



# Lafayette Parish Hazard Mitigation Plan Update Public Meeting

October 1, 2015

Lafayette, LA

# Agenda

- Hazard Mitigation Planning Process – SDMI Staff
- Risk Assessment – SDMI Staff
- Update on Previous/Current Mitigation Projects – Lafayette OHSEP
- Public Outreach Activities – SDMI Staff/Lafayette Parish OHSEP

# Hazard Mitigation

- Protect public safety and prevent loss of life and injury;
- Help accomplish community objectives, such as leveraging capital improvements, infrastructure protection, open space preservation, and economic resiliency;
- Prevent damage to a community's economic, cultural and environmental assets;
- Minimize operational downtime and accelerate recovery of government and the private sector after an event

# Why are we required to have a Hazard Mitigation Plan?

- Disaster Mitigation Act of 2000 (DMA 2000)

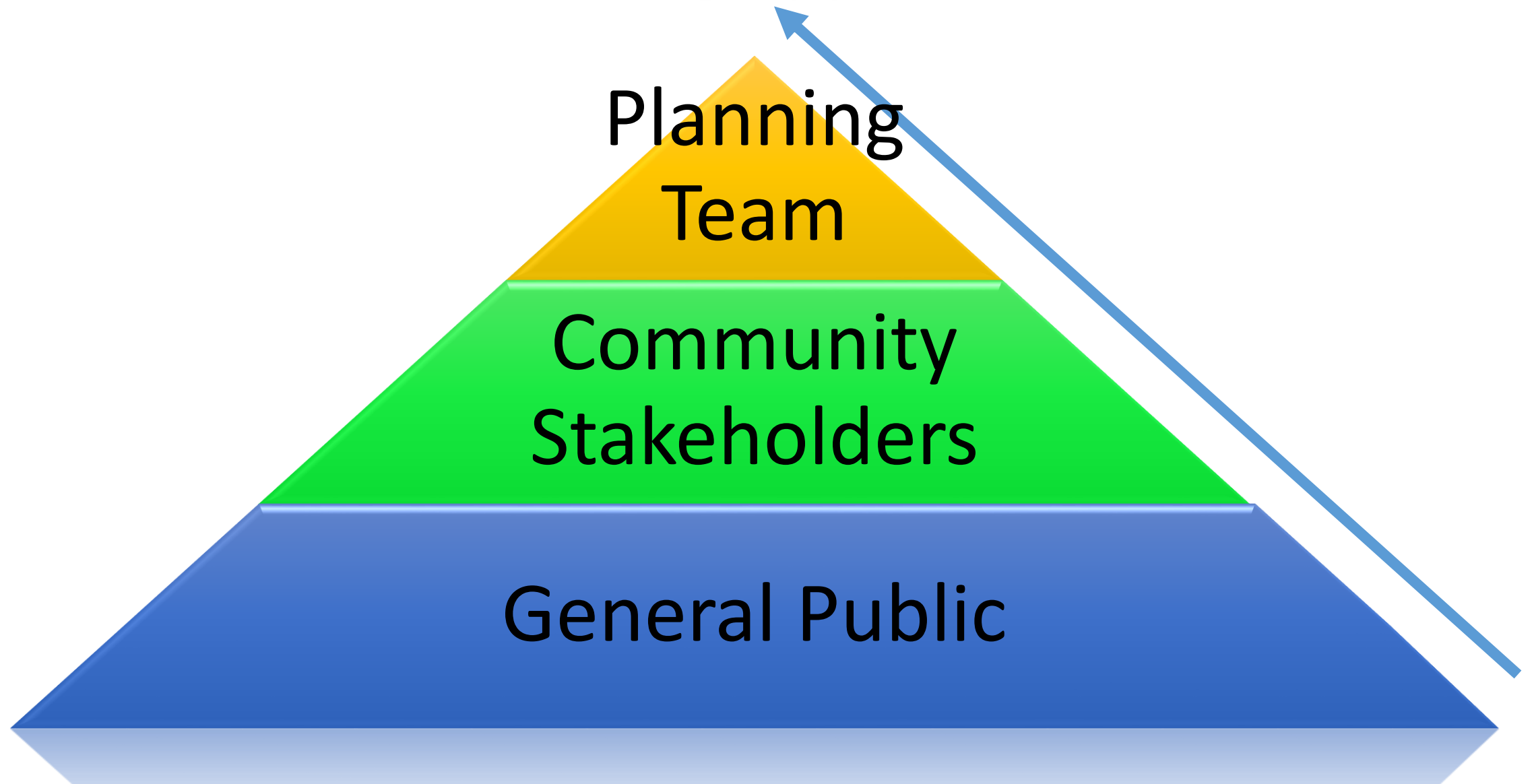
*Section 322 of the Act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard migration plans as a precondition for receiving FEMA mitigation project grants.*

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

# Collaborative Planning Approach



# Planning Development

# New Plan Layout

- Section 1: Introduction
  - Updated demographics
  - Economics
  - Update parish/jurisdiction descriptions
- Section 2: Hazard Identification and Parishwide Risk Assessment
- Section 3: Capability Assessment
- Section 4: Mitigation Strategies
  - New actions
  - Action updates
  - Survey results

# New Plan Layout

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

# 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

- Flooding
- Thunderstorm (Lightning, High Wind, Hail)
- Tornado
- Tropical Cyclone
- Severe Winter Storm
- Wildfire
- Drought
- Earthquake \*\* discounted
- Land Subsidence \*\* discounted
- Sinkhole

*\* These natural hazards were selected based on an assessment of the overall impact (geographic extent, magnitude, probability, and exacerbating or mitigating conditions) affecting Lafayette Parish.*

# Risk Assessment: Hazard Identification

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

# Risk Assessment: Analyze Risk and Summarize Vulnerability

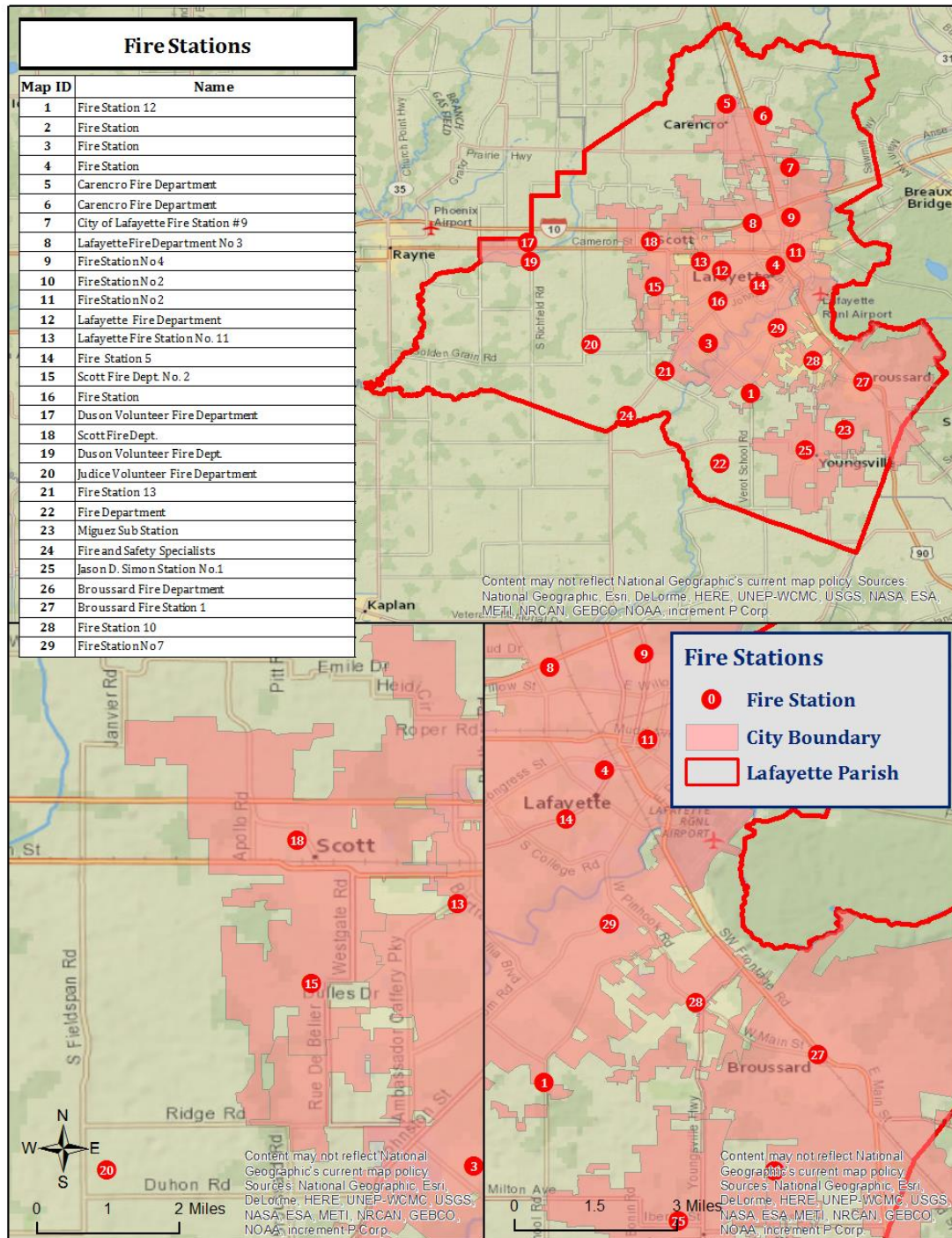
- Risk analysis involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard.
- This helps the community understand the greatest risks facing the area.
- Methods can include exposure risk analysis, historical analysis and scenario analysis.
- Through the risk analysis the community should be able to verbalize or create problem statements about the identified risks.

# Risk Assessment: Maps

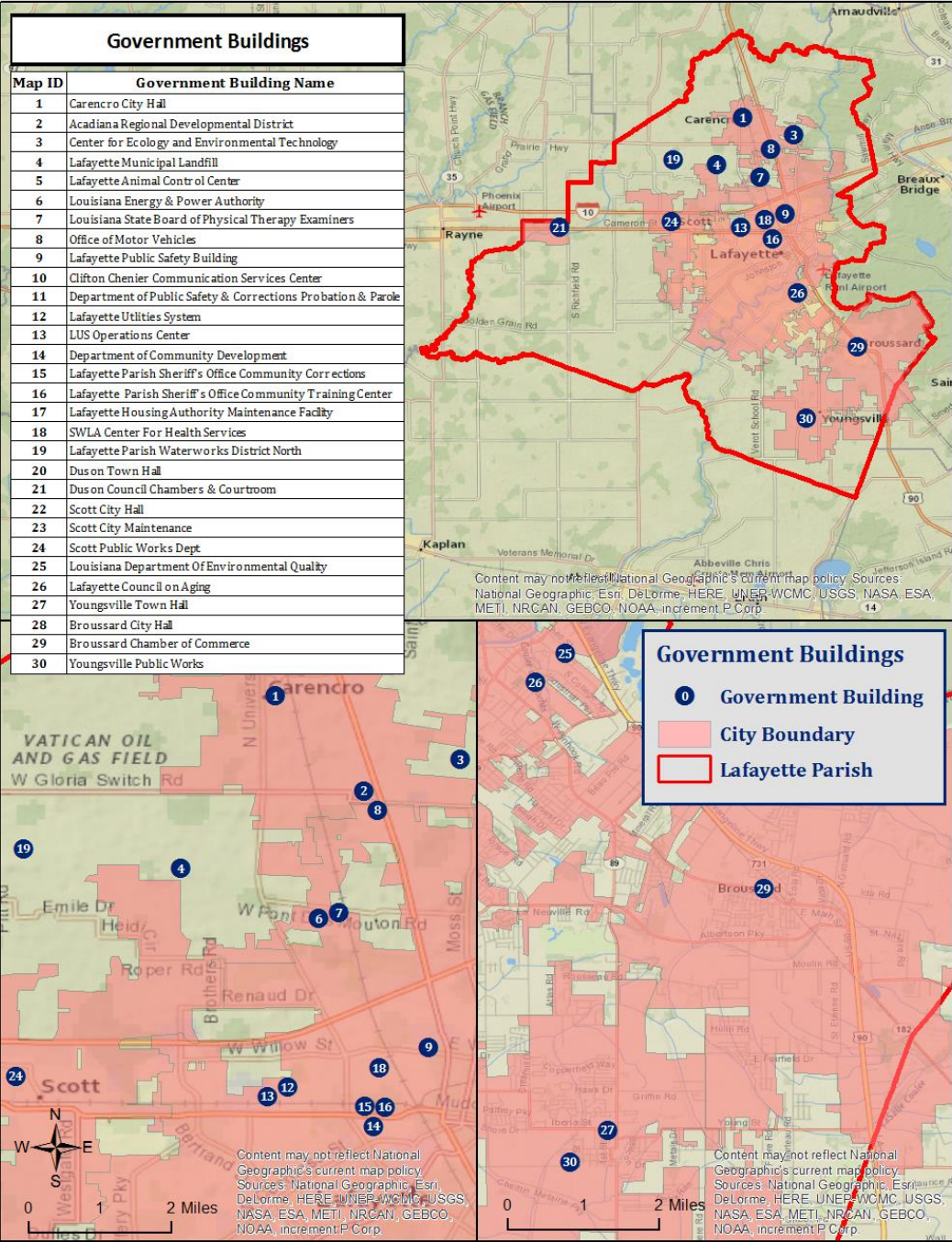




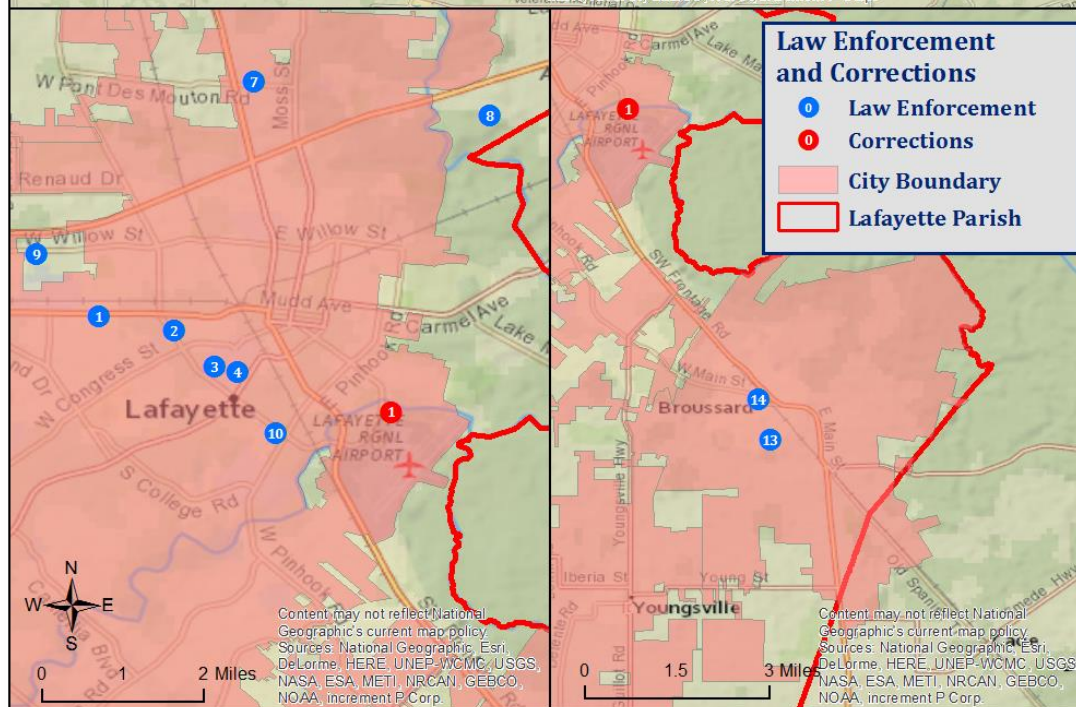
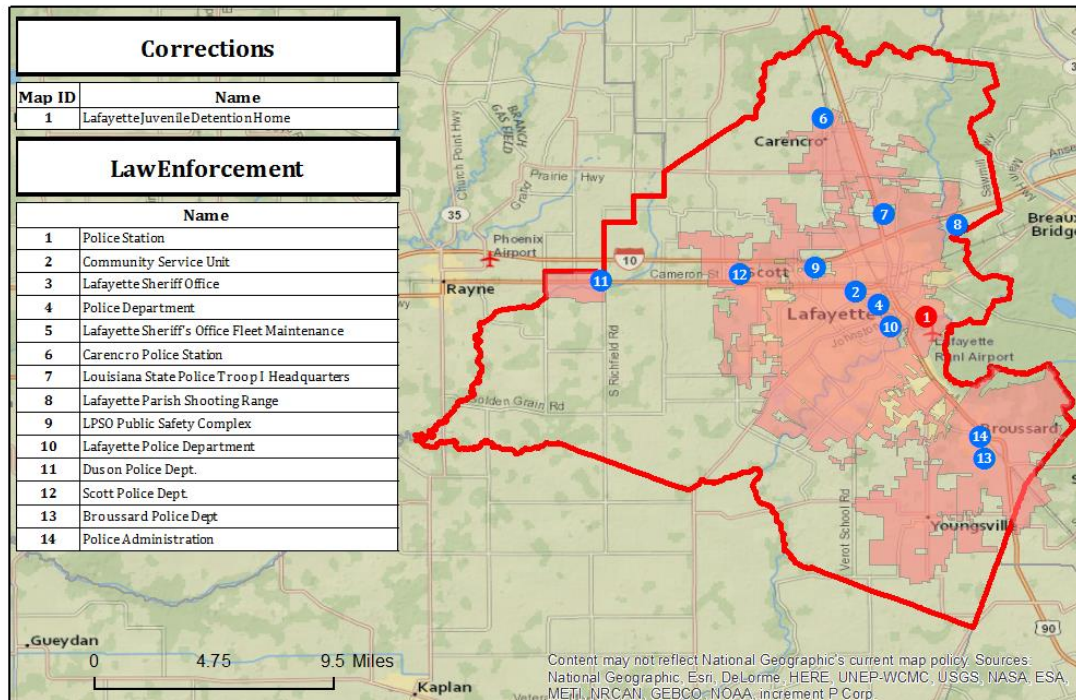
# Critical Facilities – Fire Stations



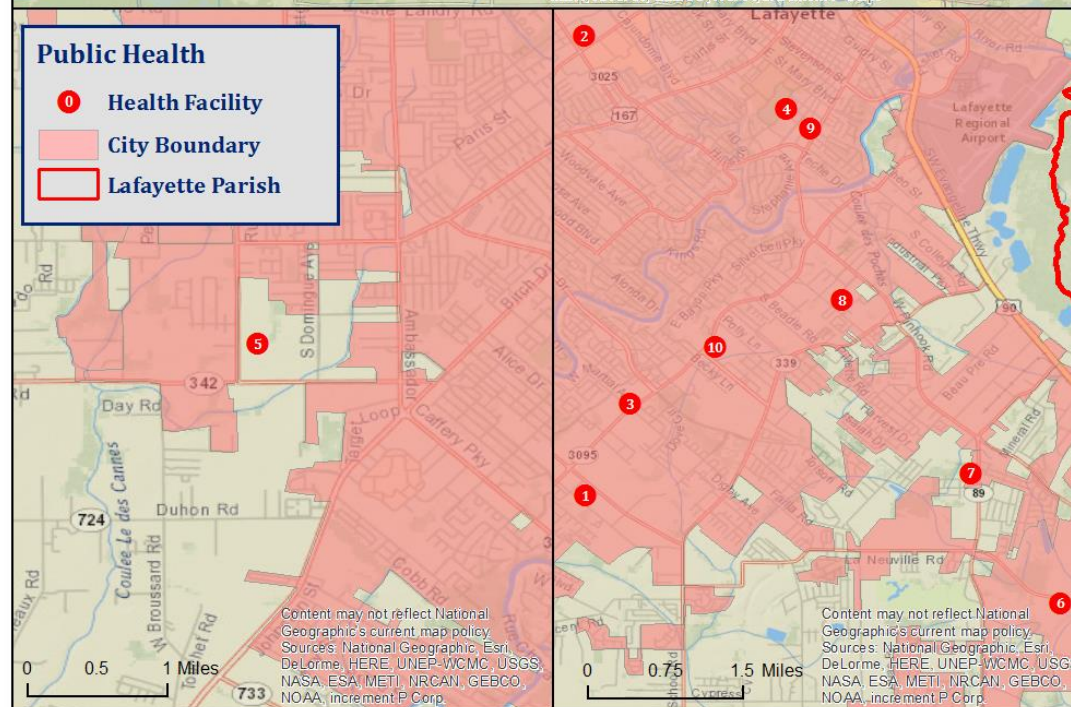
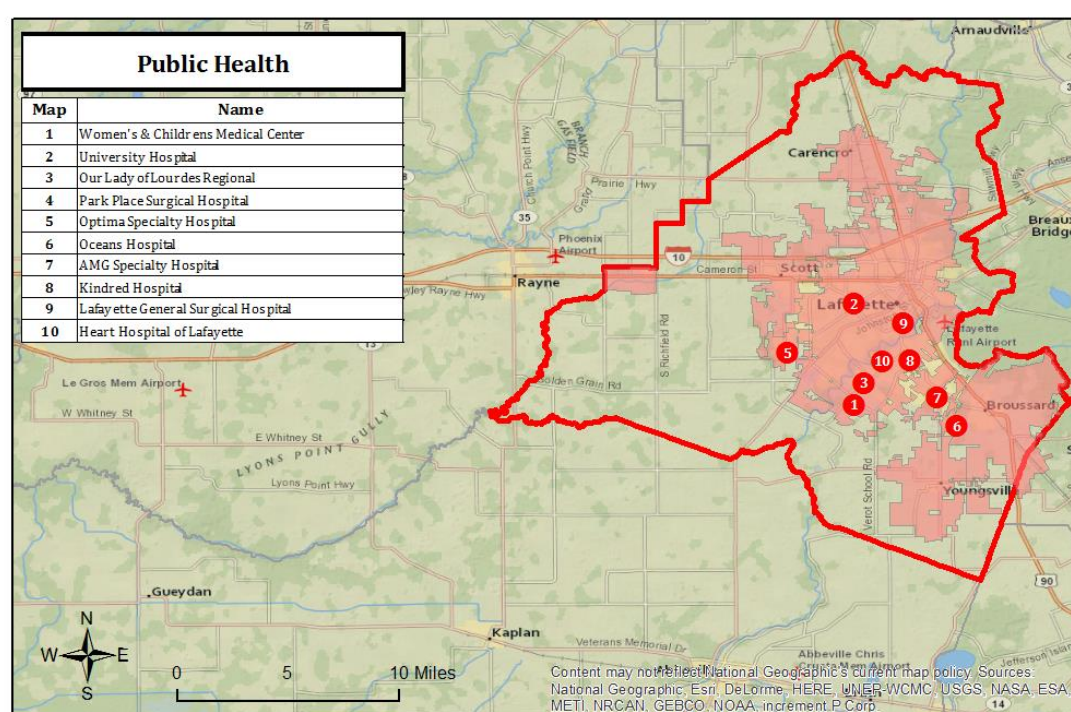
# Critical Facilities – Government Buildings



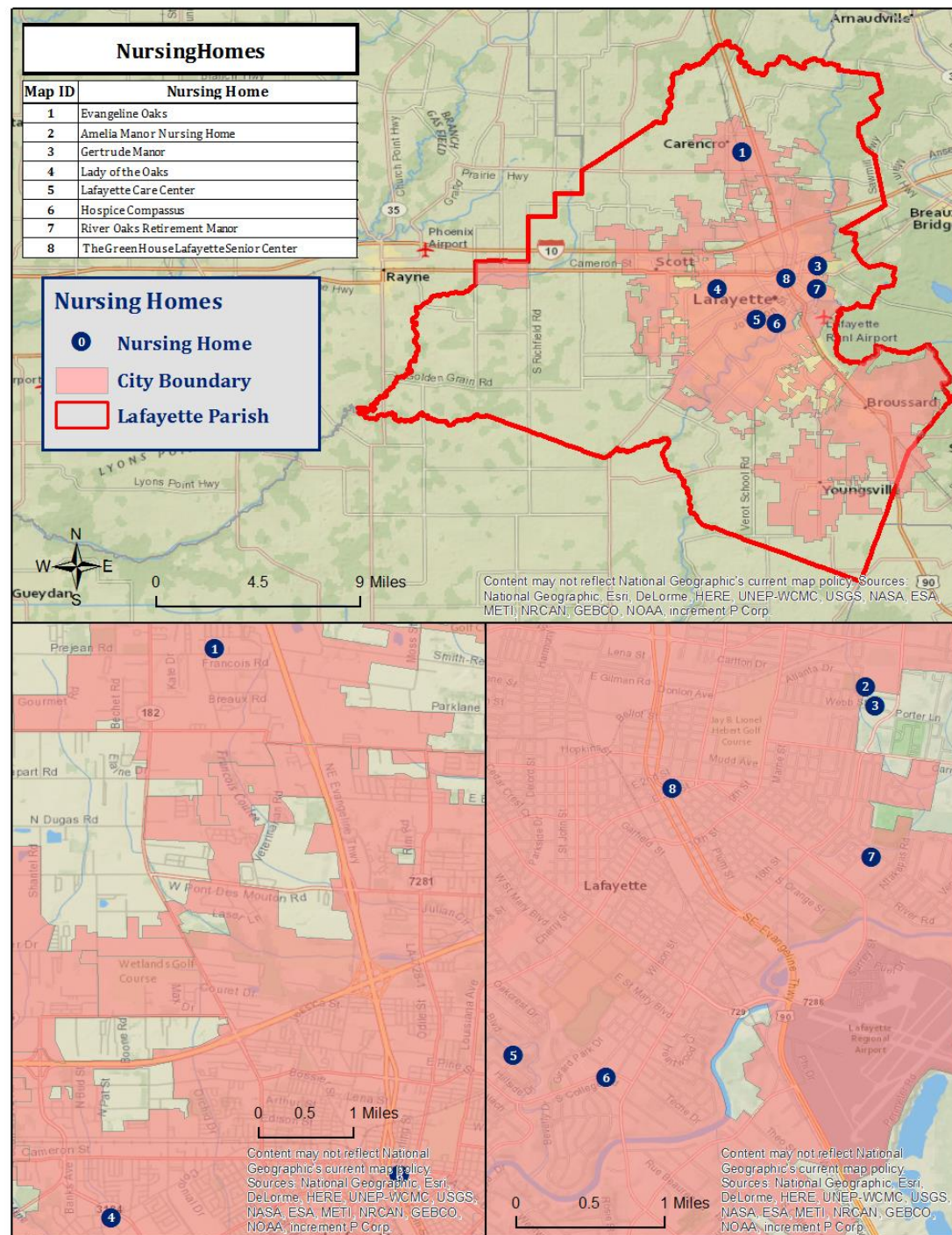
# Critical Facilities – Law Enforcement



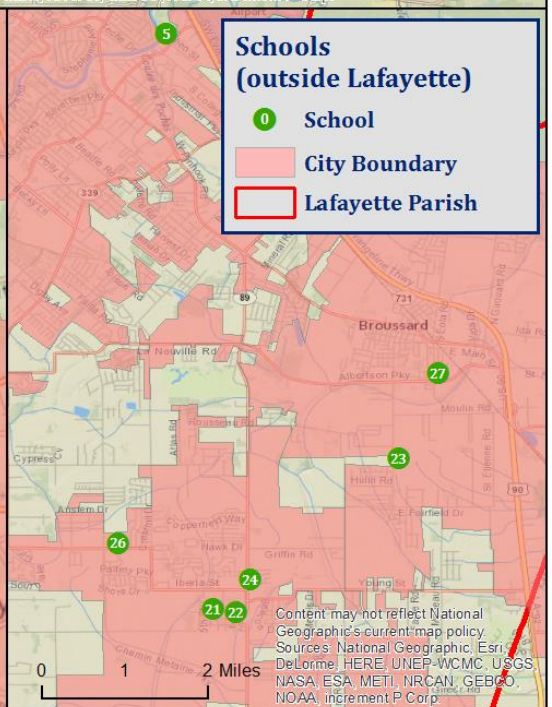
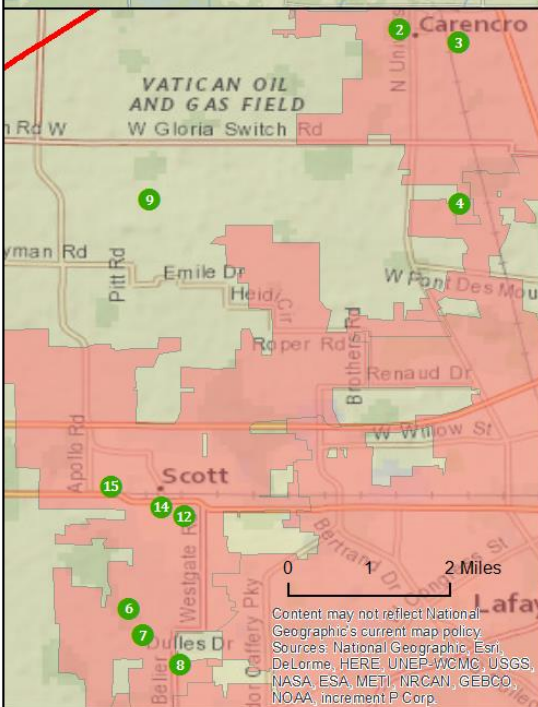
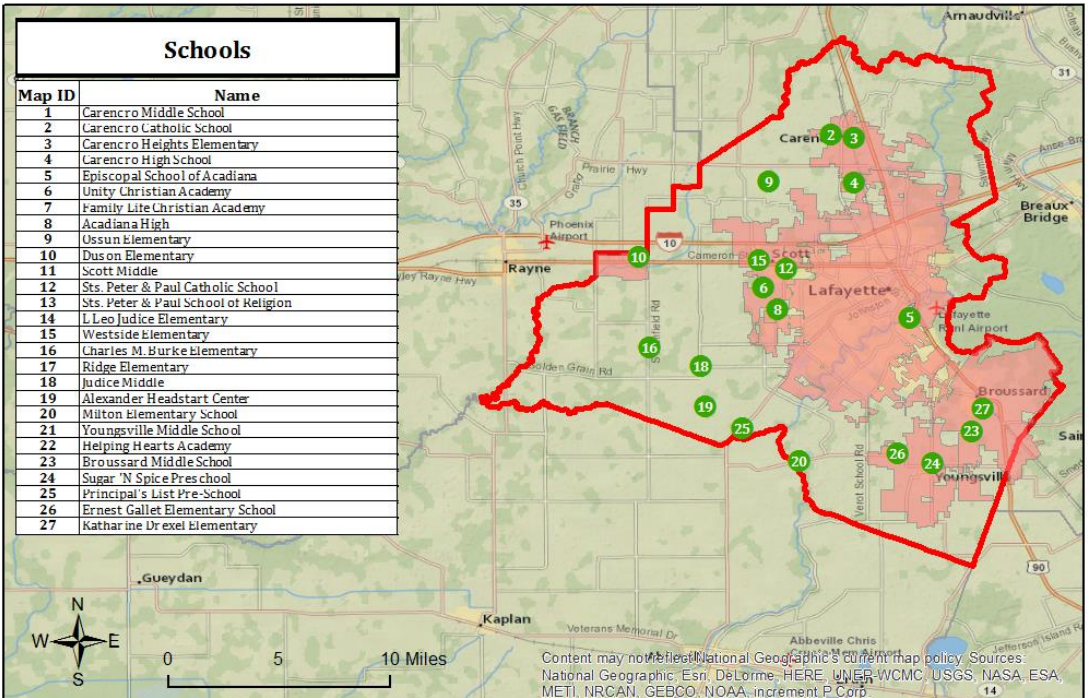
# Critical Facilities – Public Health



# Lafayette Parish – Nursing Homes



# Lafayette Parish— Schools

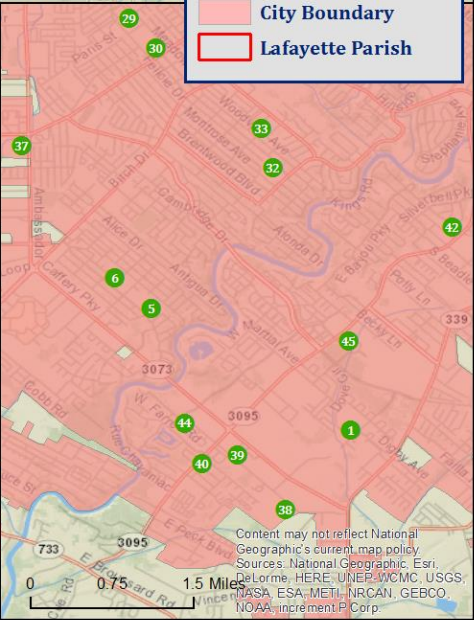
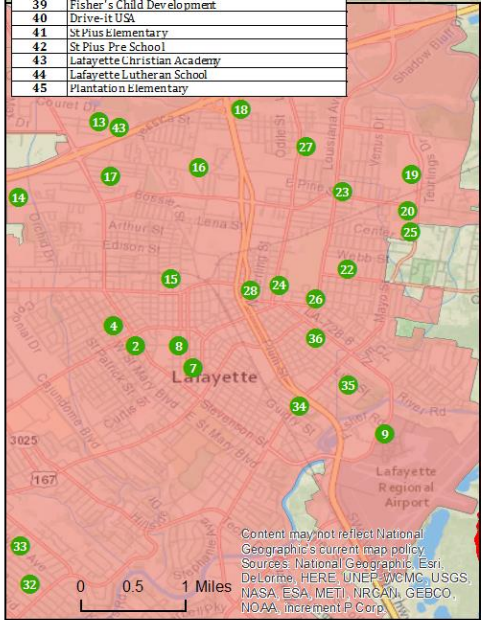
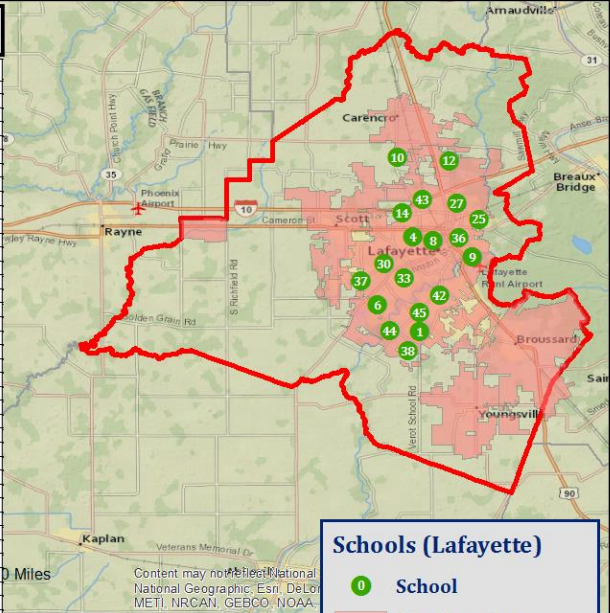


**Schools (outside Lafayette)**

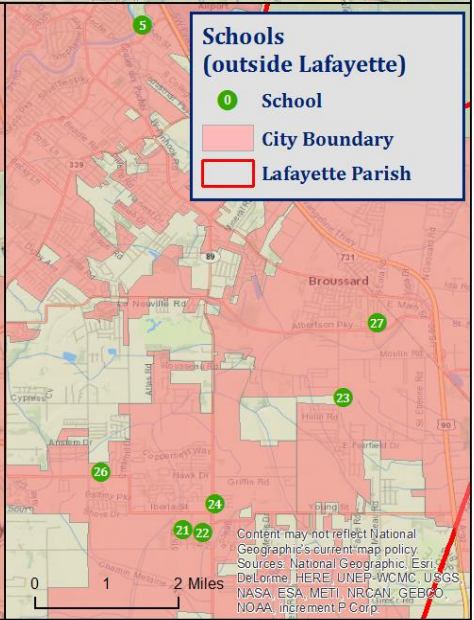
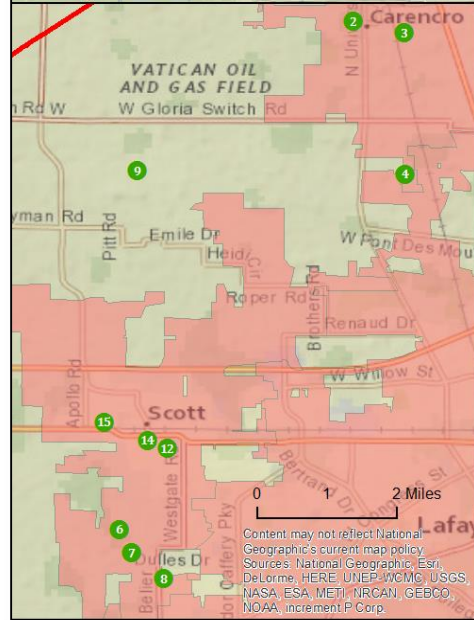
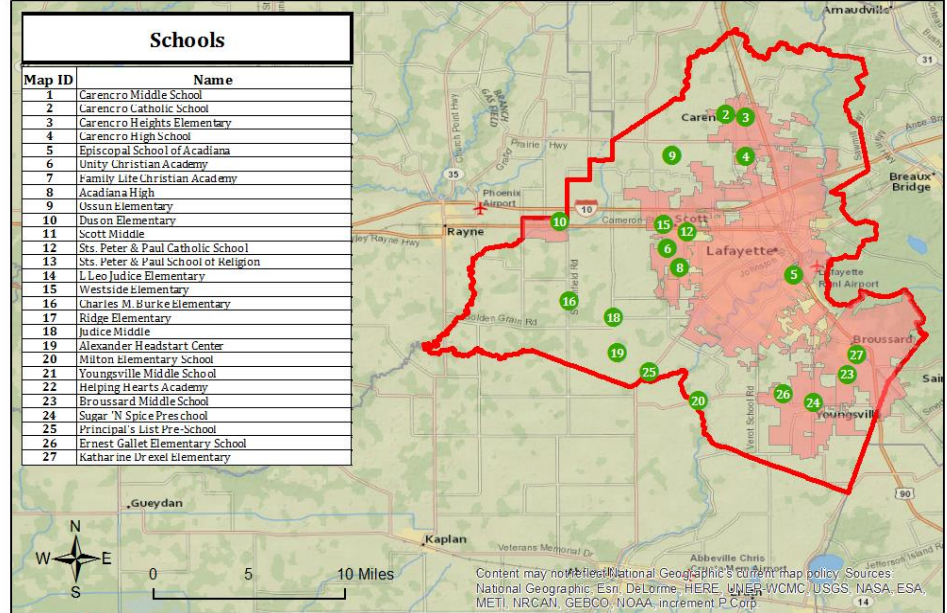
- School
- City Boundary
- Lafayette Parish

# Lafayette Parish— Schools

Schools	
Map ID	Name
1	Comeaux High School
2	Lafayette Middle
3	First Baptist
4	Myrtle Place Elementary
5	Broadmore Elementary
6	Edgar Martin Middle
7	First Baptist
8	Cathedral Carmel
9	Lafayette Parish School Board
10	Live Oak Elementary
11	Acadian Middle School
12	Evangeline Elementary
13	Lafayette Christian Academy
14	J. Wallace James Elementary
15	Holy Family Catholic School
16	Alice Boucher Elementary
17	Truman Montessori
18	Saints Leo-Seton Catholic School
19	David Thibodaux High School
20	St. Genevieve Catholic School
21	Holy Rosary Head Start
22	Holy Rosary Institute - VALANT
23	J.W. Faulk Elementary
24	N.P. Moss Preparatory School
25	Leuringes Catholic High School
26	Louisiana Avenue Early Head Start
27	Northside High School
28	St. Genevieve Catholic School
29	S.J. Montgomery Elementary
30	Lafayette High School
31	Prairie Elementary
32	L.I. Alliman Arts Academy
33	Woodvale Elementary
34	Lerosen Elementary
35	Paul Breaux Middle School
36	Immaculate Heart of Mary
37	Prairie Elementary School
38	St. Thomas Moore
39	Fisher's Child Development
40	Drive It USA
41	St. Pius Elementary
42	St. Pius Pre School
43	Lafayette Christian Academy
44	Lafayette Lutheran School
45	Plantation Elementary



Schools	
Map ID	Name
1	Carencro Middle School
2	Carencro Catholic School
3	Carencro Heights Elementary
4	Carencro High School
5	Episcopal School of Acadiana
6	Unity Christian Academy
7	Family Lite Christian Academy
8	Acadiana High
9	Ussun Elementary
10	Duson Elementary
11	Scott Middle
12	Sts. Peter & Paul Catholic School
13	Sts. Peter & Paul School of Religion
14	L. Leo Judice Elementary
15	Westside Elementary
16	Charles M. Burke Elementary
17	Ridge Elementary
18	Judice Middle
19	Alexander Headstart Center
20	Milton Elementary School
21	Youngville Middle School
22	Helping Hearts Academy
23	Broussard Middle School
24	Sugar 'N Spice Preschool
25	Principal's List Pre-School
26	Ernest Gallet Elementary School
27	Katherine Draxel Elementary



# 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

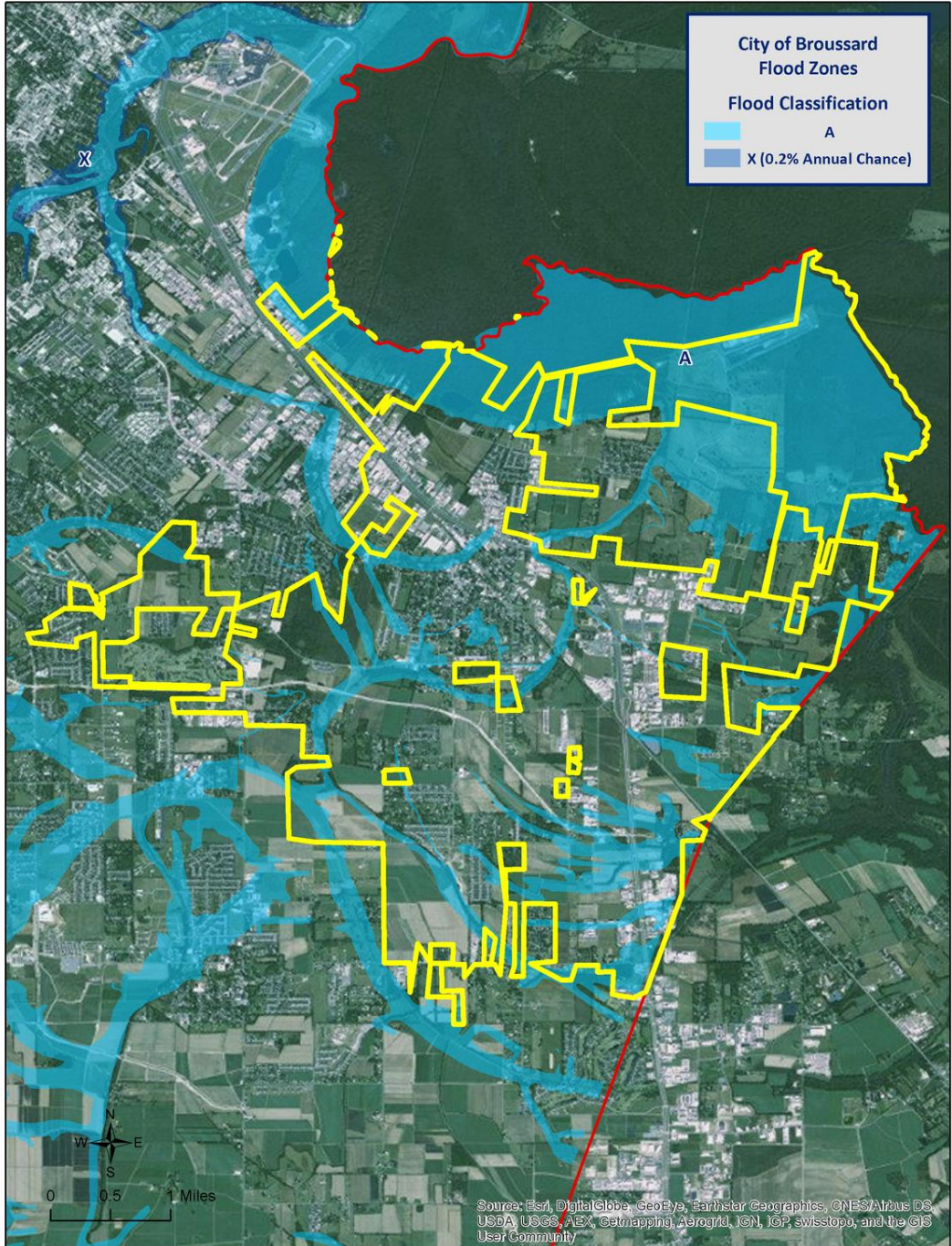
Types of flooding may include the following:

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

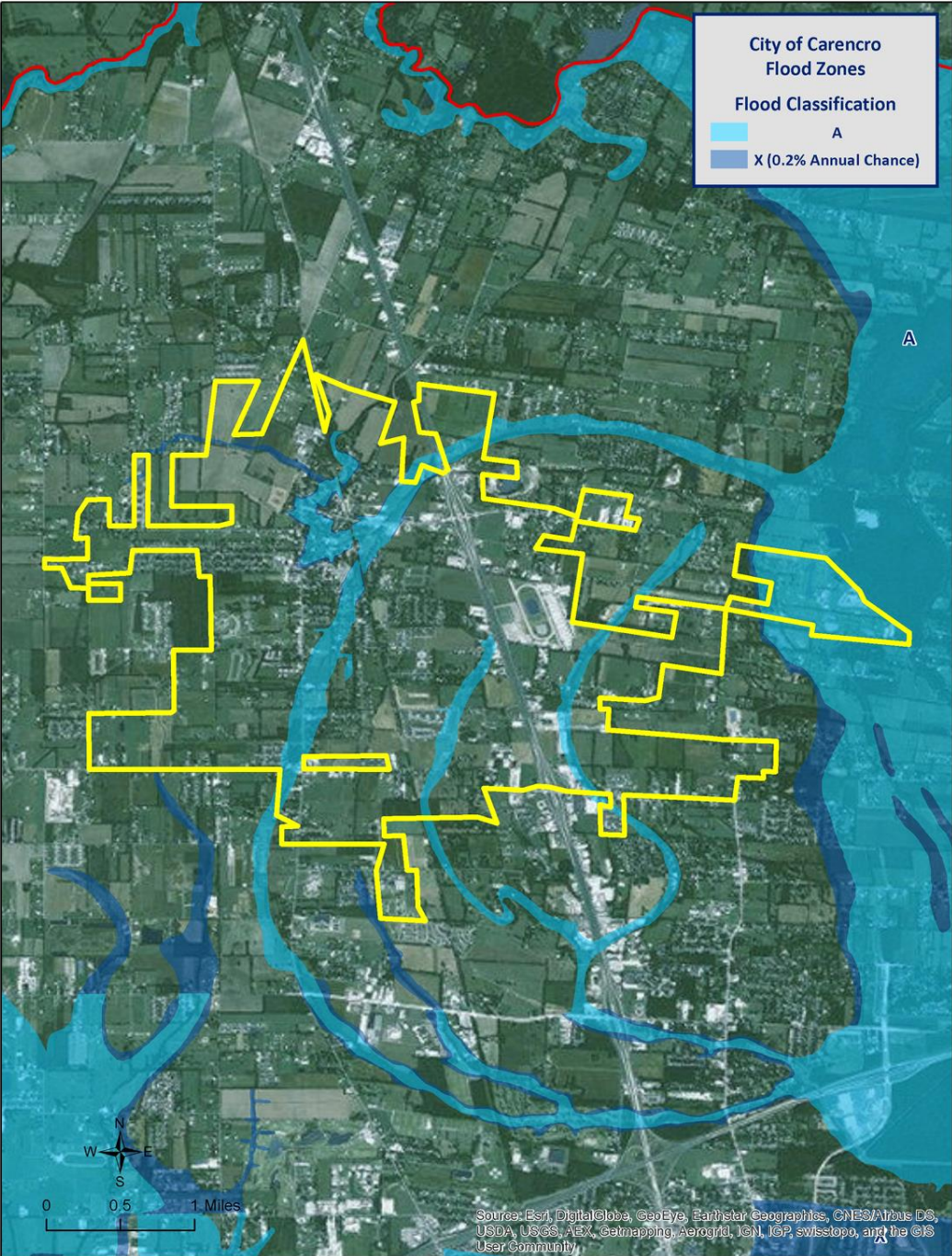




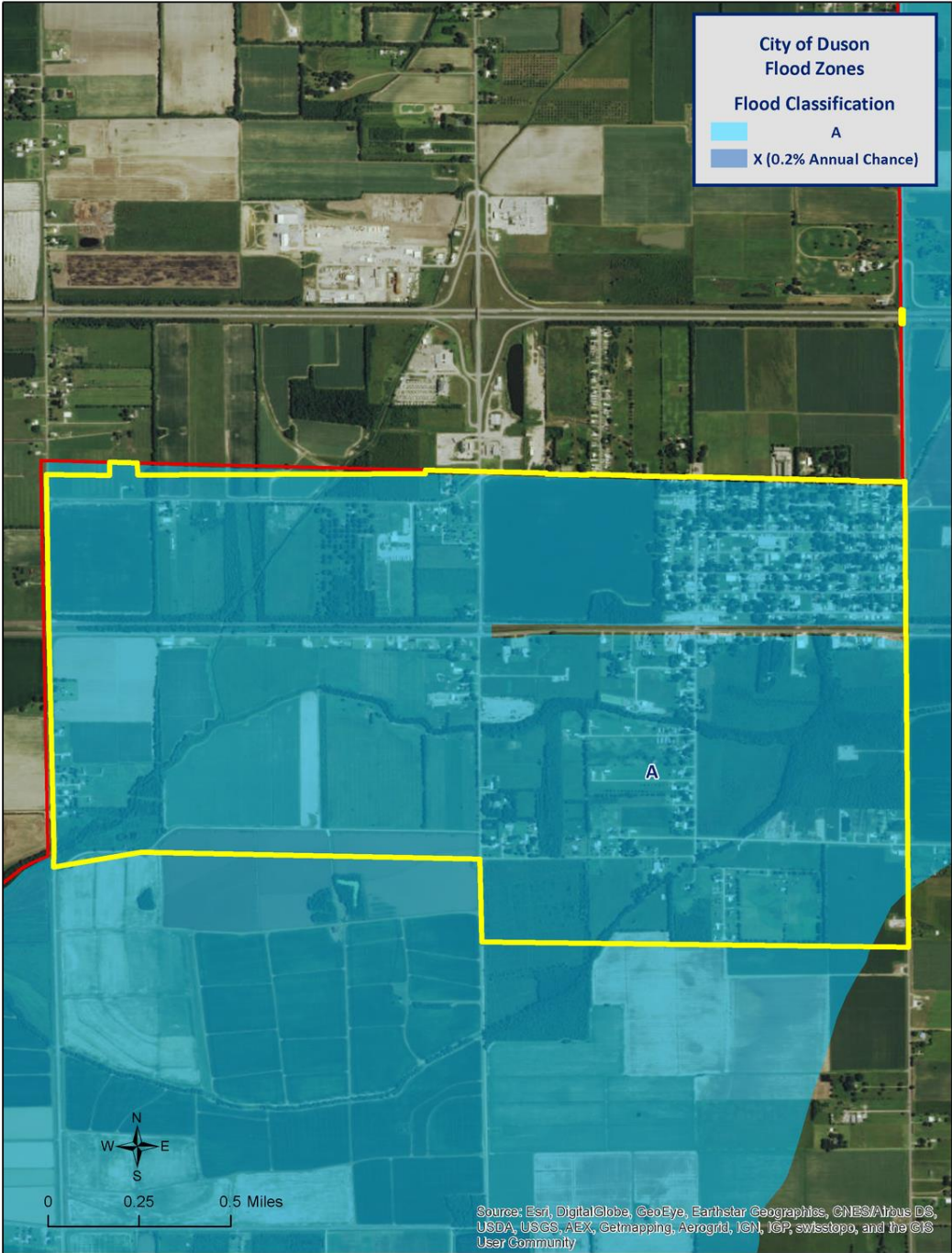
# Flooding Classification City of Broussard



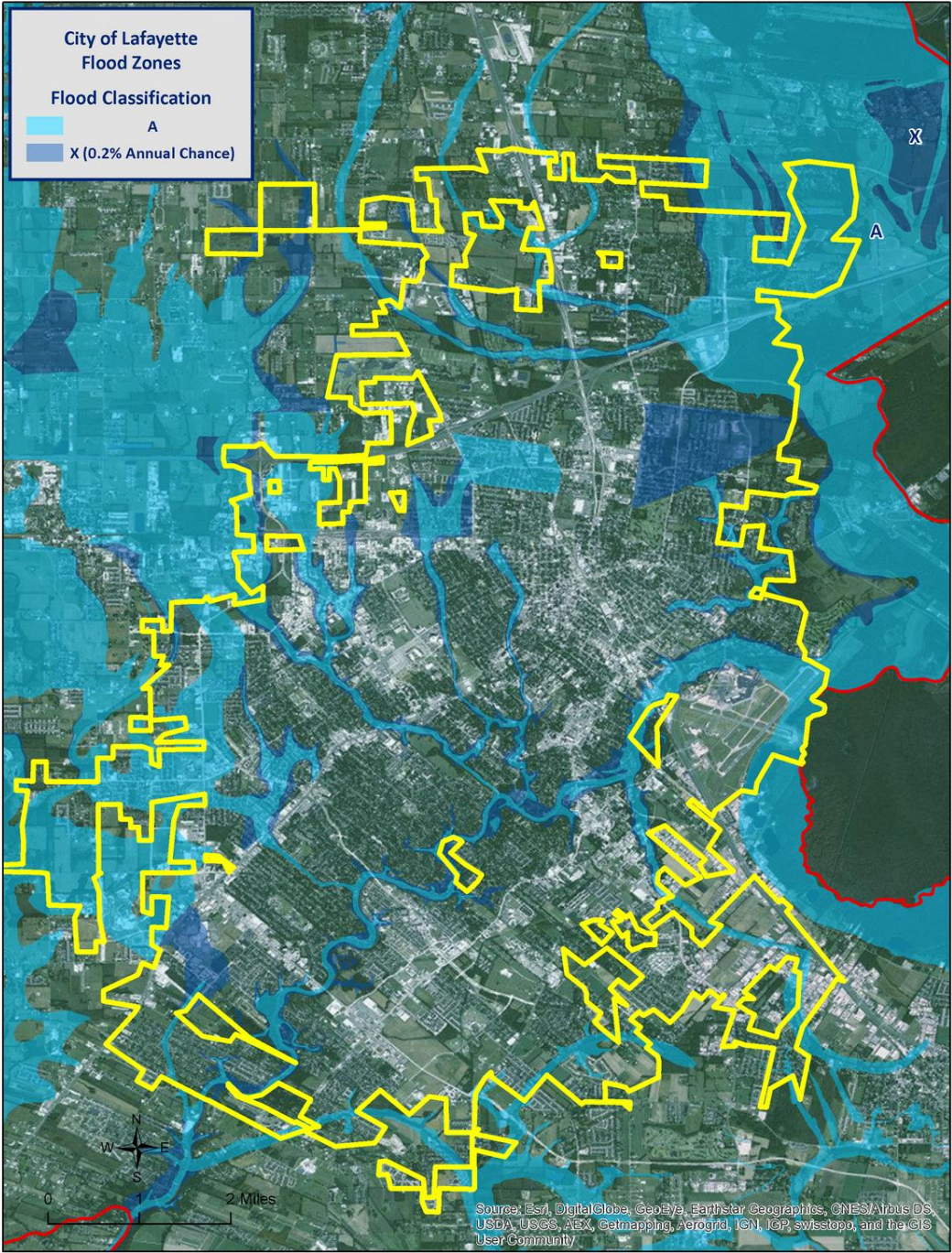
# Flooding Classification City of Carencro



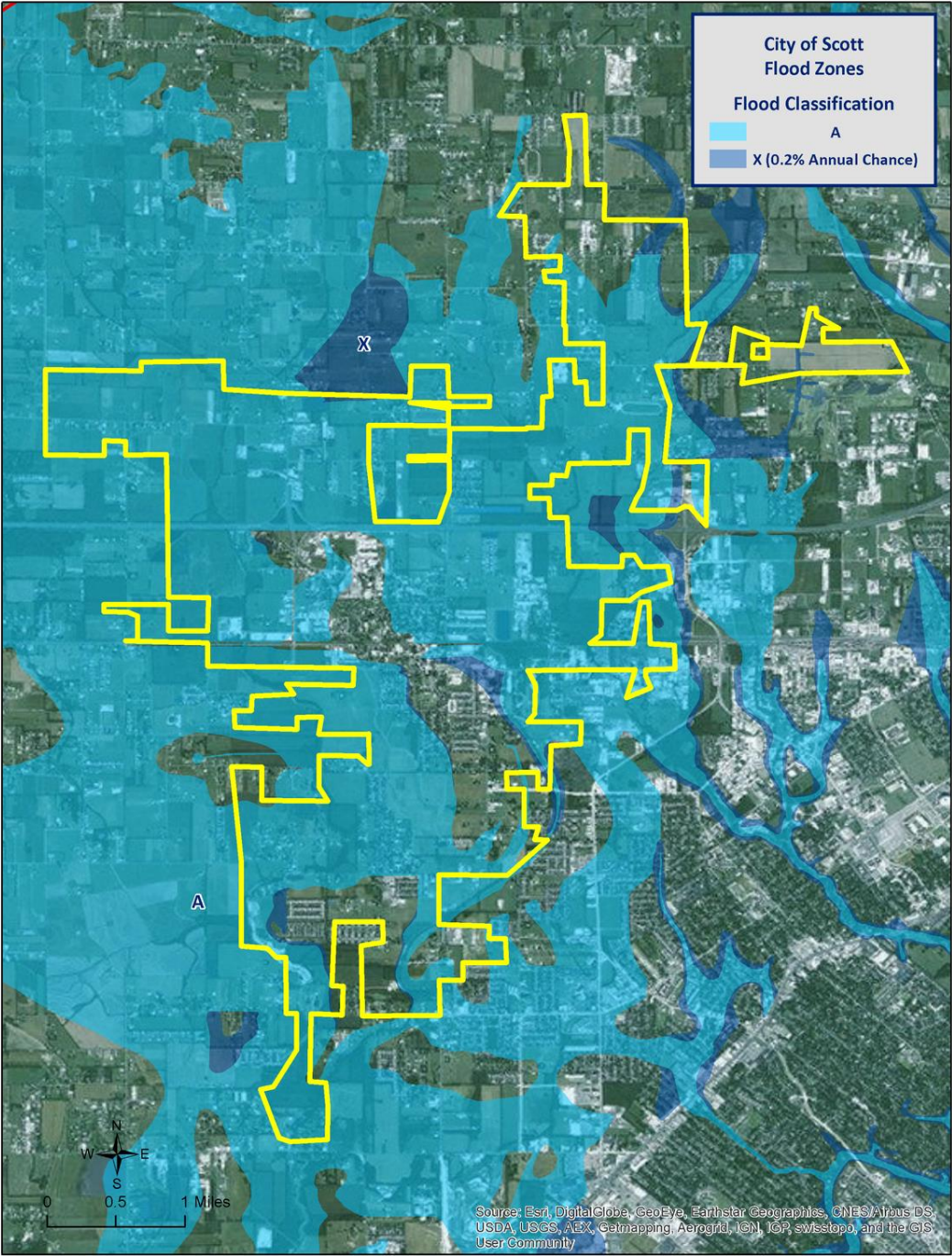
# Flooding Classification City of Duson



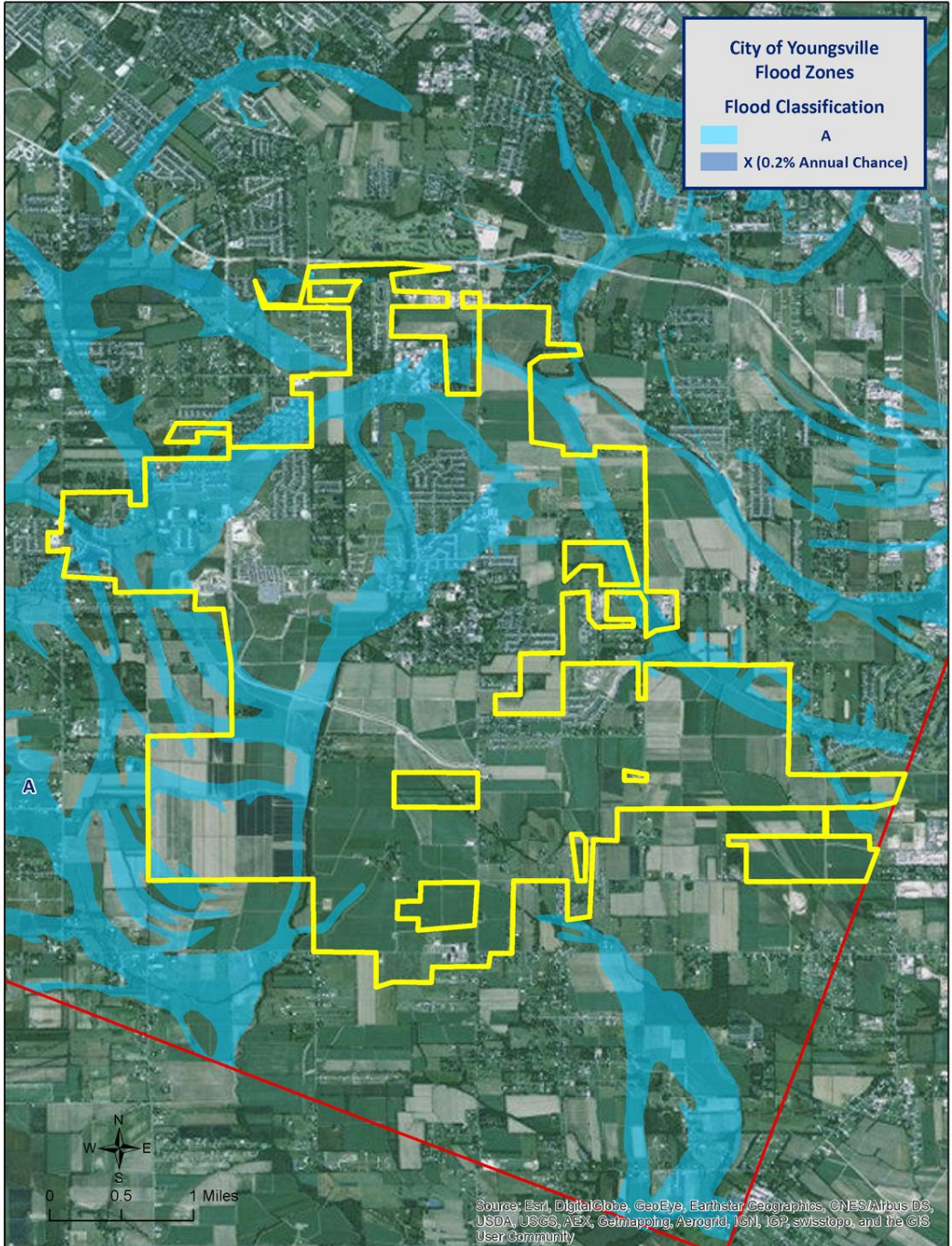
# Flooding Classification City of Lafayette



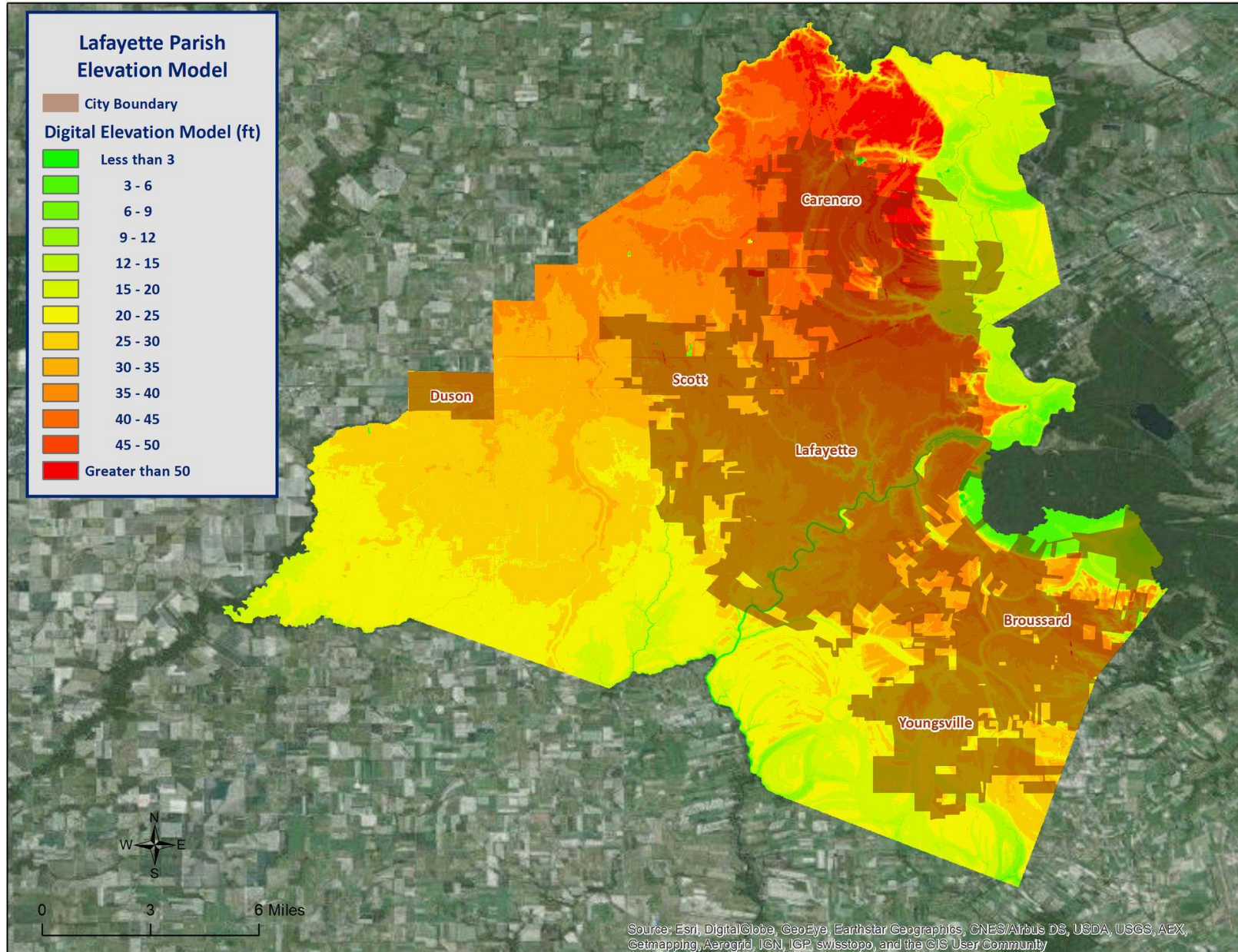
# Flooding Classification City of Scott



# Flooding Classification City of Youngsville



# Flooding Elevation Model

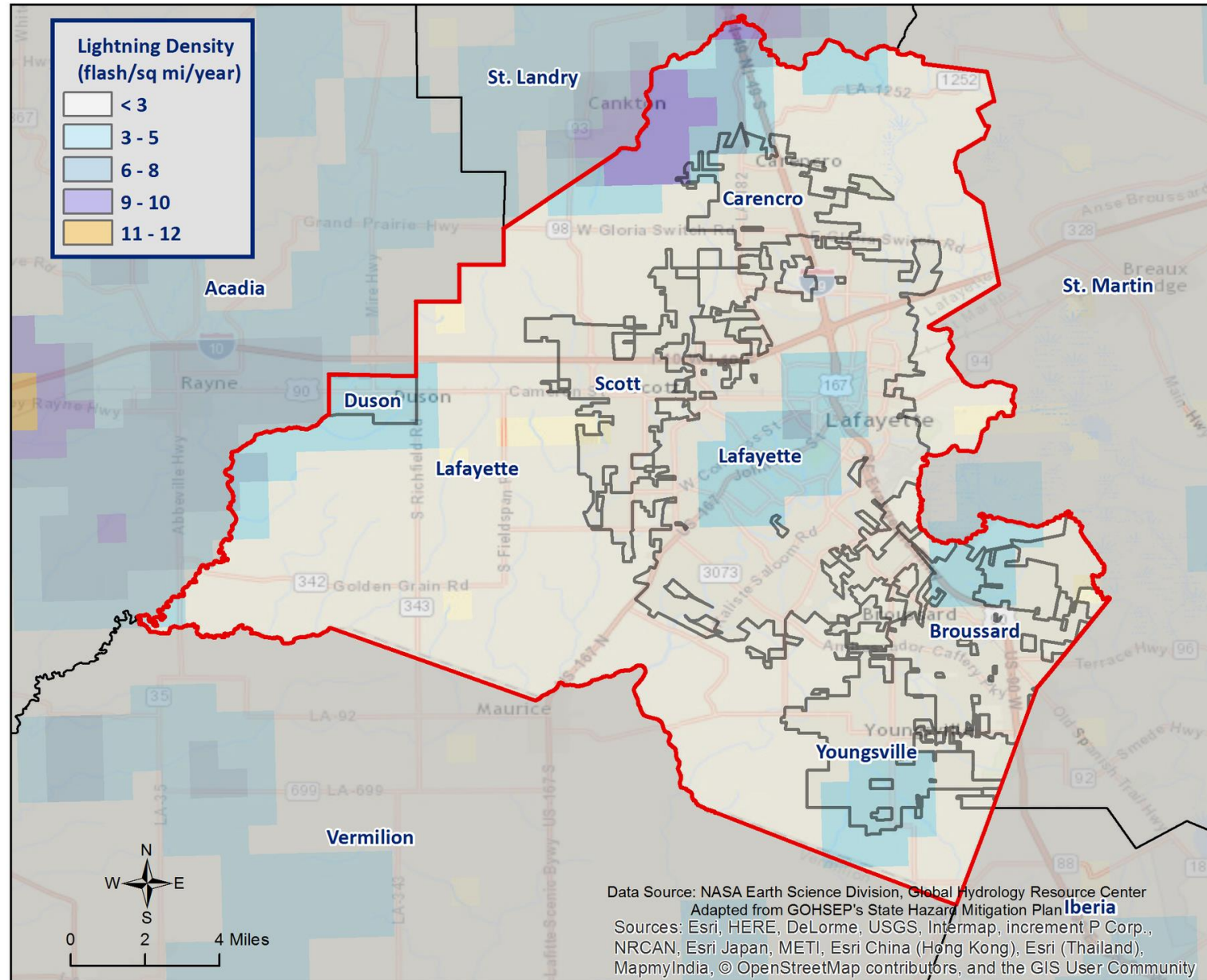


# Thunderstorms – Lightning/High Wind/Hail

- 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.

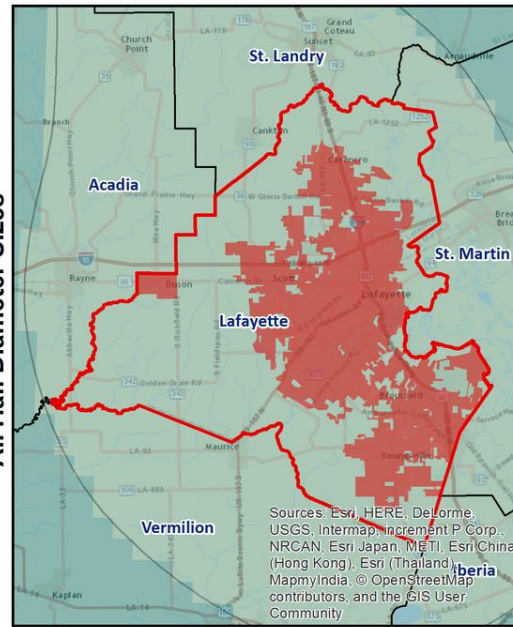


# Lightning Density Model

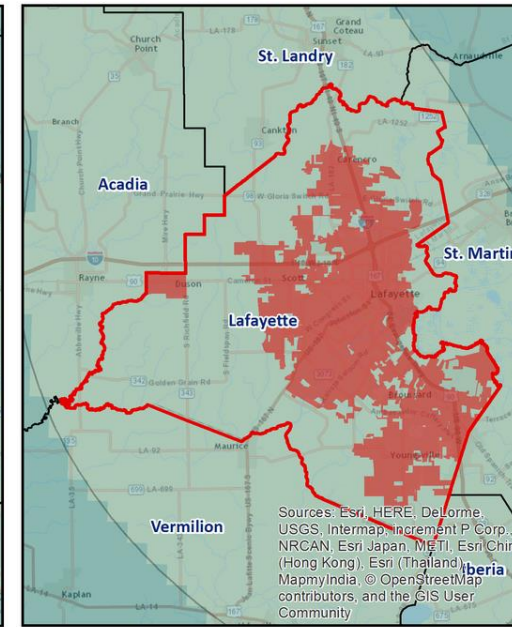


# Hail Density Models

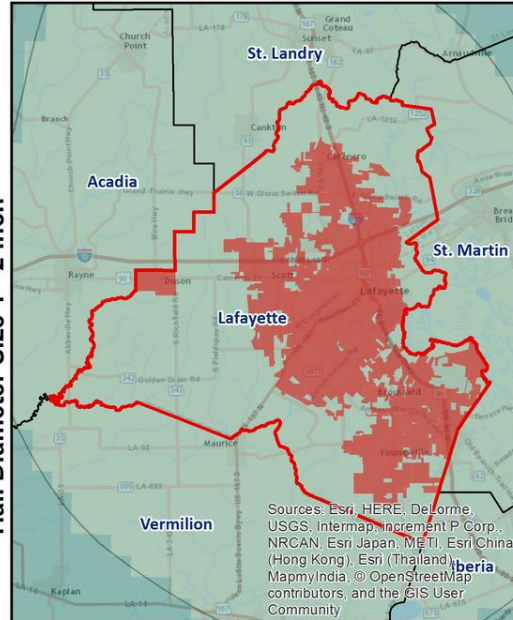
All Hail Diameter Sizes



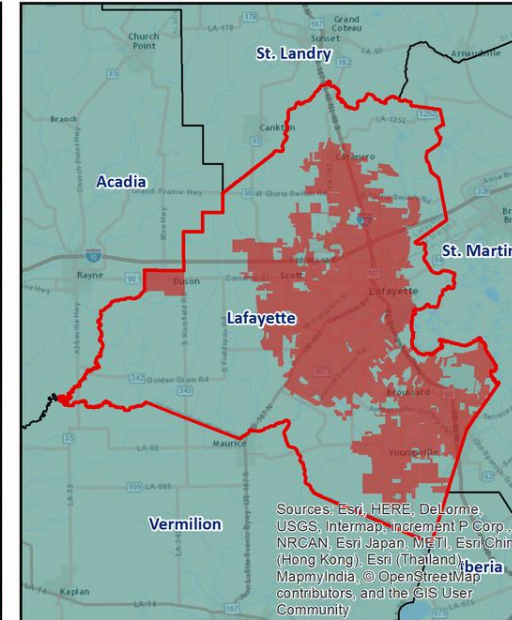
Hail Diameter Size < 1 inch



Hail Diameter Size 1 - 2 inch



Hail Diameter Size ≥ 2 inch



Data Source: NOAA Storm Prediction Center (SPC) Severe Weather Database  
 Adapted from GOHSEP's State Hazard Mitigation Plan

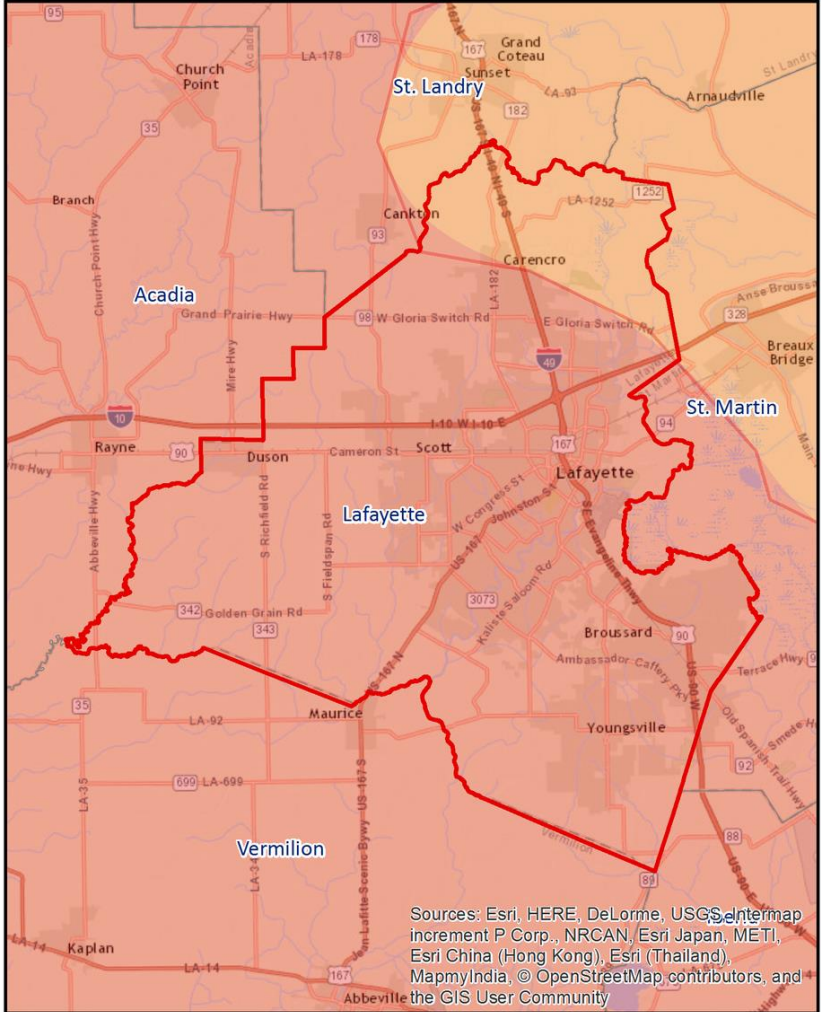
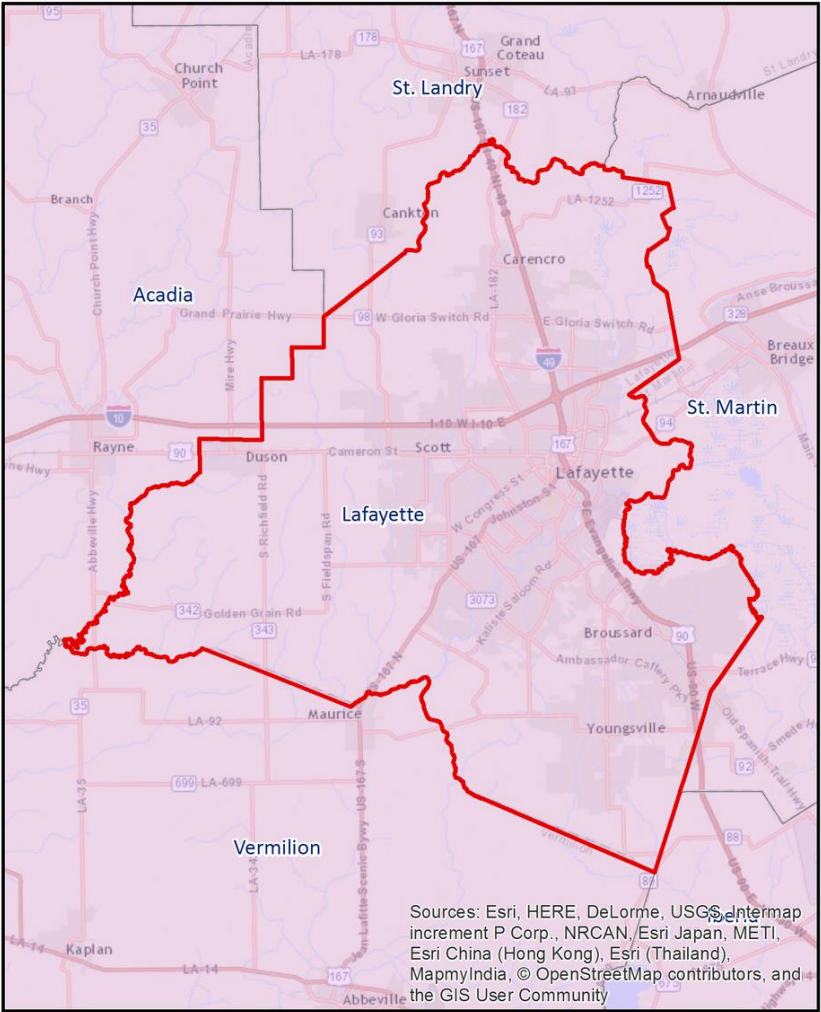
# Tropical Cyclones

- 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

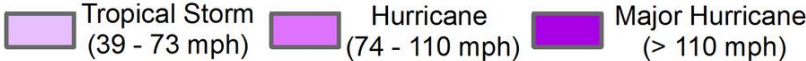
Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major 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 Rita (2005)



**Wind Speed (Saffir-Simpson Scale)**

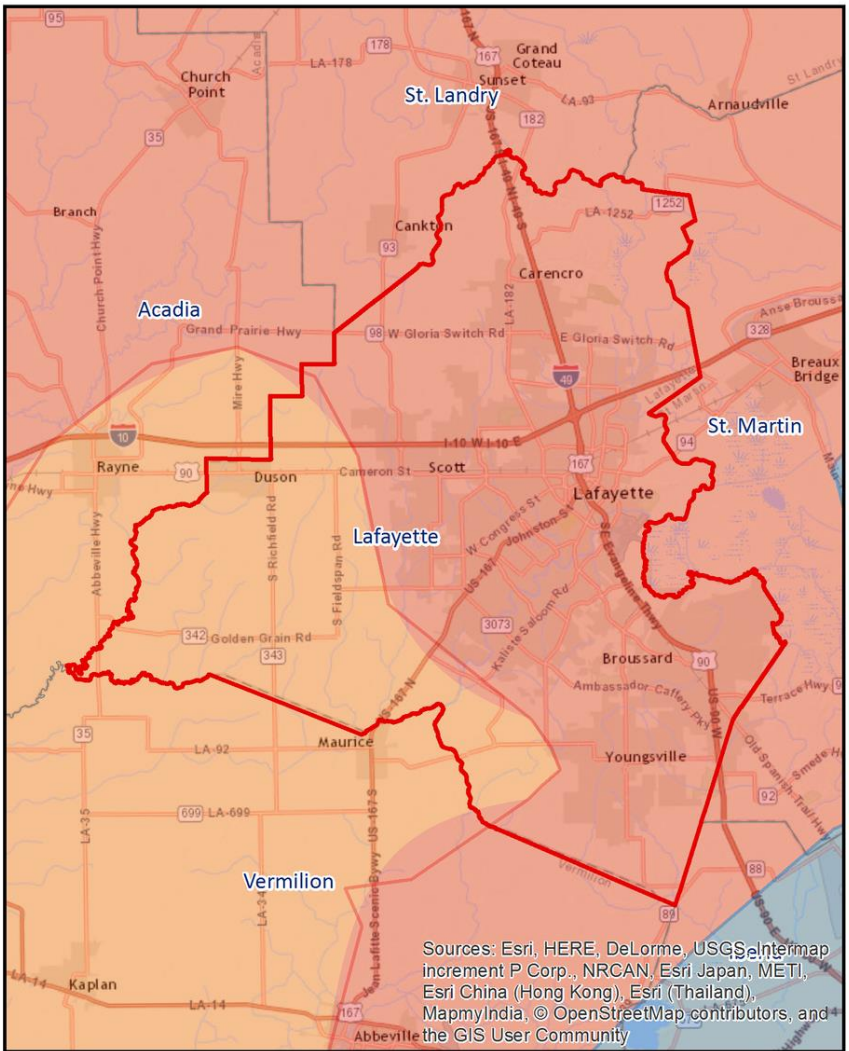
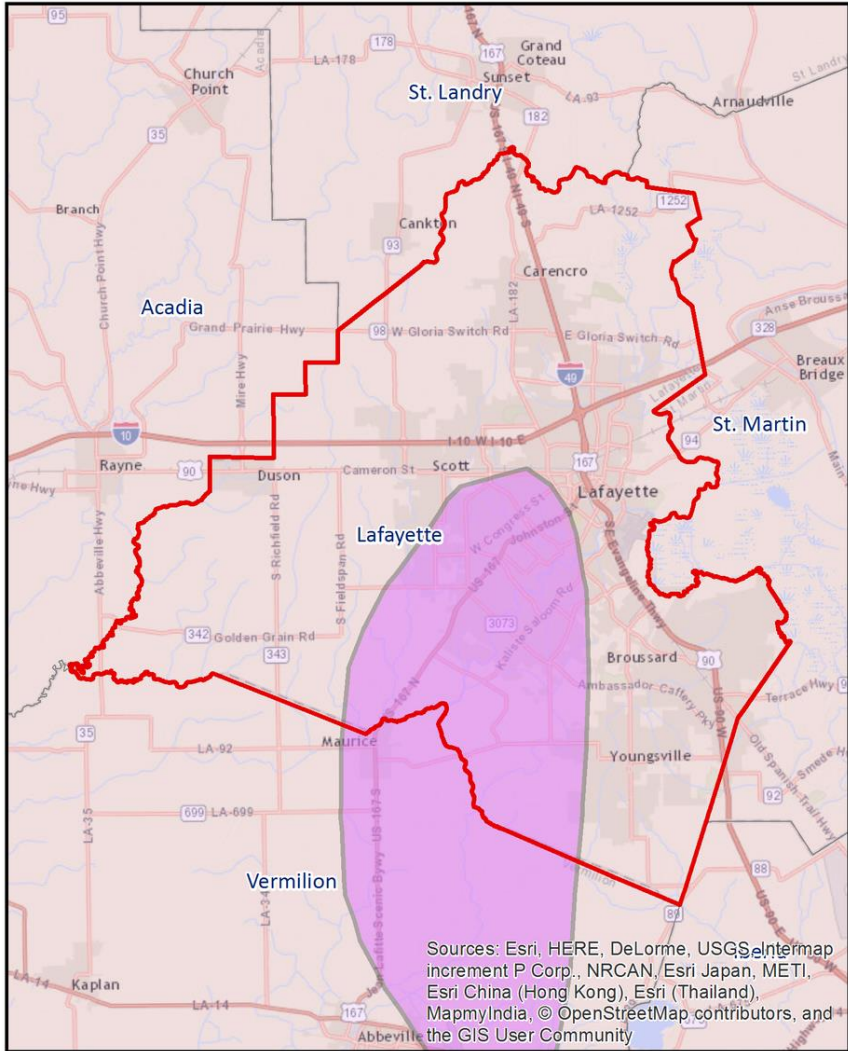


**Total Precipitation (inches)**

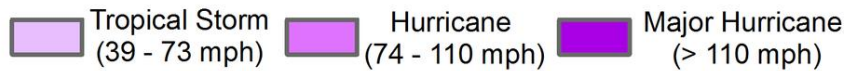


Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

# Hurricane Gustav (2008)



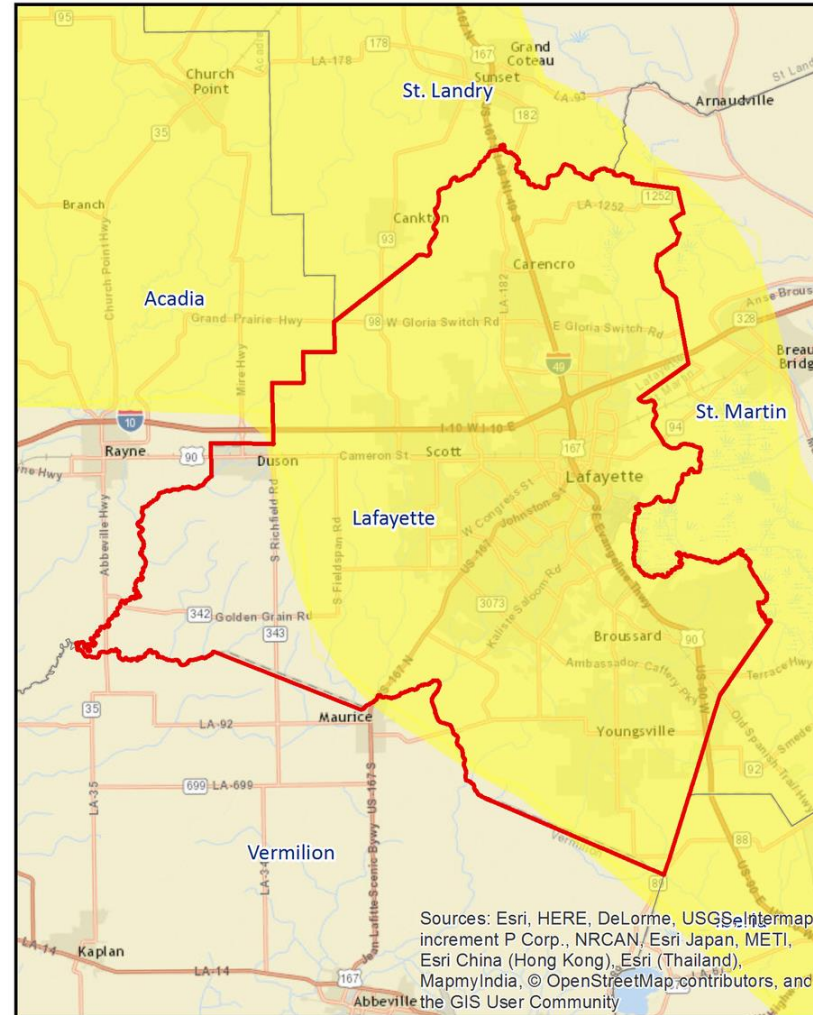
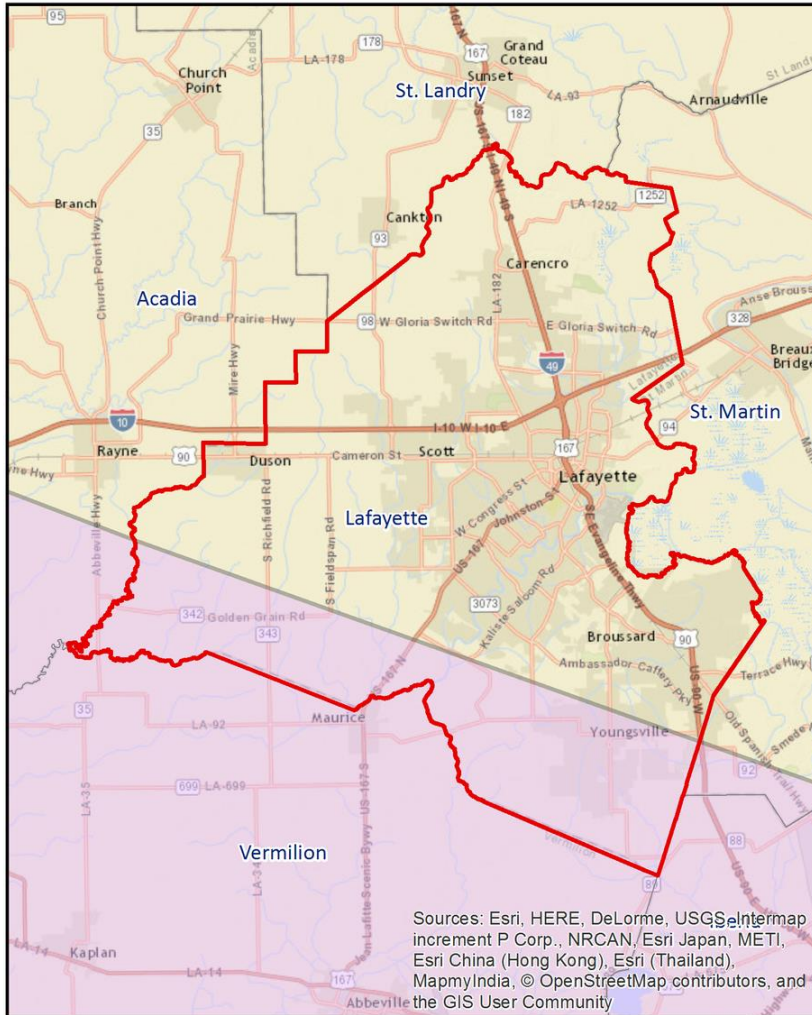
## Wind Speed (Saffir-Simpson Scale)



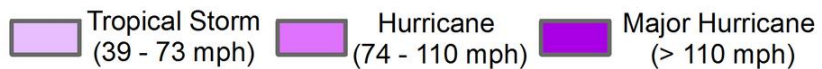
## Total Precipitation (inches)



# Hurricane Ike (2008)



## Wind Speed (Saffir-Simpson Scale)

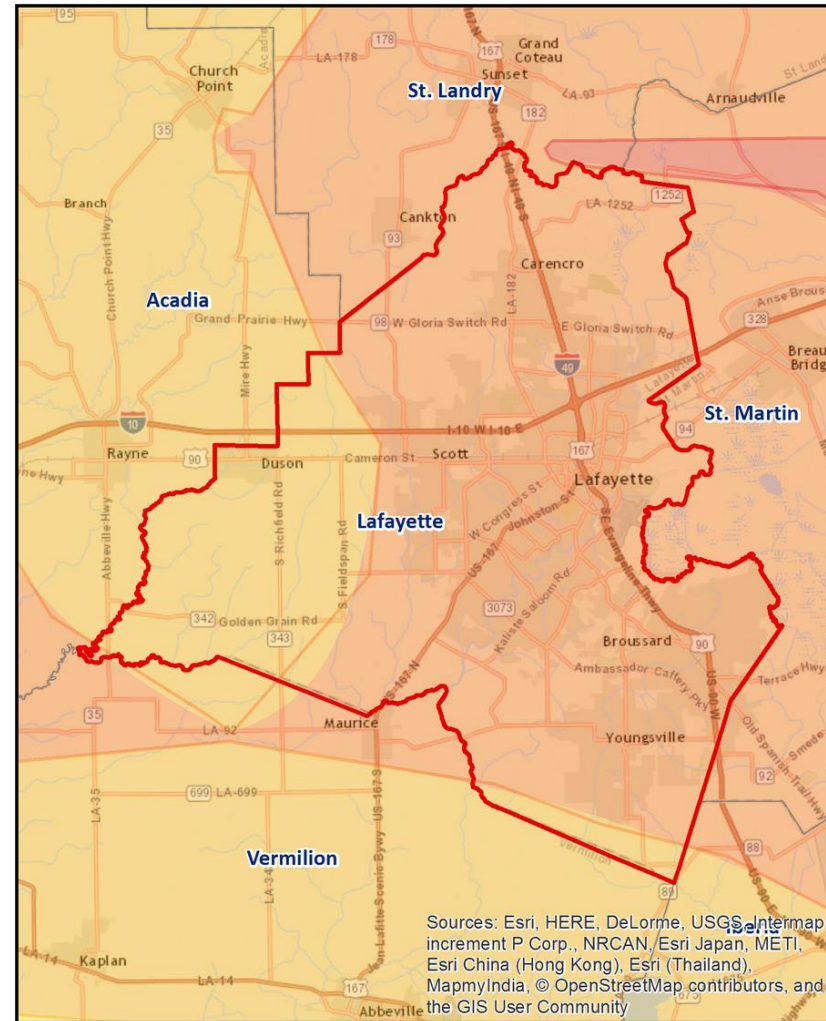
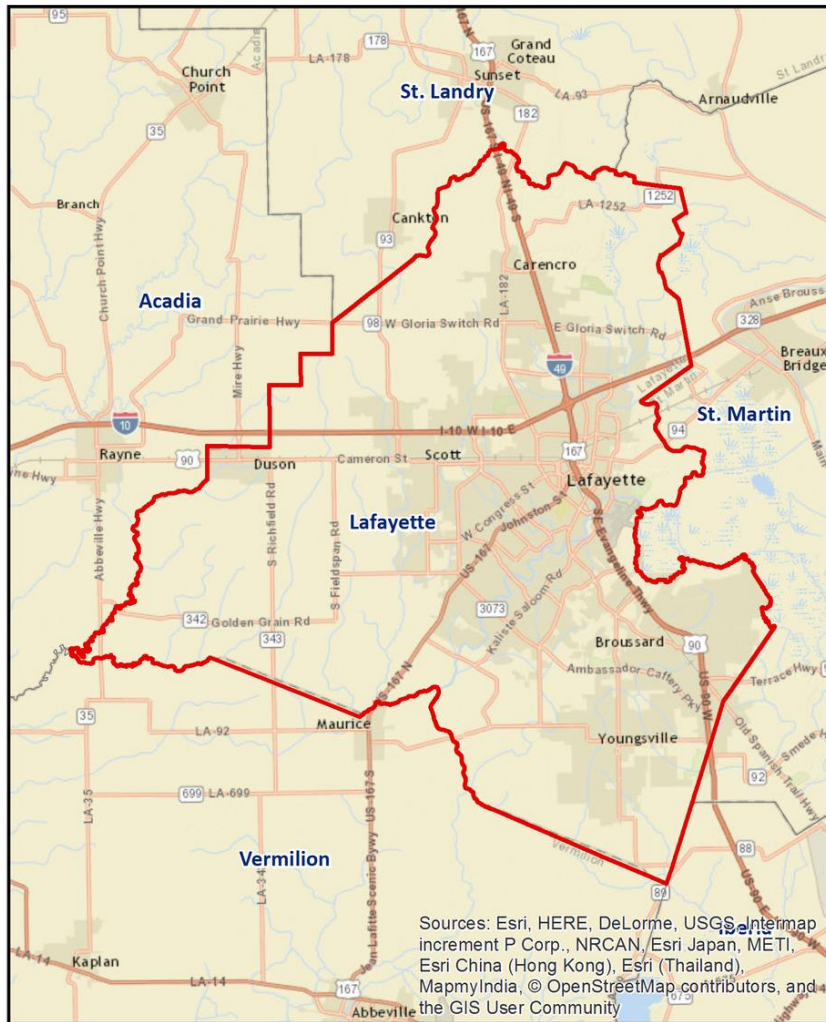


## Total Precipitation (inches)

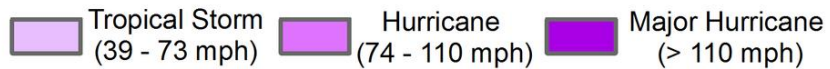


Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

# Tropical Storm Lee (2011)



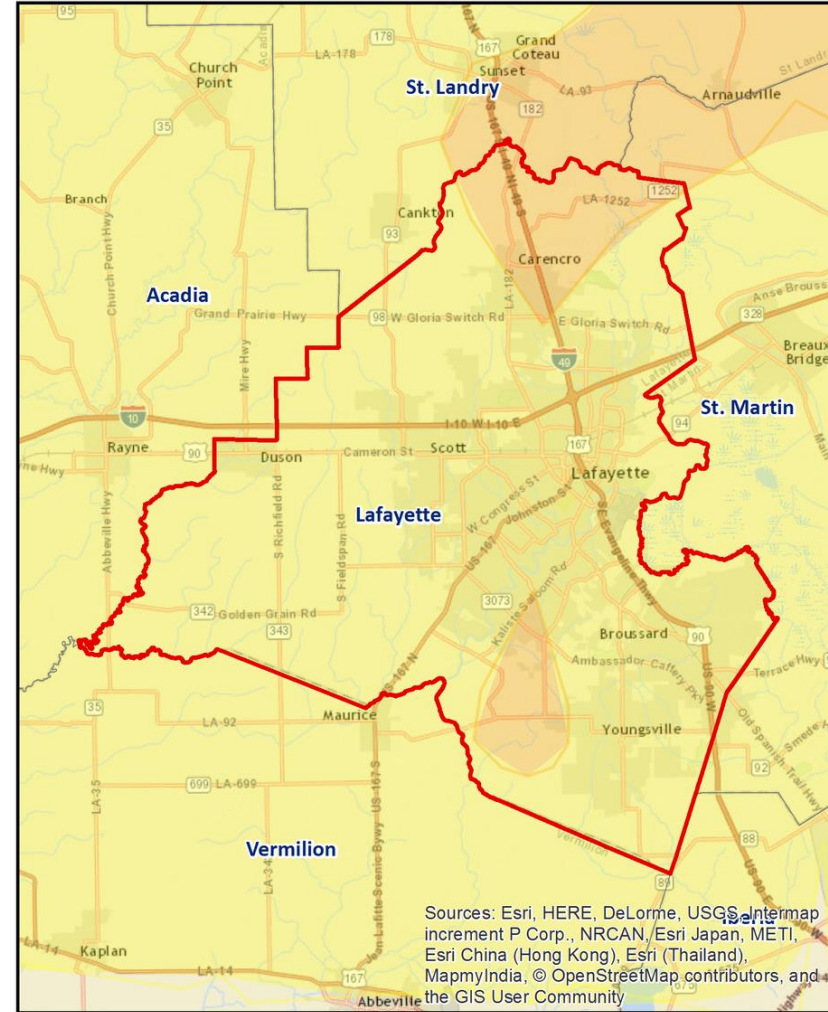
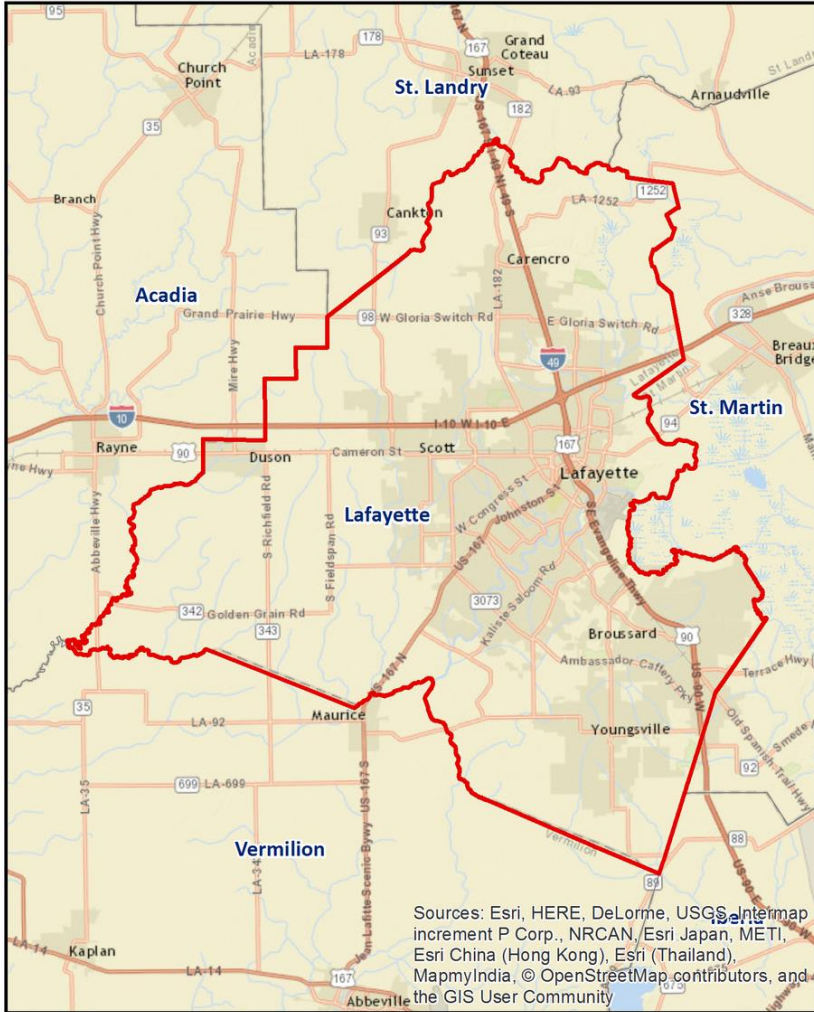
## Wind Speed (Saffir-Simpson Scale)



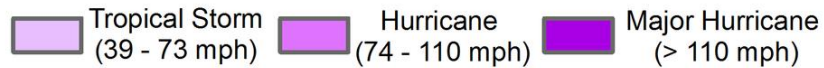
## Total Precipitation (inches)



# Hurricane Isaac (2012)



## Wind Speed (Saffir-Simpson Scale)

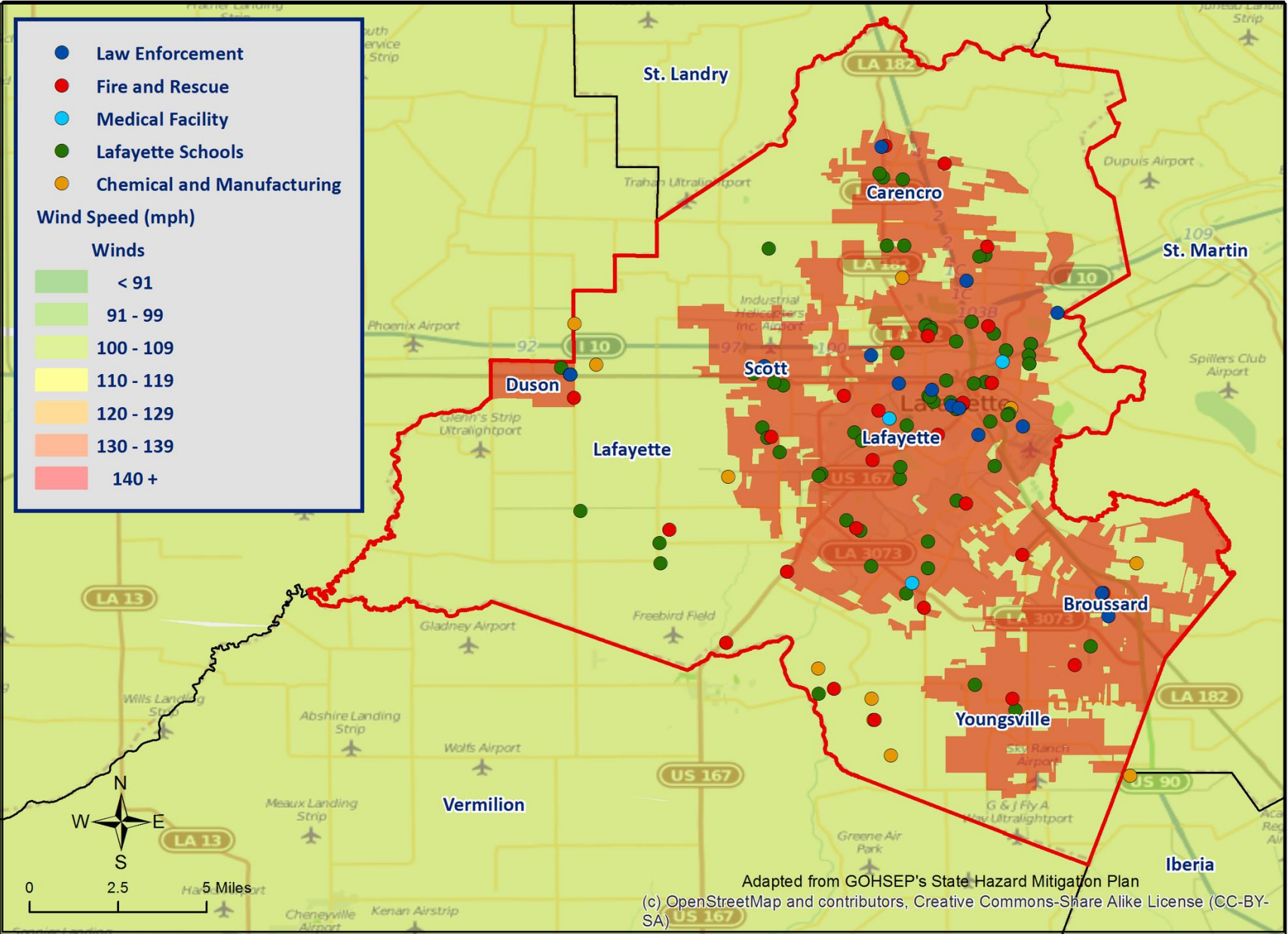


## Total Precipitation (inches)



Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

# Critical Facilities – Wind Speeds



# Tornadoes

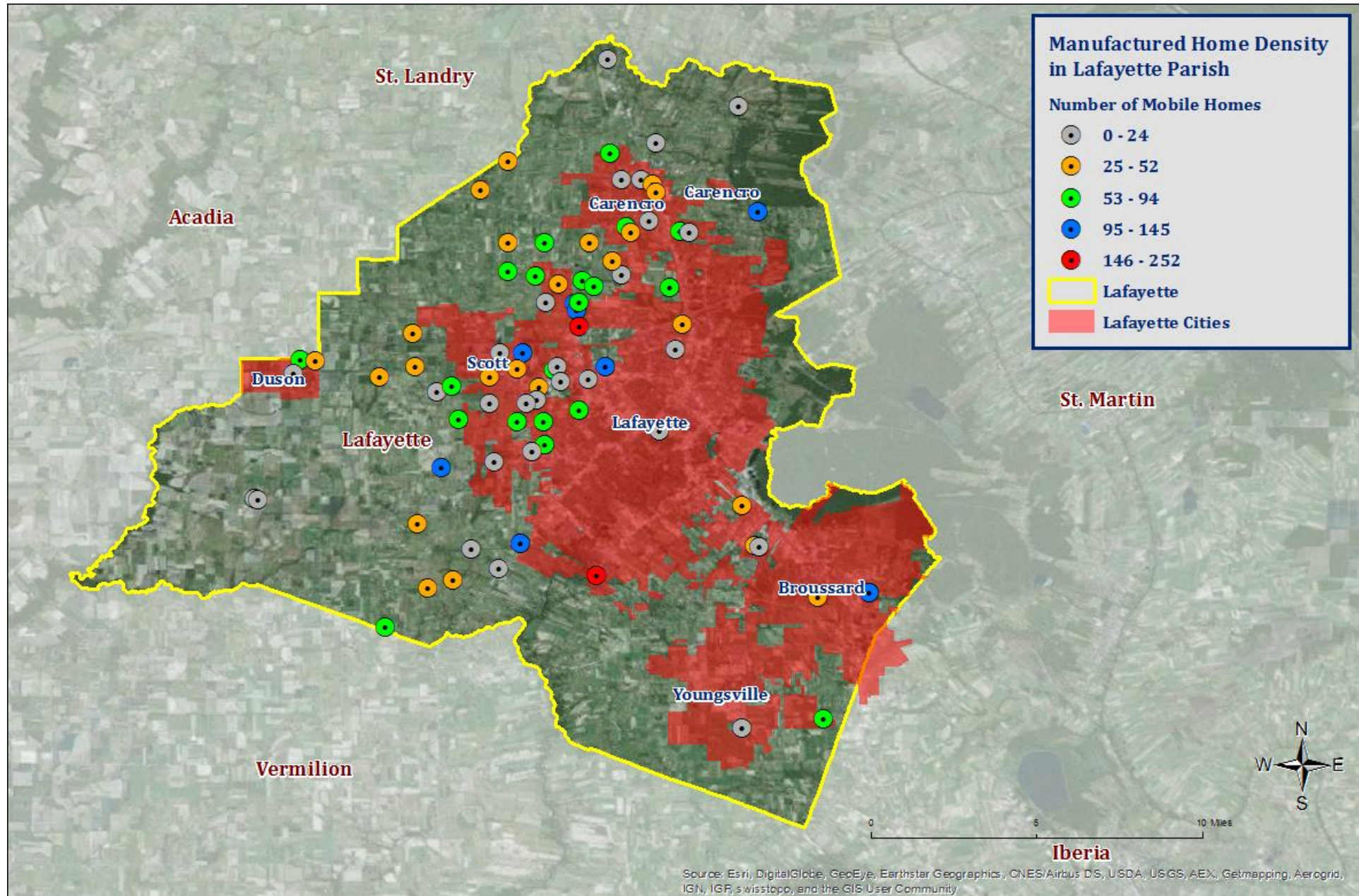
- Tornadoes (also called twisters and cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground.
- Tornadoes are the most severe storms for their size, and 70% of the world's reported tornadoes occur within the continental United States.



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



# Manufactured Home Density





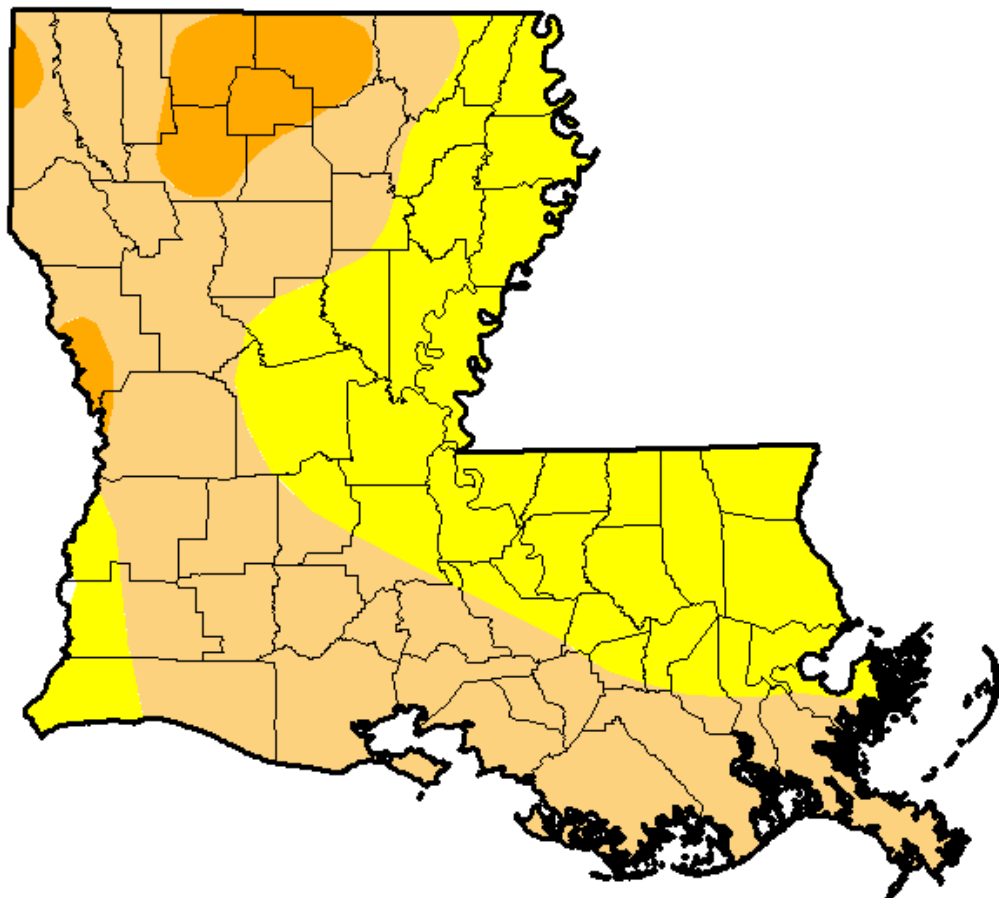
# Drought

- Drought is when a region receives below-average precipitation, resulting in prolonged shortages in its water supply, whether atmospheric, surface or ground water.
- Drought can last for months or years, or may be declared after as few as 15 days. It can have a substantial impact on the ecosystem and agriculture of the affected region.
- Periods of heat can significantly worsen drought conditions

# U.S. Drought Monitor

## Louisiana

**August 25, 2015**  
 (Released Thursday, Aug. 27, 2015)  
 Valid 8 a.m. EDT



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.10	99.90	59.83	6.91	0.00	0.00
<b>Last Week</b> <i>8/18/2015</i>	0.02	99.98	54.10	18.54	0.00	0.00
<b>3 Months Ago</b> <i>5/26/2015</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>1/20/2014</i>	47.23	52.77	10.88	0.00	0.00	0.00
<b>Start of Water Year</b> <i>9/30/2014</i>	88.99	11.01	0.63	0.00	0.00	0.00
<b>One Year Ago</b> <i>8/26/2014</i>	99.09	0.91	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

**Author:**  
 Anthony Artusa  
 NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

# Wildfire

- A large, destructive fire that spreads quickly over woodland or brush
- Any large fire that spreads rapidly and is hard to extinguish





# Winter Weather

- For Louisiana and other parts of the southeastern United States, a severe winter storm occurs when humid air from the Gulf of Mexico meets a cold air mass from the north. As the temperature falls once the cold air mass crosses Louisiana, 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.
  - Ice storms
  - Freezes
  - Snow events
  - Strong winds
    - Wind-driven snow, drifting, wind chill

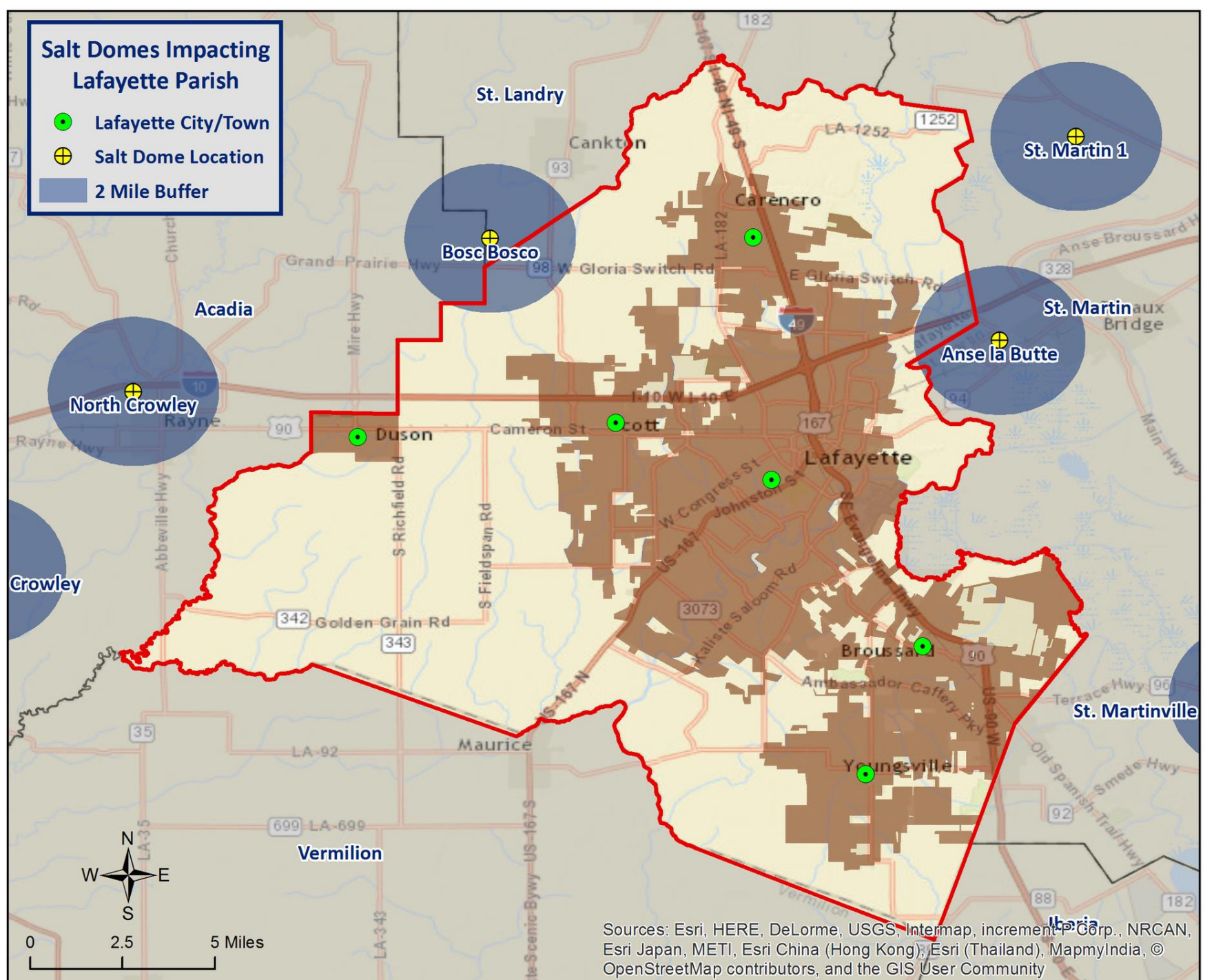


# Sinkholes

- A sinkhole is an area of ground that has no natural external surface drainage – when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface.
- Sinkholes form in areas where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them.
- As the rock dissolves, spaces and caverns develop underground. Once the spaces underground become too large, there is not enough support for the land above the spaces which causes a sudden collapse on the land surface.



# Sinkhole



# Mitigation Strategy – Parish Goals

- 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 the municipal and parish level to plan and implement hazard mitigation projects, programs, and activities
- Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities, with a focus on existing structures, future structures, protection of existing infrastructure, and protection of future infrastructure.
- Maintain continuity of operations during and after natural hazard events

# 2009-2015 Parish HM Project Status

- Director's Comments

# Public Outreach Activities

- Risk Analysis Activity (Hazard Occurrences)
- Problem Area Identification (Parish Maps)
- Survey

# *Contact Us*

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