St. Charles Parish Hazard Mitigation Plan Update Public Meeting

August 8, 2024

Hahnville, LA

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Agenda

Introductions

Hazard Mitigation Overview

Planning Process

Risk Assessment

Maps

Public Outreach Activities

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Introductions

- **St. Charles Parish DHSEP 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

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Who is SDMI?

- Stephenson Disaster Management Institute (SDMI) at Louisiana State University
- Non-Academic, Applied Research Unit on campus
- Specialize in providing programmatic support and decision making tools for state and local emergency managers
  - Hazard Mitigation Plans
  - Emergency Operations Plans
  - Geographic Information Systems
  - Application Development
  - Data Visualization
  - Aerial Imagery Collection/Processing

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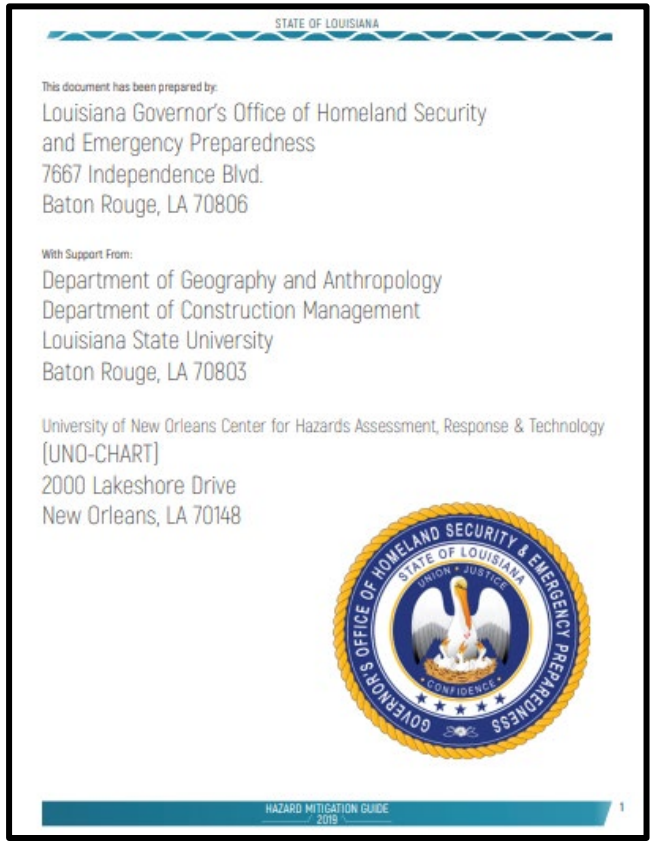
Why We're Here



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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!***

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Why the Plan is Required

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

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

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Planning Process to Date

Initial Planning Meeting with DHSEP

Full Planning Committee Meeting

Risk Assessment Review with Planning Committee

Public Meeting

Constant communication with Parish and Committee members!

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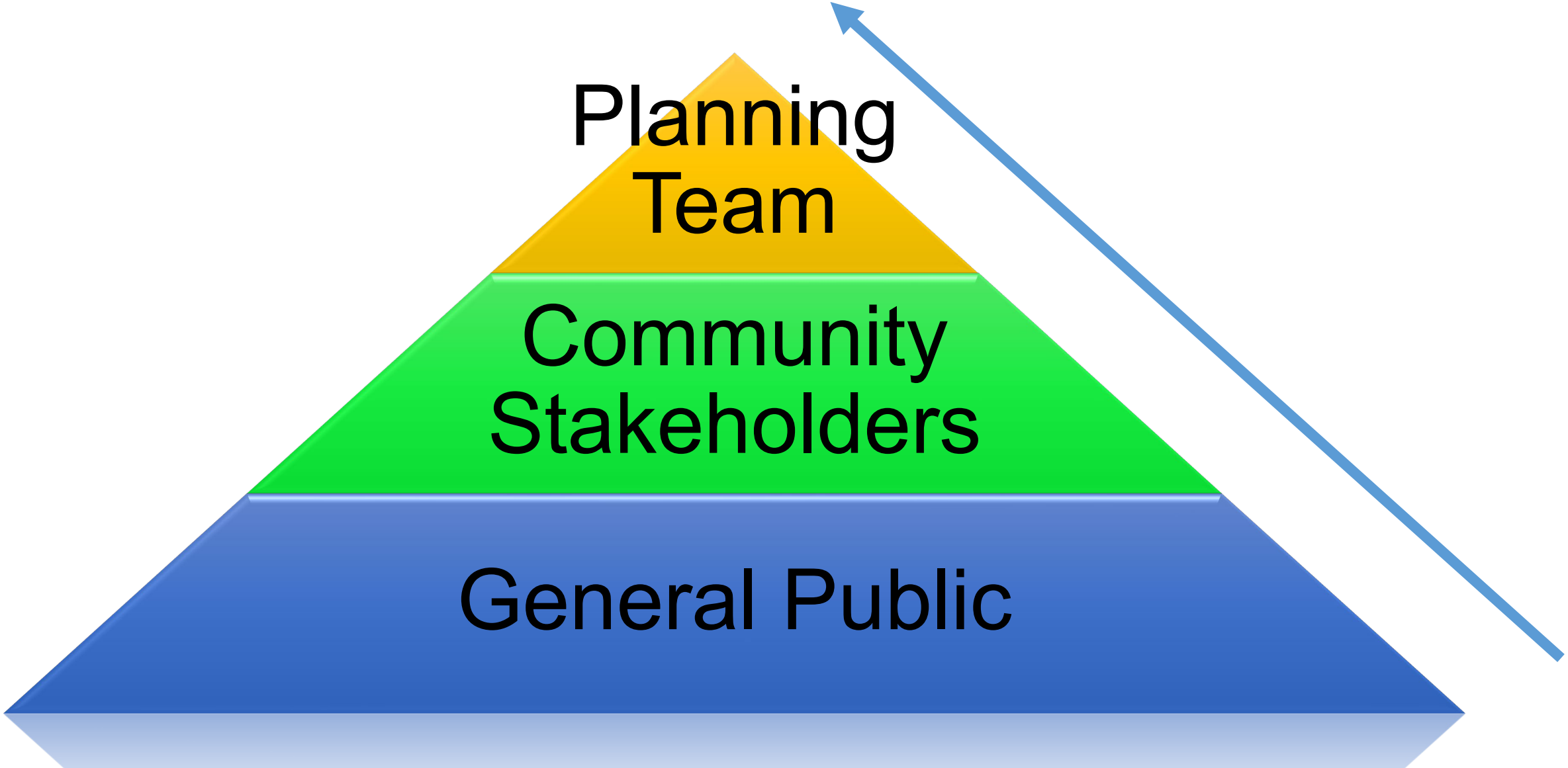
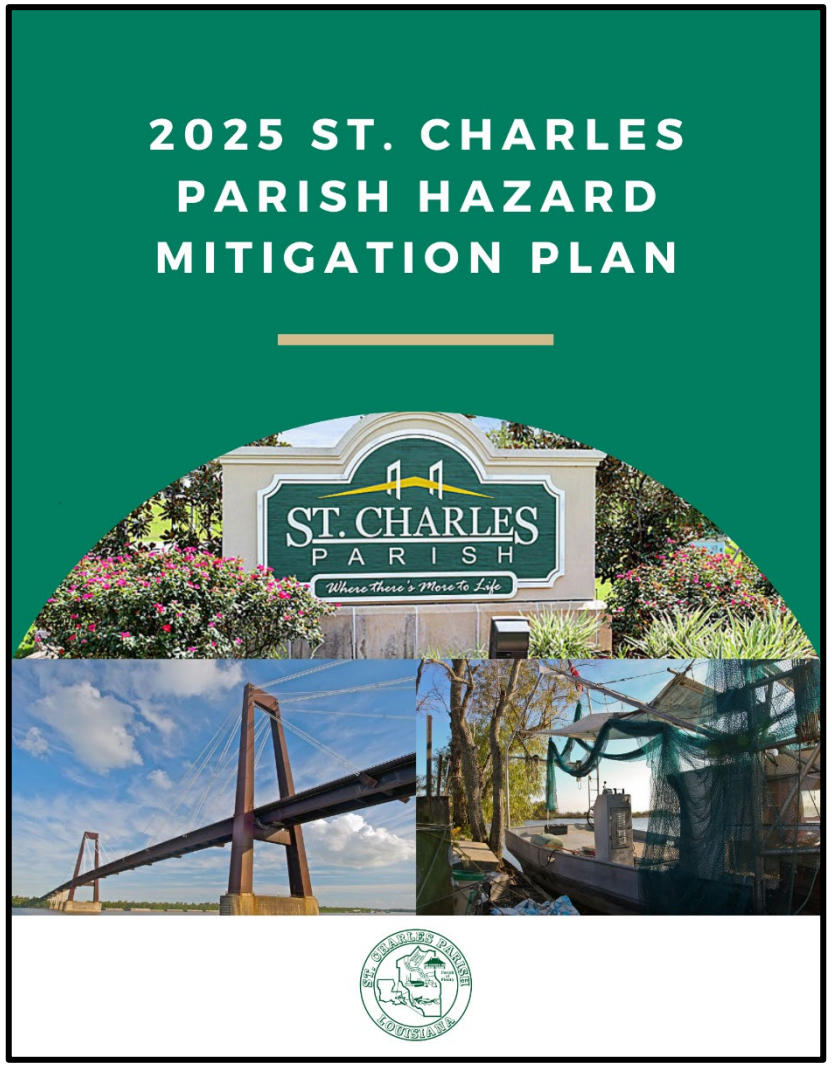
Collaborative Planning Approach



Hazard Mitigation Plan Development



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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

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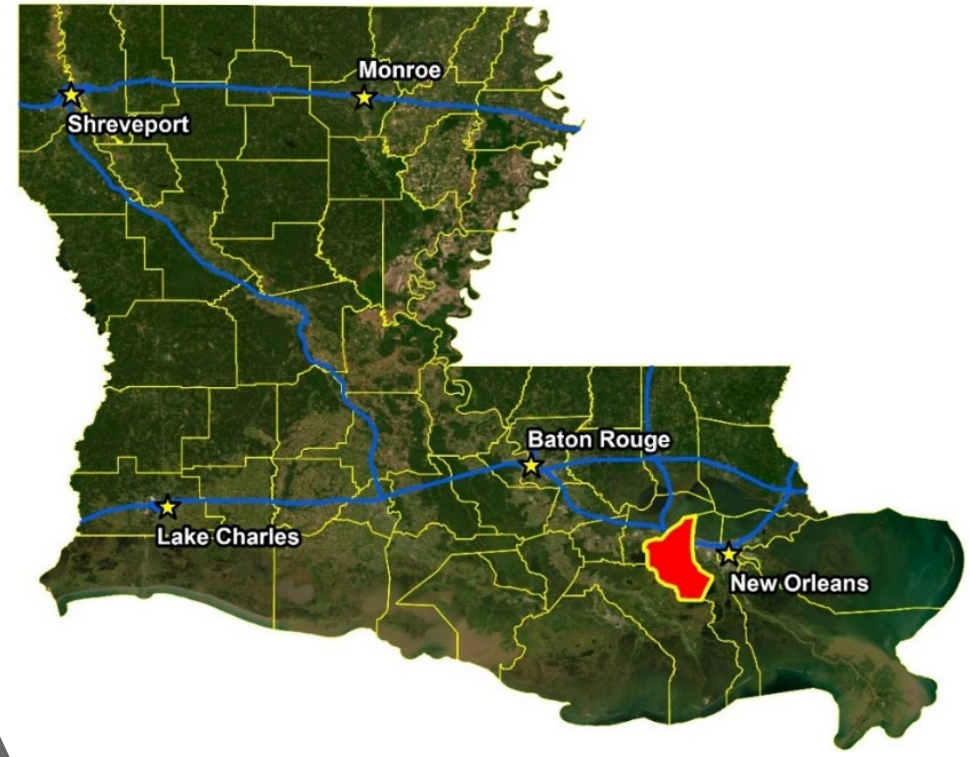
Plan Layout

- **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 parish planning area.

- The hazards identification includes the following:
  - *locations affected*
  - *extent or strength*
  - *previous occurrences*
  - *probability of future events*

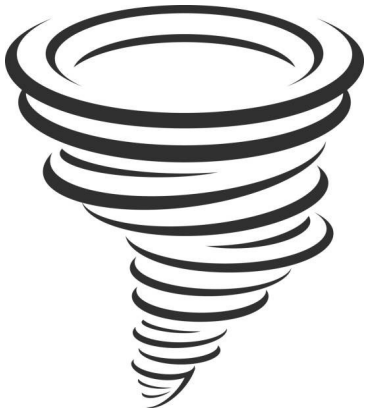


Hazard Identification And Risk Assessment

- Based on Currently Profiled Prevalent Natural Hazards
- Identify Any New Hazards
- Previous Occurrences
- Impact from Events
- Probability of Future Events
- Critical Facilities
- Future Development Trends
- Future Hazard Impacts
- Zoning and Land Use

Hazard Identification And Risk Assessment

- Coastal Hazards*
- Drought
- Excessive Heat
- Flooding
- Levee Failure
- Saltwater Intrusion
- Thunderstorms
- Tornadoes
- Tropical Cyclones
- Wildfires
- Winter Weather



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Risk Matrix for St. Charles Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Coastal Hazards	4	2	4	2	3	**3.05**
Drought	3	2	4	2	3	**2.8**
Excessive Heat	3	2	4	1	2	**2.5**
Flooding	4	4	3	4	3	**3.65**
Levee Failure	1	3	4	1	3	**2.4**
Saltwater Intrusion	4	3	2	1	4	**2.9**
Thunderstorm Hail	4	2	3	3	1	**2.7**
Thunderstorm Lightning	2	2	2	3	1	**2**
Thunderstorm Winds	4	2	3	3	1	**2.7**
Tornadoes	3	3	2	4	3	**2.95**
Tropical Cyclones	4	4	4	1	4	**3.55**
Wildfires	1	3	4	1	2	**2.25**
Winter Weather	3	4	4	1	2	**3**

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

ST. CHARLES PARISH LOUISIANA

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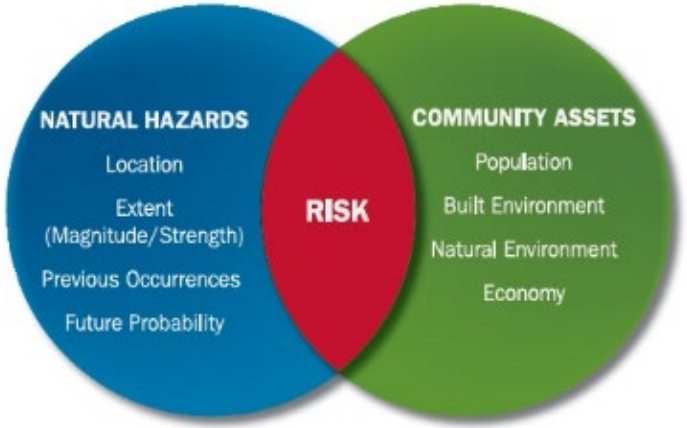
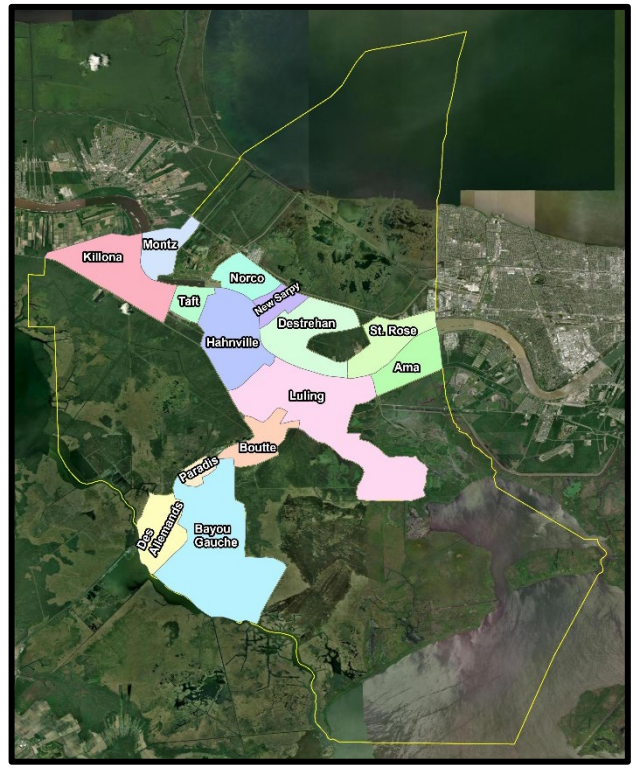
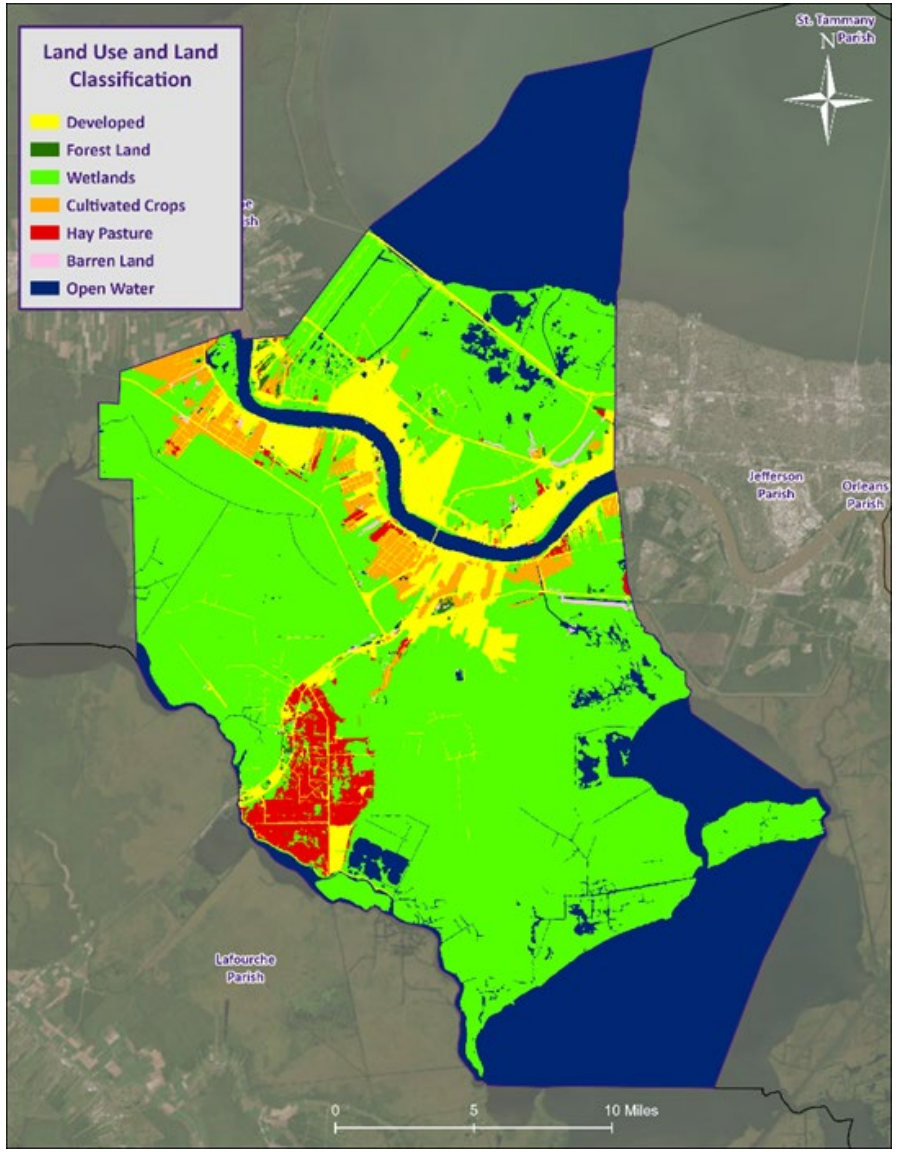




Risk Assessment Maps

St. Charles Parish Land Use



Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	10,661	9%
Wetlands	68,756	58%
Forest Land (Not including forested wetlands)	787	1%
Urban/Development	14,225	12%
Water	23,709	20%

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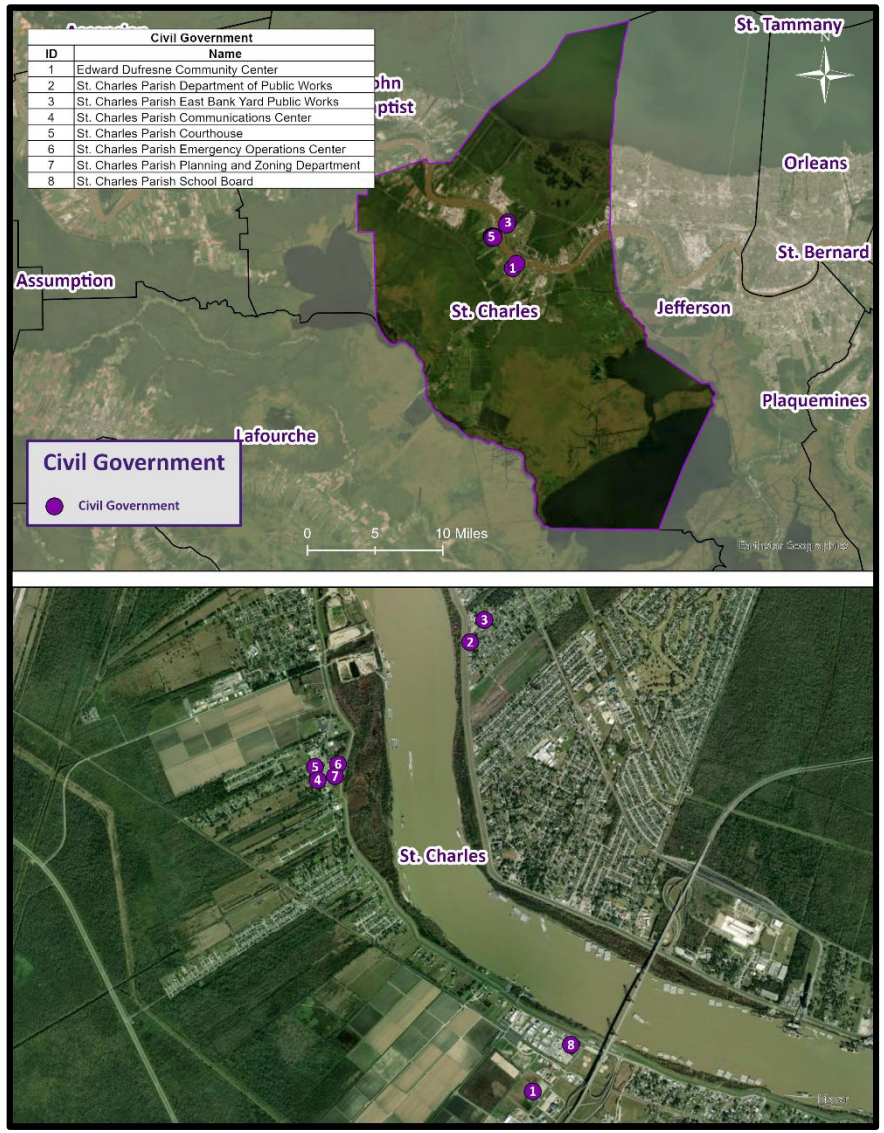
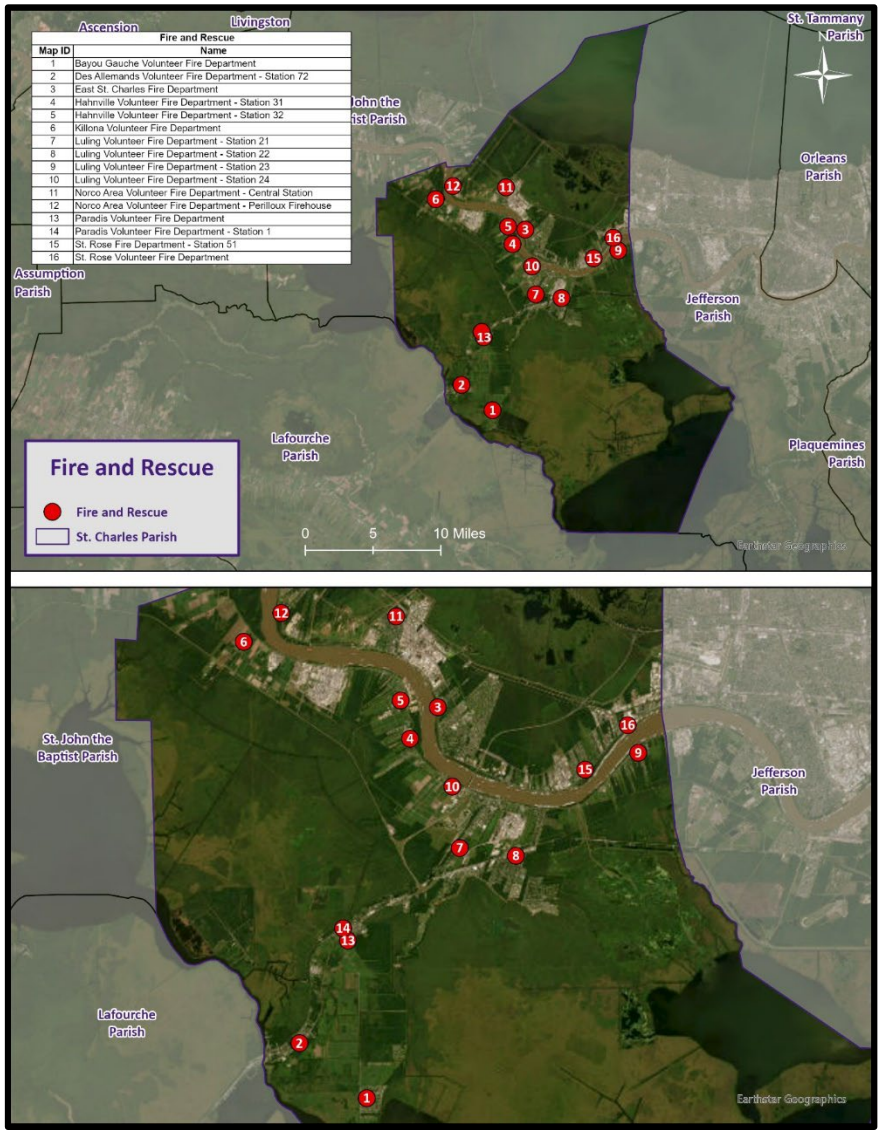
St. Charles Parish Critical Facilities

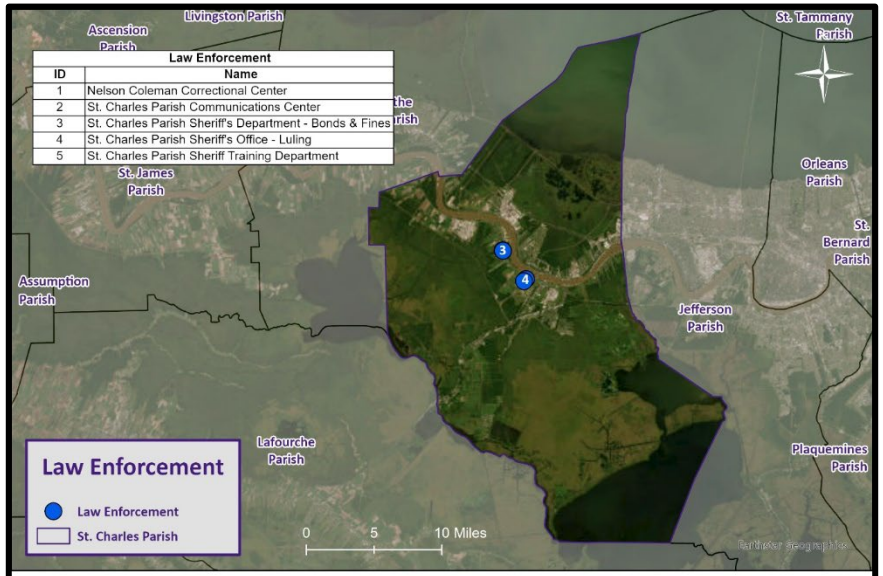


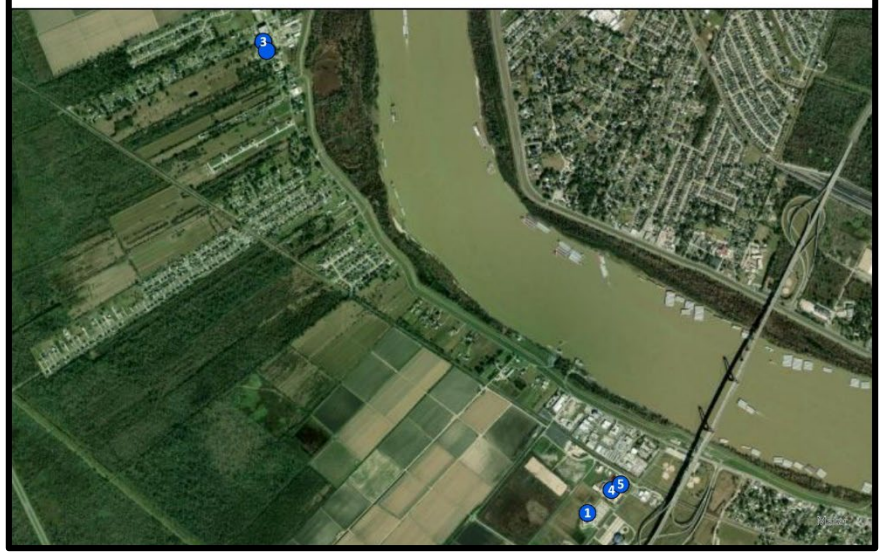
Civil Government



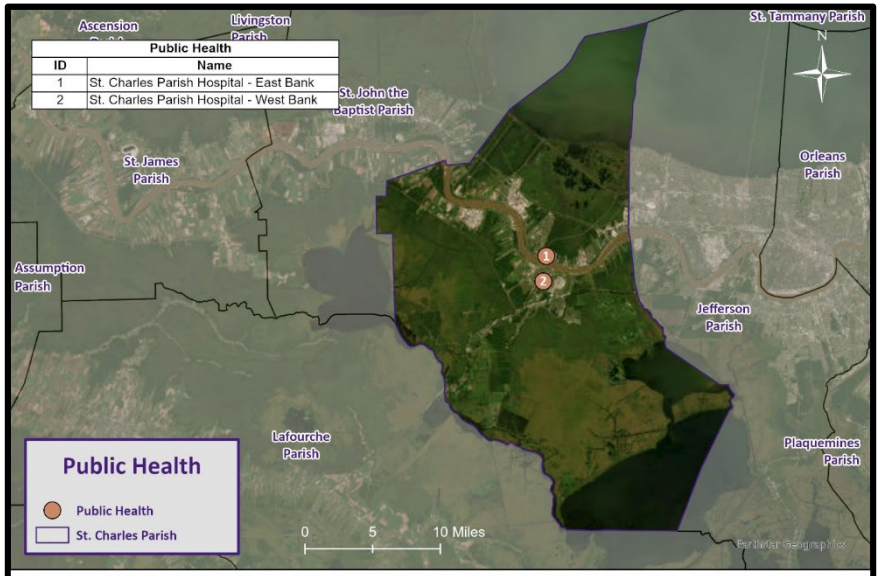
Fire & SAR

St. Charles Parish Critical Facilities



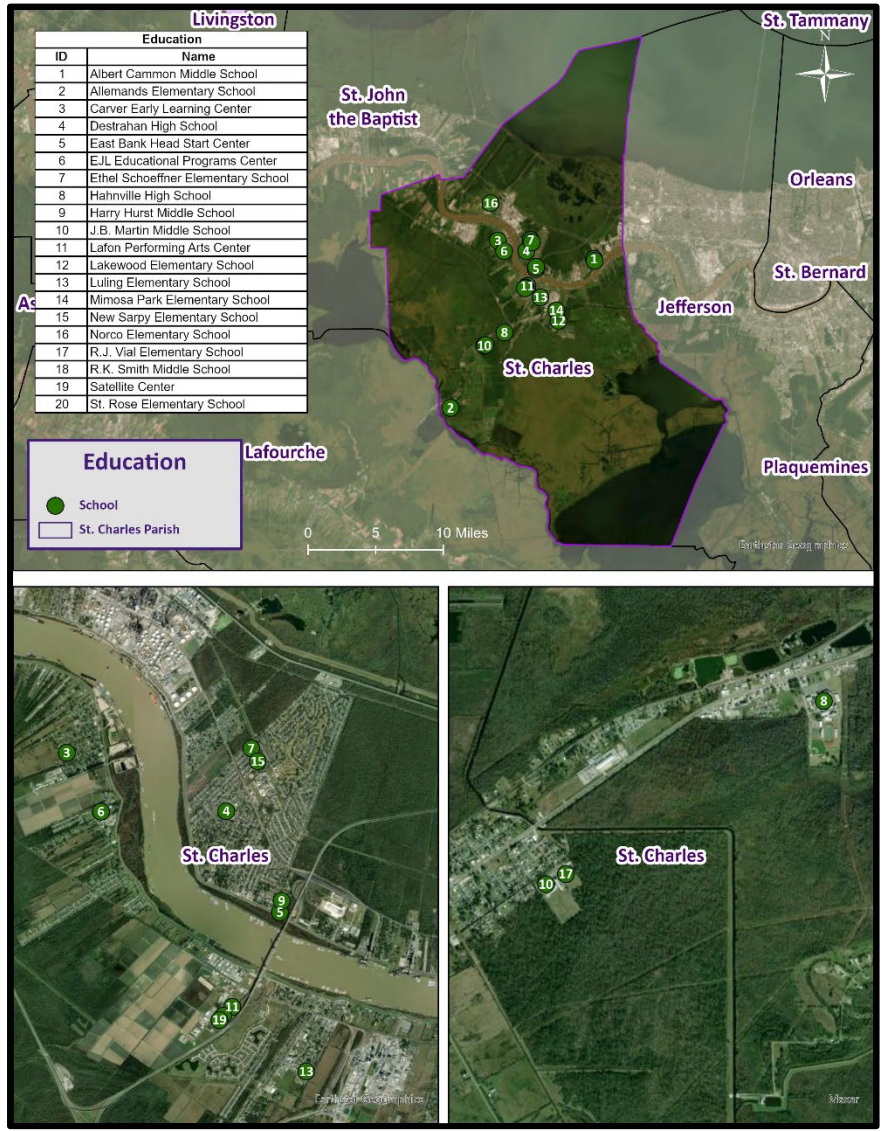


Law Enforcement



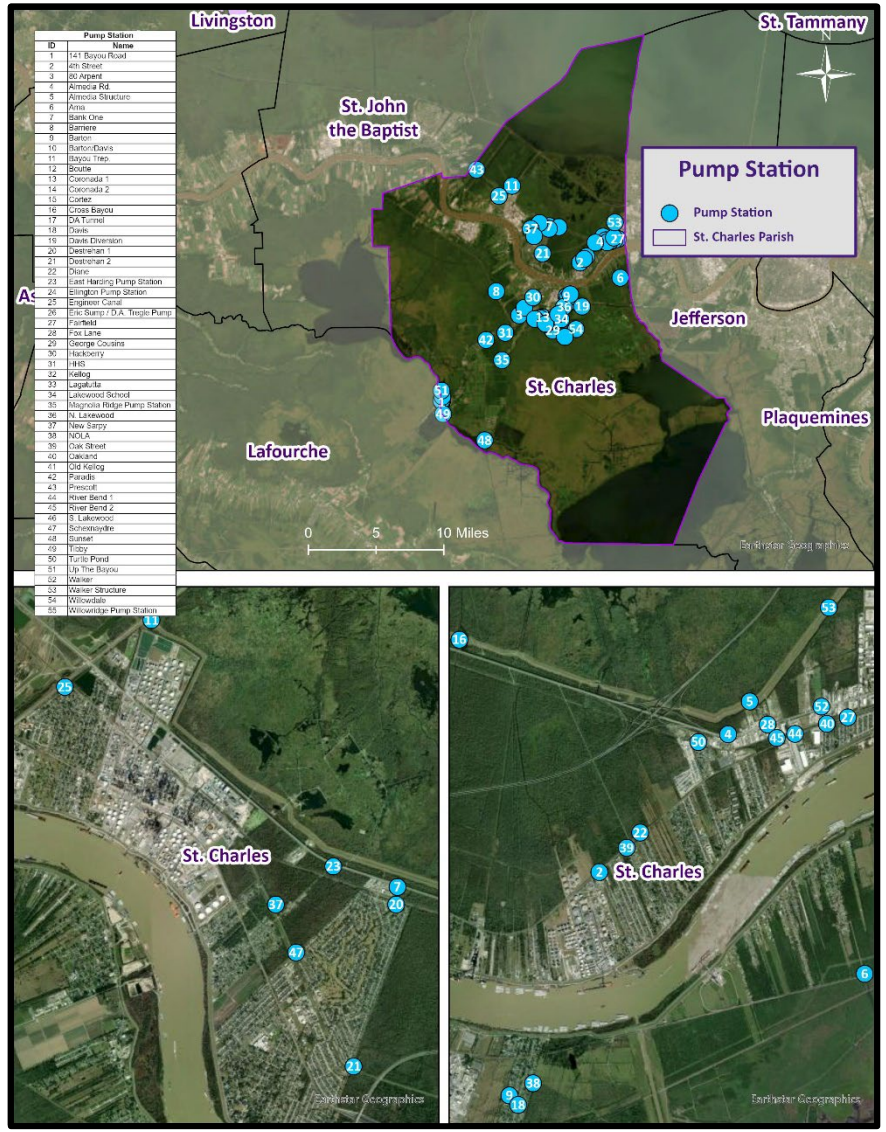
Public Health

St. Charles Parish Critical Facilities



Education	
ID	Name
1	Albert Cammon Middle School
2	Allemands Elementary School
3	Carver Early Learning Center
4	Destrahan High School
5	East Bank Head Start Center
6	EJL Educational Programs Center
7	Ethel Schoeffner Elementary School
8	Hahnville High School
9	Harry Hurst Middle School
10	J.B. Martin Middle School
11	Lafon Performing Arts Center
12	Lakewood Elementary School
13	Luling Elementary School
14	Mimosa Park Elementary School
15	New Sarpy Elementary School
16	Norco Elementary School
17	R.J. Vial Elementary School
18	R.K. Smith Middle School
19	Satellite Center
20	St. Rose Elementary School

Public Education



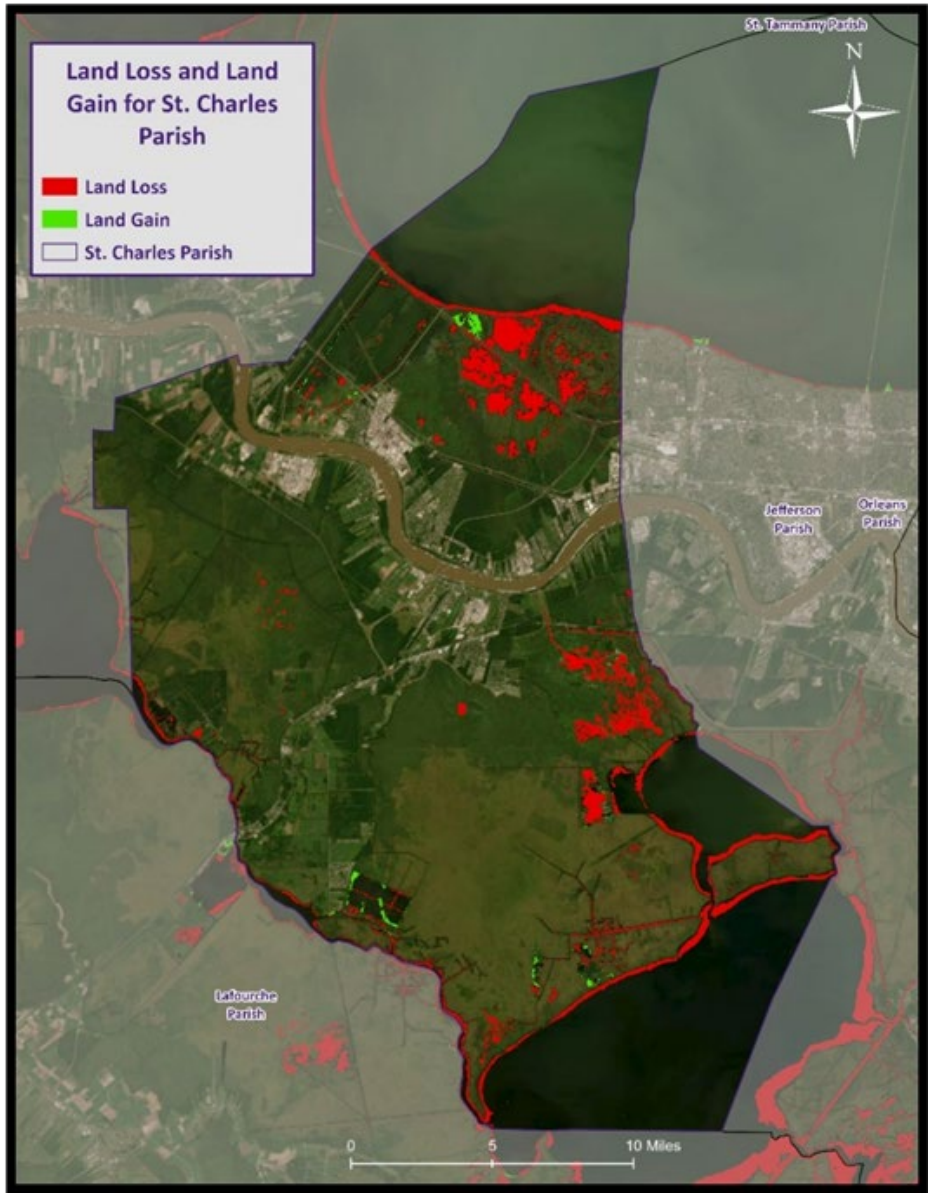
Pump Station	
ID	Name
1	141 Bayou Road
2	4th Street
3	80 Arpent
4	Almeda Rd.
5	Almeda Structure
6	Ama
7	Bank One
8	Barriere
9	Barton
10	Barton/Davis
11	Bayou Trep
12	Boutte
13	Coronada 1
14	Coronada 2
15	Cortez
16	Cross Bayou
17	DA Tunnel
18	Davis
19	Davis Diversion
20	Destrehan 1
21	Destrehan 2
22	Diana
23	East Harding Pump Station
24	Ellington Pump Station
25	Engineer Canal
26	Eric Bump / D.A. Tregle Pump
27	Fairfield
28	Fox Lane
29	George Cousins
30	Hackberry
31	HHS
32	Kellog
33	Lagaffuta
34	Lakewood School
35	Magnolia Ridge Pump Station
36	N. Lakewood
37	New Sarpy
38	NOLA
39	Oak Street
40	Oakland
41	Old Kellog
42	Paradis
43	Prescott
44	River Bend 1
45	River Bend 2
46	S. Lakewood
47	Schexnaydre
48	Sunset
49	Toby
50	Turtle Pond
51	Up The Bayou
52	Walker
53	Walker Structure
54	Willowdale
55	Willowridge Pump Station

Pump Stations

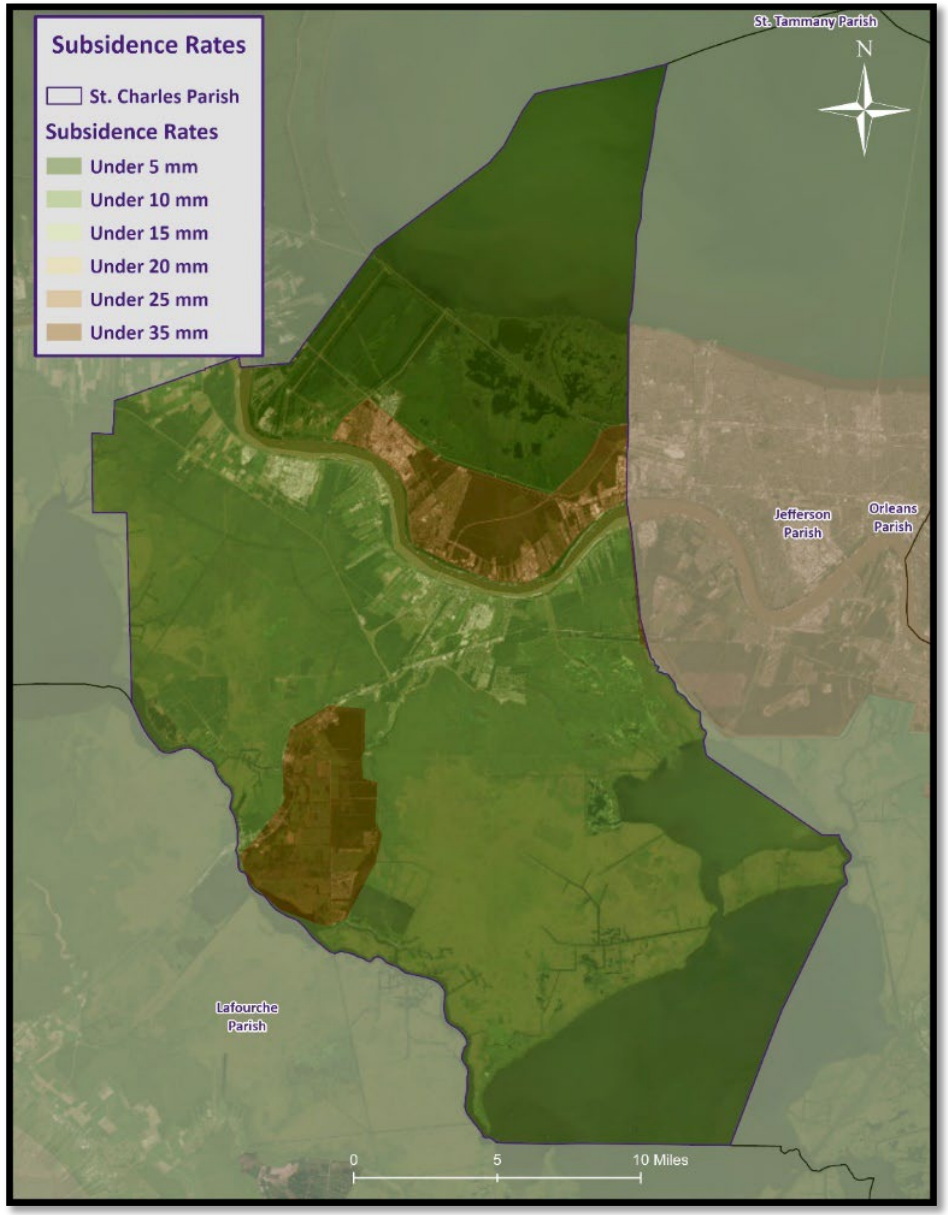
Coastal Hazards

- Since 1932, the average annual land loss in Louisiana is 35 square miles, while the average annual land gained is 3 square miles.
- Subsidence and sea level rise are the main culprits for land loss but other “discrete hazards” i.e. hurricanes, also contribute.
- The Southwestern portion of SCP can expect subsidence rates of 35 mm annually while the remainder of the parish can expect subsidence rates of 10 mm annually.

Land Gain and Land Loss



Subsidence Rates



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

State-wide Drought Monitor

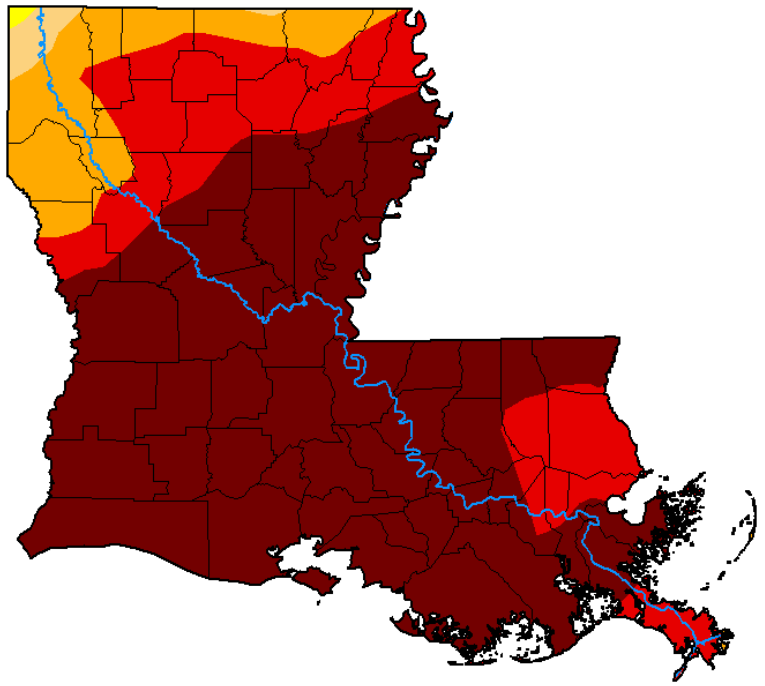
U.S. Drought Monitor

Louisiana

October 24, 2023

(Released Thursday, Oct. 26, 2023)

Valid 8 a.m. EDT



Intensity:

- None
- 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. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Rocky Bilotta
NCEI/NOAA

droughtmonitor.unl.edu

U.S. Drought Monitor

Louisiana

July 30, 2024

(Released Thursday, Aug. 1, 2024)

Valid 8 a.m. EDT

Intensity:

- None
- 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. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Lindsay Johnson
National Drought Mitigation Center

droughtmonitor.unl.edu

Excessive Heat

- 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

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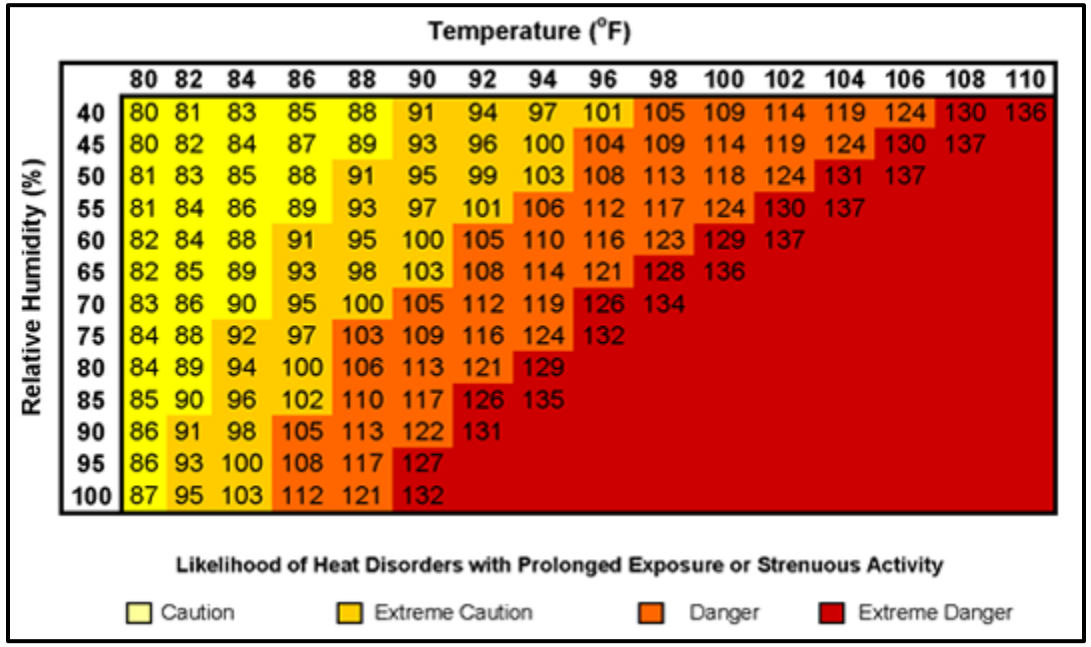
Excessive Heat



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.

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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.”

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Flooding

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

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

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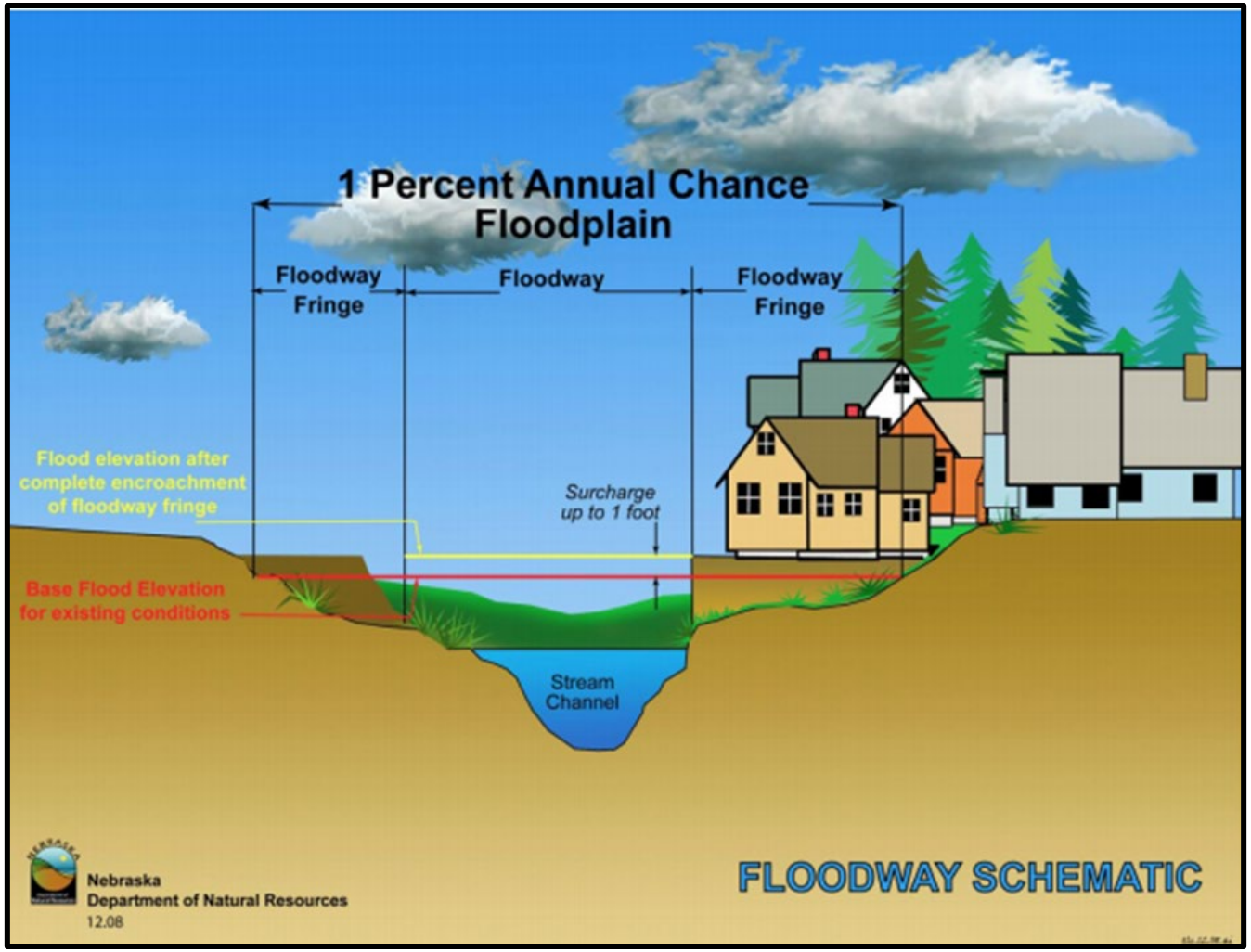
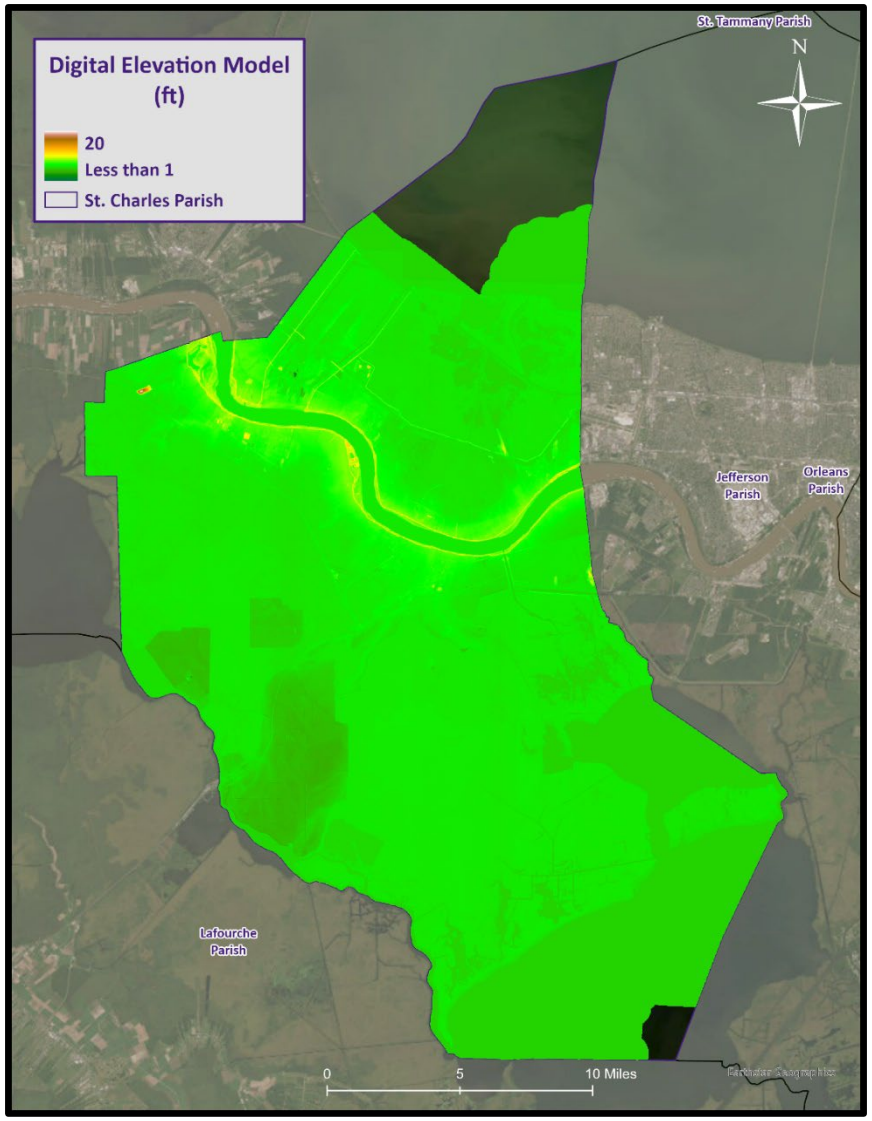
Floodway Diagram



Digital Elevation Model



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St. Charles Parish Flood Map

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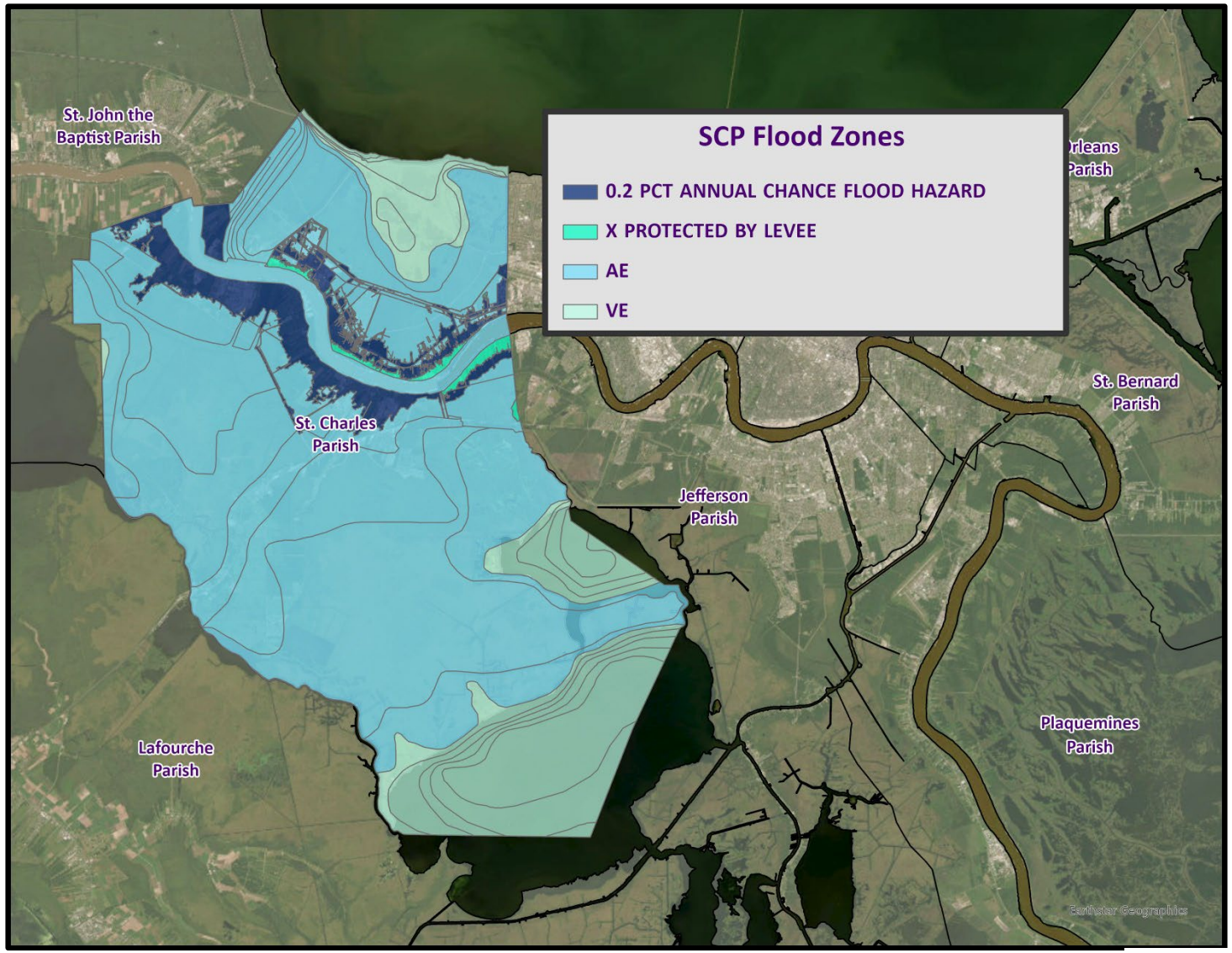
St. Charles Parish Flood Map



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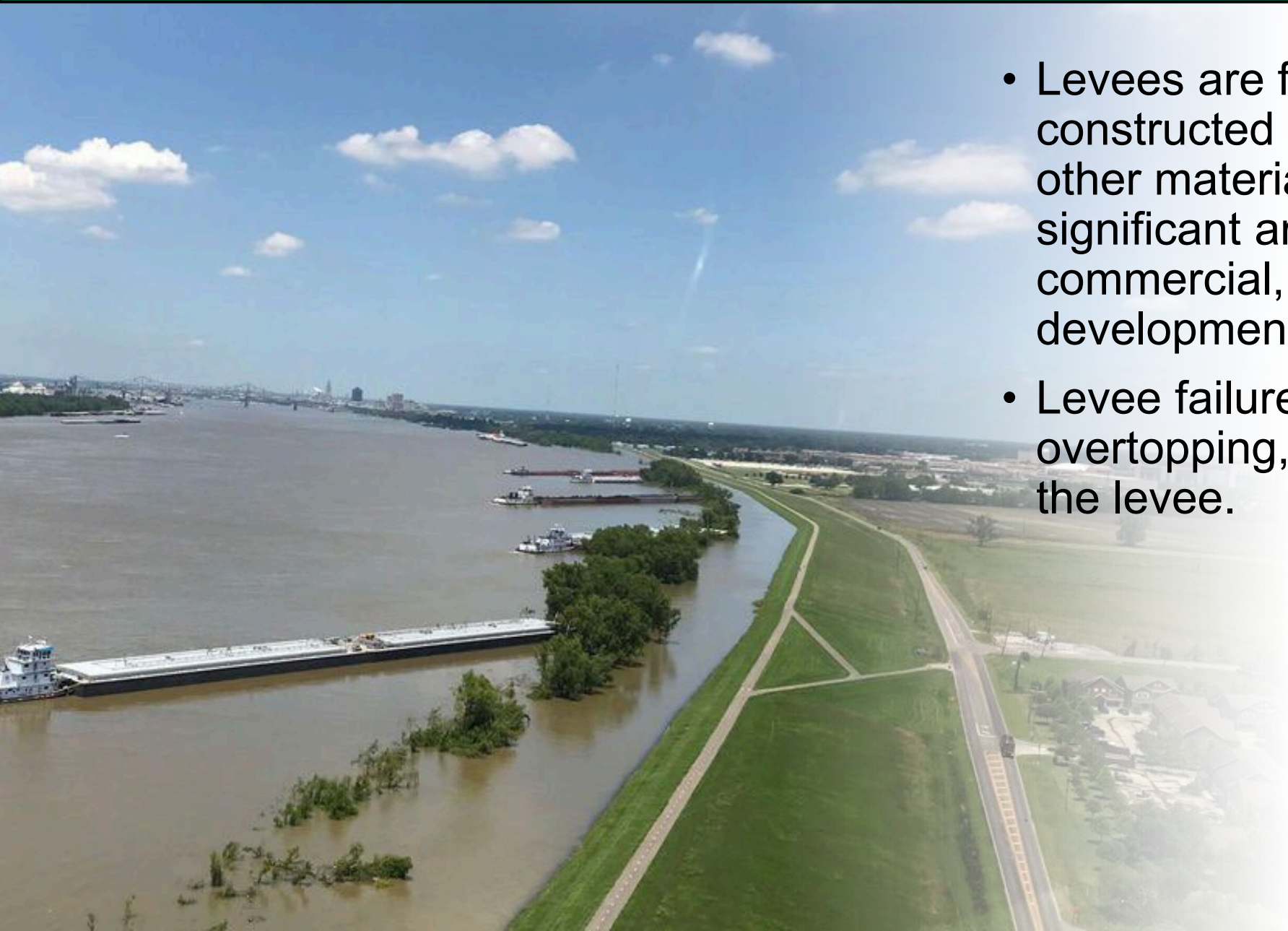
Flooding

- 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.

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.

Levee Locations in St. Charles Parish

System	Length (miles)	Height (ft)	Population	Buildings	Property Value
Bayou Saules West Guide	3.323	No Data	0	0	$0
Davis Pond East Guide	0.814	No Data	0	0	$0
Des Allemands North	1.762	No Data	224	67	$20 million
East of Martins Island Levee	6.68	No Data	0	0	$0
Grand Ridge Levee	3.599	No Data	1,363	525	$300 million
Magnolia Ridge	12.163	No Data	13,888	5,489	$3 billion
Mississippi River East Bank	107.108	19	429,480	178,846	$60 billion
Mississippi River West Bank	58.386	26	73,459	36,223	$9 billion
New Orleans East Bank	179.259	17	849,393	323,422	$70 billion
New Orleans West Bank	110.122	15	248,334	90,436	$20 billion
New Sarpy Levees	1.285	No Data	1,323	322	$50 million
North of Cajun Paradis Road Levee	6.627	No Data	2	1	$500,000
Ormond Levee	4.364	No Data	5,552	1,911	$400 million
Sunset Levee	18.283	No Data	4,966	1,713	$700 million

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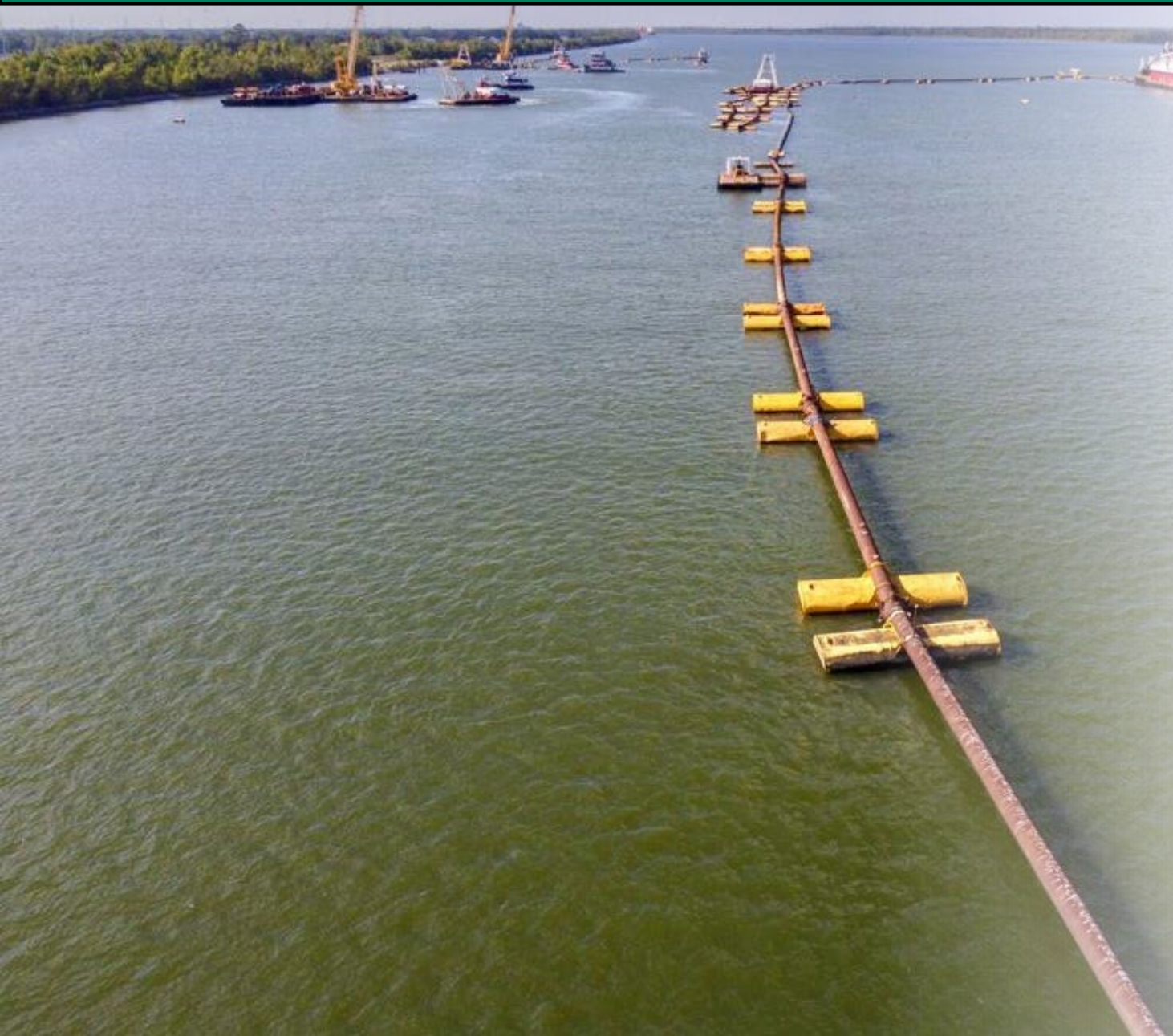
Saltwater Intrusion



- Occurs when seawater infiltrates freshwater aquifers or surface water bodies
- Can be detrimental to the access of fresh drinking water for coastal communities.
- Compromises agriculture by degrading soil quality
- The state relies heavily on freshwater aquifers. Excessive pumping of groundwater causes a depletion of freshwater, creating a gradient that draws seawater into aquifers.

Saltwater Intrusion

Saltwater Intrusion Wedge in the Mississippi River October 10, 2023.
(Source: NOLA.com)

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 sheer causes a deviation in their course at a right angle to the wind shear direction.

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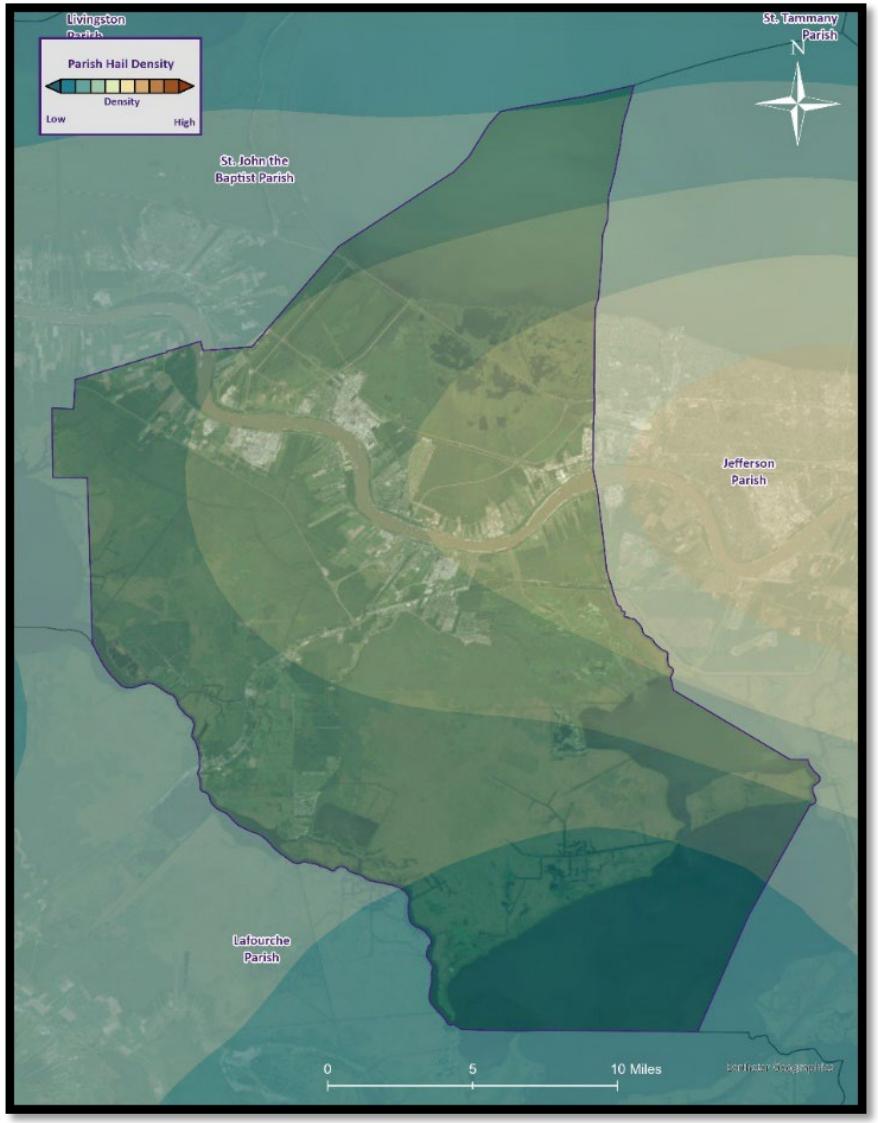
Hailstorm Density in St. Charles Parish



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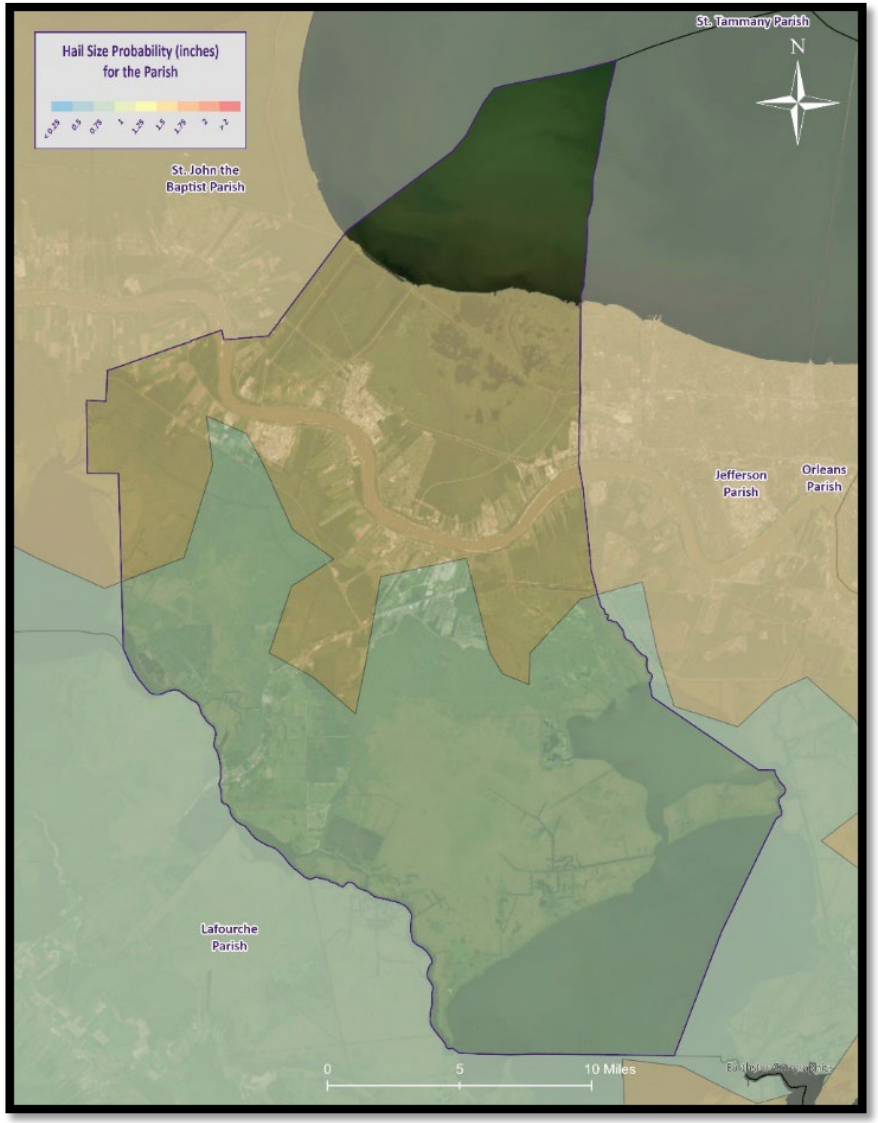
Maximum Hail Size Probability



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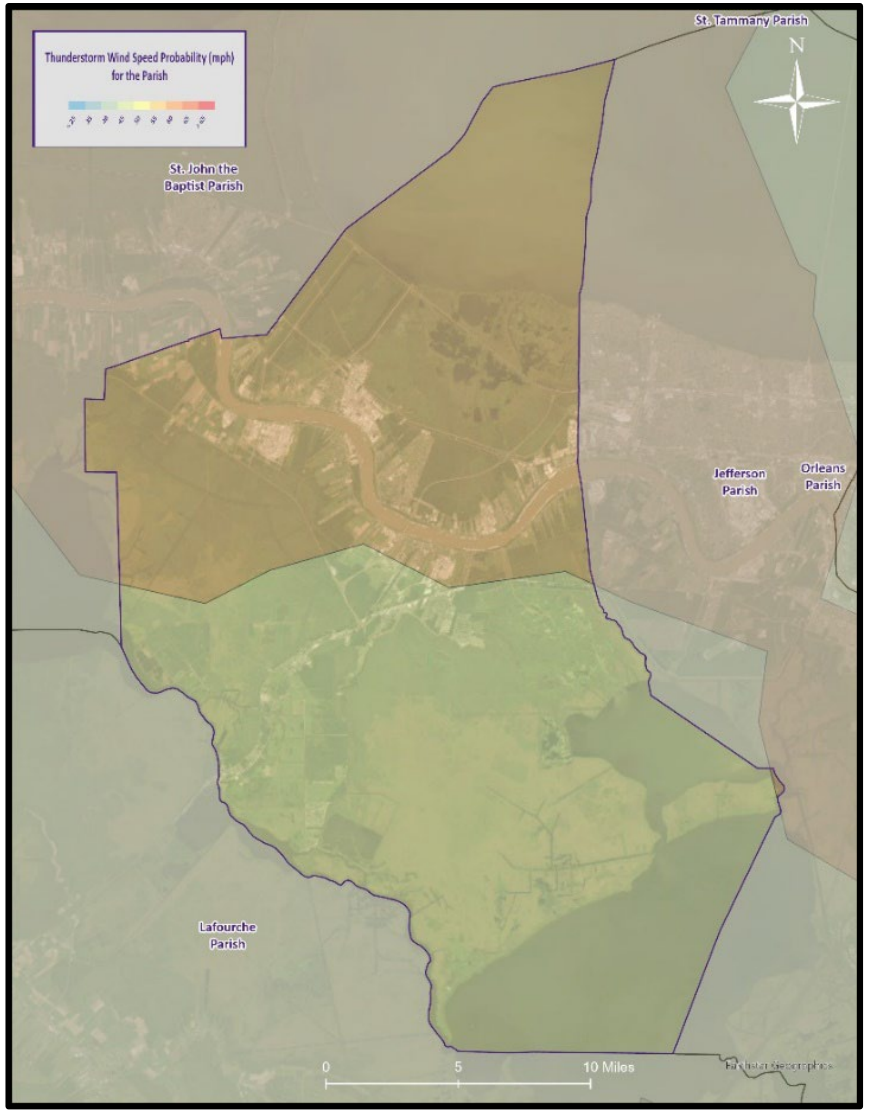
Maximum Wind Speed Probability



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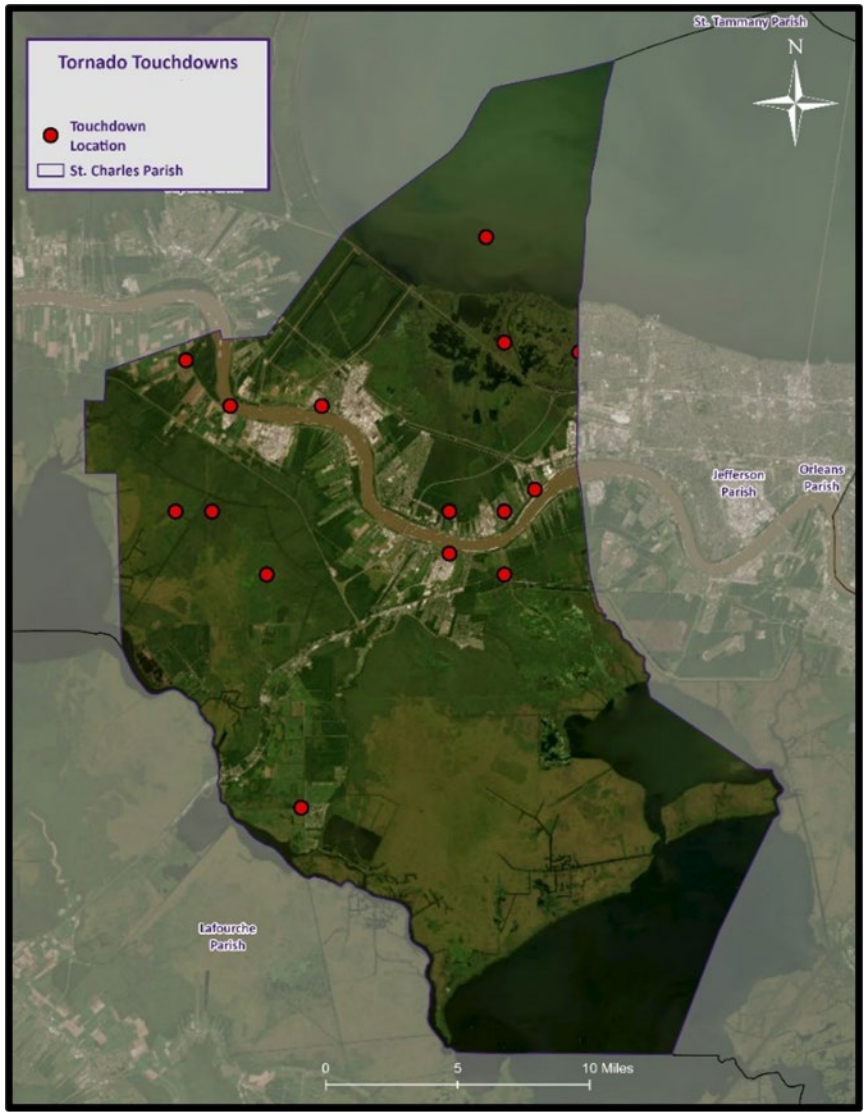
Tornadoes

- Tornadoes 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

Tornadoes in St. Charles Parish



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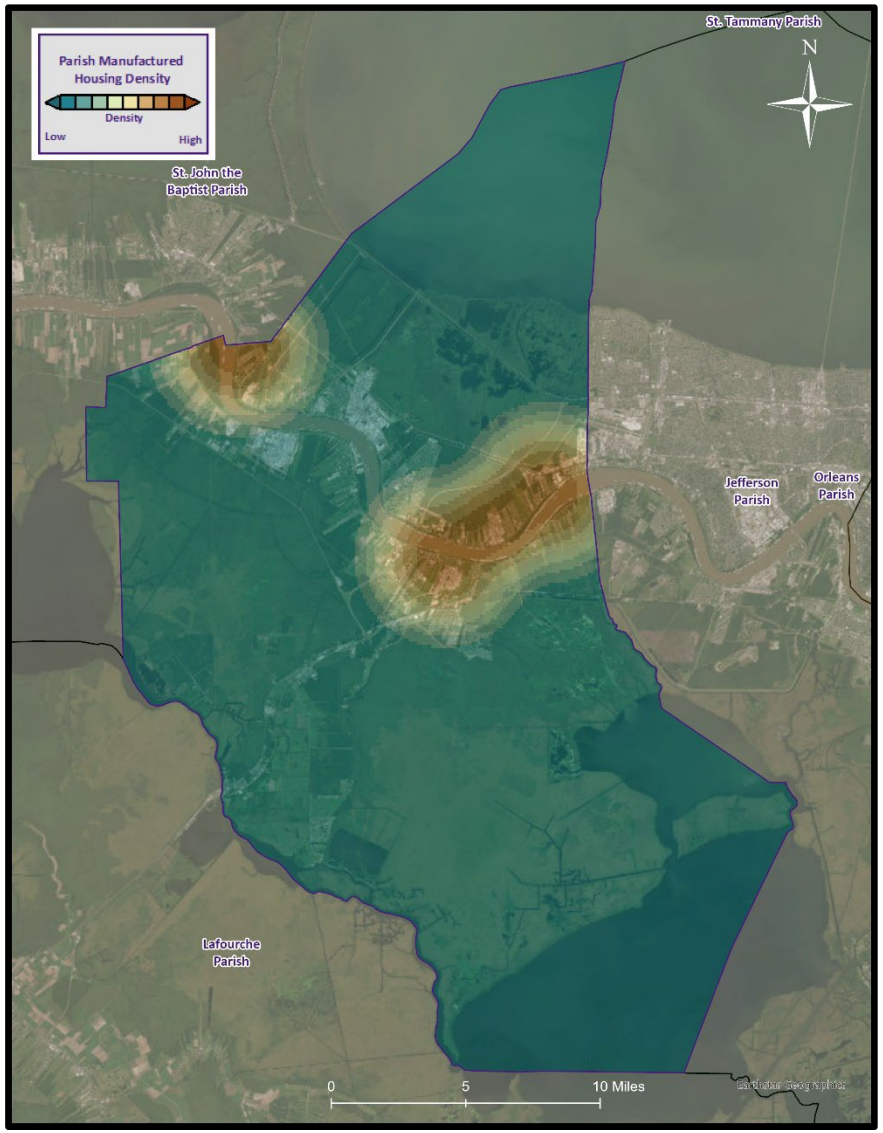
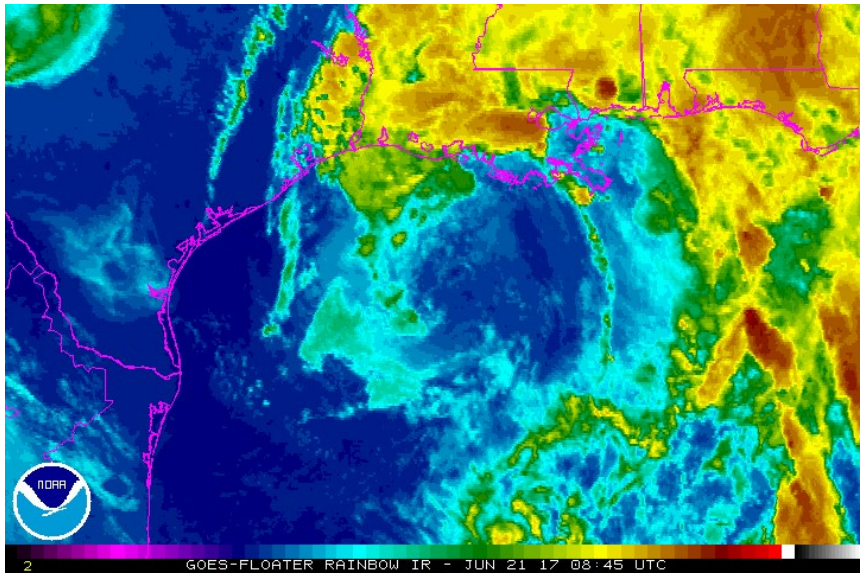
Manufactured Home Density



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.



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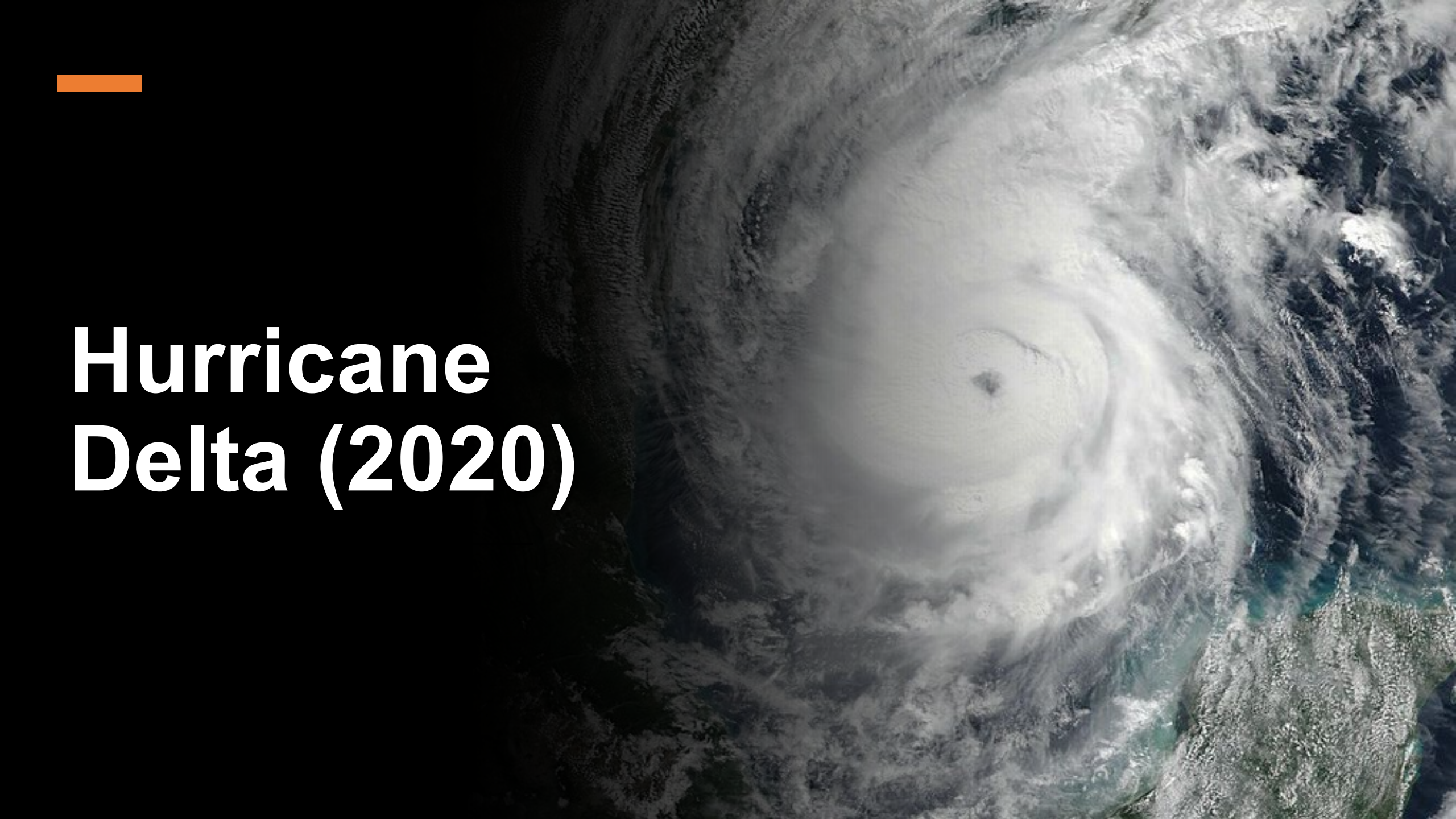
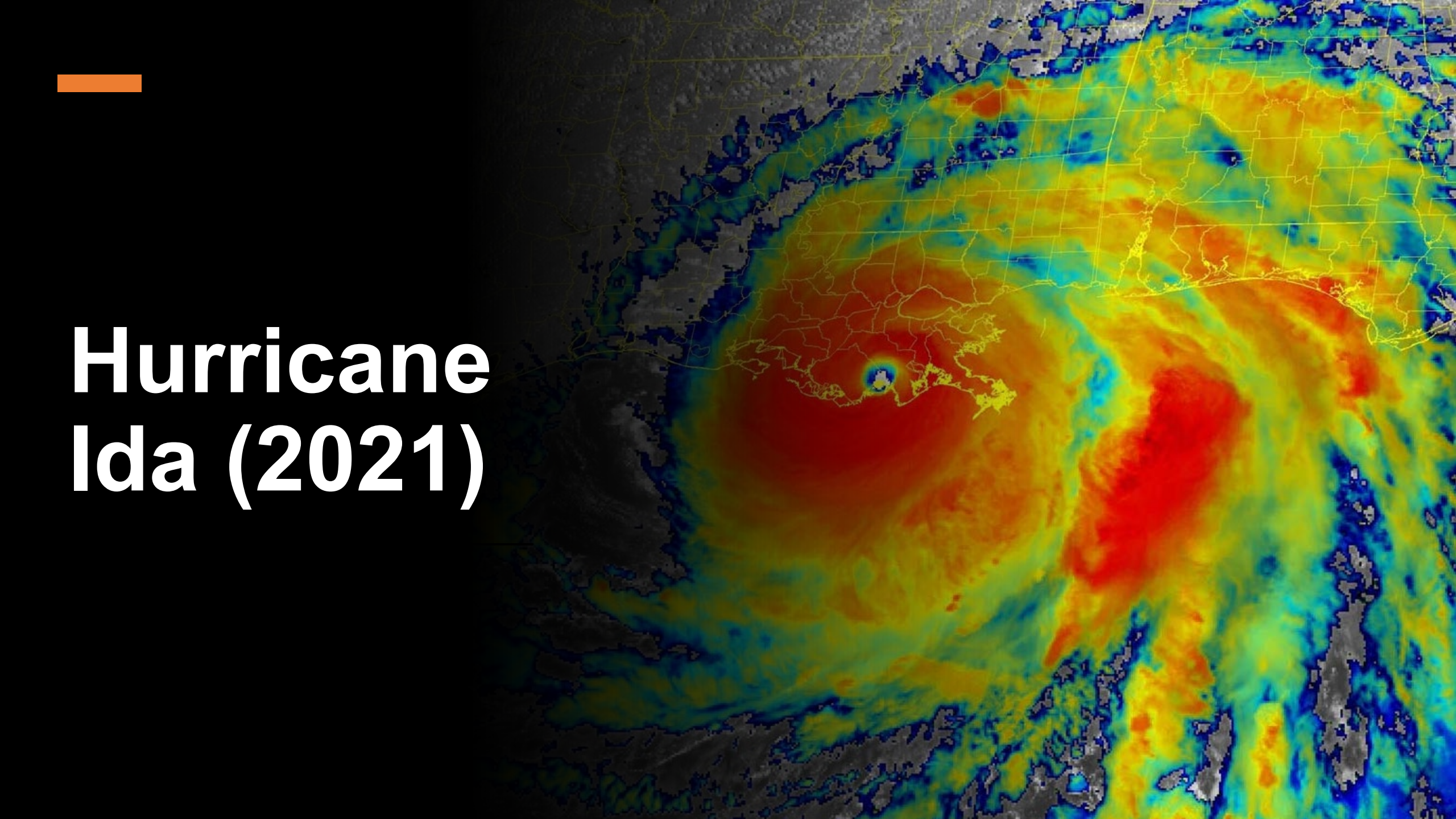
Hurricane Delta (2020)

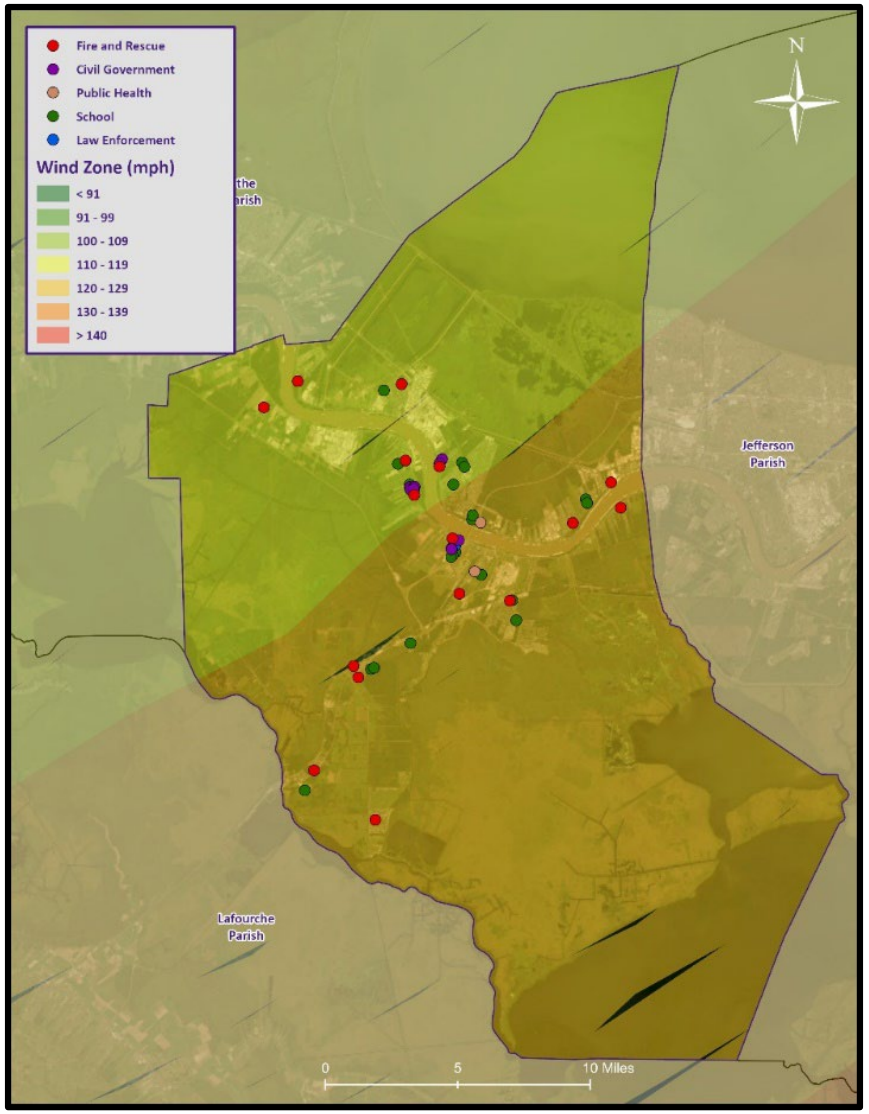


Tropical Storm Zeta (2020)

Hurricane Ida (2021)



Wind Speed Impacts on C.I.



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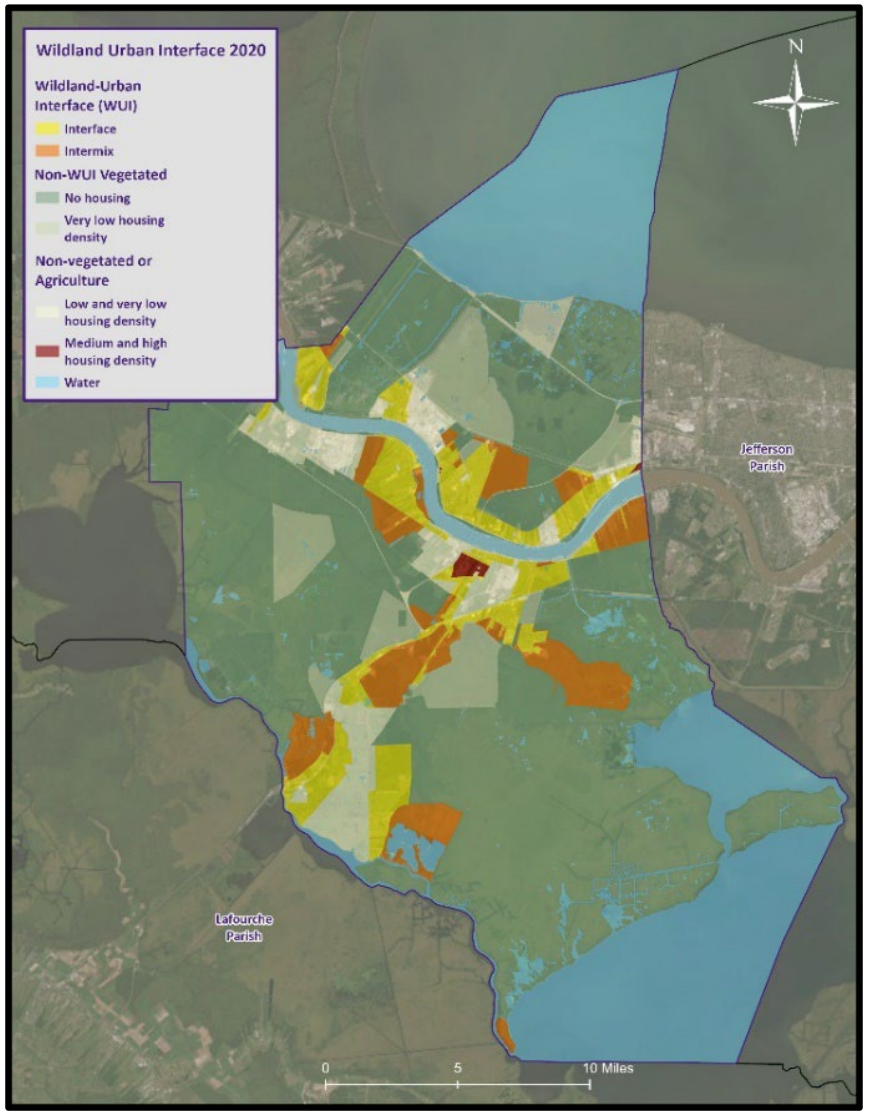
Wildfires

- 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.

Wildland-Urban Interaction Map



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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.

St. Charles Parish Mitigation Goals

Goals & Objectives

1. Reduce losses to existing and future property due to hazards
    1. Target FEMA/NFIP repetitive loss structures for property protection measures
    2. Evaluate existing regulations that might impact the vulnerability of property and persons to hazards and how well those regulations are enforced
    3. Improve the ability of property owners in hazard areas to undertake mitigation actions
    4. Enhance the Parish's information base to support future hazard mitigation planning
    5. Reduce the impacts of hazards on St. Charles Parish through structural measures
    6. Increase the capacity of the Parish to use existing infrastructure in an efficient manner
    7. Protect the continuity of important Parish records
    8. Increase public awareness of potential damages to property from natural hazards

St. Charles Parish Mitigation Goals

Goals & Objectives

2. Protect the health and well-being of the people of St. Charles Parish from the negative effects of hazards
    1. Increase awareness of appropriate actions to take in the case of a hazard event
    2. Seek effective and efficient methods and technology for notifying residents of hazards and severe weather events

3. Ensure the ability of emergency services provides and facilities, including essential facilities, to continue operating during hazard events
    1. Enhance property protection measures at emergency services facilities and other critical facilities
    2. Evaluate the interdependencies between emergency service provides during hazard events

Parish Hazard Mitigation Project Update

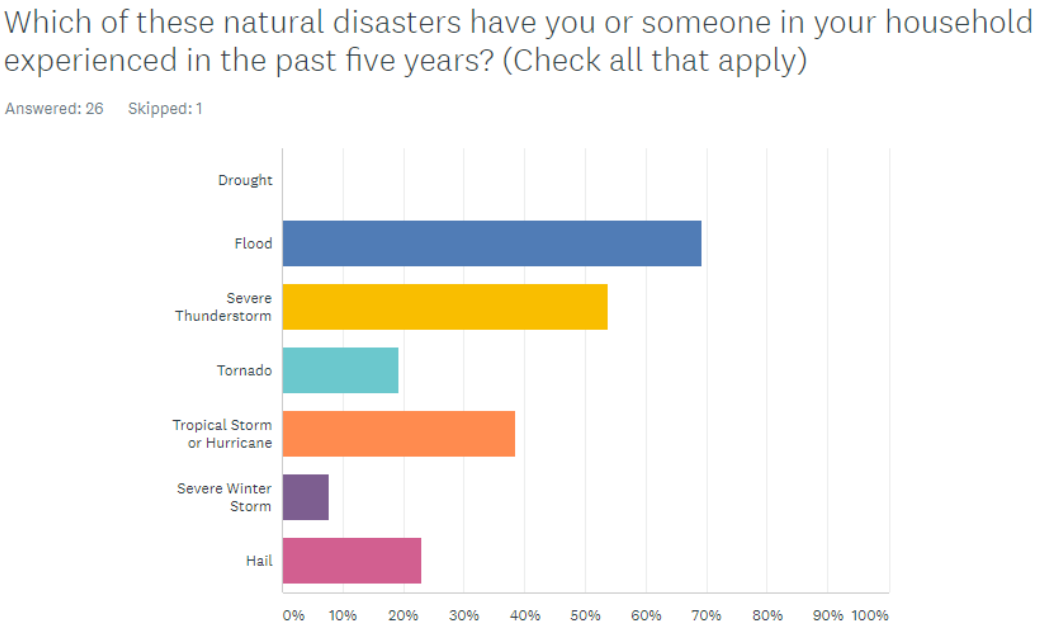
St. Charles OHSEP/

St. Charles Parish Government Discussion

Public Outreach Activity #1

Hazard Mitigation Public Opinion Survey

https://lsu.qualtrics.com/jfe/form/SV_0xfGyPobXEld7BI



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Public Outreach Activity #2

Please fill out an incident questionnaire!

ST. CHARLES PARISH PUBLIC MEETING

PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

1. HAZARD TYPE(S):

A. COASTAL HAZARDS
B. DROUGHT
C. EXCESSIVE HEAT
D. FLOODING
E. LEVEE FAILURE
F. SALTWATER INTRUSION
G. THUNDERSTORMS
H. TORNADOES
I. TROPICAL CYCLONES
J. WILDFIRES
K. WINTER WEATHER

2. DESCRIBE INCIDENT OR ISSUE:

3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

4. INTENSITY:

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

B. WIND STRENGTH

5. RECURRING OR ONE TIME:

A. IF RECURRING, HOW OFTEN:

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

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

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

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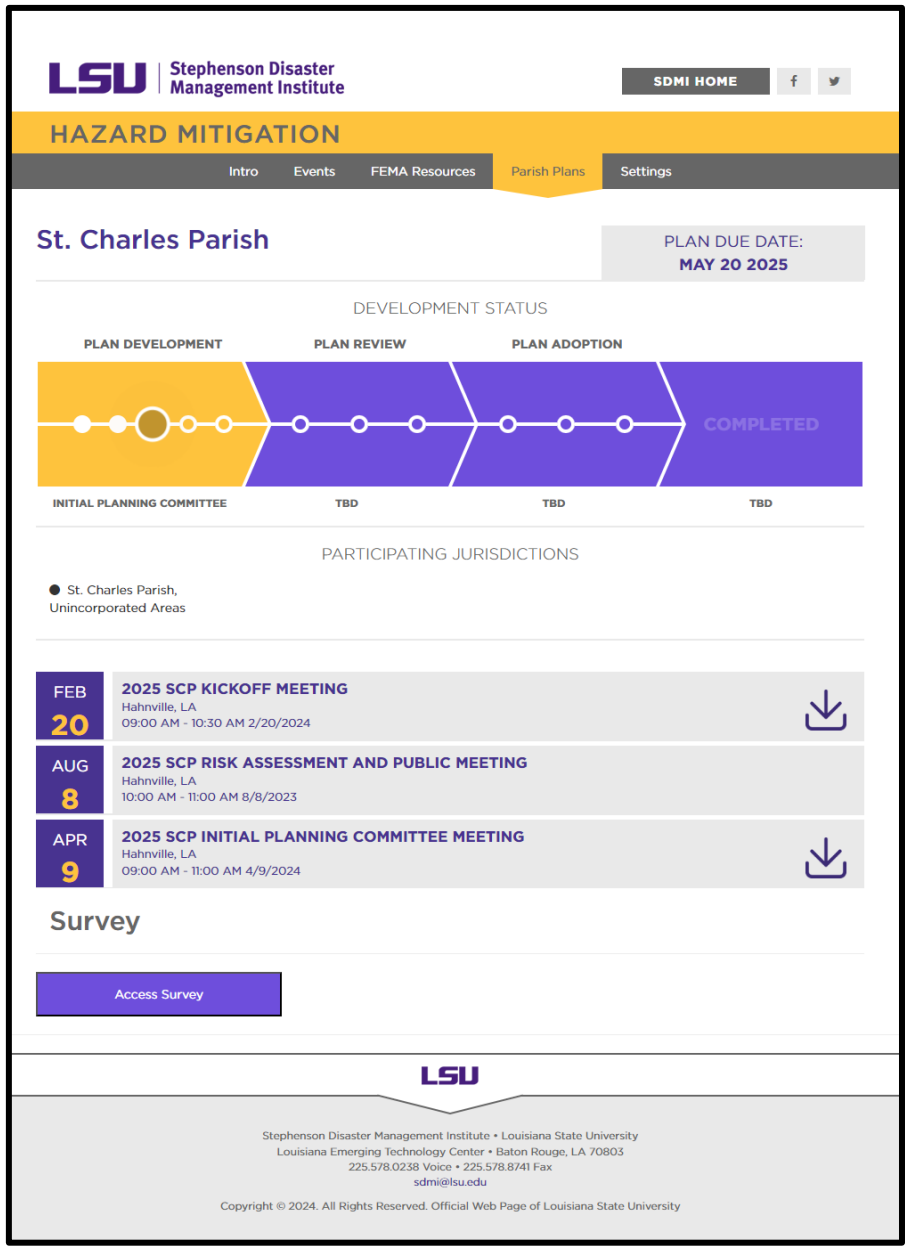
SDMI Hazard Mitigation Website



- Repository for materials used during update process
- https://hmplans.sdmi.lsu.edu/Home/Parish/st-charles

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Contact Us

Brant Mitchell, Director, CEM

bmitch9@lsu.edu

(225) 578-5939

Chris Rippetoe, HM Program Manager, CFM

crippe2@lsu.edu

(225) 578-6667

Jason Martin, Emergency Management Analyst

jmar293@lsu.edu

(225) 578-6264

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