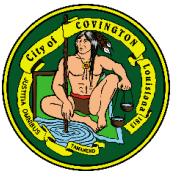




# 2025 St. Tammany Parish Hazard Mitigation Plan Update

## Risk Assessment Review

March 25<sup>th</sup>, 2025



# Agenda



**Introductions**



**Hazard Identification &  
Risk Assessment Review**



**Public Outreach  
Activities**



# Introductions

- **St. Tammany Parish (STP)**
  - Clint Ory – STP OHSEP Director
  - deEtte Smythe – STP Regulatory Manager/CRS Coordinator
  - Planning Committee Members
- **Stephenson Disaster Management Institute (SDMI)**
  - Chris Rippetoe – Hazard Mitigation Program Manager
  - Jason Martin – Emergency Management Analyst
- **Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)**
  - Christopher Olvey – HM Technical Services Section Chief
  - Lennie LaFleur – Preparedness Program Specialist



# 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*

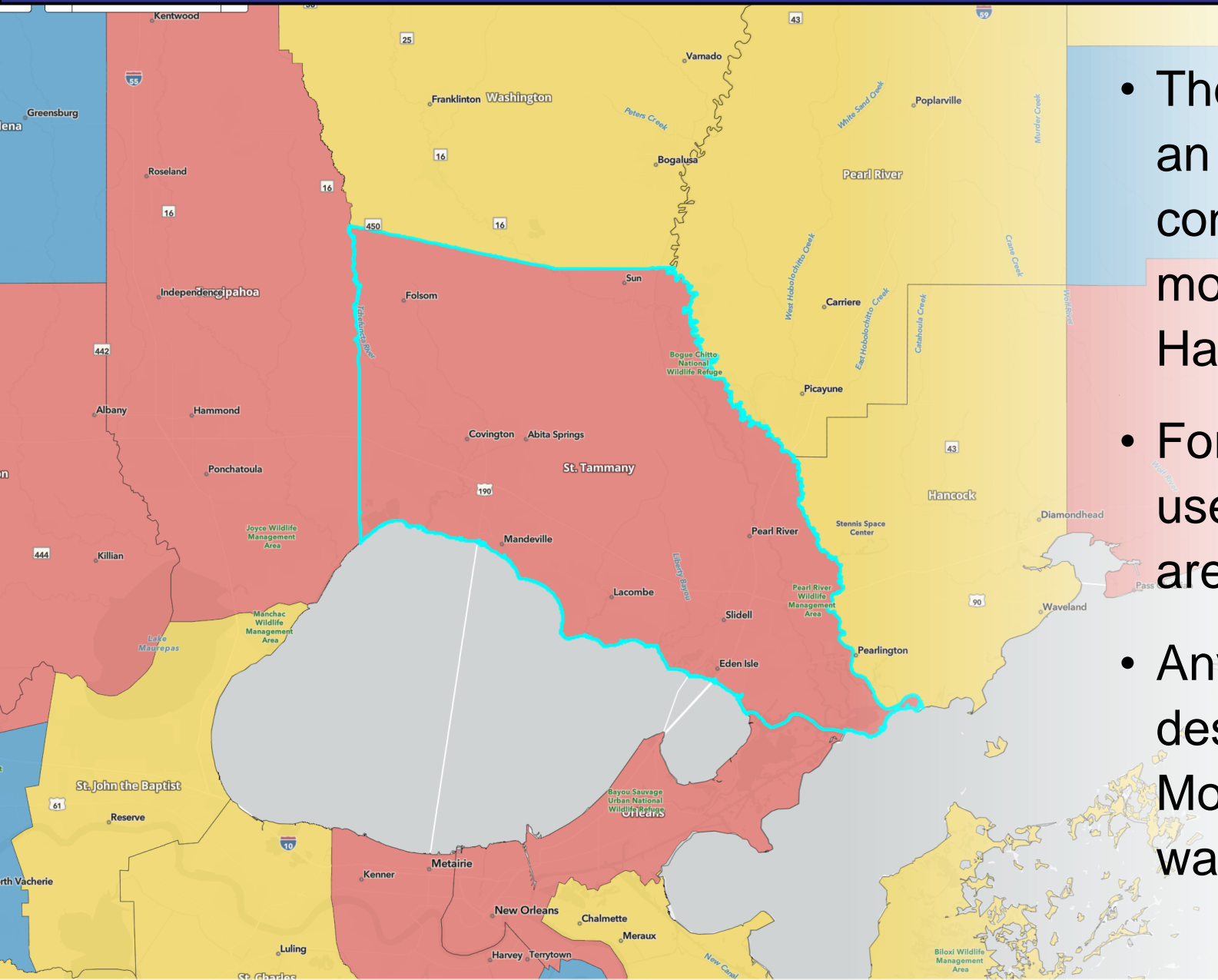


# Hazard Identification And Risk Assessment

- 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



# National Risk Index

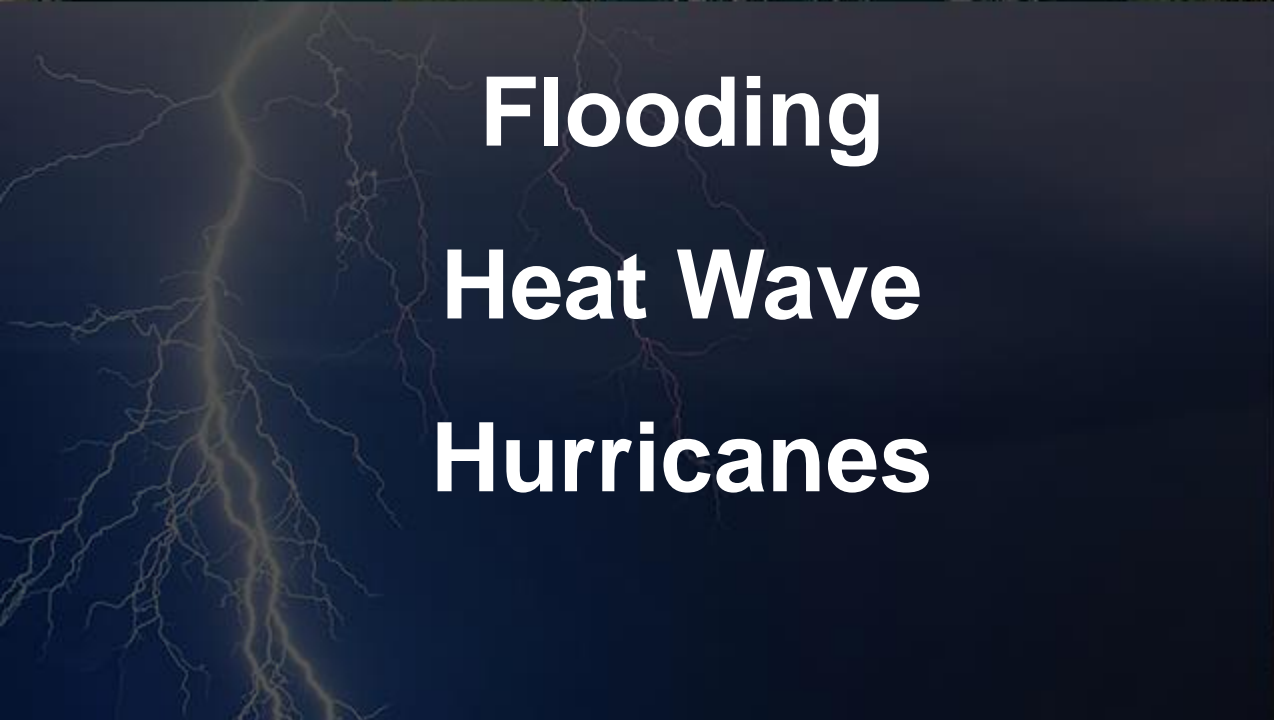


- The National Risk Index (NRI) is an online tool that is used to help convey the communities in the US most at risk for the 18 Natural Hazards classified by FEMA.
- For the 2025 update, NRI was used to identify the hazards that are prevalent in STP.
- Any hazard that was given the designation of “Relatively Moderate” or “Relatively High” was profiled for this plan update.

# **Hazard Identification And Risk Assessment**



**Coastal Flooding**  
**Dam Failure**



**Flooding**  
**Heat Wave**  
**Hurricanes**



**Ice Storms**  
**Levee Failure**



**Lightning**  
**Tornadoes**  
**Wildfires**  
**Winter Weather**

# Risk Matrix for St. Tammany Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Coastal Flooding	3	4	2	4	3	3.2
Dam Failure	1	3	4	1	3	2.4
Flooding	4	4	3	4	3	3.65
Heat Wave	3	2	4	1	2	2.5
Hurricanes	3	4	4	1	4	3.3
Ice Storm	1	4	4	1	2	2.5
Levee Failure	1	3	4	1	3	2.4
Lightning	3	2	2	3	1	2.25
Tornadoes	1	3	4	1	3	2.4
Wildfires	4	3	2	4	3	3.2
Winter Weather	2	3	4	1	2	2.5

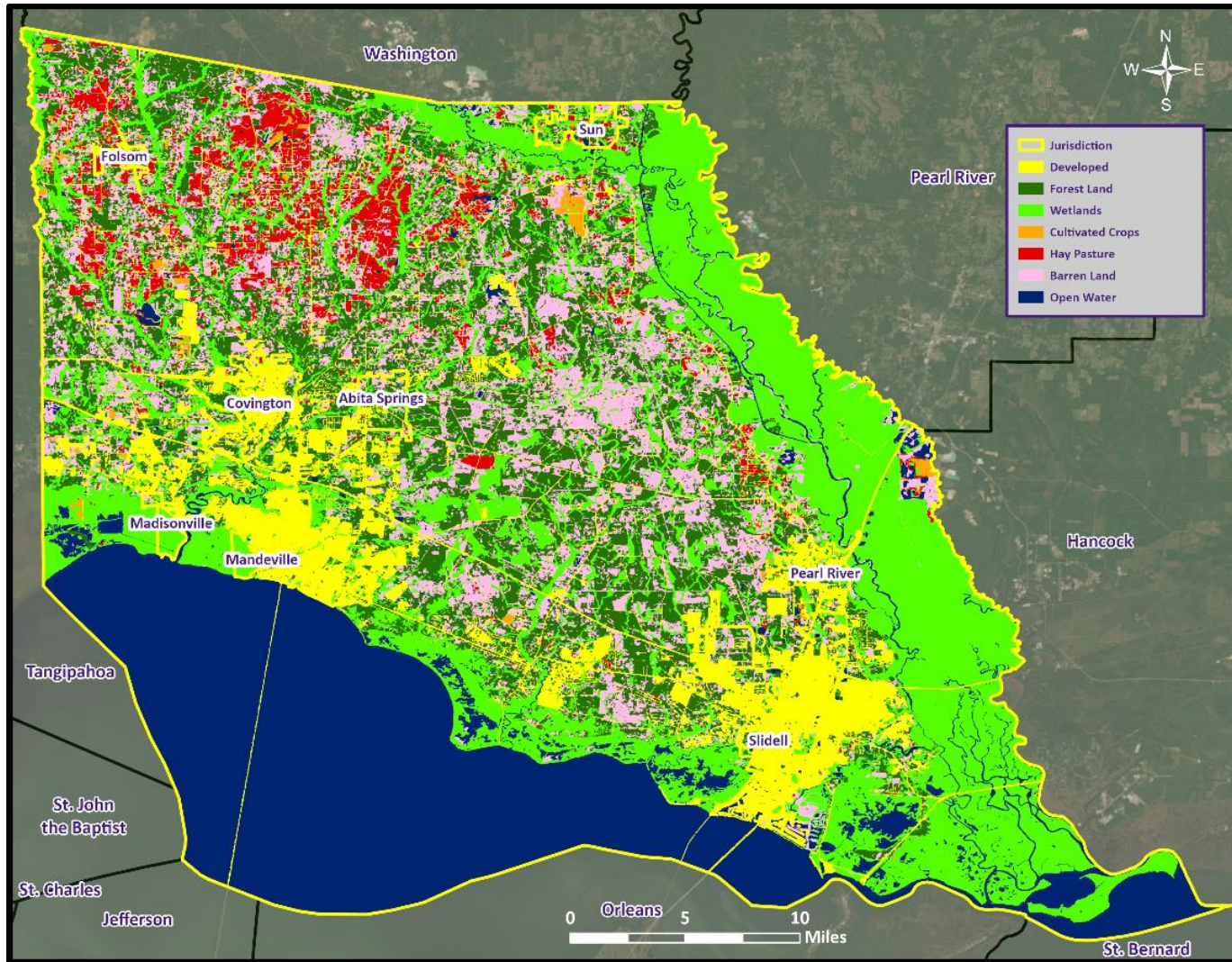
Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9





# Risk Assessment Maps

# St. Tammany Parish Land Use



Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	128,374	18%
Wetlands	194,666	27%
Forest Land (Not including forested wetlands)	137,515	19%
Urban/Development	76,537	11%
Water	178,560	25%

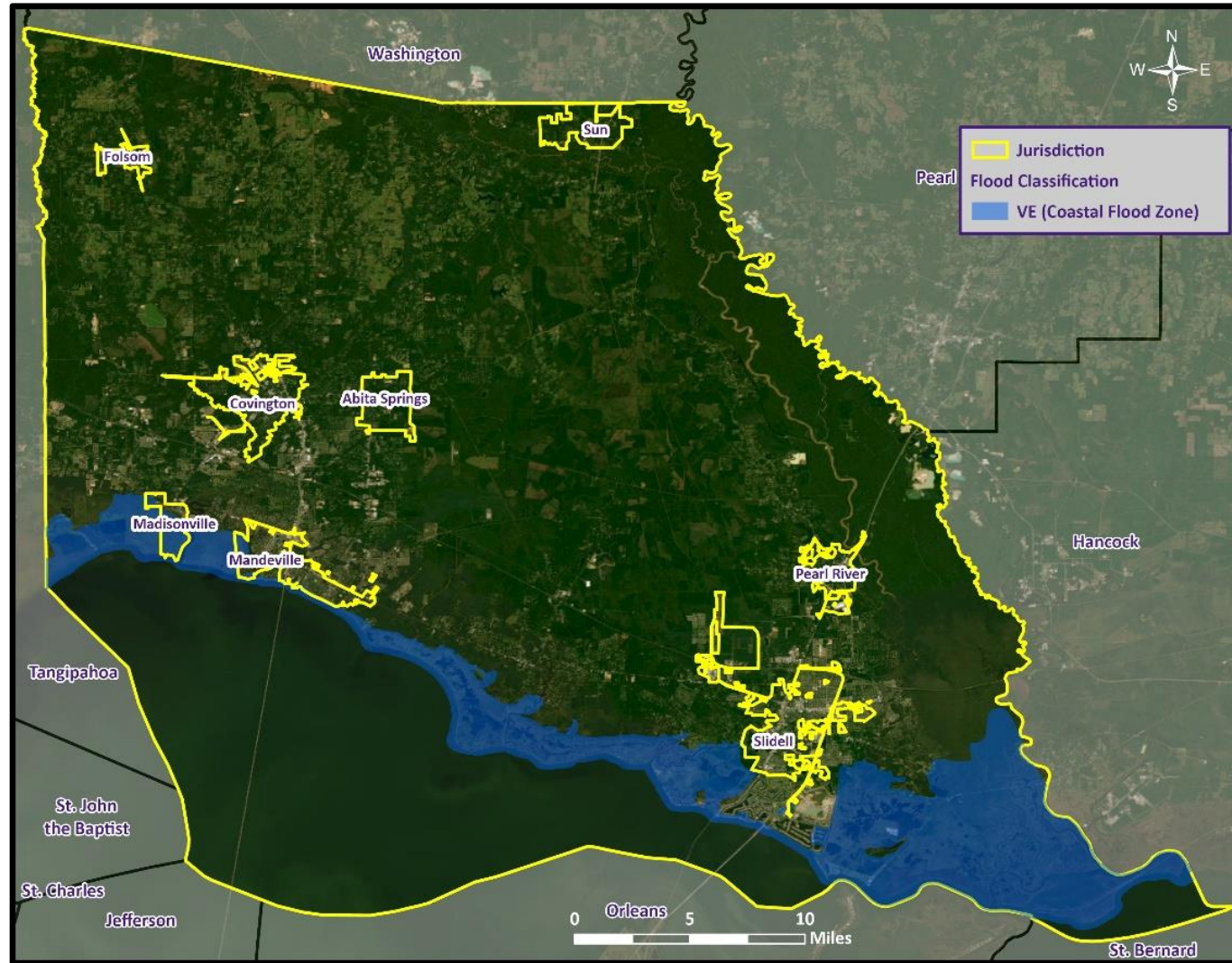
Source: USGS Land Use Map

# Coastal Flooding



- Inundation of coastal areas surrounded by bodies of water.
- Some of the most severe Coastal Flooding instances have been tied to other extraneous hazards events (tropical cyclones/hurricanes)
- Closely related to the combined effects of subsidence and sea level rise, also know as, relative sea level rise
- Usually driven by one, or more, of these factors: storm surge, high tides, heavy precipitation, sea level rise, or subsidence.

# Coastal Flood Map



Source: FEMA Maps Service Center

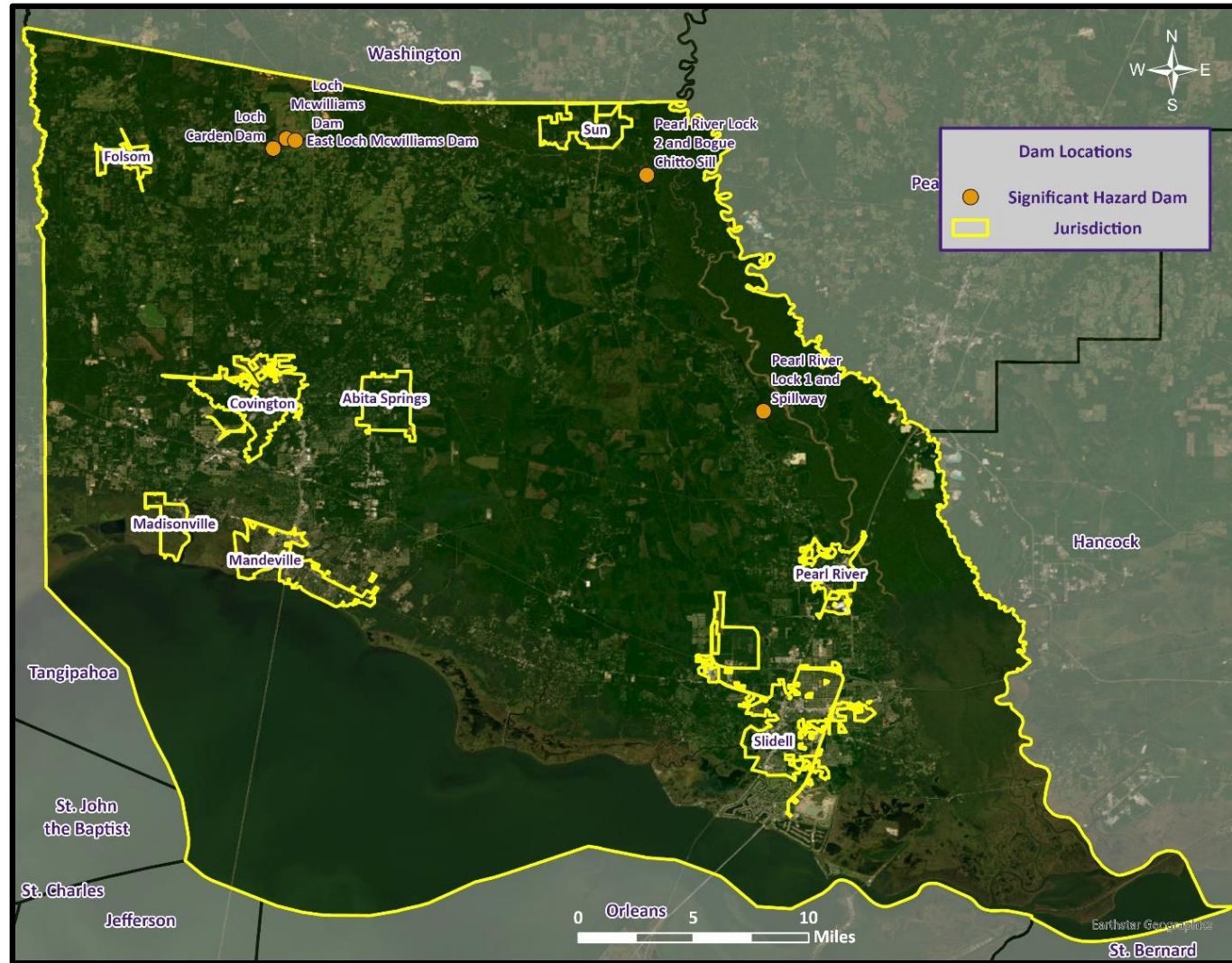


# Dam Failure

- 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



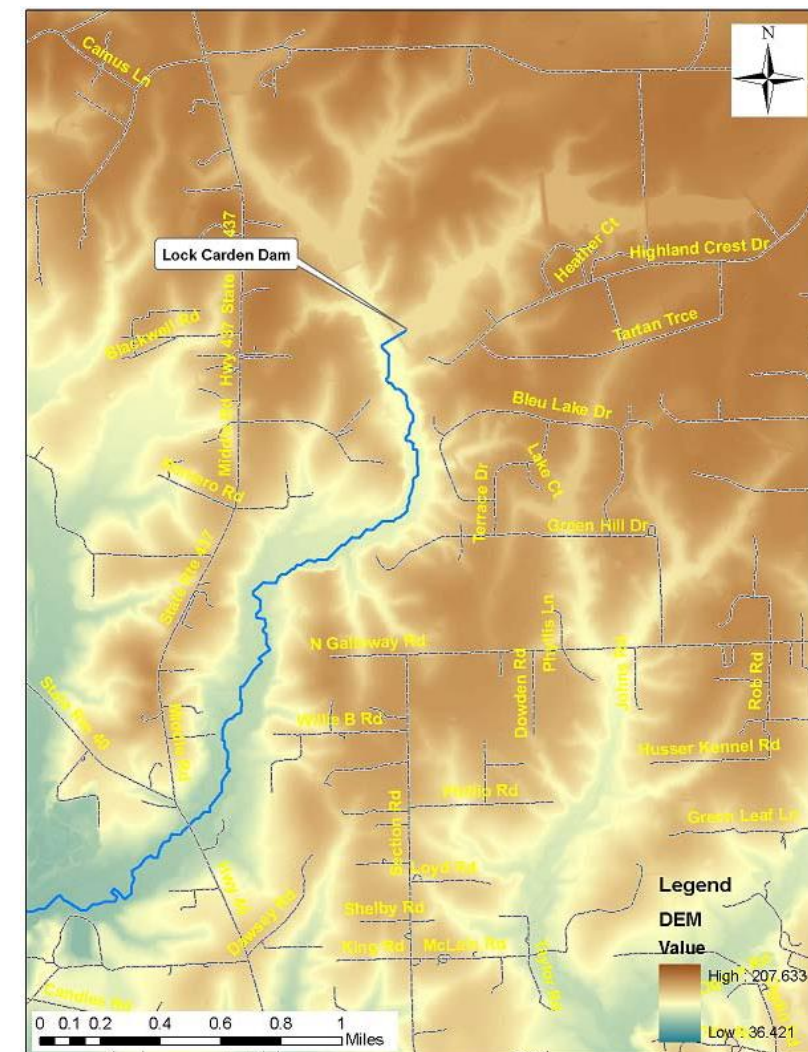
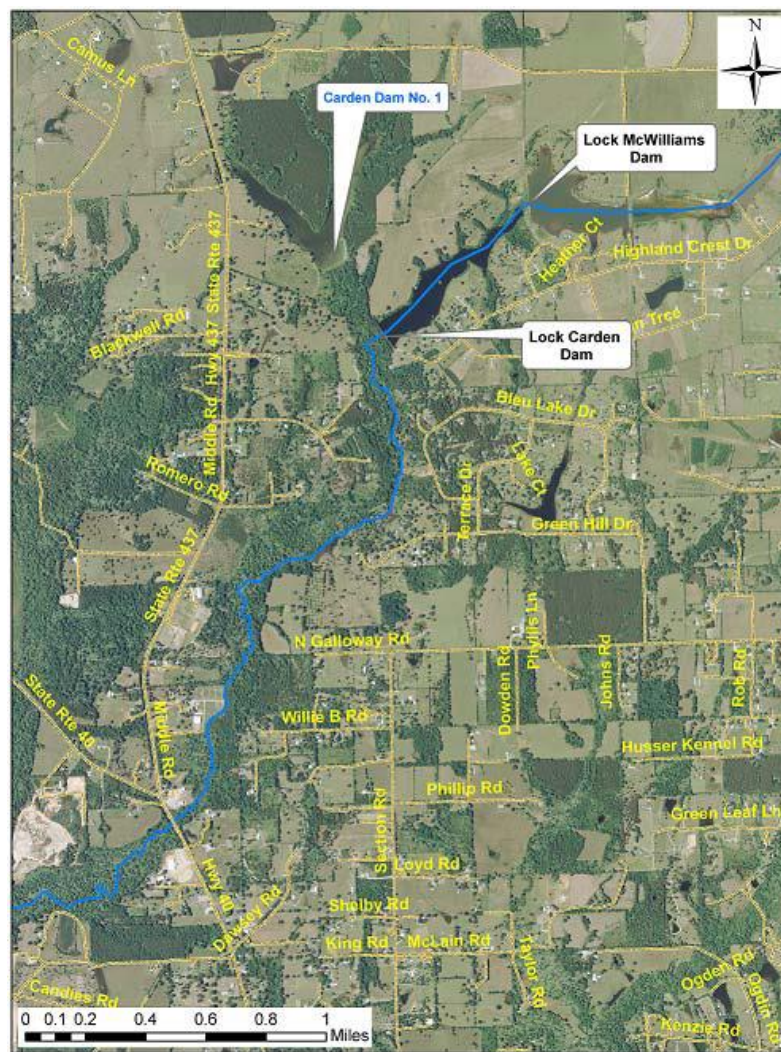
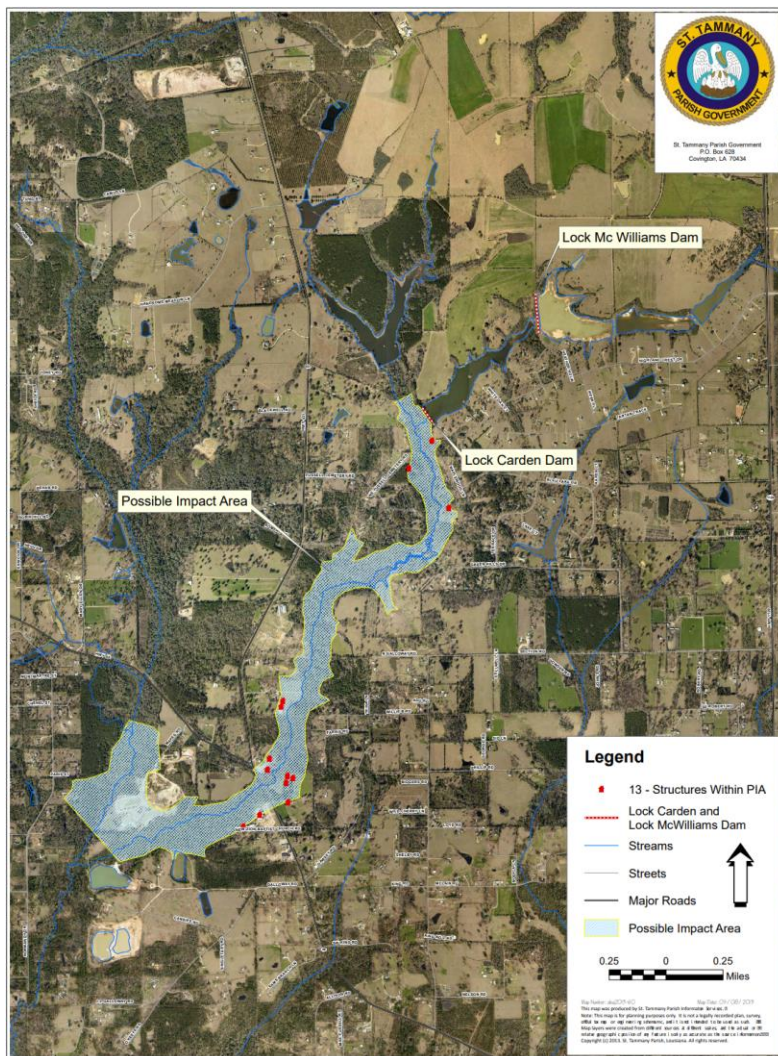
# Dam Failure



Source: LA DOTD



# Dam Failure



Source: STP, CRS 632.a

# 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.”





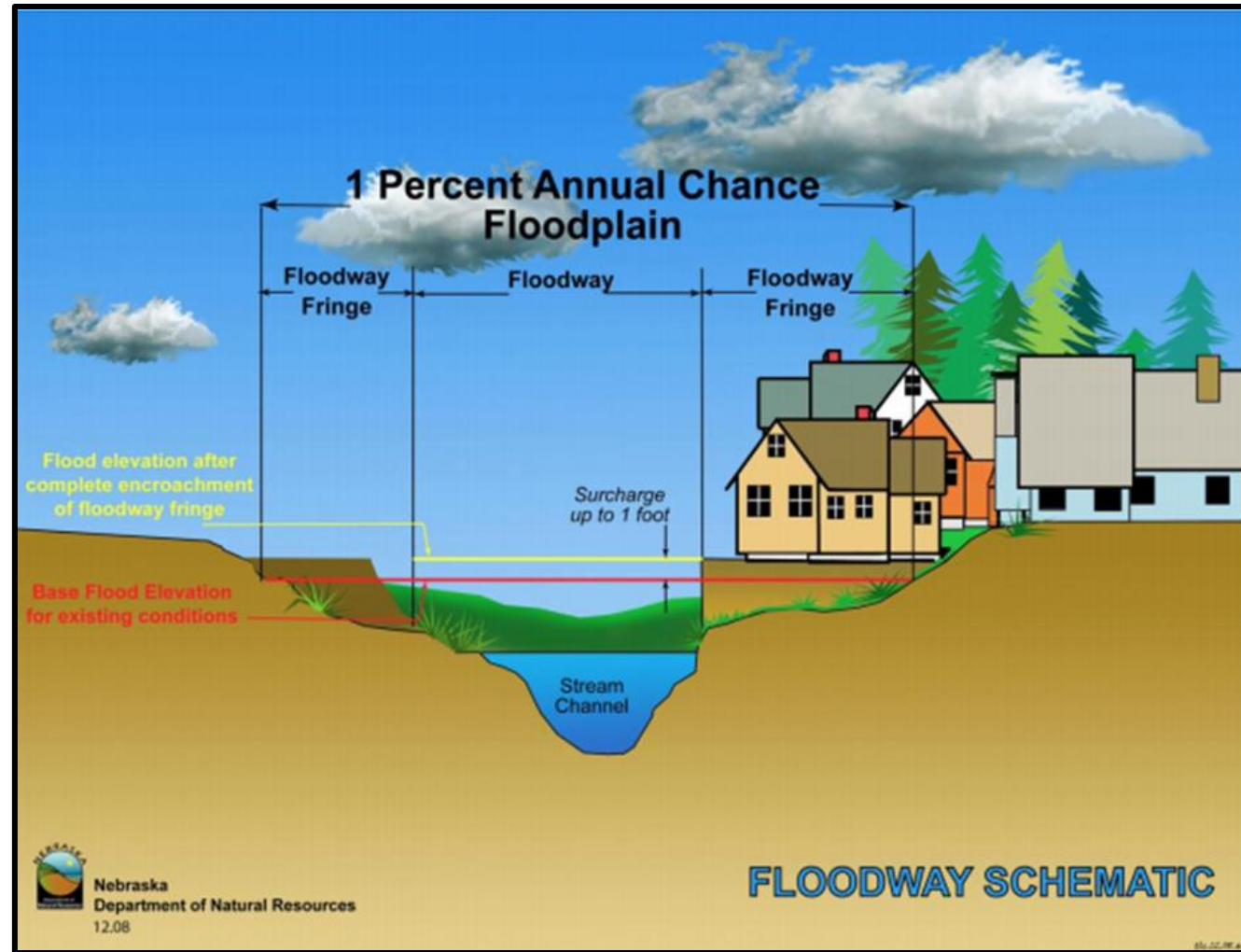
# Flooding

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- In Louisiana, six specific types of flooding are of main concern:
  - Riverine
  - Flash
  - Ponding
  - Backwater
  - Urban
  - Coastal

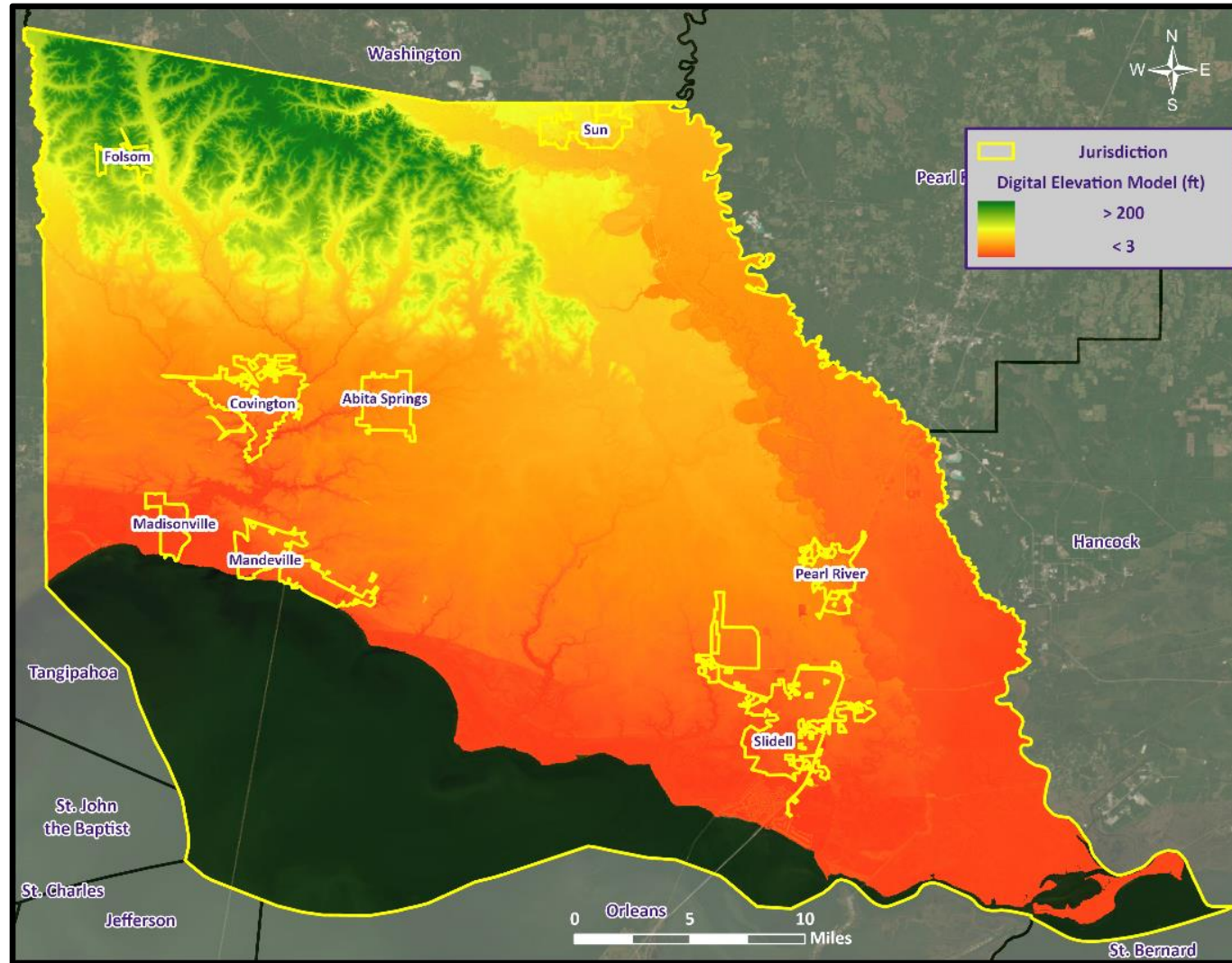


# Floodway Diagram



**Source:** Nebraska Department of Natural Resources

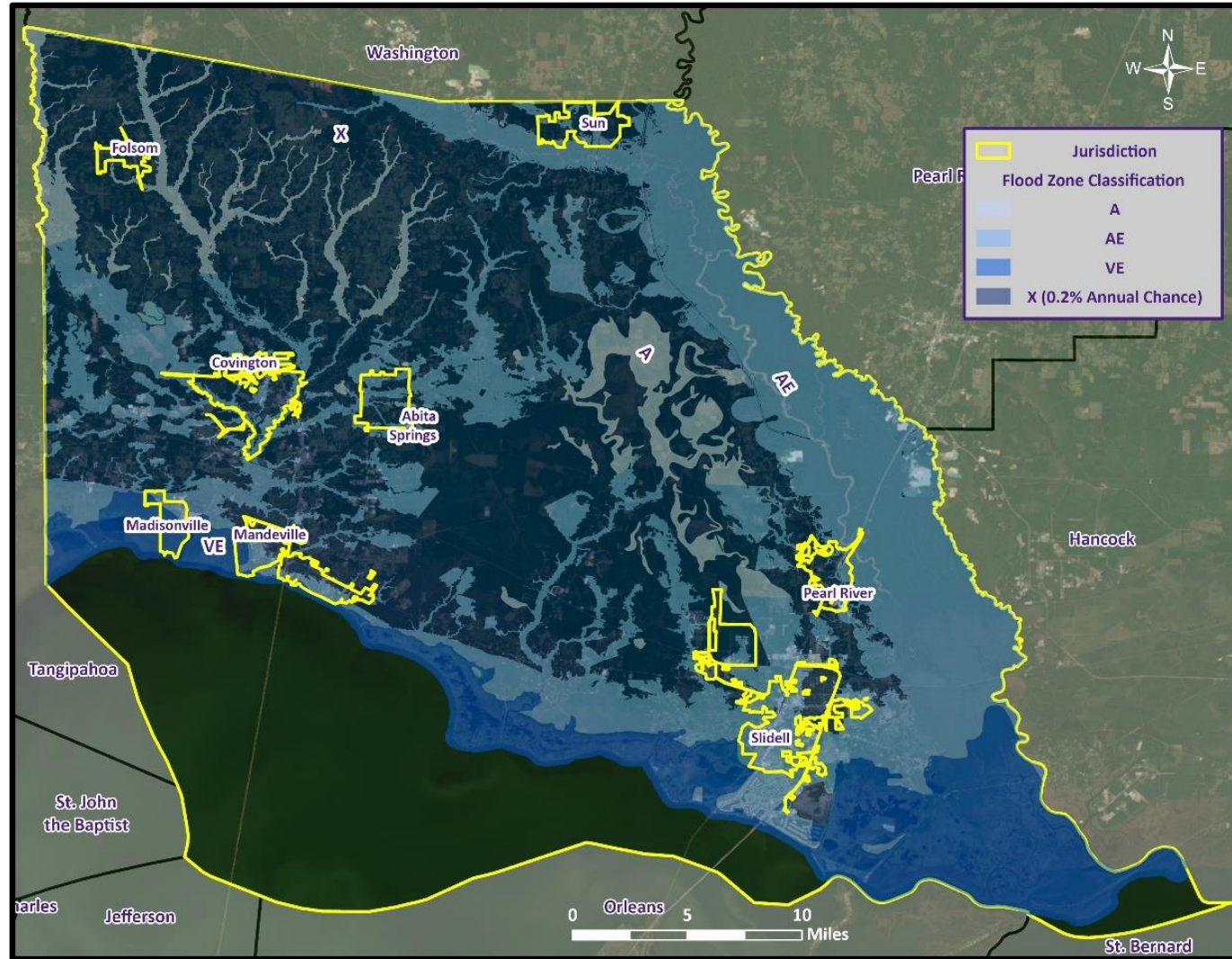
# Digital Elevation Model



Source: USGS



# St. Tammany Parish Flood Map



Source: FEMA Maps Service Center

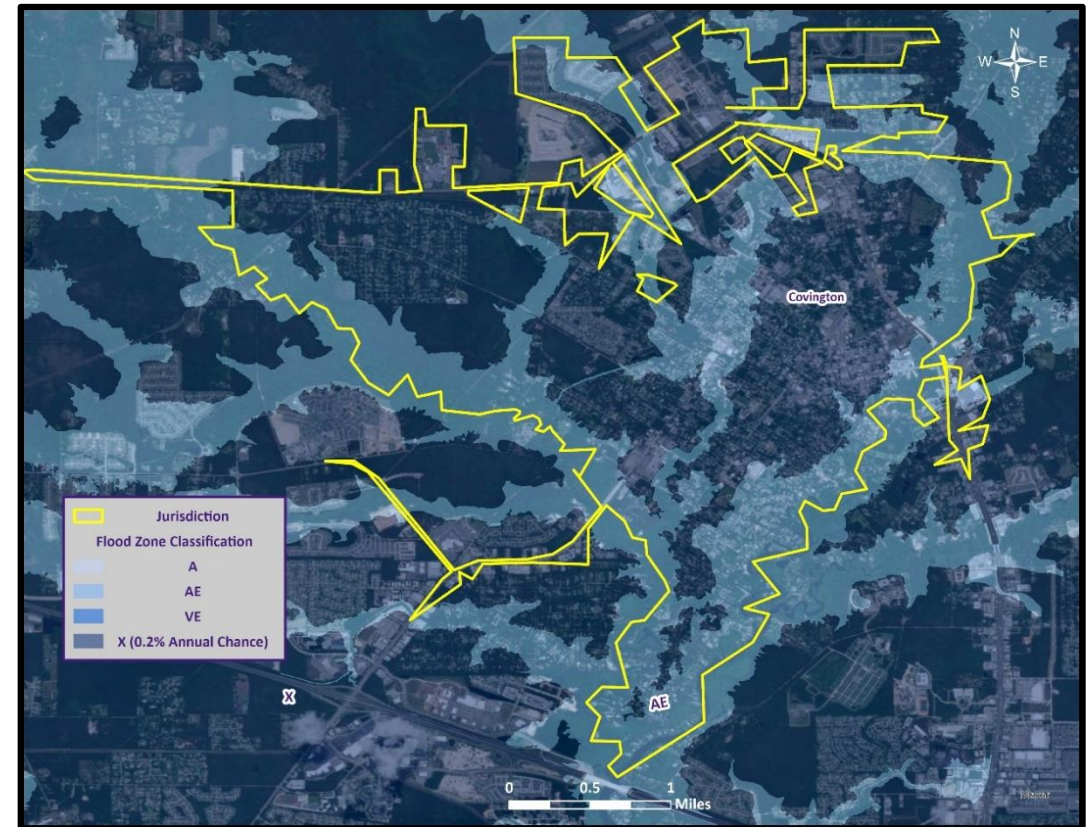


# St. Tammany Parish Flood Maps

Source: FEMA Maps Service Center



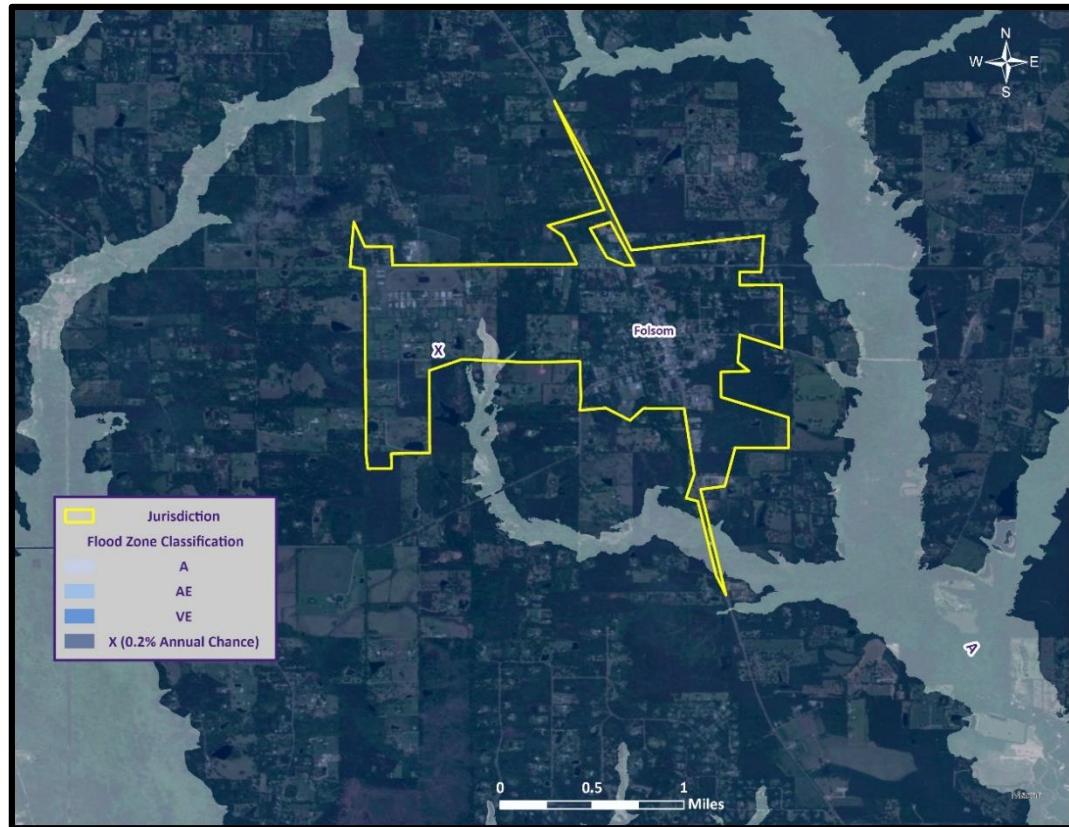
**Abita Springs**



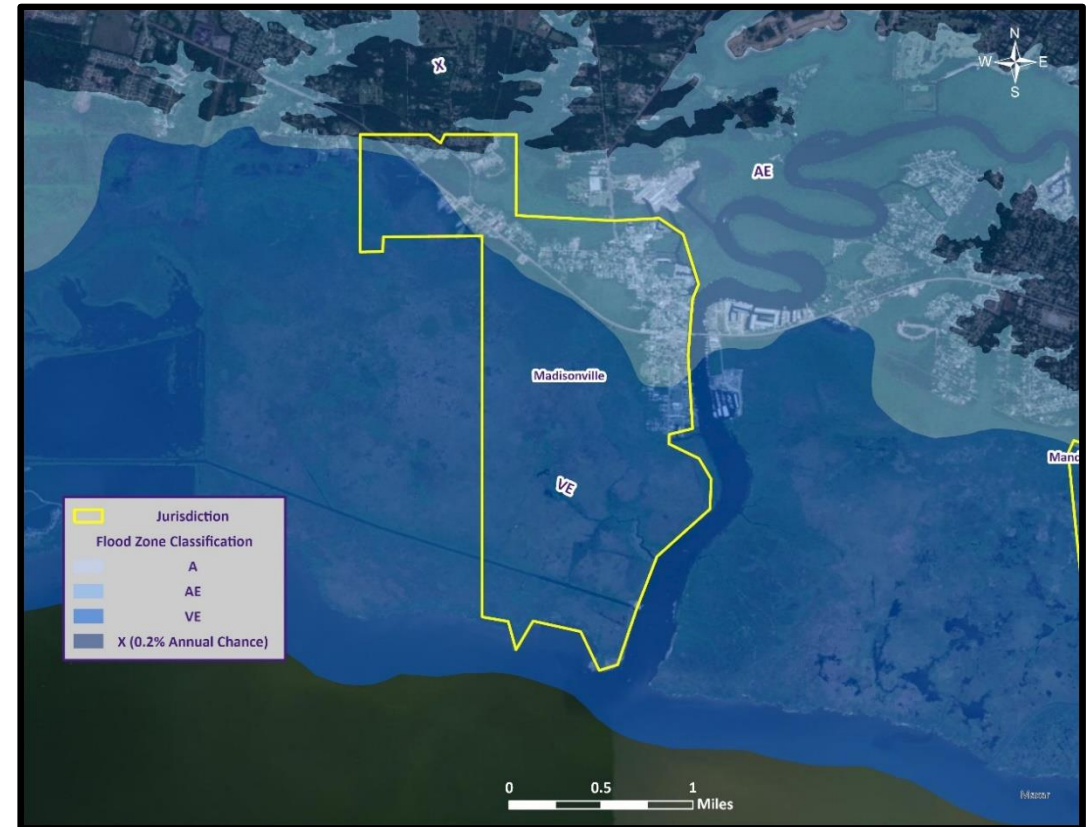
**Covington**

# St. Tammany Parish Flood Maps

Source: FEMA Maps Service Center



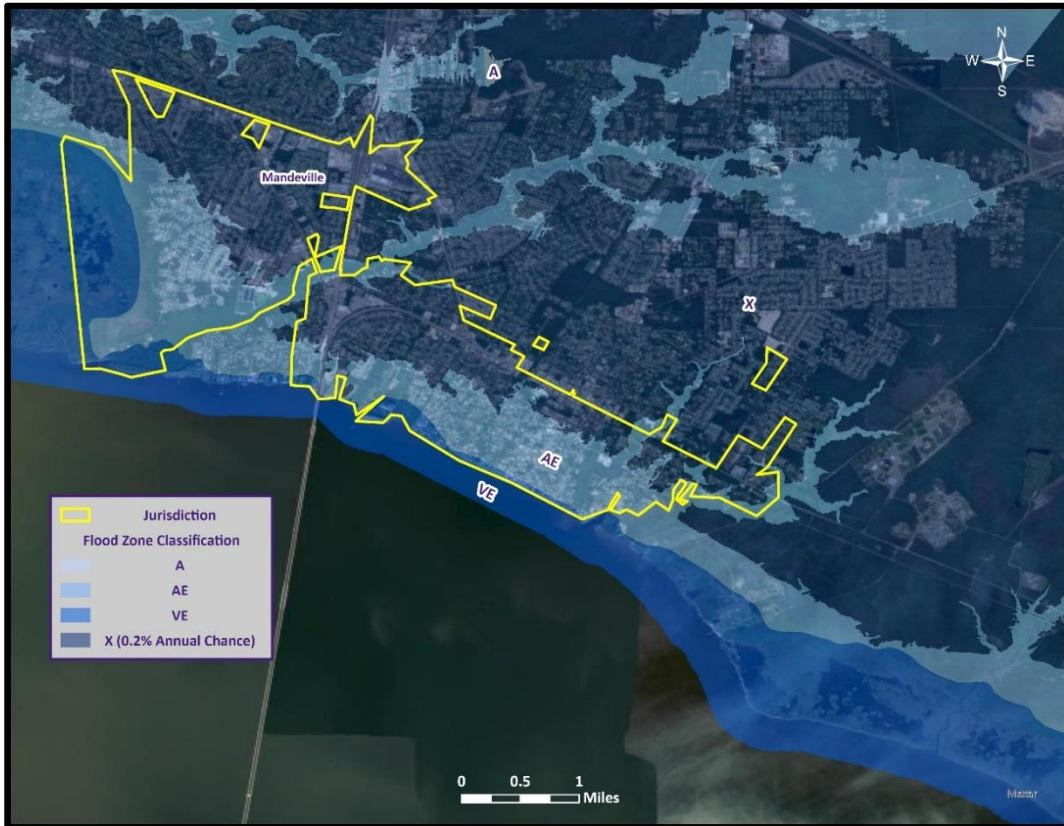
**Folsom**



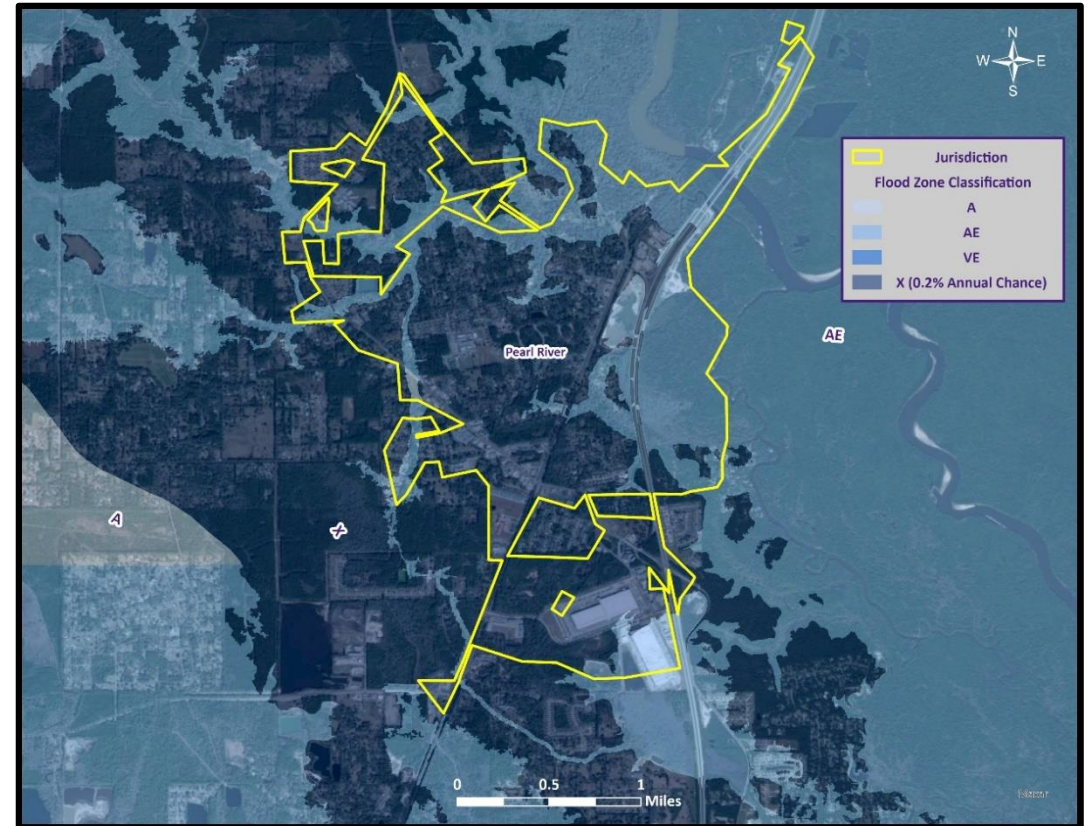
**Madisonville**

# St. Tammany Parish Flood Maps

Source: FEMA Maps Service Center



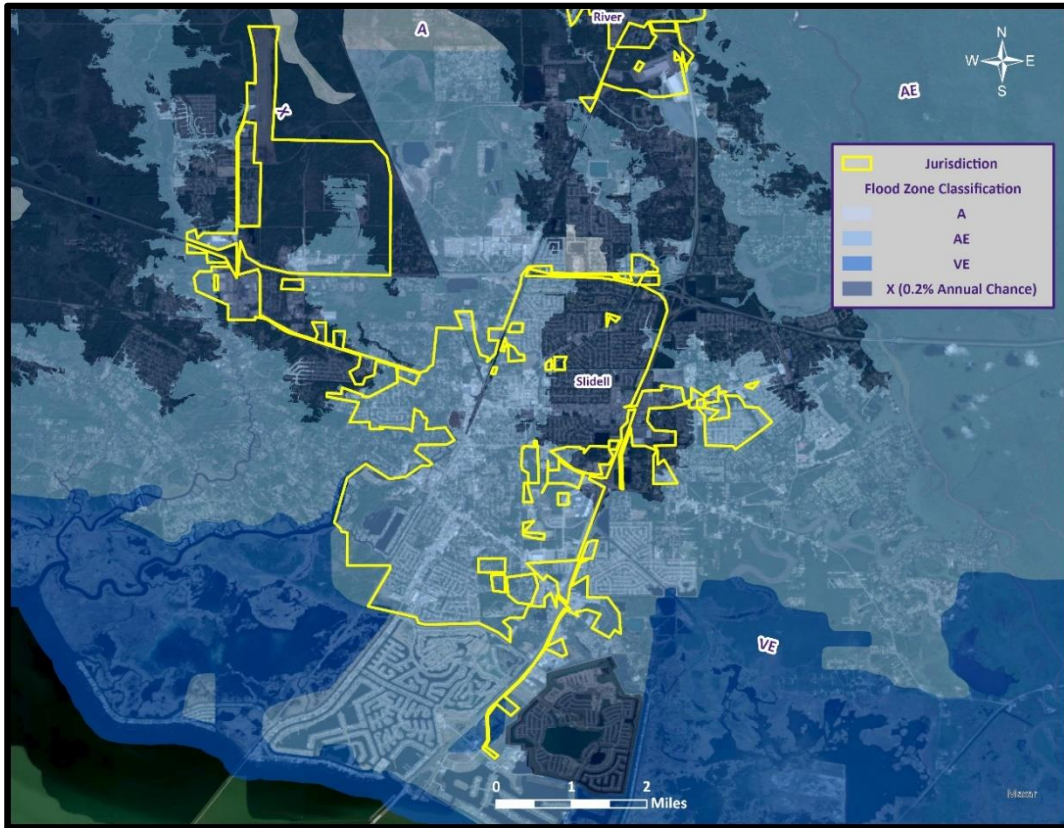
**Mandeville**



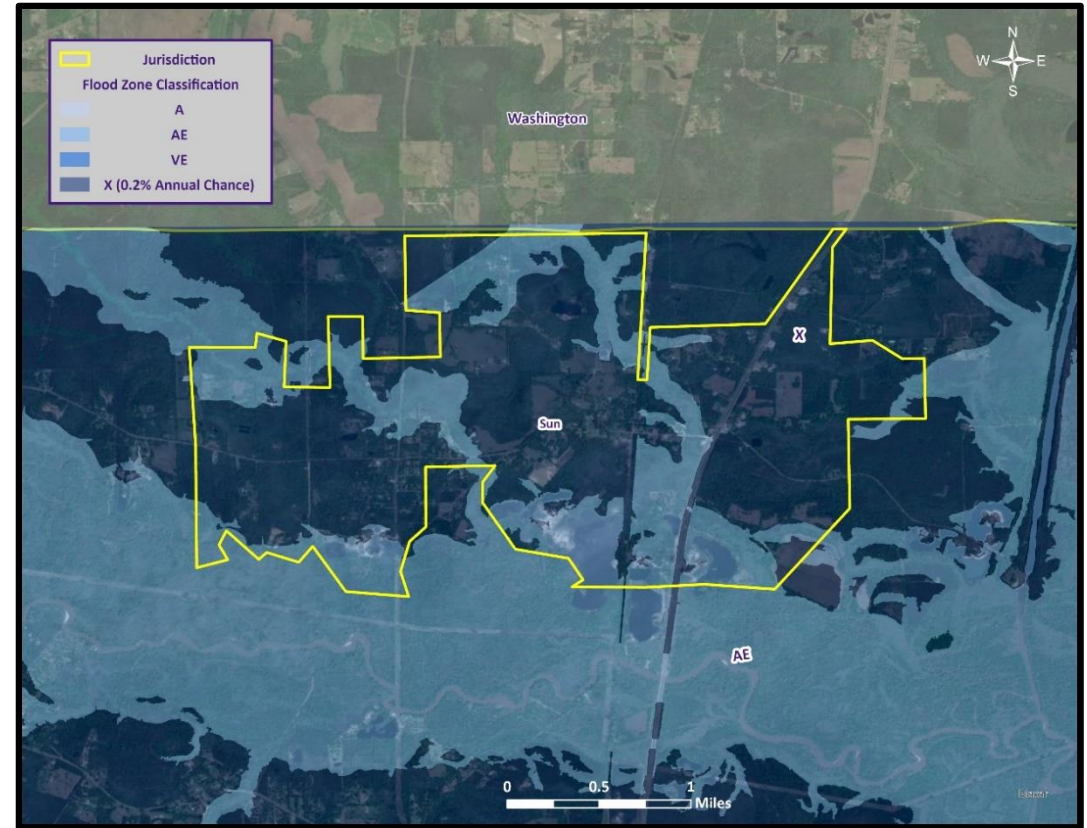
**Pearl River**

# St. Tammany Parish Flood Maps

Source: FEMA Maps Service Center



**Slidell**



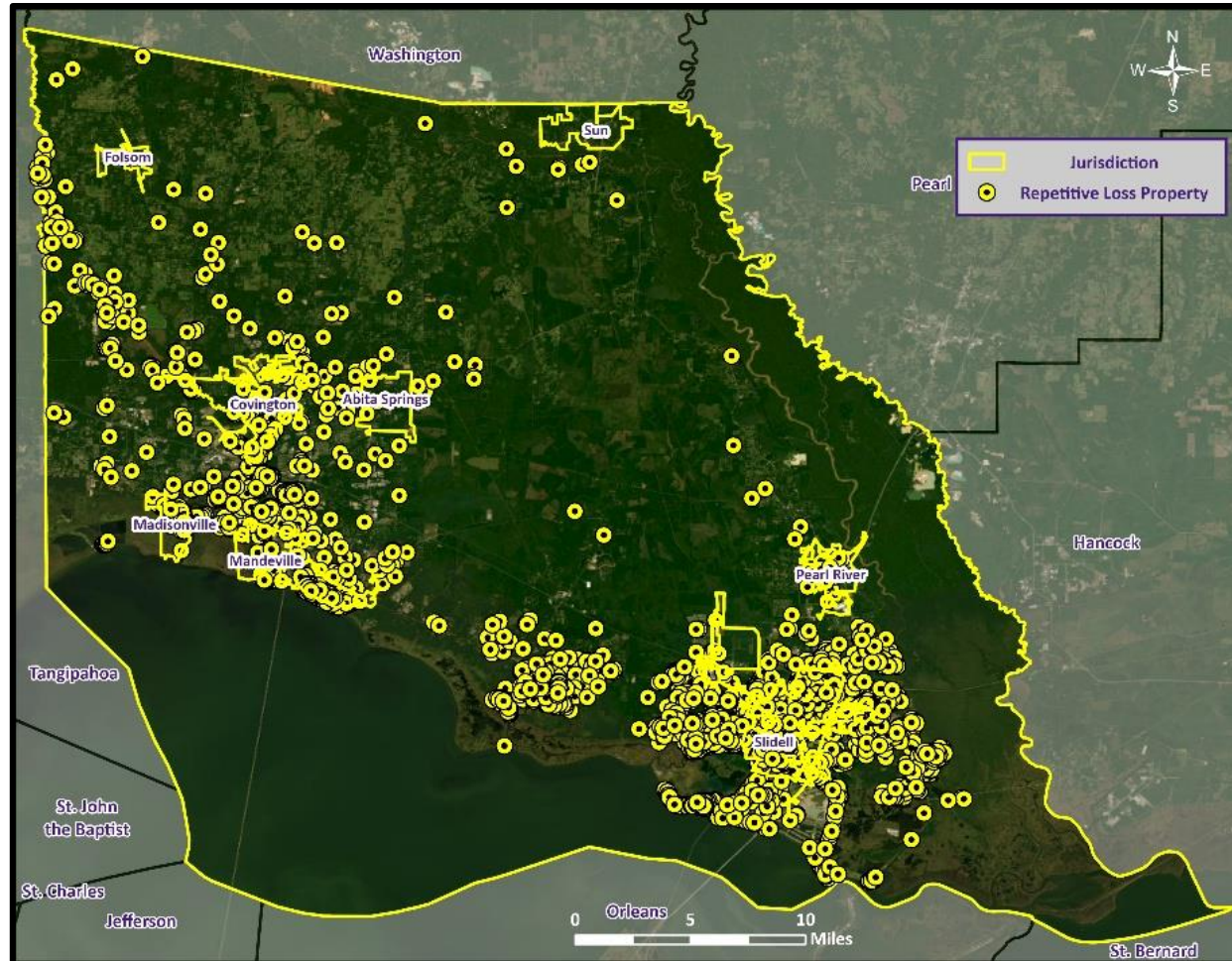
**Sun**



# 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 over 250,000 repetitive loss properties in the U.S.
  - ~43,000 in Louisiana alone
- These properties comprise 1.3% of the NFIP policy base, but they account for approximately 25-30% of the country’s flood insurance claim payments.

# Repetitive Loss Properties



Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid
4,692	4,482	210	0	11,385	\$515,763,826

# Flooding Discussion

- For CRS credit under Steps 4&5, the following items need to be assessed by STP and the participating jurisdictions in the CRS Program.
- Step 4:
  - Less frequent flood hazards
    - Uncertain flow paths, closed basin lakes, subsidence, coastal erosion.
  - Source of water, depth of flooding, velocities and warning times
  - Areas not mapped on the FIRM that have flooded in the past
  - Surface flooding identified in previous studies
  - Areas likely to flood and likely to get worse over time
    - Changes in floodplain development and demographics, development in the watershed, climate change or sea level rise.

# Flooding Discussion

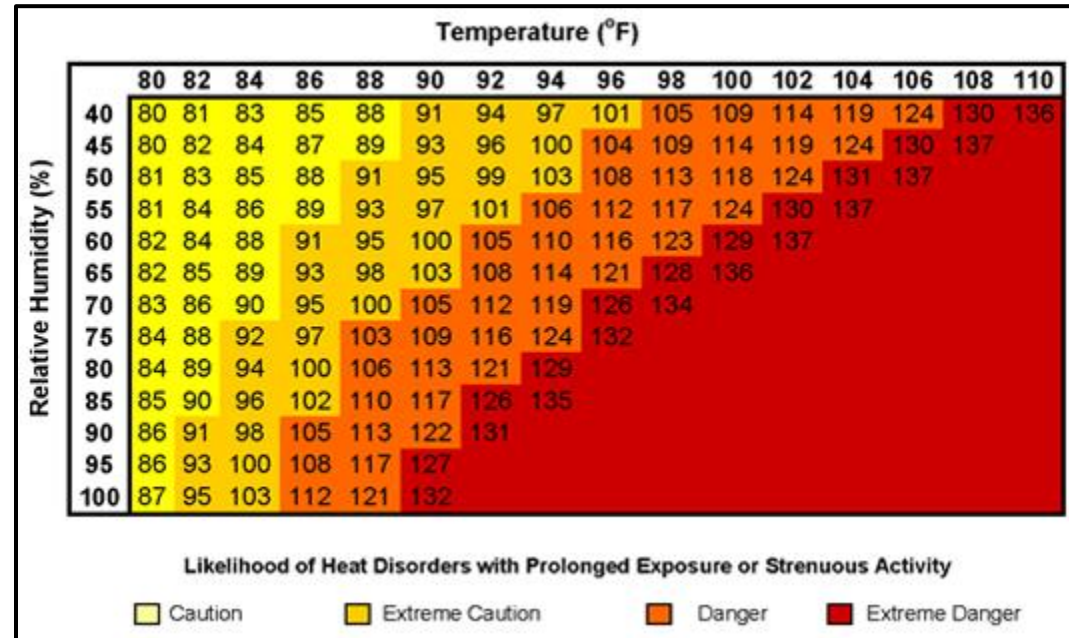
- For CRS credit under Steps 4&5, the following items need to be assessed by STP and the participating jurisdictions in the CRS Program.
- Step 5:
  - Impact from hazards on the following items:
    - Life, safety, warning, evacuating the public (CRS Activity 610)
    - Community's economy and major employers
    - Inventory of all community owned buildings, those in flood prone areas, and which buildings are insured for flood damage
  - Areas within the floodplain that act as natural functions (i.e., wetlands, riparian areas, sensitive areas, etc.)
  - Development and redevelopment in the community and what impacts that can bring on the watershed, natural resource areas, etc.

# Heat Wave

- 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



# Heat Wave



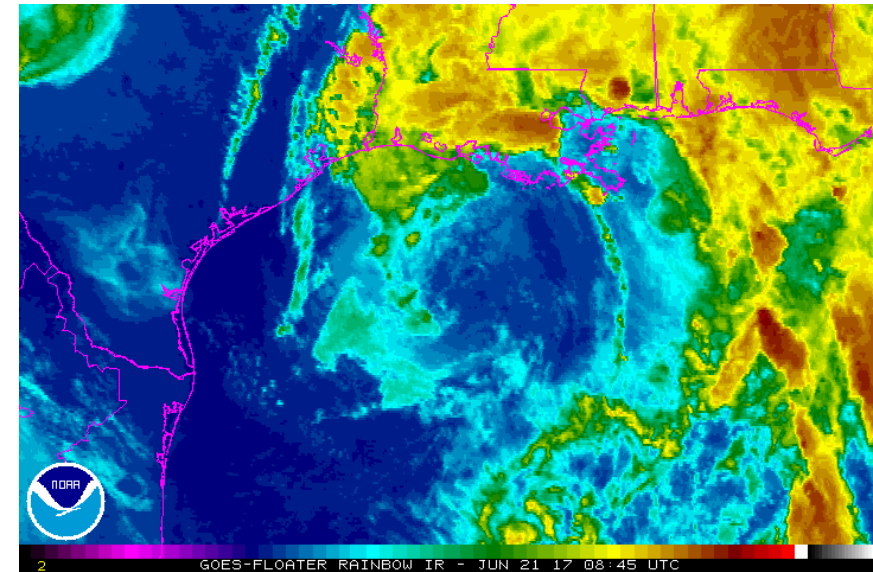
Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning.
91°F to 103°F	Moderate	Implement precautions and heighten awareness.
103°F to 115°F	High	Additional precautions to protect workers.
Greater than 115°F	Very High to Extreme	Triggers even more aggressive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



# Hurricanes

- 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.



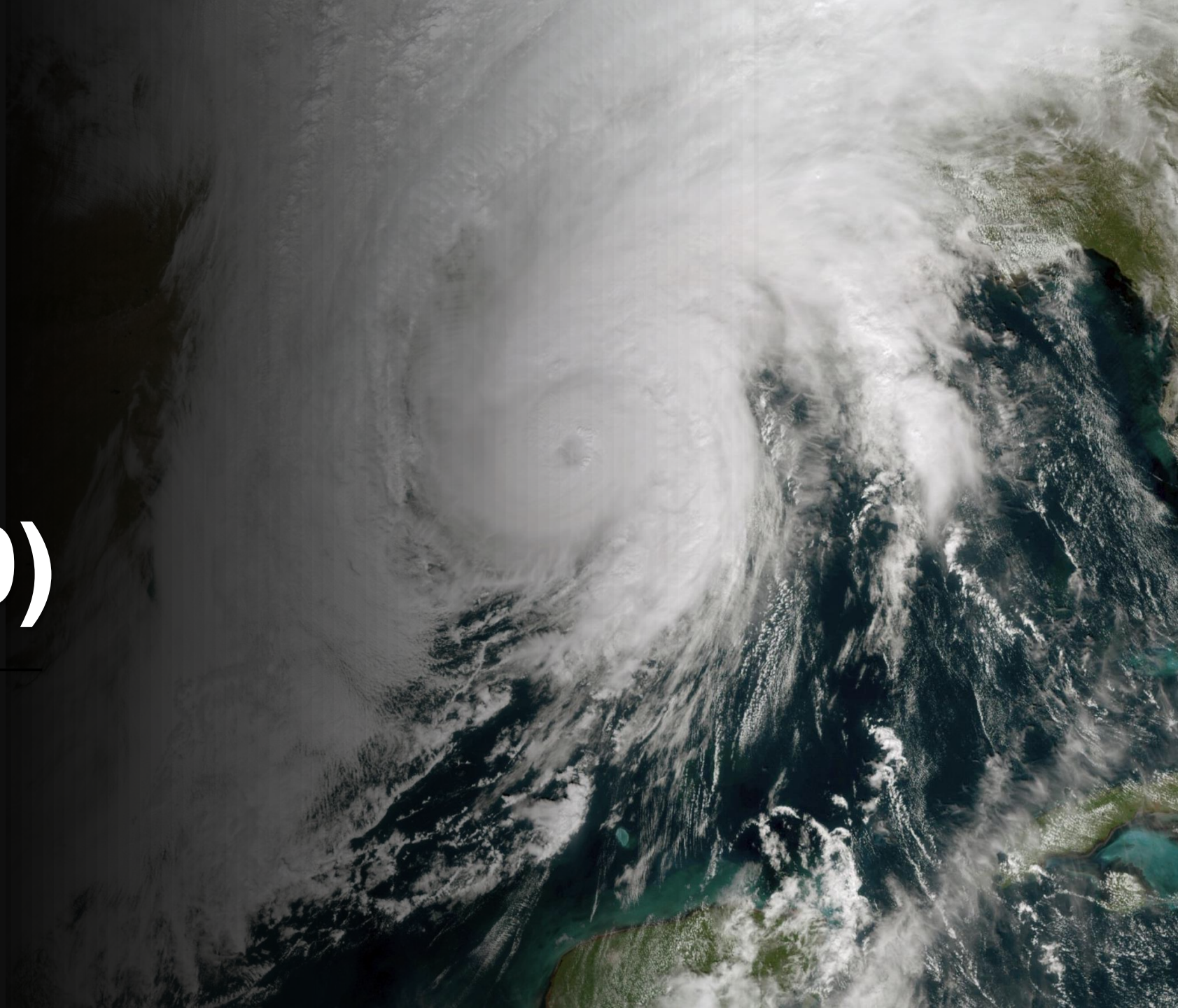


# Hurricane Delta (2020)





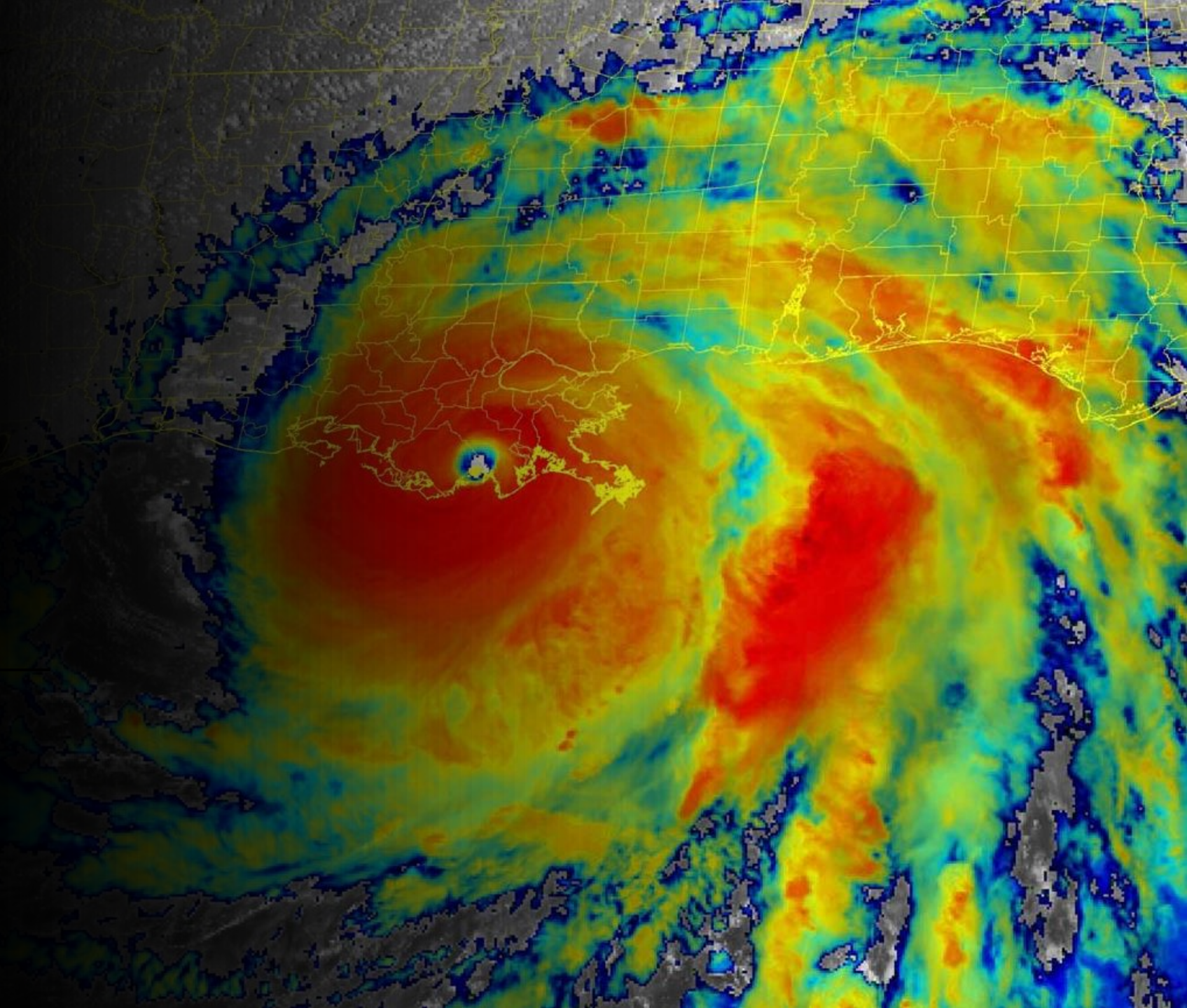
# Hurricane Zeta (2020)



© 2007 The Authors



# Hurricane Ida (2021)





# Tropical Storm Francine (2024)

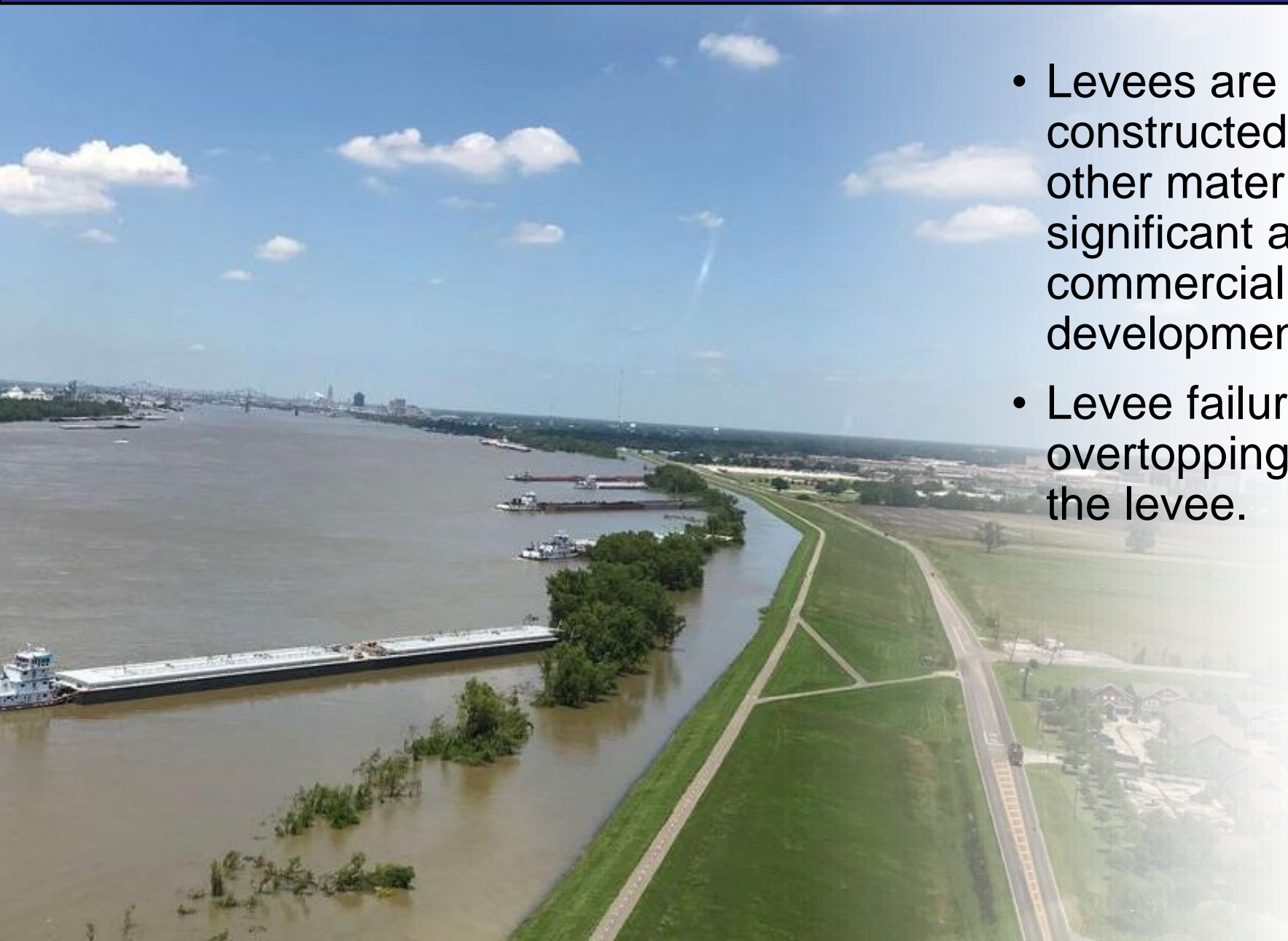


# Ice Storm

- Severe winter weather events characterized by the rapid accumulation of ice on surfaces such as roads, trees, powerlines, and buildings.
- Powerful systems can generate intense bands of freezing rain that can deposit a thick layer of ice, leading to widespread power outages, impassable roads, and significant structural damage.
- Major transportation routes like I-12 & I-59 have a close proximity to wetland areas which increase the likelihood of black ice road conditions

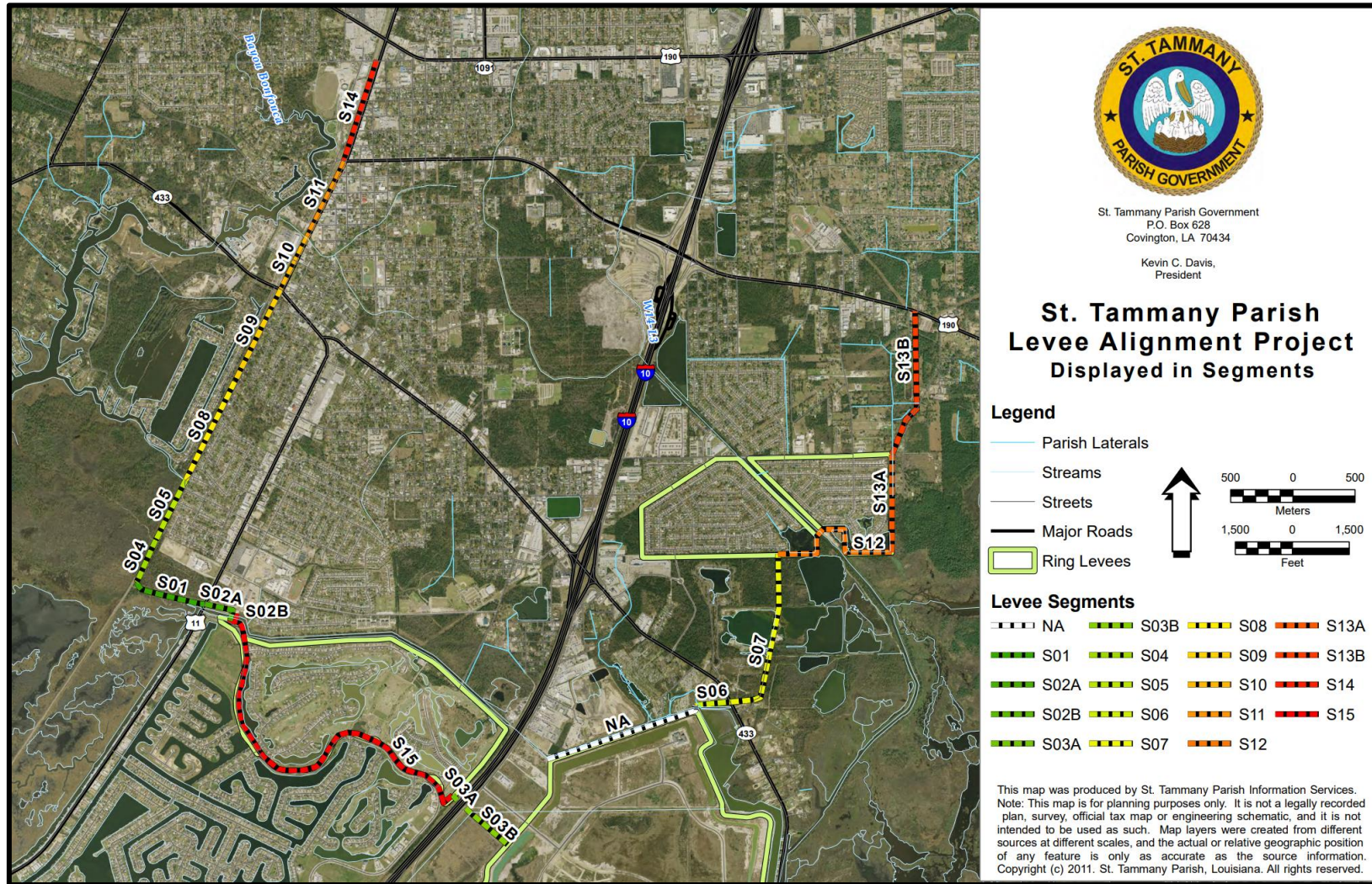


# Levee Failure



- 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 Failure



Source: STP

# Lightning



- As defined by the National Weather Service, Lightning is any and all of the various forms of visible electrical discharge caused by thunderstorms.
- Cloud-to-ground lightning is the form associated with the most risk to property and the wellbeing of the public. Objects struck can result in explosion, burning, or total destruction while people struck can result in major injury or even death.

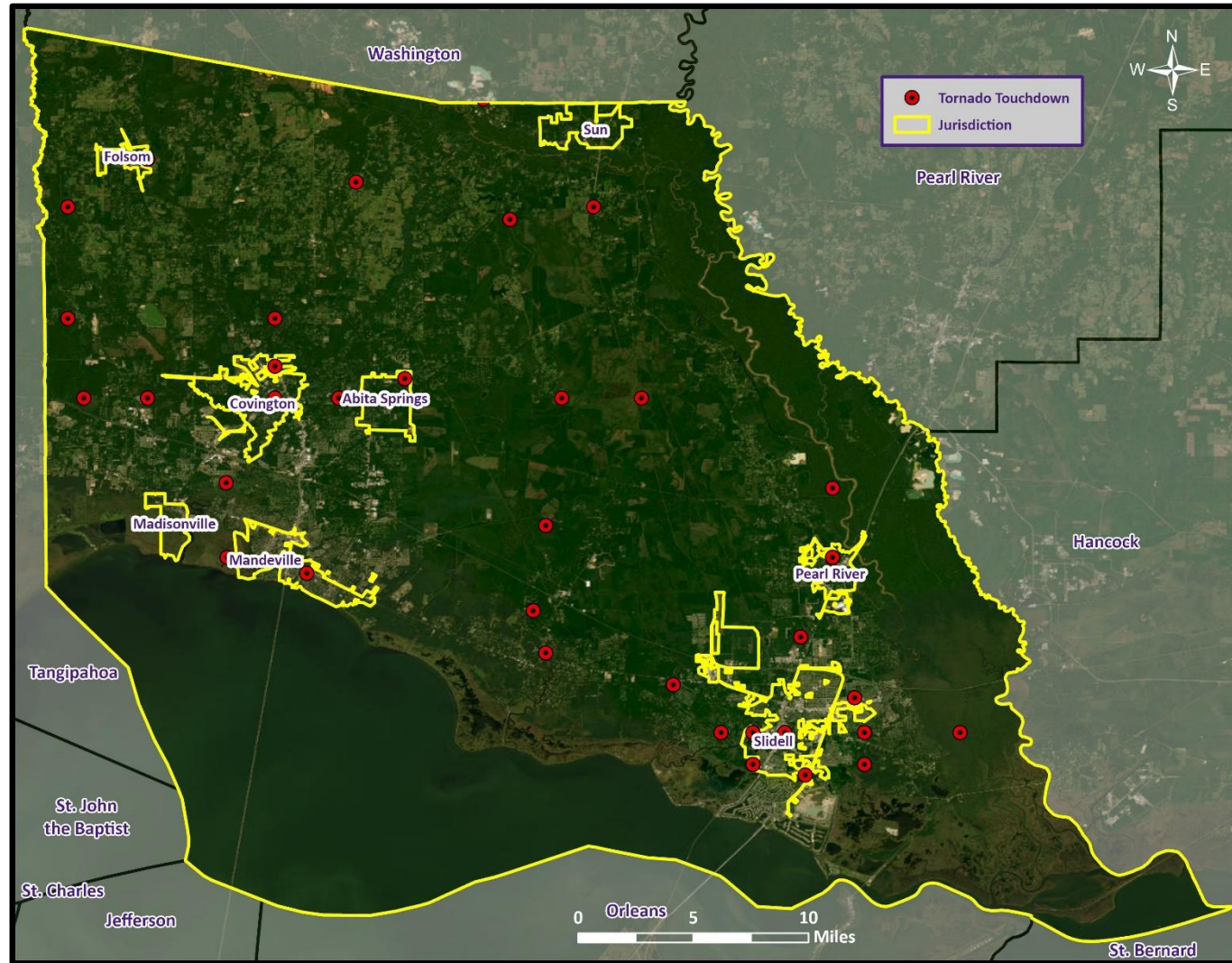
# Tornadoes

- 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

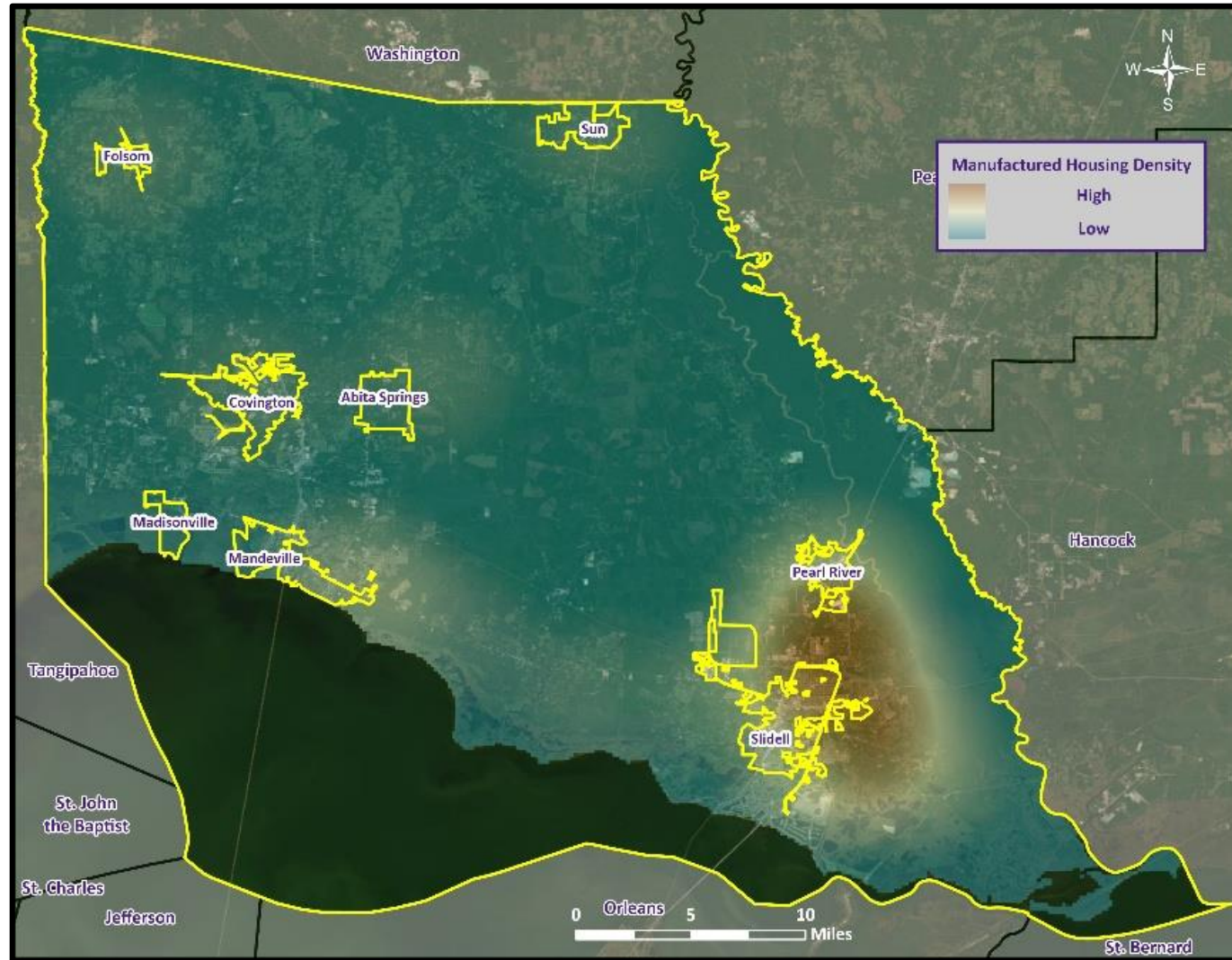


# Tornadoes in St. Tammany Parish



Source: NCEI Storm Events Database

# Manufactured Home Density



**Source:** Vulnerable Populations Worksheet

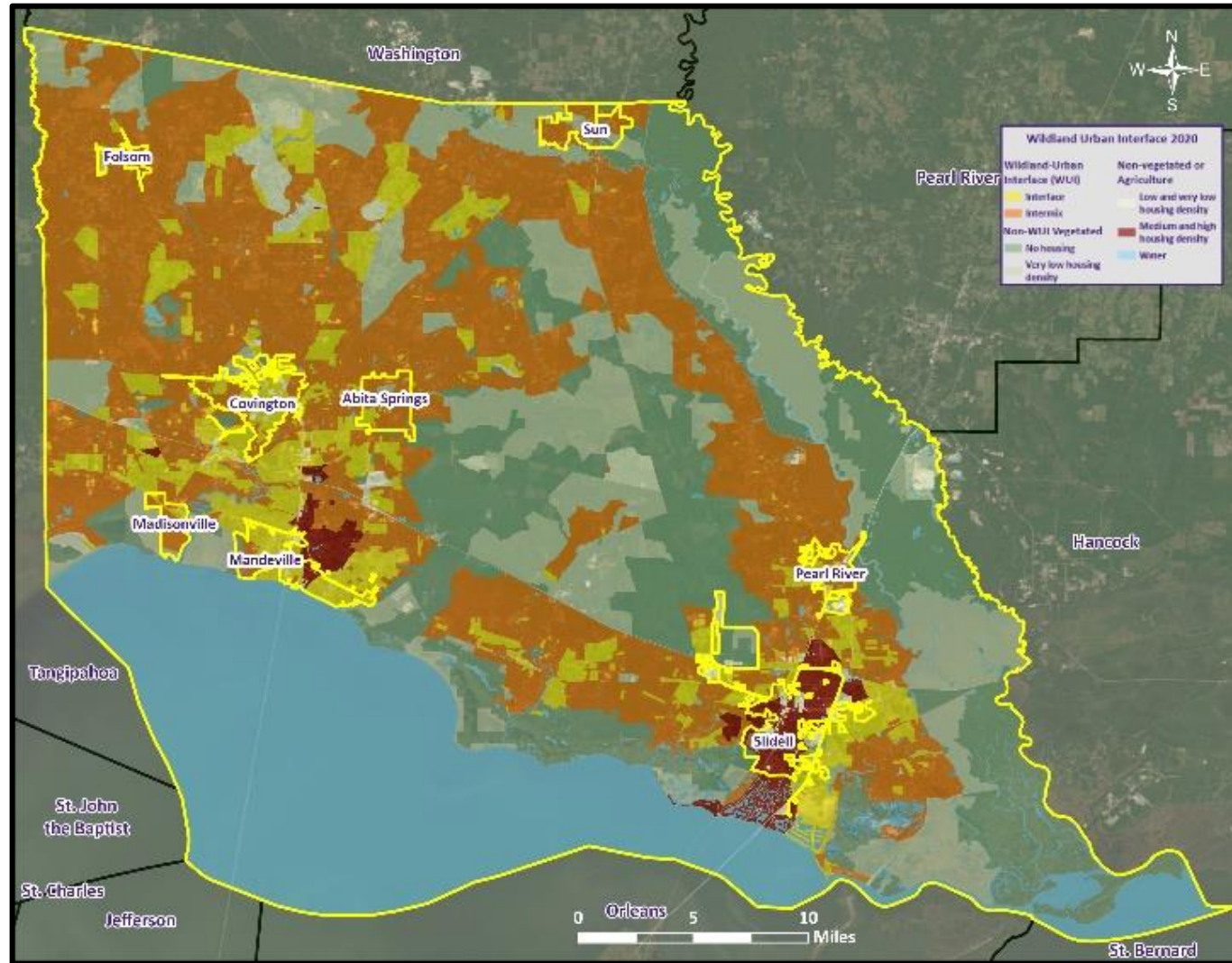


# Wildfires



- 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.

# STP Wildland-Urban Interaction Map

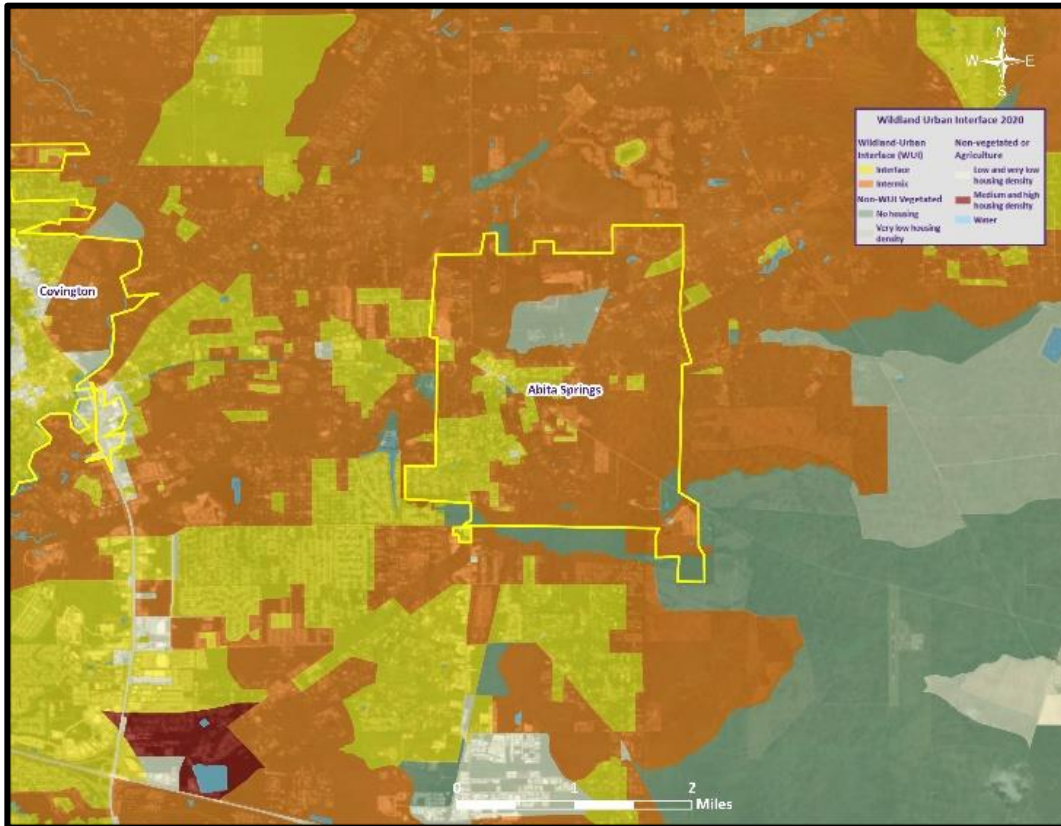


**Source:** U.S. Forest Service –  
Geospatial Data Discovery

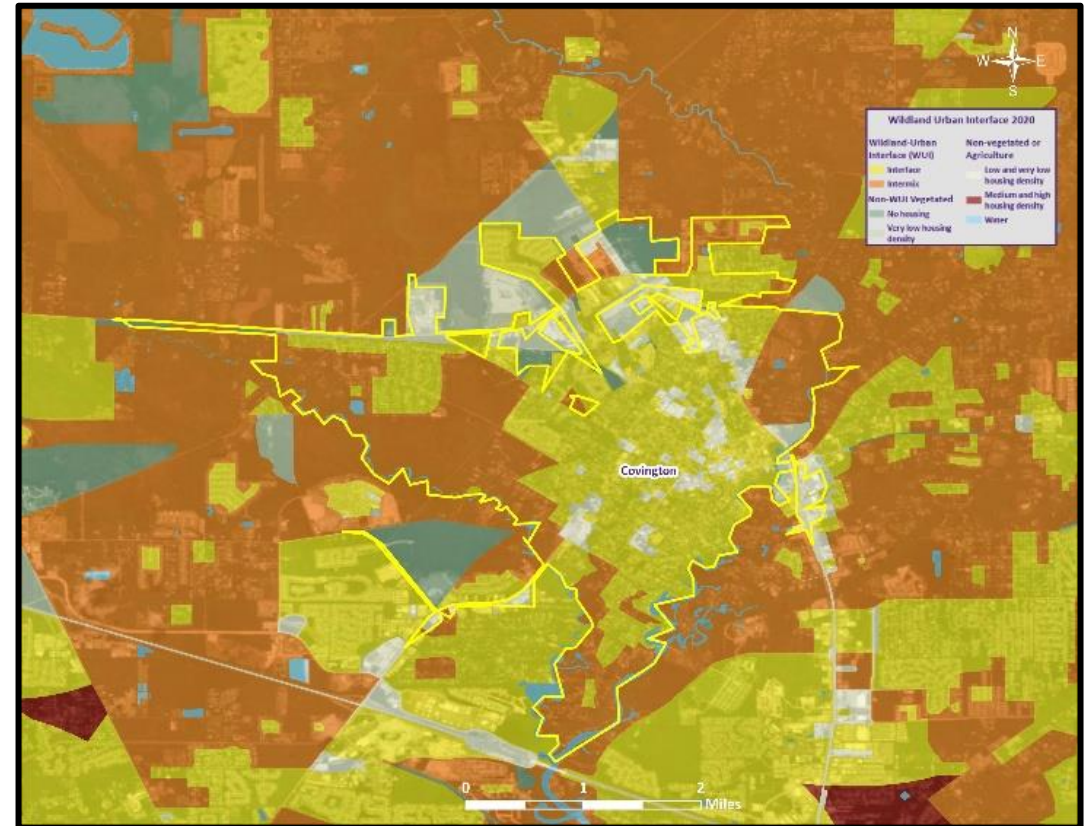


# Wildland Urban Interaction Maps

**Source:** U.S. Forest Service –  
Geospatial Data Discovery



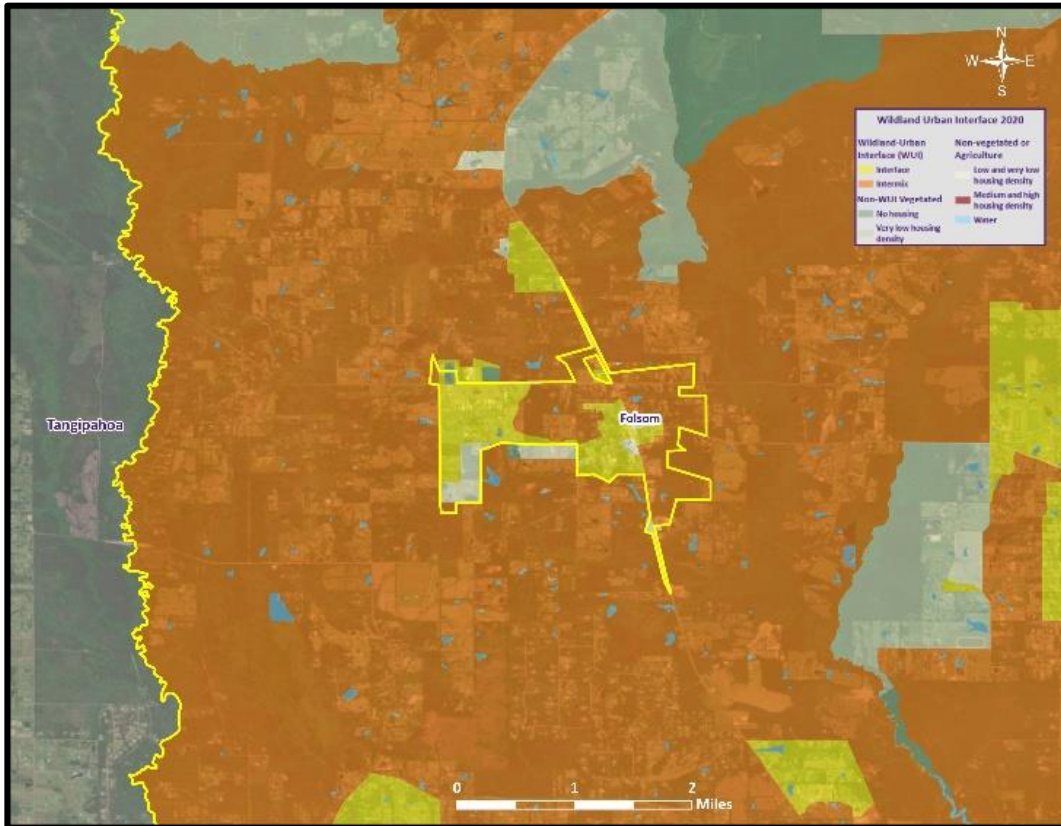
**Abita Springs**



**Covington**

# Wildland Urban Interaction Maps

**Source:** U.S. Forest Service –  
Geospatial Data Discovery



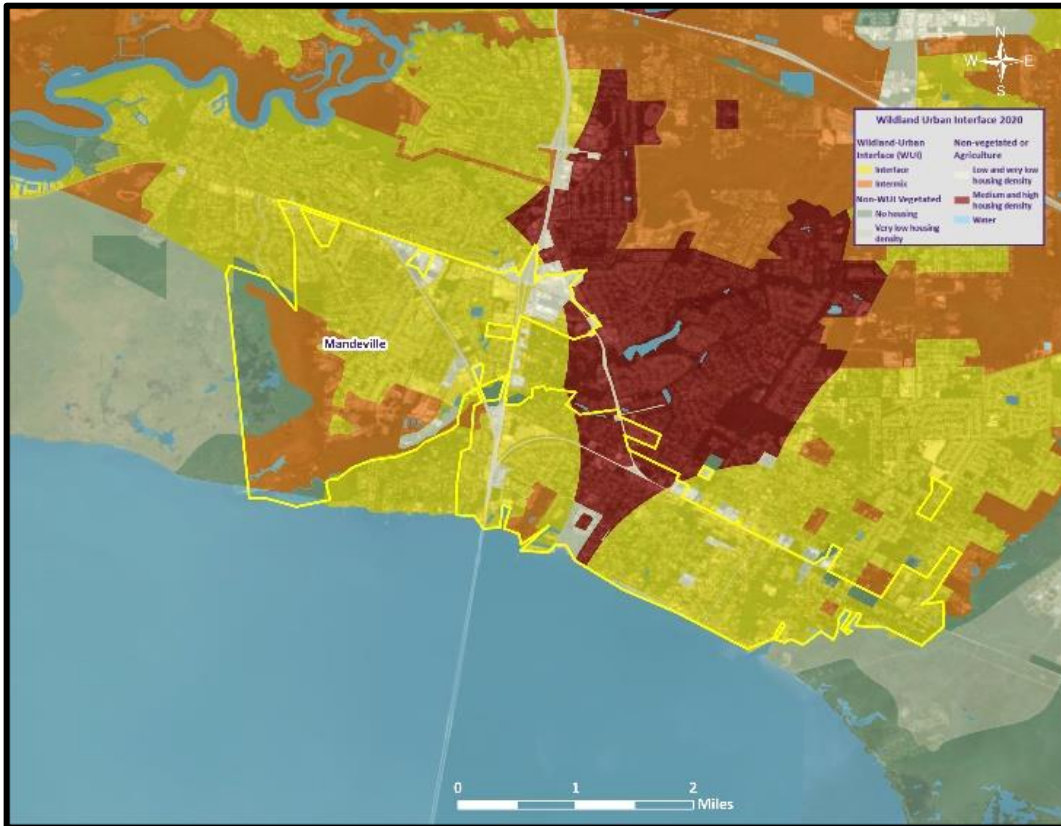
**Folsom**



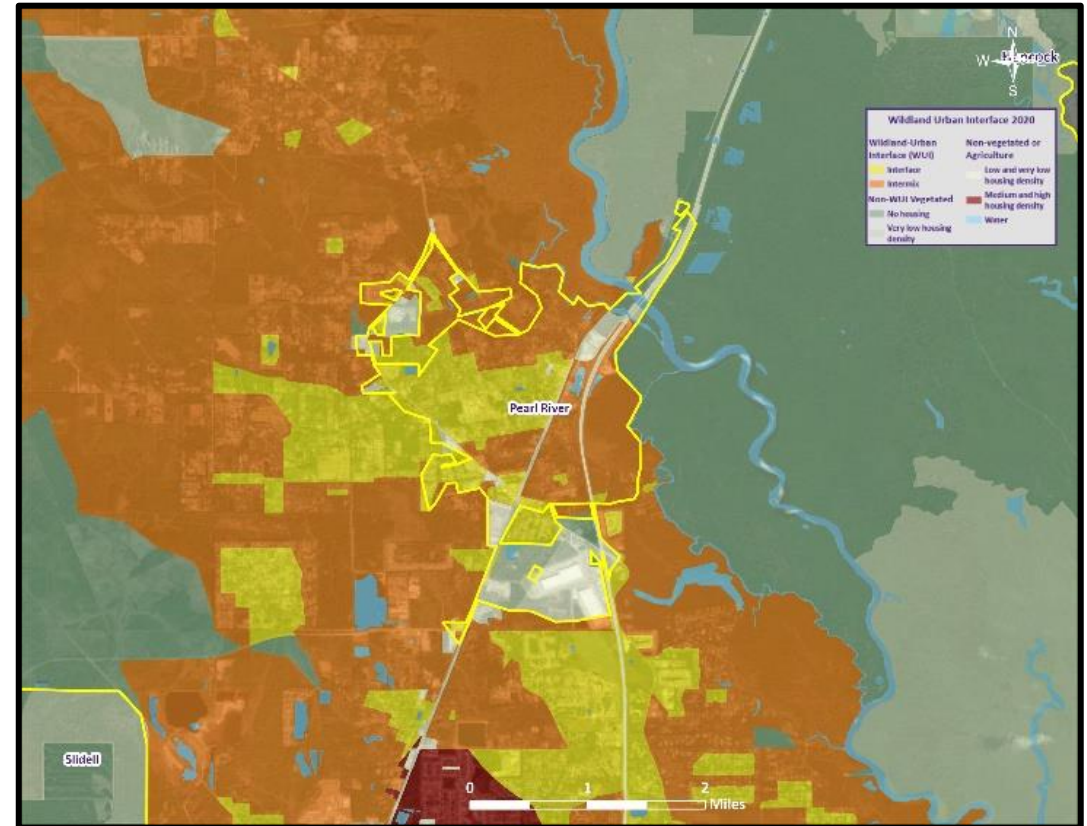
**Madisonville**

# Wildland Urban Interaction Maps

**Source:** U.S. Forest Service –  
Geospatial Data Discovery



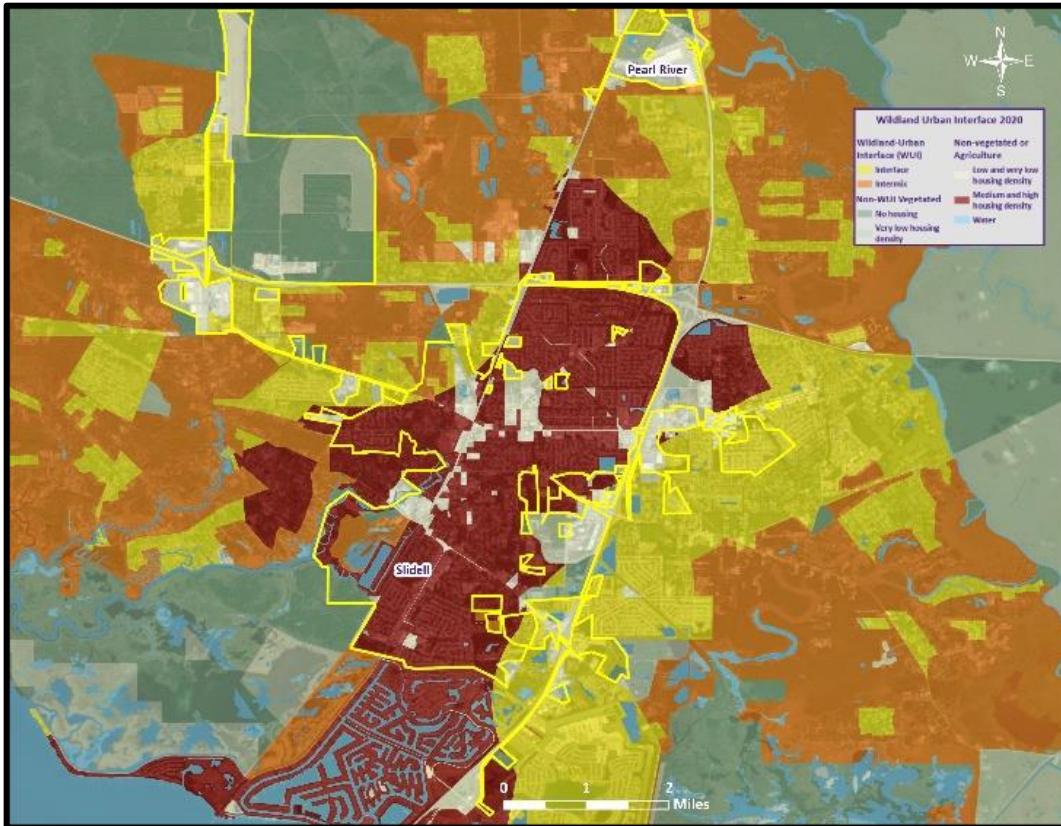
**Mandeville**



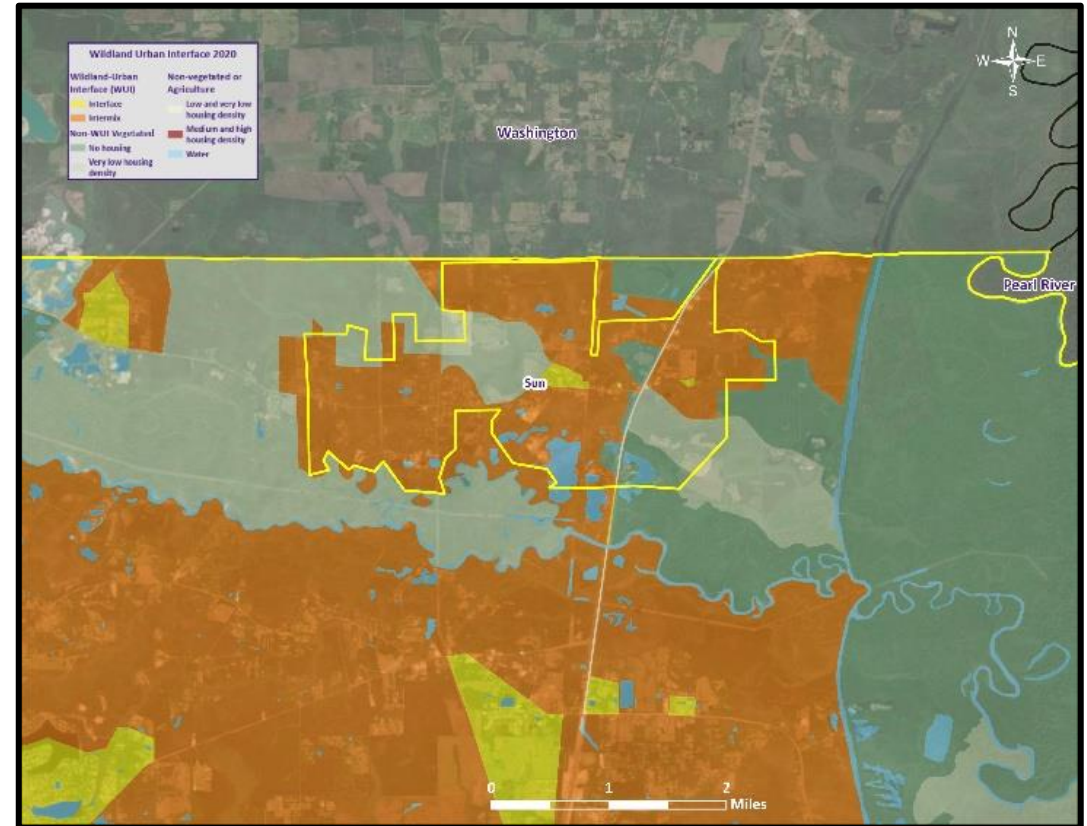
**Pearl River**

# Wildland Urban Interaction Maps

**Source:** U.S. Forest Service –  
Geospatial Data Discovery



**Slidell**



**Sun**

# Winter Weather

- Occurs when humid air from the Gulf of America 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.



# STP Hazard Mitigation Goals

1. Protect the lives and health of the Parish's residents from the dangers of natural hazards
2. Ensure that public services and critical facilities operate during and after a disaster
3. Ensure that adequate evacuation routes, streets, utilities and public and emergency communications are maintained and available during and after a disaster
4. Protect homes and businesses from damage
5. Use new infrastructure and development planning to reduce the impact of natural hazards
6. Give special attention to repetitively flooded areas
7. Maintain and improve CRS ratings throughout the parish



# Public Outreach Activity #1

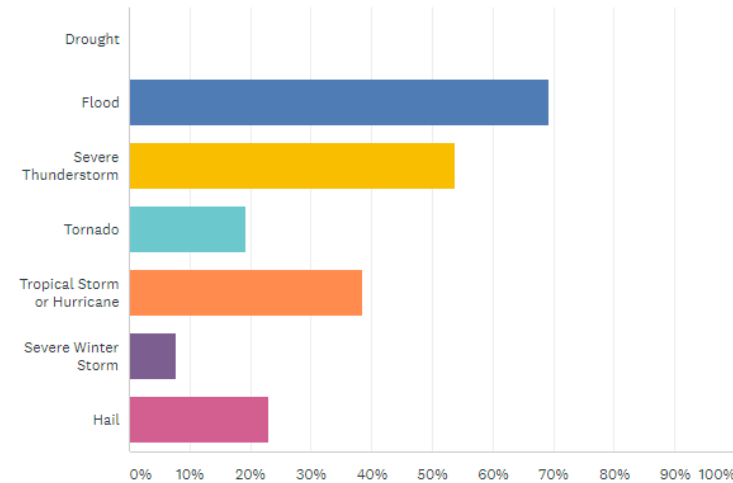
## Hazard Mitigation Public Opinion Survey

[https://lsu.qualtrics.com/jfe/form/SV\\_8hW0tiW3bKZz5We](https://lsu.qualtrics.com/jfe/form/SV_8hW0tiW3bKZz5We)



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



# Survey Trends So Far...

- As of March 24, 2025...
  - 122 responses collected
  - Flooding, Tropical Cyclones and Tornadoes are the hazards of greatest concern to respondents.
  - Almost 50% of residents place more trust in their local government for hazard information than in eleven other external sources.
  - Roughly 70% of respondents reported being unaware that the hazard mitigation plan requires an update every five years.



# Public Outreach Activity #2

Please fill out an incident questionnaire!



## ST. TAMMANY PARISH PUBLIC MEETING

### PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

#### 1. HAZARD TYPE(S):

- A. COASTAL FLOODING
- B. DAM FAILURE
- C. FLOODING
- D. HEAT WAVE
- E. HURRICANES
- F. ICE STORM
- G. LEVEE FAILURE
- H. LIGHTNING
- I. WILDFIRES
- J. 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/DID THE INCIDENT OR ISSUE  
CAUSE? (BUSINESS CLOSURE, DAMAGE,  
EVACUATION, ETC.)

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

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



# SDMI Hazard Mitigation Website

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



The screenshot displays the "SDMI Hazard Mitigation Website" for St. Tammany Parish. The header includes the LSU logo, "Stephenson Disaster Management Institute", and navigation links: "SDMI HOME", "f", and "t". Below the header is a "HAZARD MITIGATION" section with tabs for "Intro", "Events", "FEMA Resources", "Parish Plans", and "Settings". The main content area is titled "St. Tammany Parish" and shows the "PLAN DUE DATE: NOVEMBER 3 2025". A "DEVELOPMENT STATUS" section features a progress bar with four stages: "PLAN DEVELOPMENT", "PLAN REVIEW", "PLAN ADOPTION", and "COMPLETED". Below this, "PARTICIPATING JURISDICTIONS" are listed: Town of Abita Springs, City of Covington, Village of Folsom, Town of Mandeville, Town of Pearl River, Village of Sun, St. Tammany, and City of Slidell. A "MEETINGS" section lists four upcoming meetings with dates and times. A "PREVIOUS PLANS" section shows two years of plans (2015 and 2020) with download links. At the bottom, there is a "Survey" section with an "Access Survey" button and the LSU logo.

# Contact Us

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