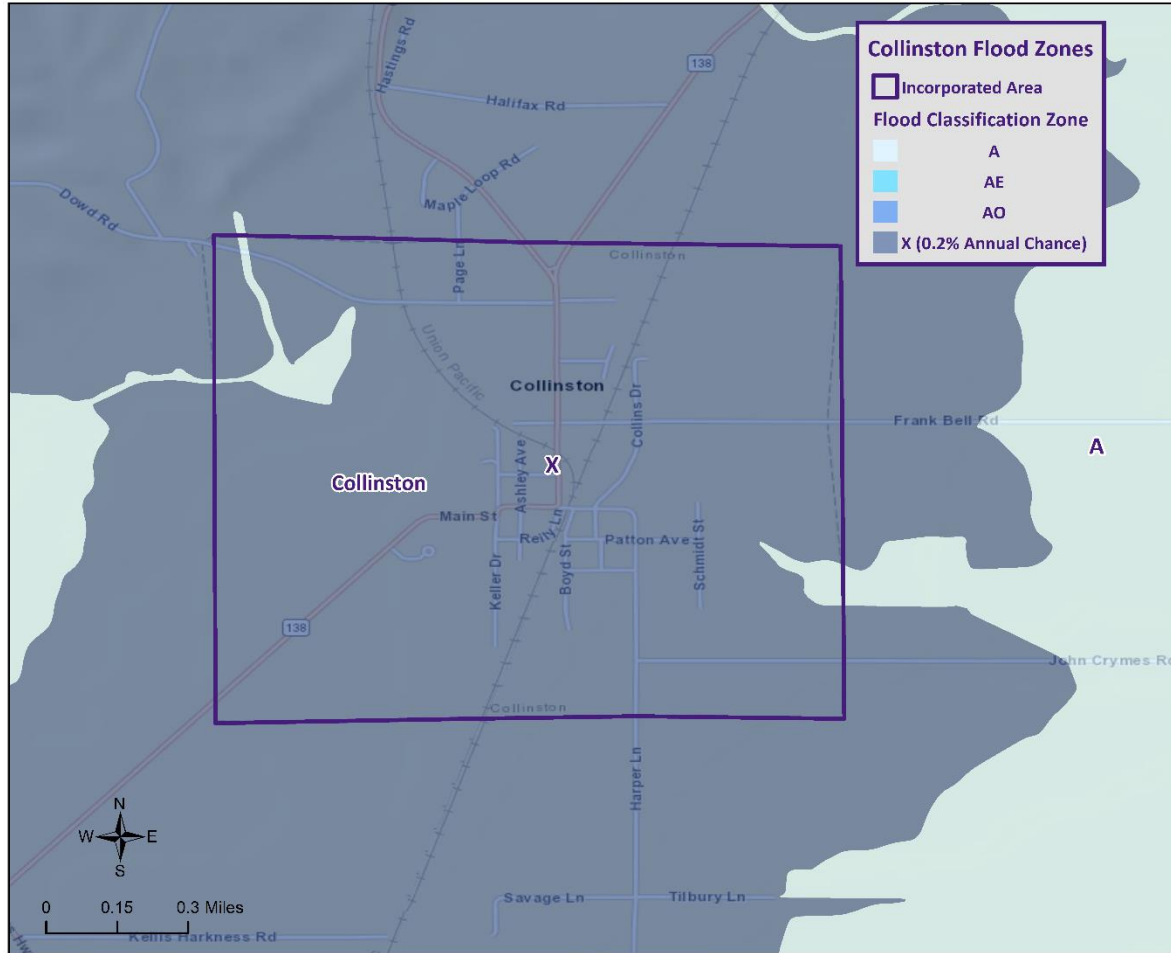


# Flood Map: Bonita

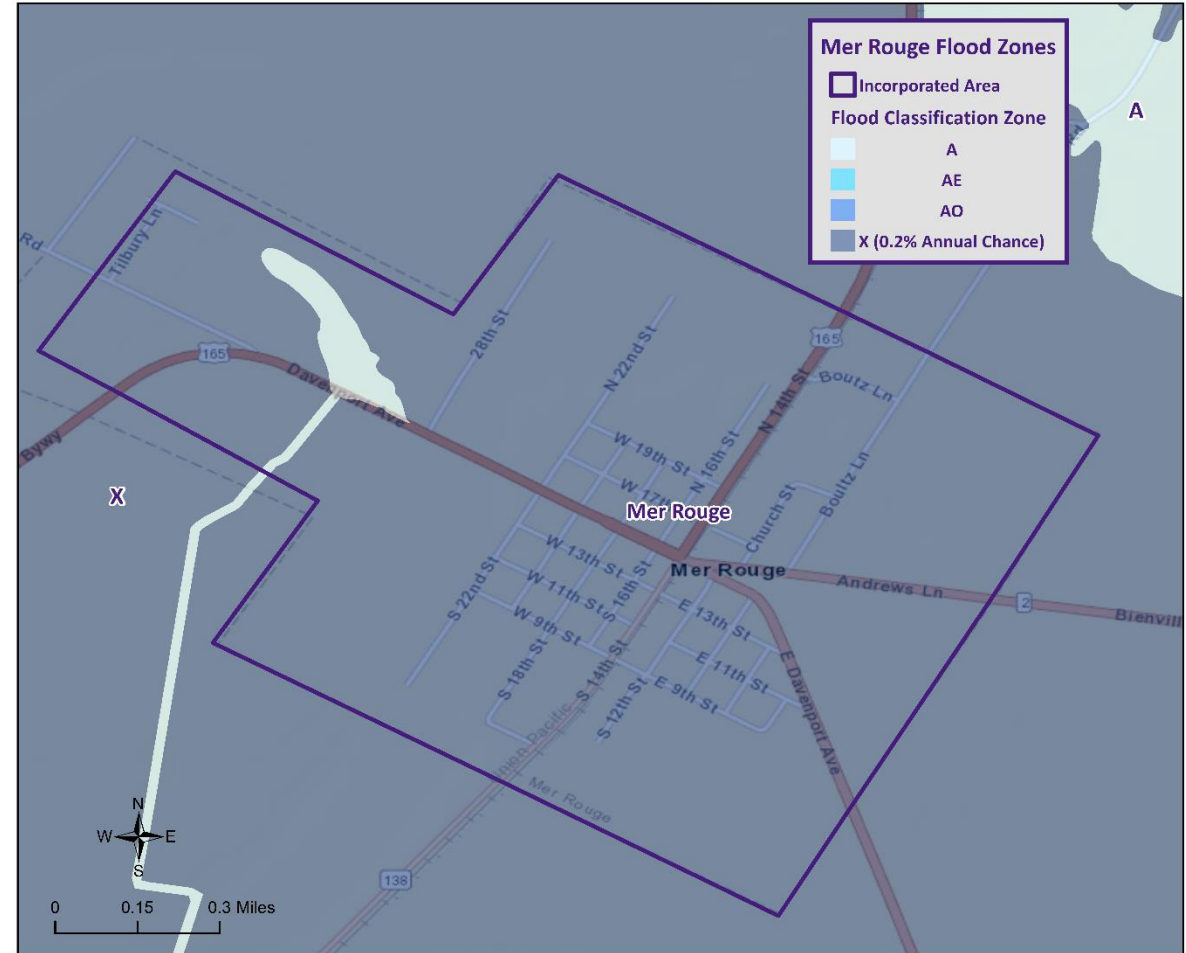




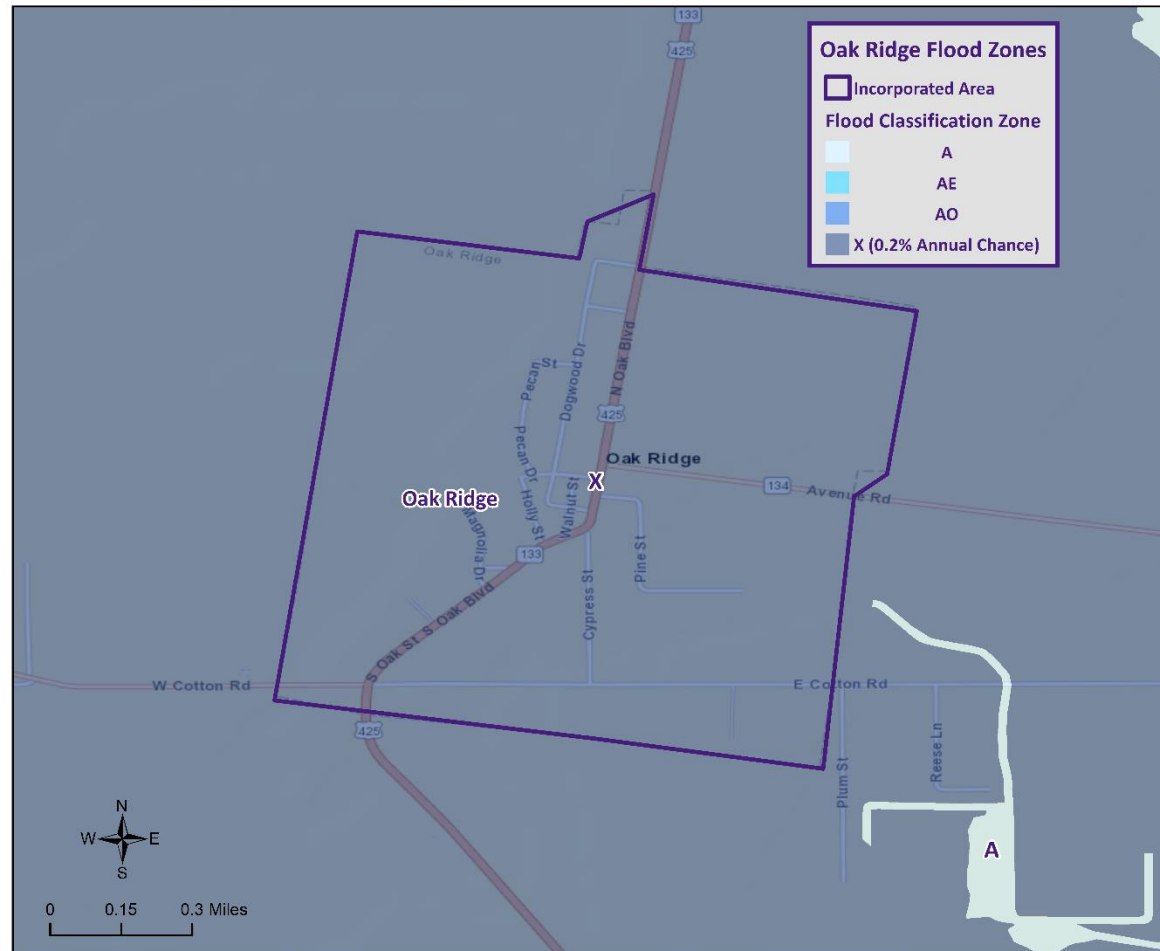
# Flood Map: Collinston



# Flood Map: Mer Rouge



# Flood Map: Oak Ridge

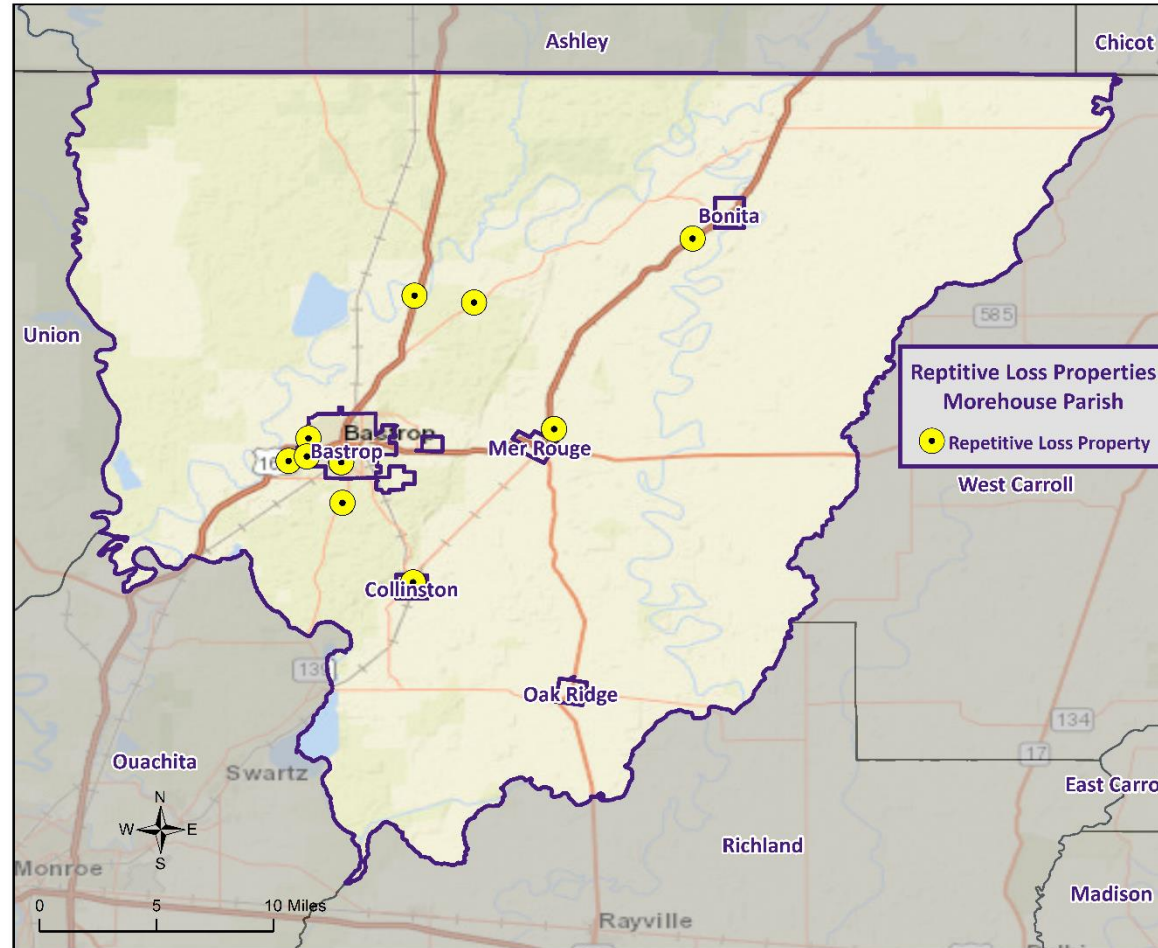


# Flooding



- Some areas flood more often than other properties, even more than those in the mapped 100-year floodplain.
- FEMA defines a “repetitive loss” property as one which has received two flood insurance claim payments for at least \$1,000 over any 10-year period since 1978.
- There are currently around 160,000 repetitive loss properties in the U.S.
- These properties comprise 1% of the NFIP policy base, but they account for approximately 30% of the country’s flood insurance claim payments.

# Repetitive Loss Properties



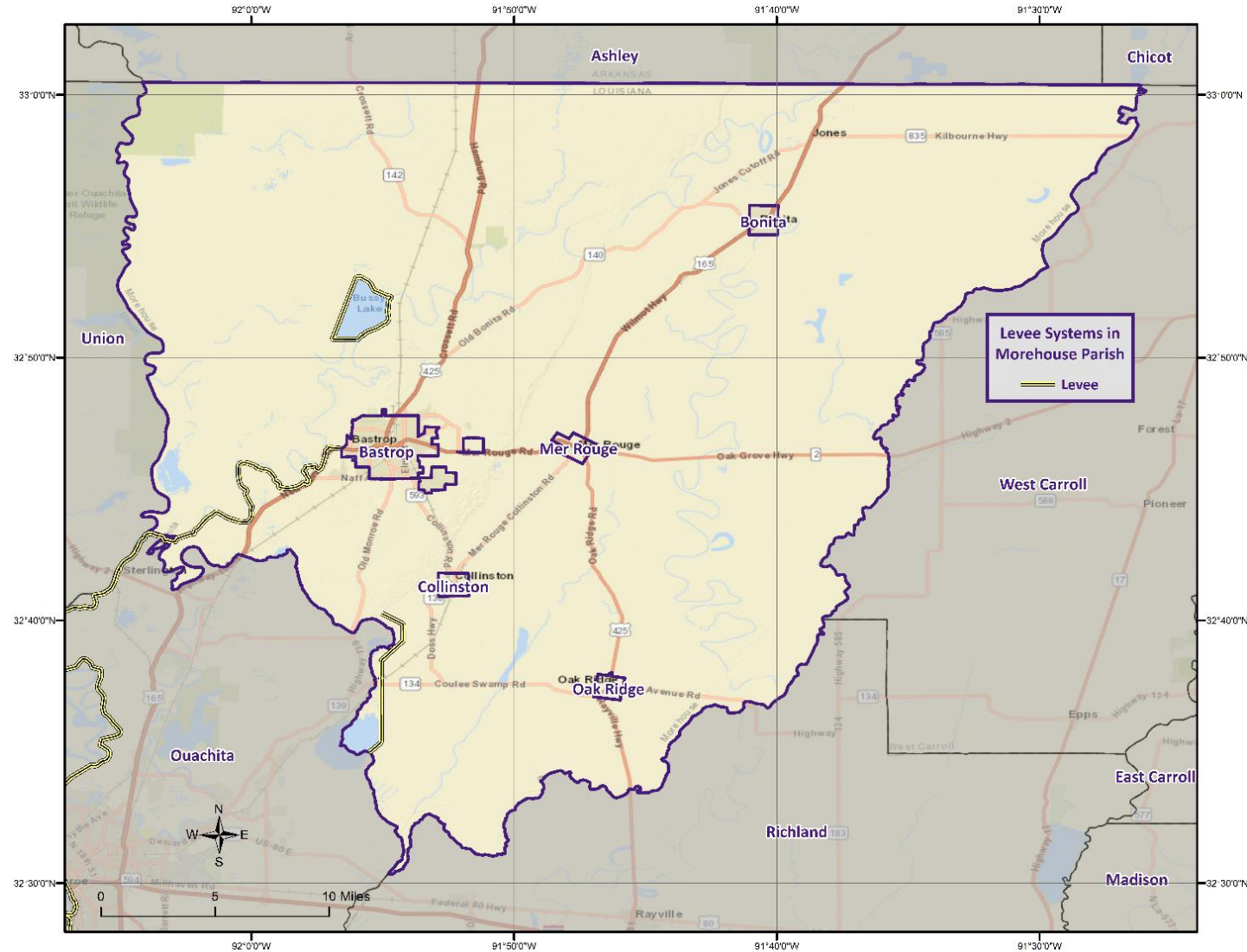


# Levee Failure

- Levees are flood control barriers constructed of earth, concrete, or other materials that protect significant areas of residential, commercial, or industrial development.
- Levee failure involves the overtopping, breach, or collapse of the levee.



# Locations of Levees in Morehouse Parish



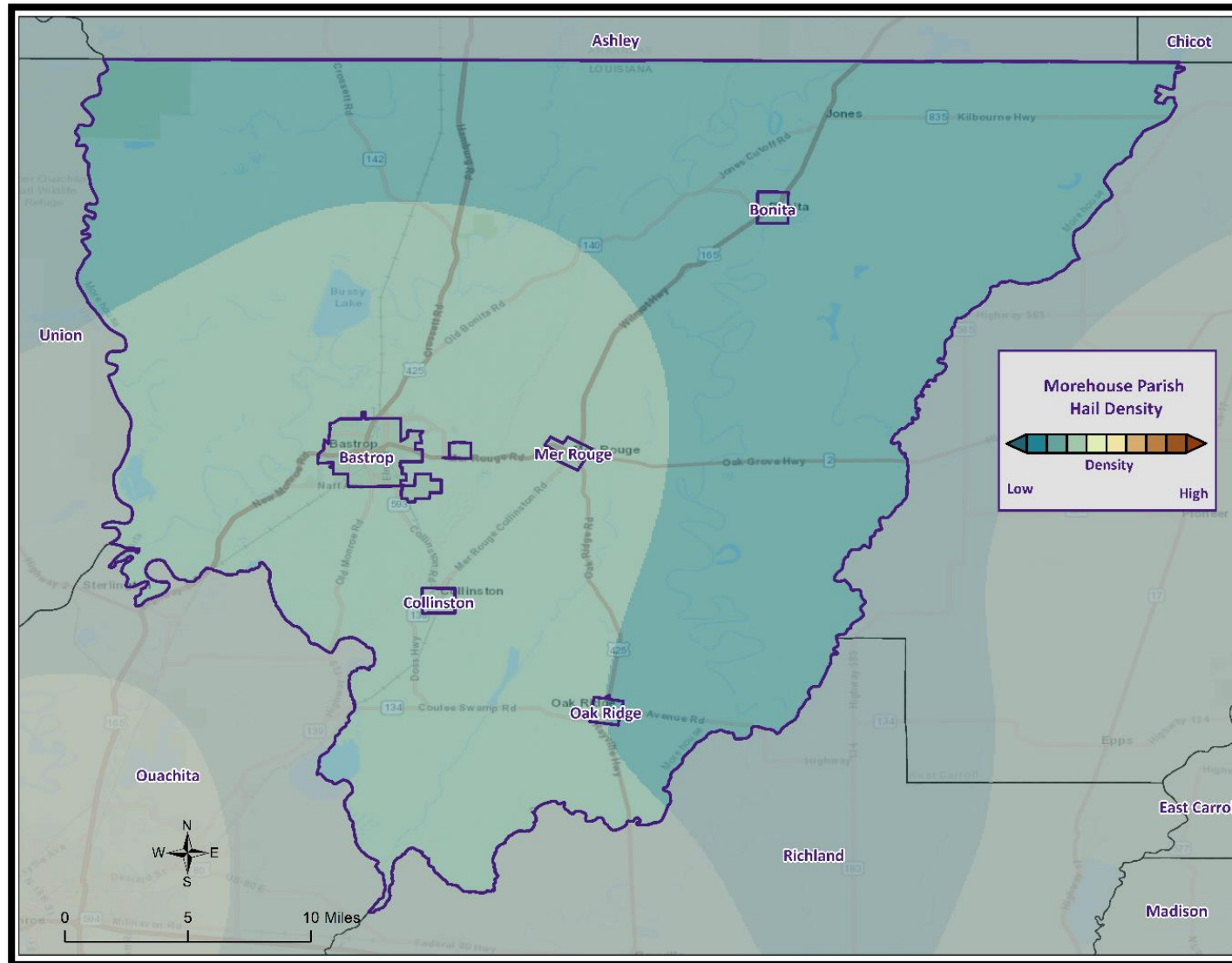




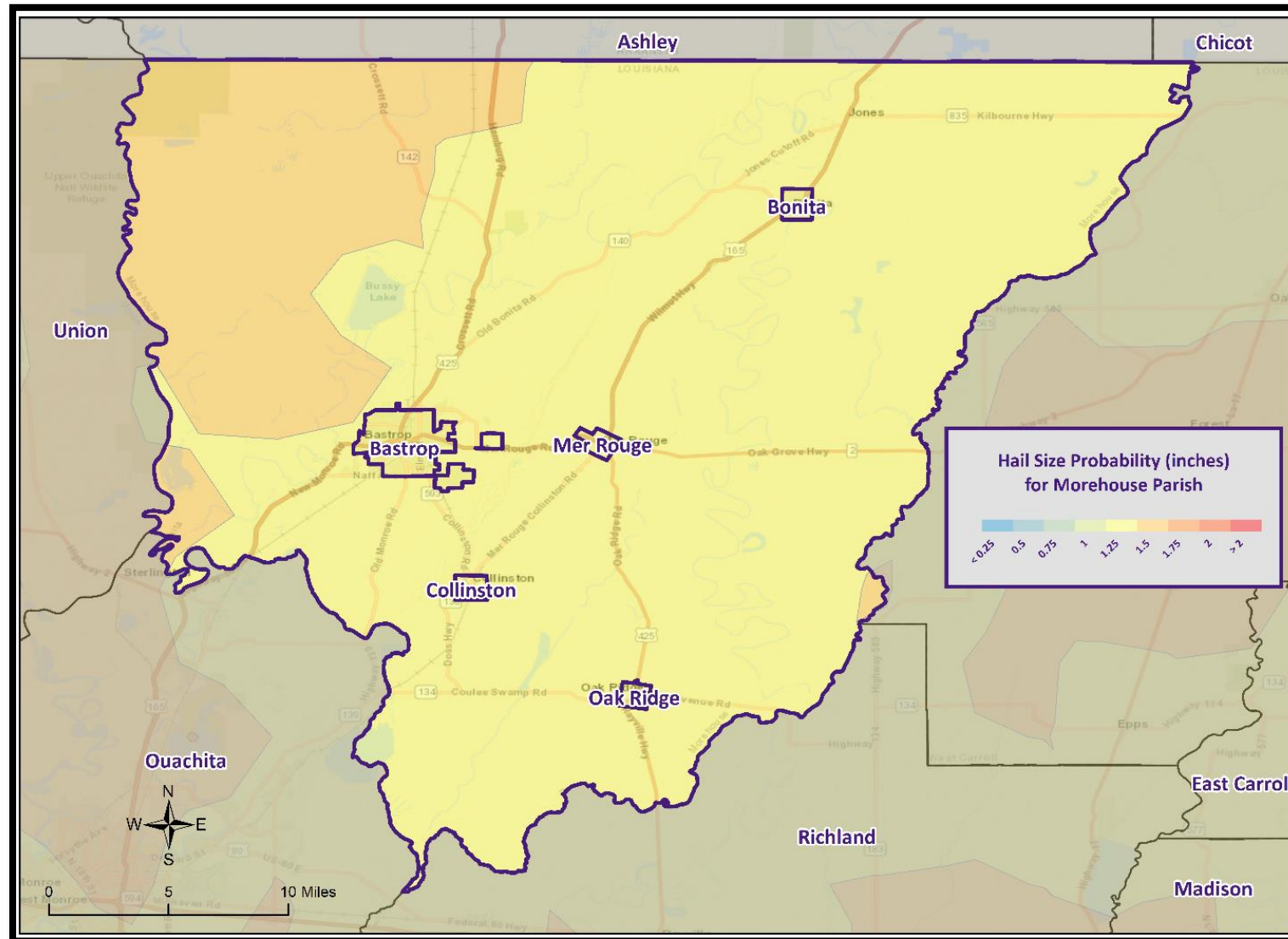
# Thunderstorms

- A **thunderstorm**, also known as an **electrical storm**, a **lightning storm**, or a **thundershower**, is a type of storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder.
- They are usually accompanied by strong winds, heavy rain, and sometimes snow, sleet, or hail.
- Thunderstorms may line up in a series or rainband, known as a squall line. Strong or severe thunderstorms may rotate, known as supercells. While most thunderstorms move with the mean wind flow through the layer of the troposphere that they occupy, vertical wind shear causes a deviation in their course at a right angle to the wind shear direction.

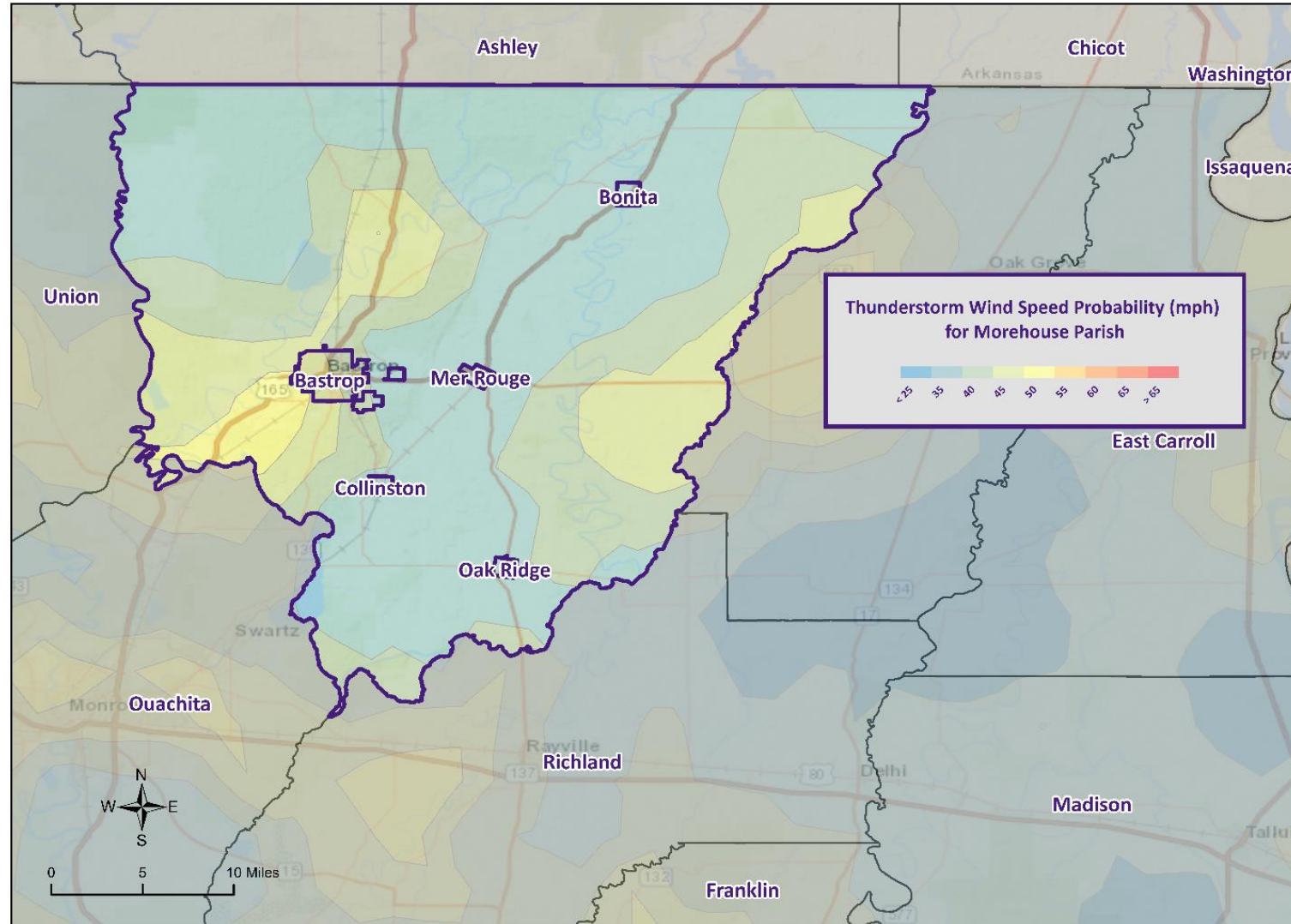
# Density of Prior Hailstorms



# Maximum Hail Size Probability



# Maximum Wind Speed Probability



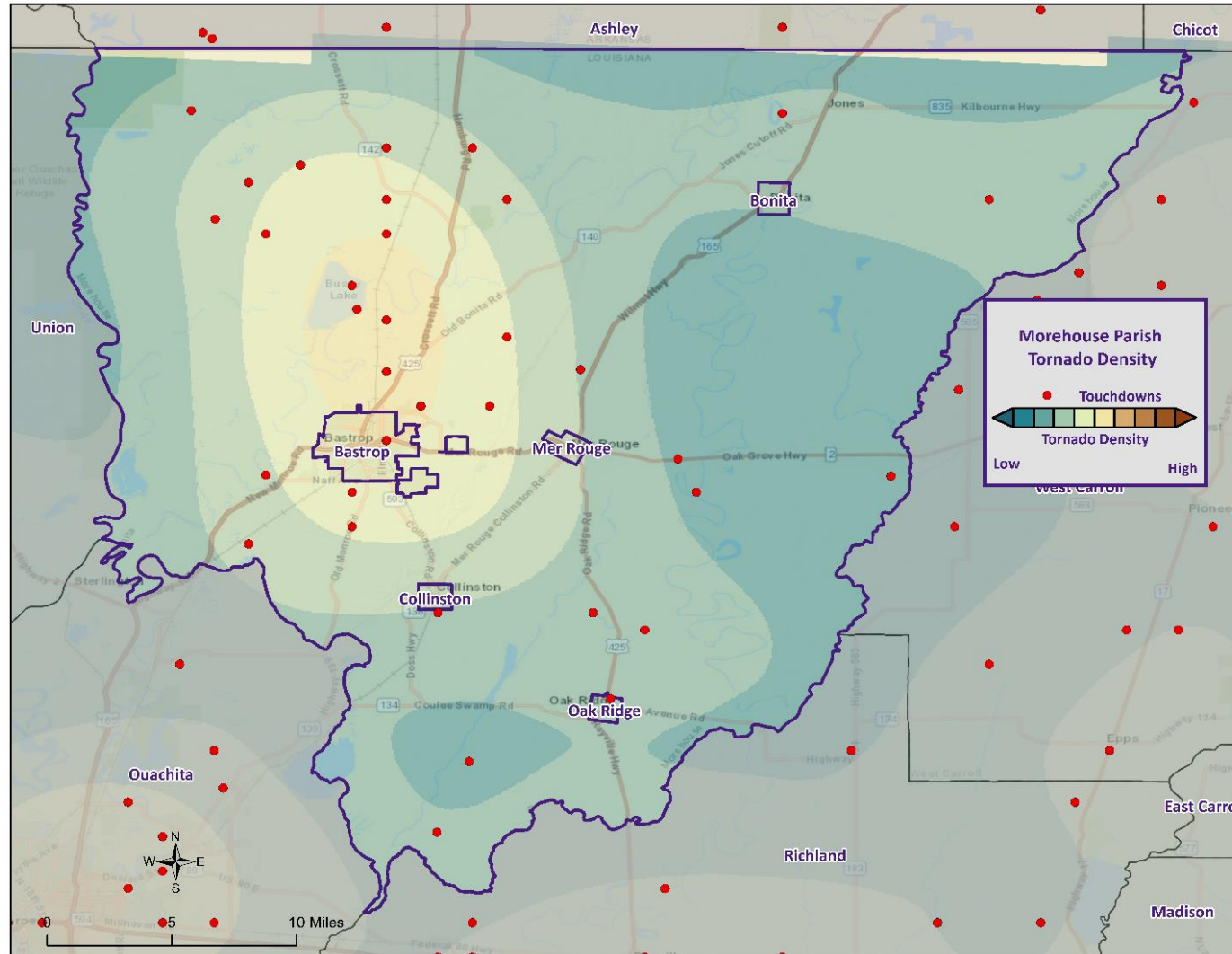
# Tornadoes

- Tornadoes (also called twisters and cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground.
- Tornadoes are the most severe storms for their size, and 70% of the world's reported tornadoes occur within the continental United States.

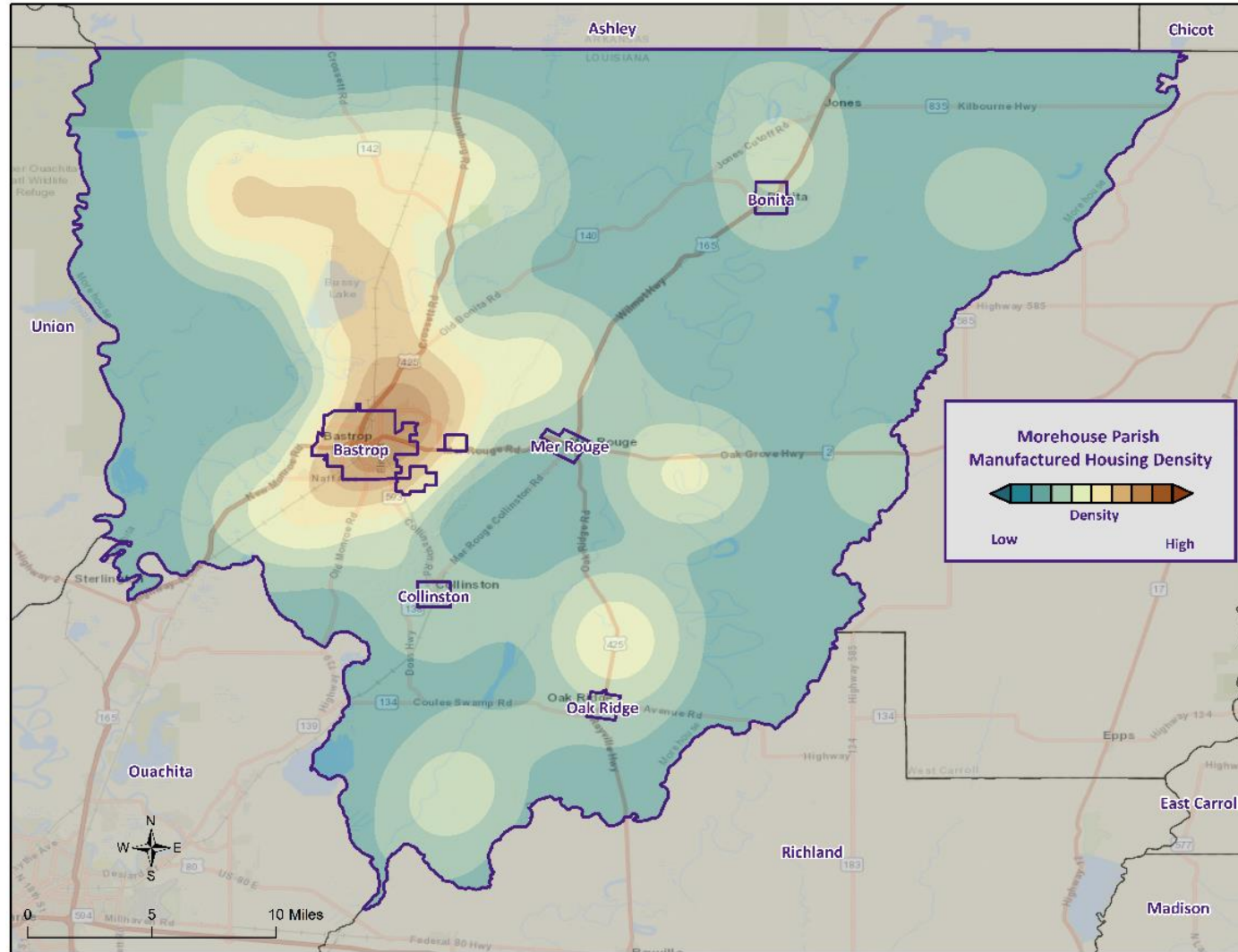
ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph



# Tornado Location



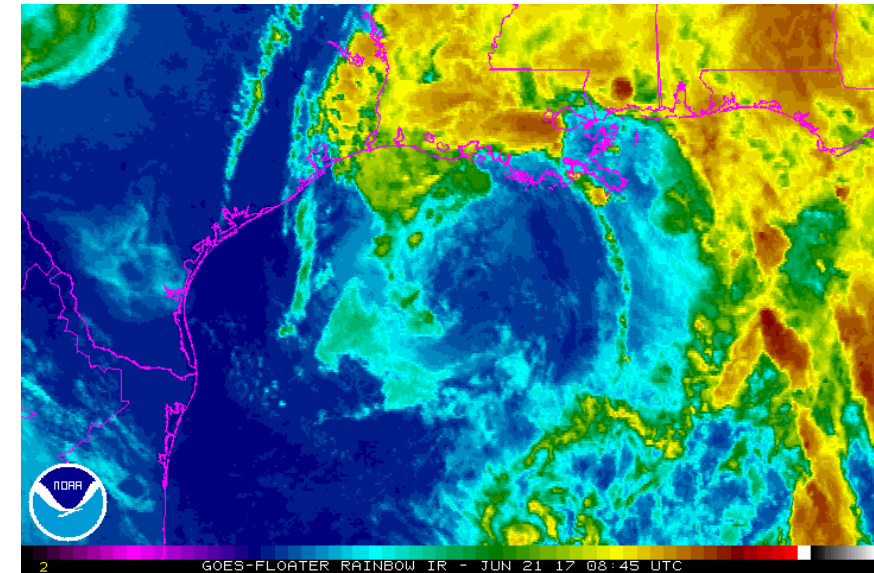
# Manufactured Homes Density



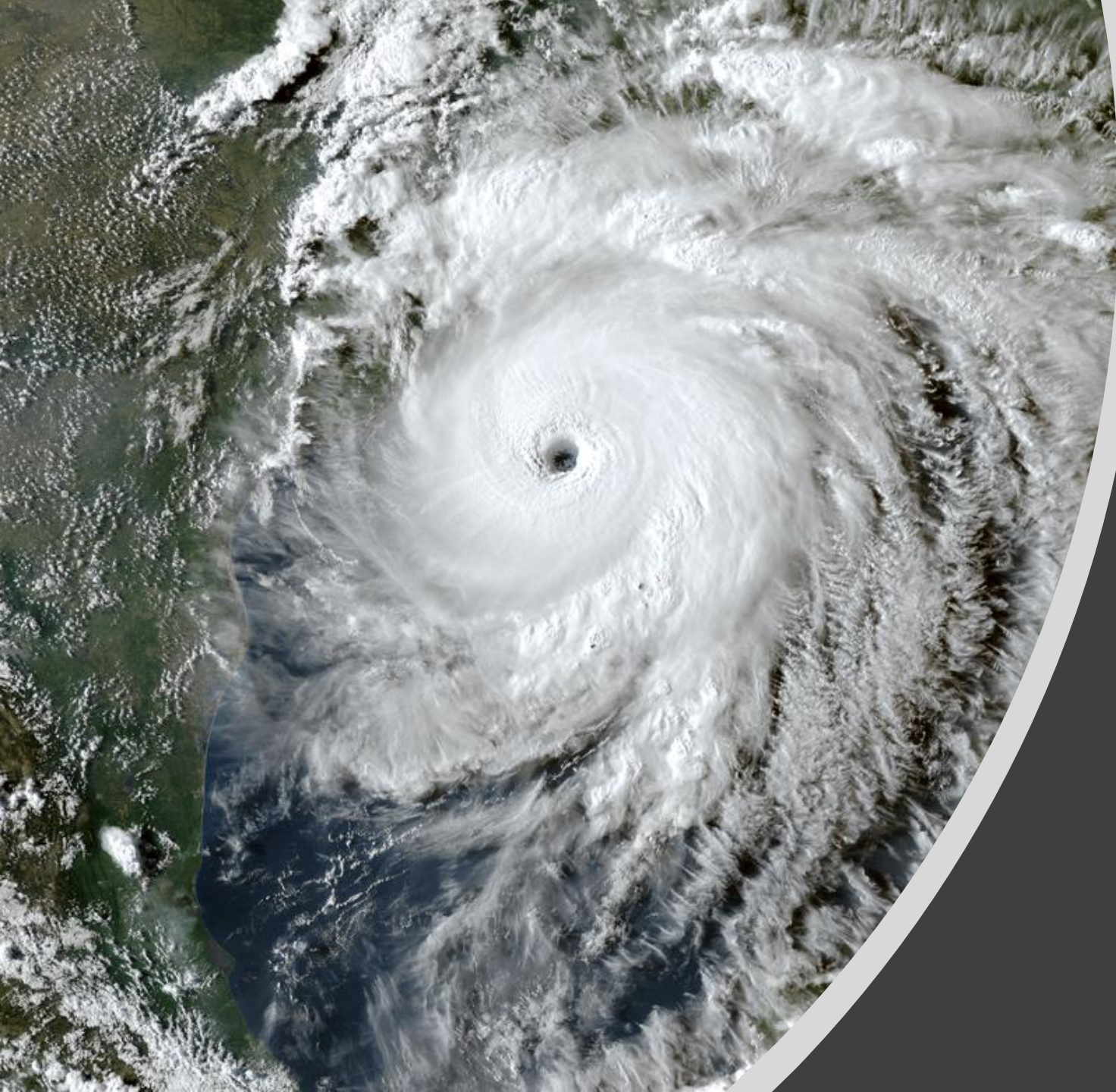
# Tropical Cyclones

- Tropical cyclones are defined spinning, low-pressure air masses that draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes

Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major damage to exposed mobile homes, evacuation of some shoreline residents
Category 3	111-130 mph (178-209 km/hr)	Devastating damage will occur. Some structural damage to small buildings; serious flooding at coast and many smaller structures near coast destroyed
Category 4	131-155 mph (210-249 km/hr)	Catastrophic damage will occur. High risk of injury or death to people, livestock, and pets due to flying and falling debris. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.
Category 5	> 155 mph (249 km/hr)	Catastrophic damage will occur. People, livestock, and pets are at very high risk of injury or death from flying or falling debris.  A high percentage of frame homes will be destroyed. Long-term power outages and water shortages will render area uninhabitable for weeks or months.







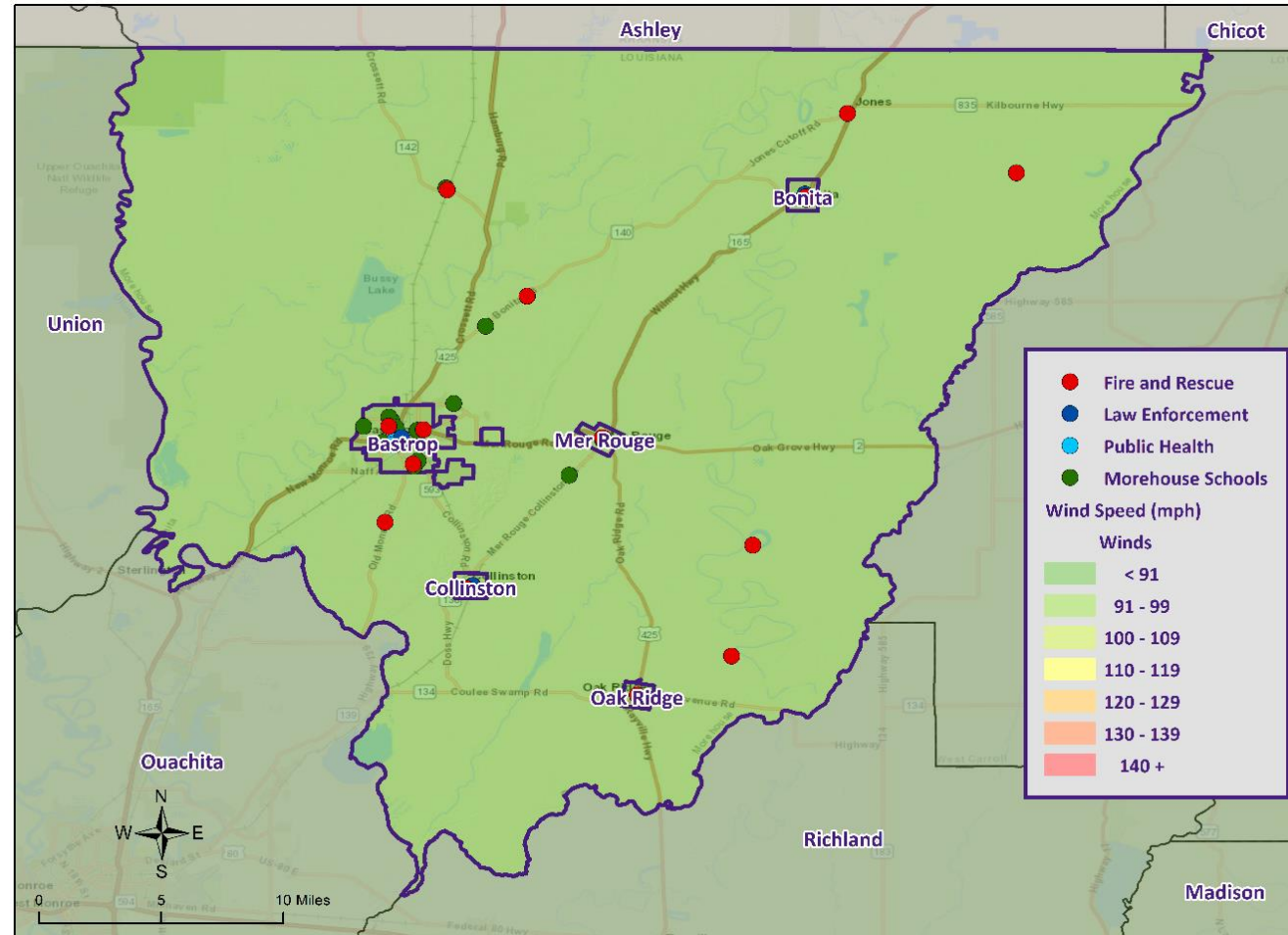
# Hurricane Laura





# Hurricane Delta

# Wind Speed Impacts on Critical Infrastructure



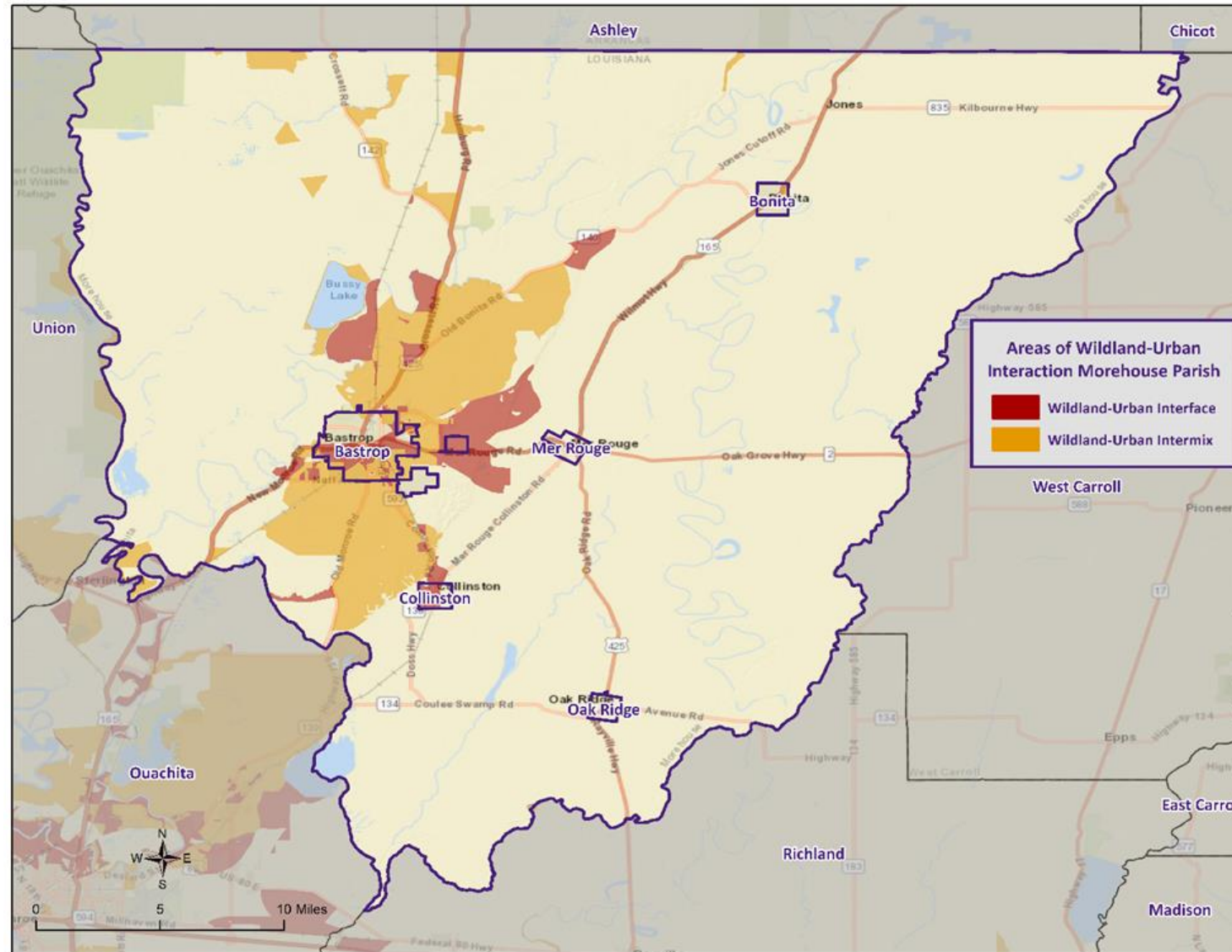




# Wildfires

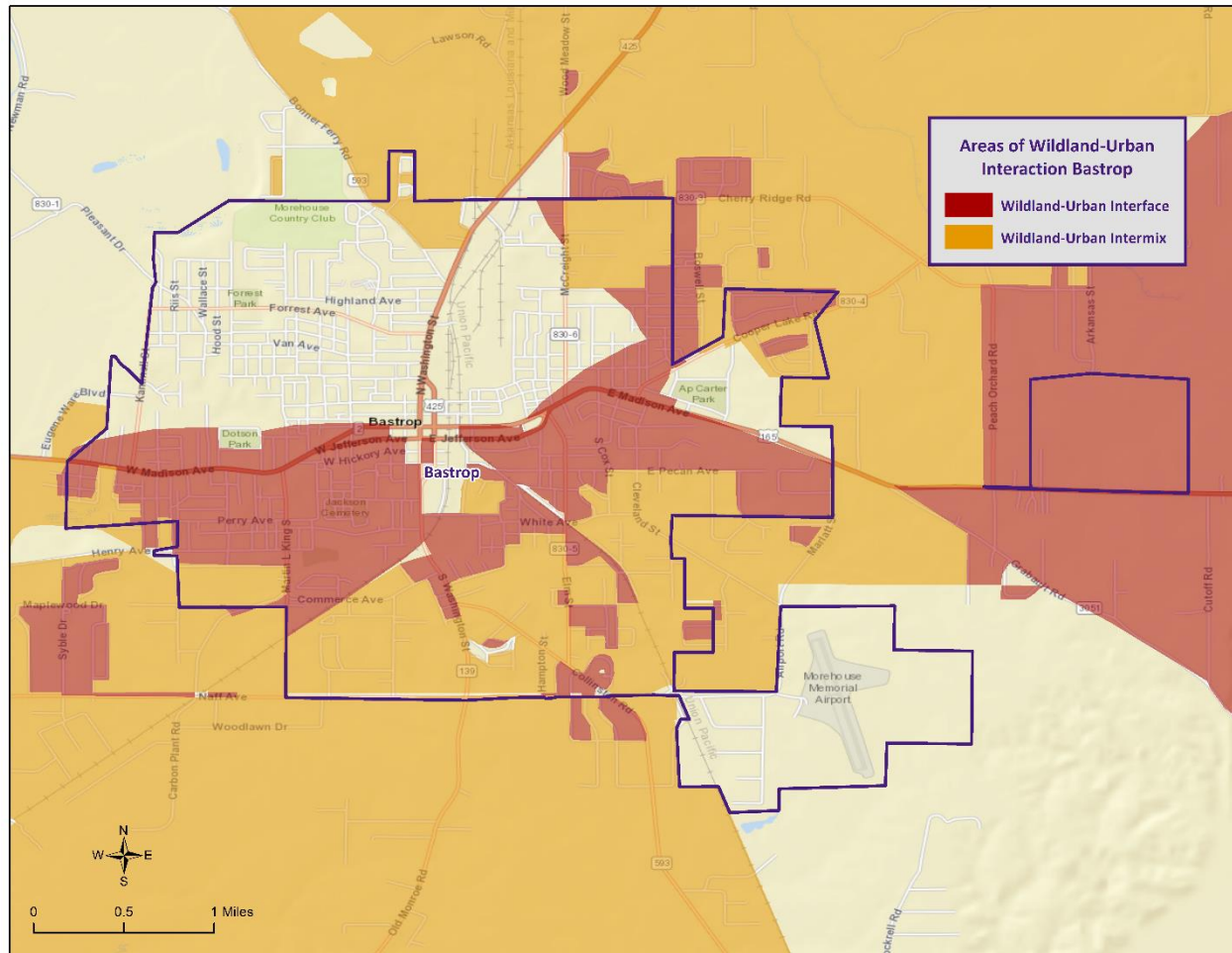
- A wildfire is combustion in a natural setting, marked by flames or intense heat.
- Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns
- While loss of timber is a problem, the real hazard is when wildfires threaten developed areas. As more development moves into and next to forested areas, the hazards to people and property increases.

# Morehouse Wildland-Urban Interaction

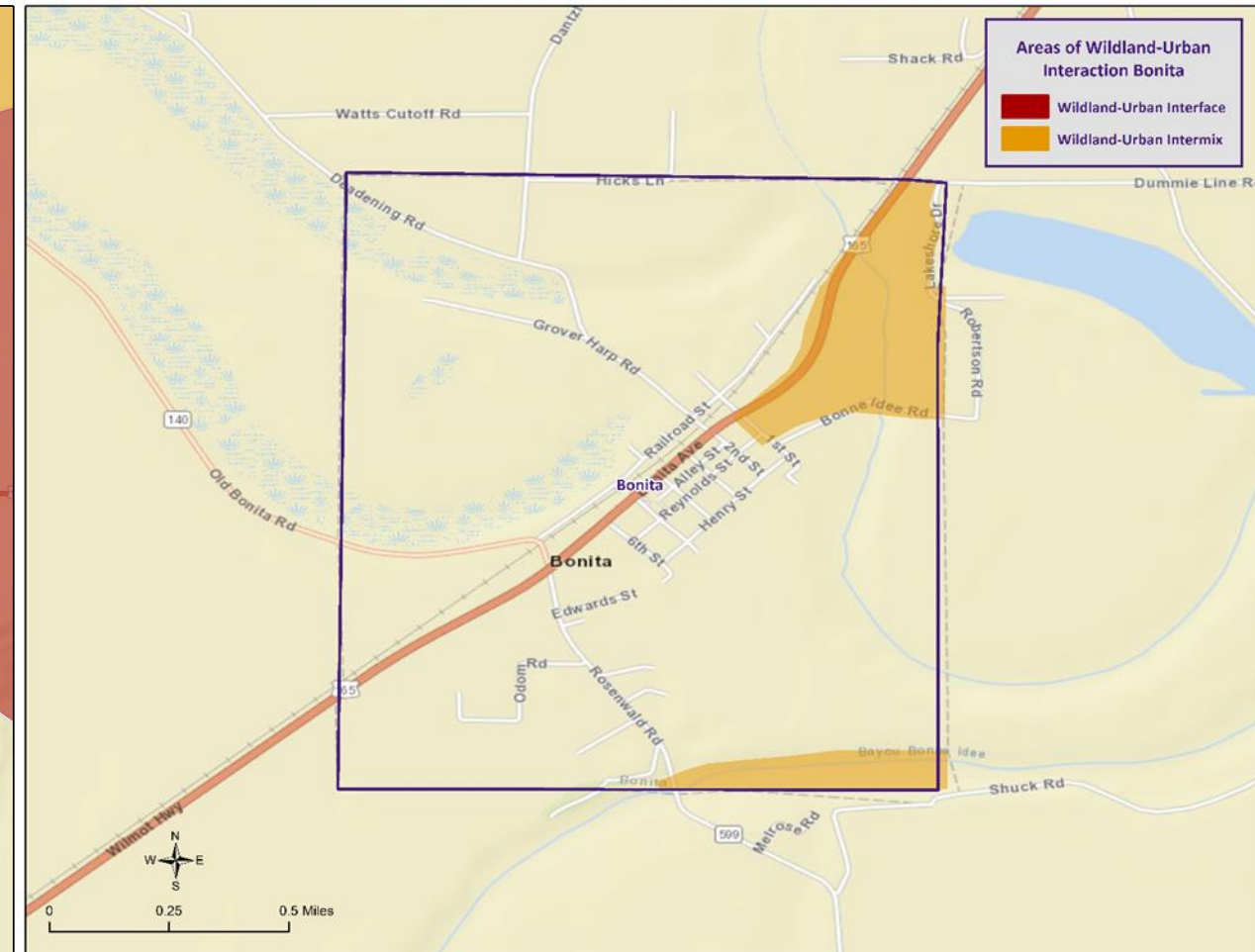




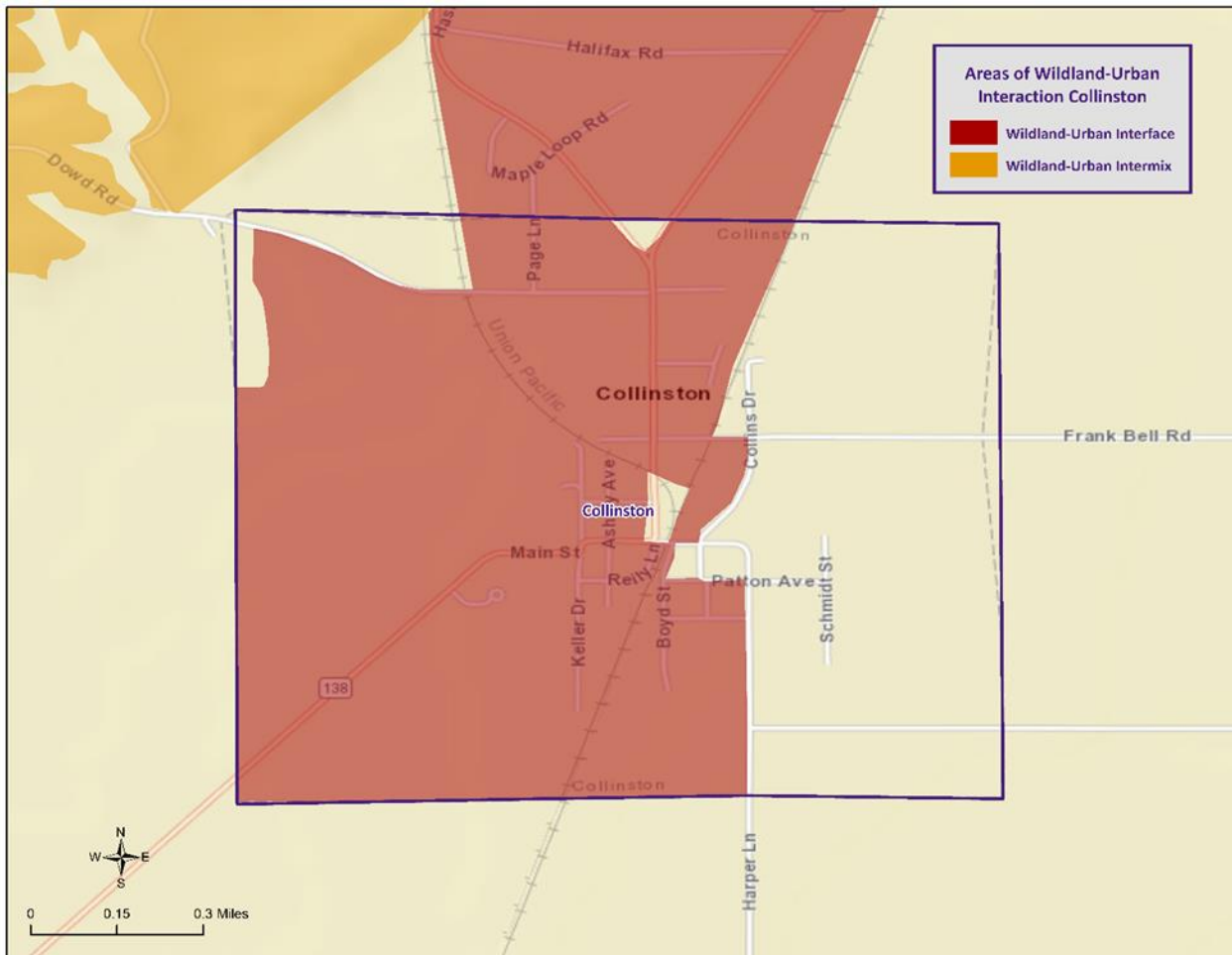
# WUI: Bastrop



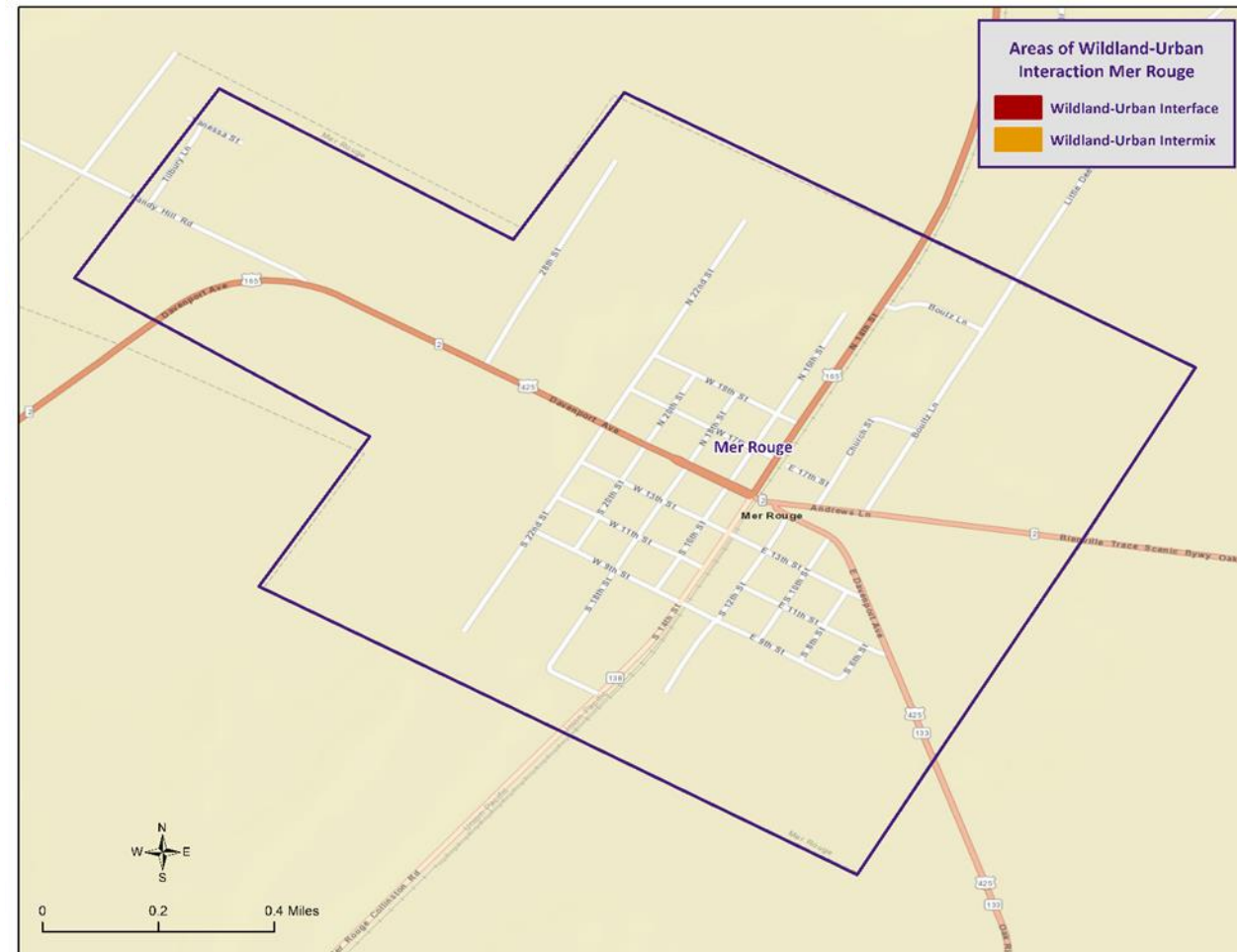
# WUI: Bonita



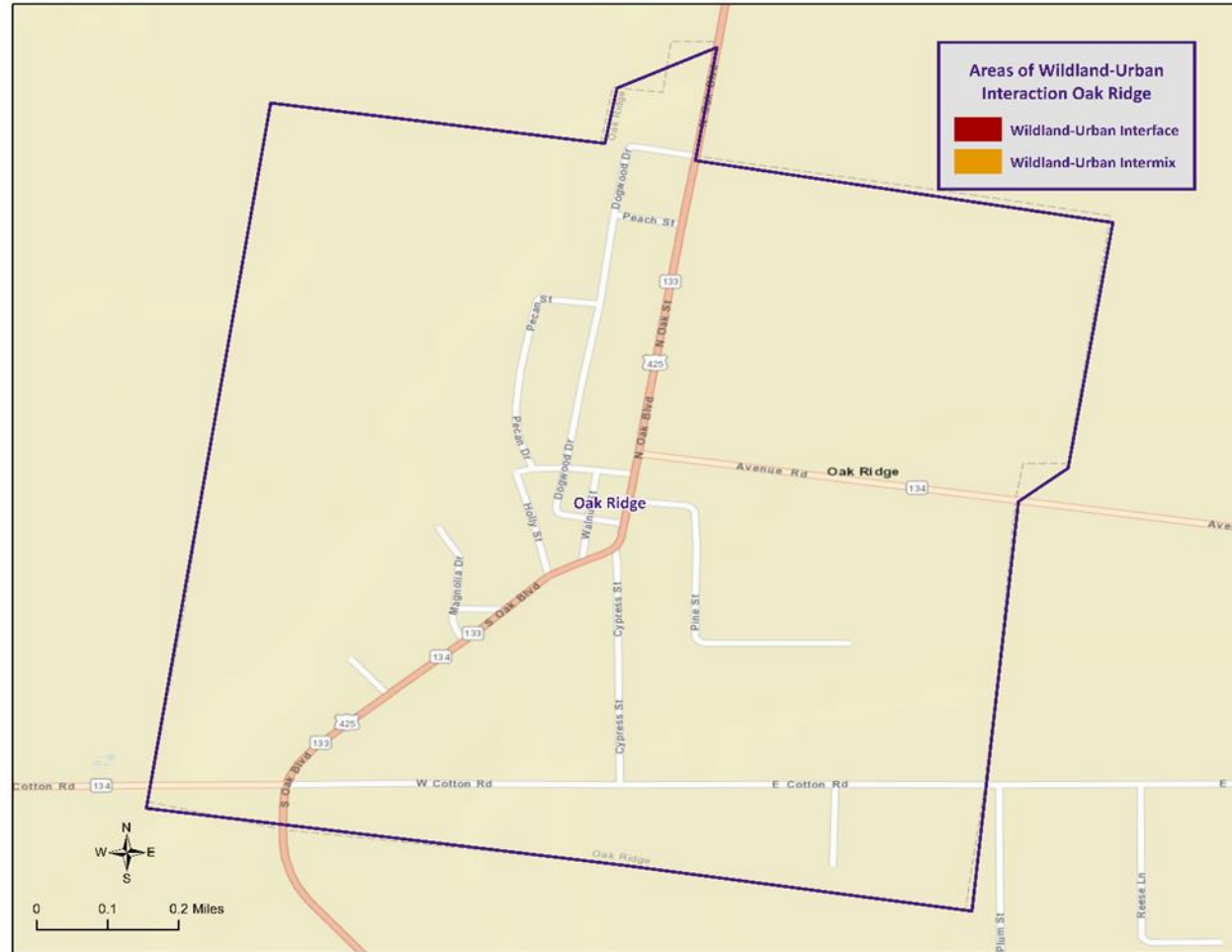
# WUI: Collinston



# WUI: Mer Rouge



# WUI: Oak Ridge





# Winter Weather

- Occurs when humid air from the Gulf of Mexico meets a cold air mass from the north.
- As the temperature falls, 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.





# Parish Mitigation Goals

- Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities
- Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact
- Improve data collection, use, and sharing to reduce the impact of hazards
- Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities



# Parish Hazard Mitigation Project Update

Morehouse OHSEP/  
Morehouse Government Discussion

# Public Outreach Activity #1

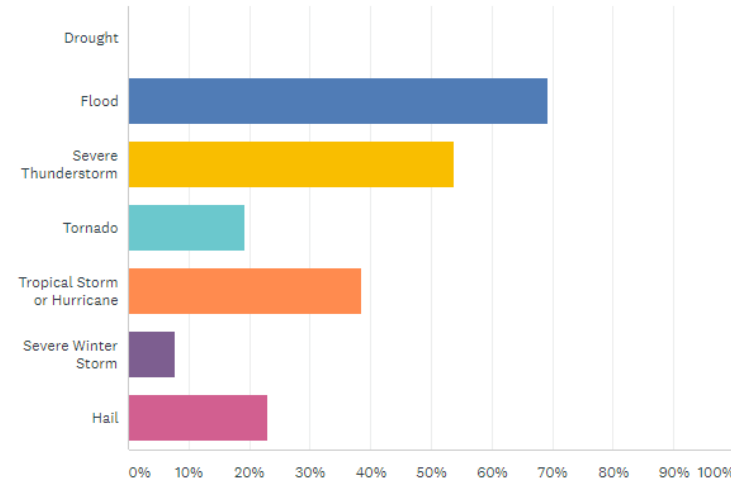
## Hazard Mitigation Public Opinion Survey

<https://www.surveymonkey.com/r/MorehouseHM2022>



Which of these natural disasters have you or someone in your household experienced in the past five years? (Check all that apply)

Answered: 26 Skipped: 1



# Public Outreach Activity #2

Please fill out an incident questionnaire!



MOREHOUSE PARISH PUBLIC MEETING	
<b>PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE</b>	<b>4. INTENSITY</b>
<b>1. HAZARD TYPE(S):</b>	<b>A. DEPTH (FLOODING) OR SIZE (HAIL ETC.):</b>
A. DAM FAILURE B. DROUGHT C. EXCESSIVE HEAT D. FLOODING E. LEVEE FAILURE F. THUNDERSTORMS G. TORNADOES H. TROPICAL CYCLONES I. WILDFIRES J. WINTER WEATHER	<b>B. WIND STRENGTH:</b>
<b>F. OTHER:</b>	<b>5. RE-OCCURRING OR ONE-TIME</b>
<b>2. DESCRIBE INCIDENT OR ISSUE:</b>	<b>A. IF RE-OCCURRING, HOW OFTEN?</b>
	<b>6. WHAT TYPE OF INTERRUPTIONS DOES/DID THE INCIDENT OR ISSUE CAUSE? (BUSINESS CLOSURE, DAMAGE, EVACUATION, ETC.)</b>
<b>3. LOCATION:</b>	<b>7. HOW LONG WAS THE INTERRUPTION (HOURS, DAYS, WEEKS, ETC.)?</b>
<b>A. CITY:</b>	<b>8. HOW COULD THIS PROBLEM OR IMPACT BE PREVENTED, FIXED OR ALLEVIATED?</b>
<b>B. ADDRESS OR AREA:</b>	
<b>C. LOCALIZED OR DISPERSED:</b>	





# Contact Us

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