Wastewater Treatment System Resilience: On-Site Sewer Systems in Plaquemines Parish

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Pontchartrain Conservancy's mission is to drive environmental sustainability and stewardship through scientific research, education, and advocacy.

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Science for Our Coast

RESEARCH

EDUCATION

ADVOCACY

Background

- 475,299 permitted on-site wastewater treatment systems in Louisiana as of August 2023[1]
- Approximately 54 billion gallons of wastewater treated per year[1]
- 50% failure rate across Louisiana

Failure of onsite wastewater systems pollute the ditches, nearby waterbodies, and ultimately Lake Pontchartrain, affecting the whole basin.

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Wastewater Home Inspection Program

- PC Inspection Programs - St. Tammany, Tangipahoa, Plaquemines Parish
  - ❖ Assistance to homeowners
  - ❖ Data collection
  - ❖ Improvement of waterways; reduction in non-point source pollution

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Plaquemines Parish

- Area - 2,567 square miles[2]
  - ❖780 square miles land
  - ❖1,787 square miles water
- Population – 24,000 residents[2]
- Fully unincorporated
- 6 large regional Wastewater Treatment Plants (WWTP)

Unincorporated areas not tied into WWTPs largely have onsite wastewater treatment systems.

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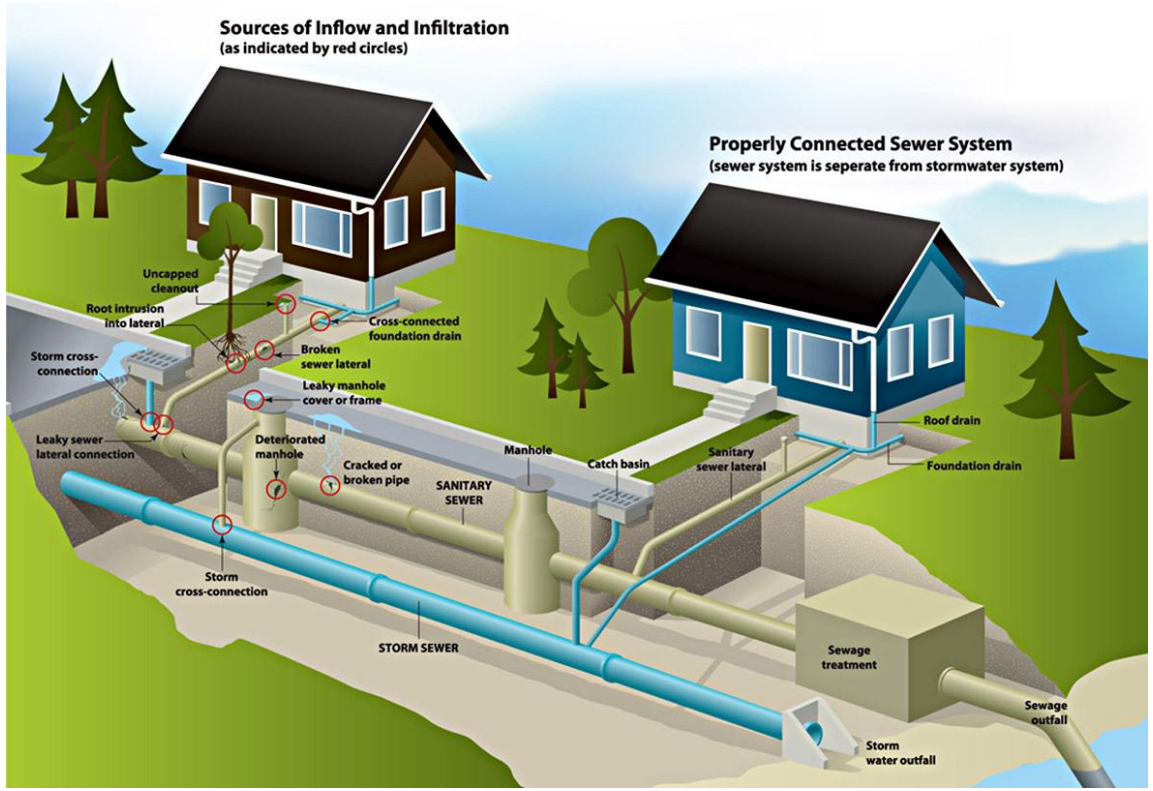
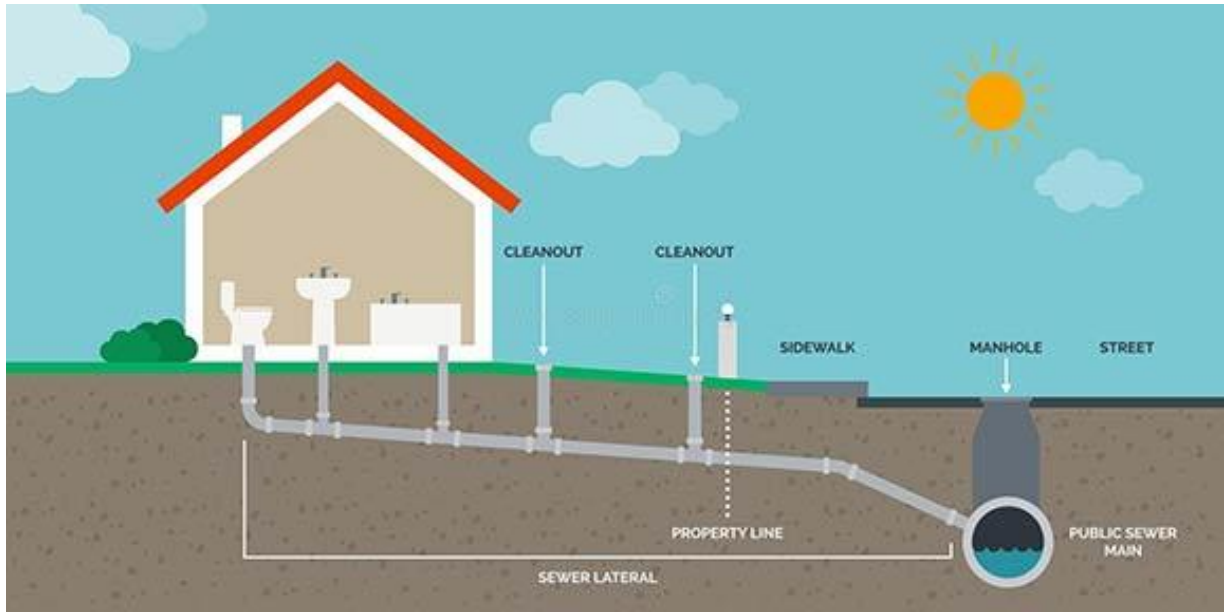
City Sewer Systems





Homes and businesses connected to city sewer infrastructure have trained professionals that ensure sewerage gets to the nearby WWTP and is treated properly.

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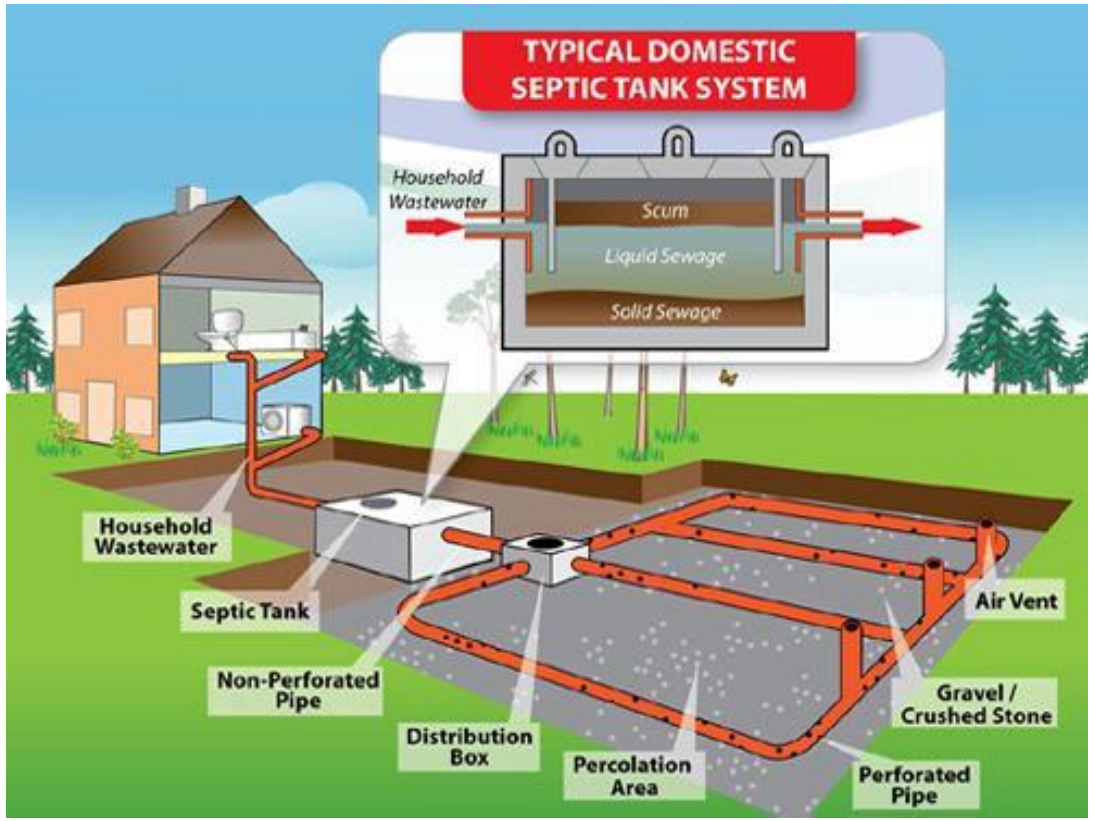
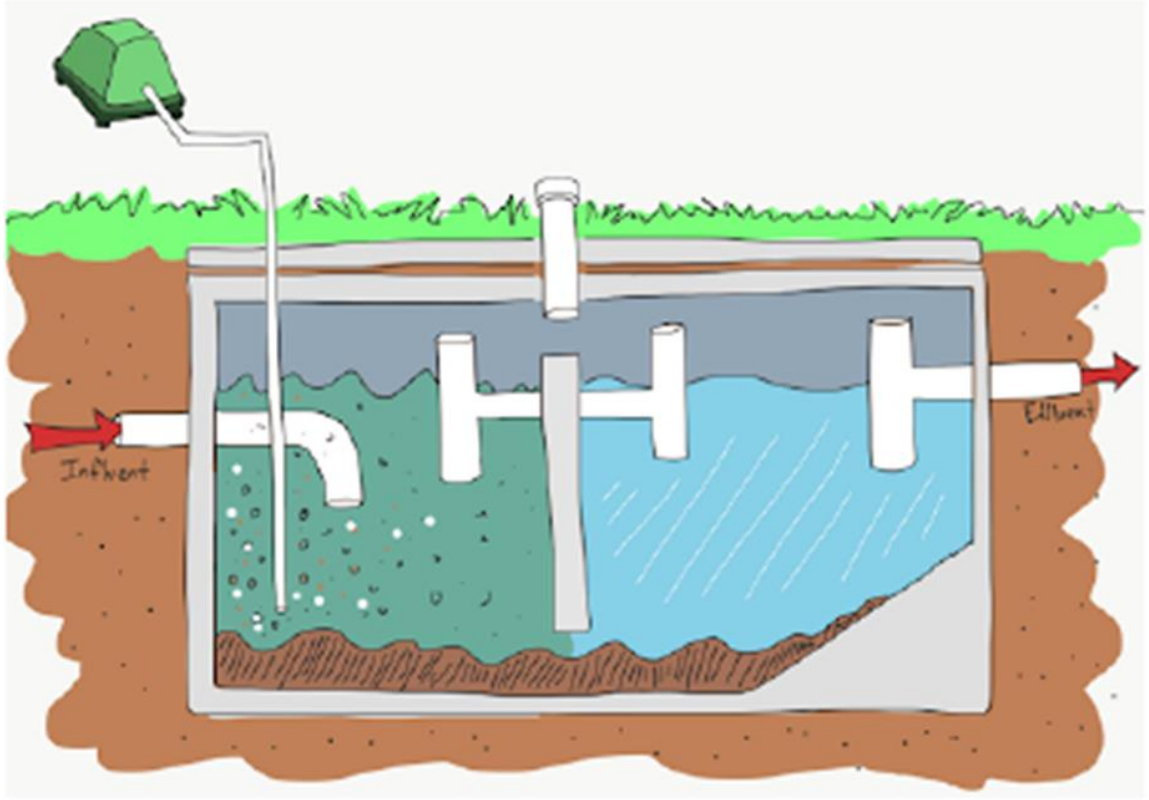
Onsite Sewer Systems





Maintenance, repairs, and any costs or responsibilities associated with an onsite sewer system fall onto the owner/operator. Operators are obligated to have a functioning system to properly treat system discharge.

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Impact of Non-Functioning Systems

- Public health risk
  - ❖Disease transmission by mosquitoes (West Nile, Zika, Dengue)
- Impaired waterways
  - ❖Contaminated water sources lead to water-borne diseases
  - ❖Fish kills and mosquito production
- Homeowners
  - ❖Reduced property value
  - ❖Increased system maintenance costs

Failing systems lead to negative impacts for people and the environment!

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GNOF 100 and YMCA

- Residential and commercial inspections
- Operator questionnaires
- Goals
  1. Investigate the functionality of wastewater systems
  2. Survey homeowners and commercial operators' system knowledge
  3. Determine storm resilience

PC aimed to identify areas with onsite sewer systems, assess system vulnerabilities, educate the public, and suggest solutions to vulnerabilities, if any.

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PLAQUEMINES PARISH HOME WASTEWATER INSPECTION FORM

HOUSE #	
STREET	
SUBDIVISION	
GPS @ OUTFALL	
DHH PERMIT #	

System Information	
RENTAL PROPERTY	☐ YES ☐ NO
CHLORINATING	☐ YES ☐ NO ☐ N/A
BACKFLOW PREVENTER	☐ YES ☐ NO ☐ N/A
GCFI/ELECTRICAL PROTECTION	☐ YES ☐ NO ☐ N/A
BACKUP POWER AVAILABLE	☐ YES ☐ NO ☐ UNKNOWN ☐ N/A
AGE OF SYSTEM	
HEIGHT OF SYSTEM RELATIVE TO GROUND SURFACE	
HEIGHT OF AERATOR ABOVE GROUND	
IS YOUR SYSTEM VULNERABLE TO:	PLUVIAL FLOODING ☐ YES ☐ NO FLUVIAL FLOODING ☐ YES ☐ NO

INSPECTION 1		Which Part FAILED		
DATE		Aerator	Airline	Aeration Chamber
HOMEOWNER PRESENT	☐ YES ☐ NO	☐ Connection ☐ Not Plugged In ☐ Not Running ☐ Running Not Pumping ☐ No Aerator	☐ Crack in Airline ☐ Airline Blocked ☐ Undetermined	☐ Sludge Level ☐ Roots ☐ Diffuser ☐ Undetermined
REFUSED INSPECTION	☐ YES ☐ NO			
ROS	☐ YES ☐ NO			
☐ PASS ☐ FAIL ☐ NA		Other:	Other:	Other:
NOTES:				INSPECTOR:

SYSTEM TYPE	EFFLUENT DISPERSAL METHOD	ESTIMATED CAPACITY (GAL.)
☐ Septic Tank ☐ Sewered ☐ ATU ☐ Other	☐ Ditch ☐ Leach Field ☐ Drain Field ☐ Undetermined	☐ 500 ☐ 1000 ☐ 1500
MANUFACTURER		
☐ Econo ☐ Norweco/Jet ☐ Clearstream ☐ Hoot ☐ Delta ☐ Modad Other:		
STATE TAG:	MODEL/SERIAL#:	

PLAQUEMINES PARISH HOME WASTEWATER INSPECTION FORM

Homeowner Questions	
ARE YOU HAVING OR THINK YOU WOULD HAVE ANY FINANICAL DIFFICULTIES MAINTAINING YOUR SYSTEM?	☐ YES ☐ NO
DO YOU FEEL LIKE YOU ARE PHYSICALLY ABLE TO MAINTAIN YOUR SYSTEM?	☐ YES ☐ NO
IF NO, DO YOU HAVE A FAMILY MEMBER OR FRIEND WHO CAN HELP YOU MAINTAIN YOUR SYSTEM?	☐ YES ☐ NO ☐ N/A
DO YOU FEEL LIKE YOU KNOW ENOUGH ABOUT YOUR SYSTEM TO PROPERLY MAINTAIN IT?	☐ YES ☐ NO ☐ SOMEWHAT
ARE YOU INTERESTED IN LEARNING MORE ABOUT HOW TO MAINTAIN YOUR SYSTEM?	☐ YES ☐ NO
IF WE OFFERED AN EDUCATION EVENT ABOUT YOUR SYSTEM WOULD YOU BE INTERESTED IN ATTENDING?	☐ YES ☐ NO
WHERE WOULD BE THE BEST PLACE TO GET WASTEWATER SYSTEM EDUCATION FOR YOU?	☐ ONLINE ☐ IN PERSON ☐ MAIL ☐ OTHER

The residential system questionnaire covered treatment system information, storm vulnerability, and operator knowledge and ability.

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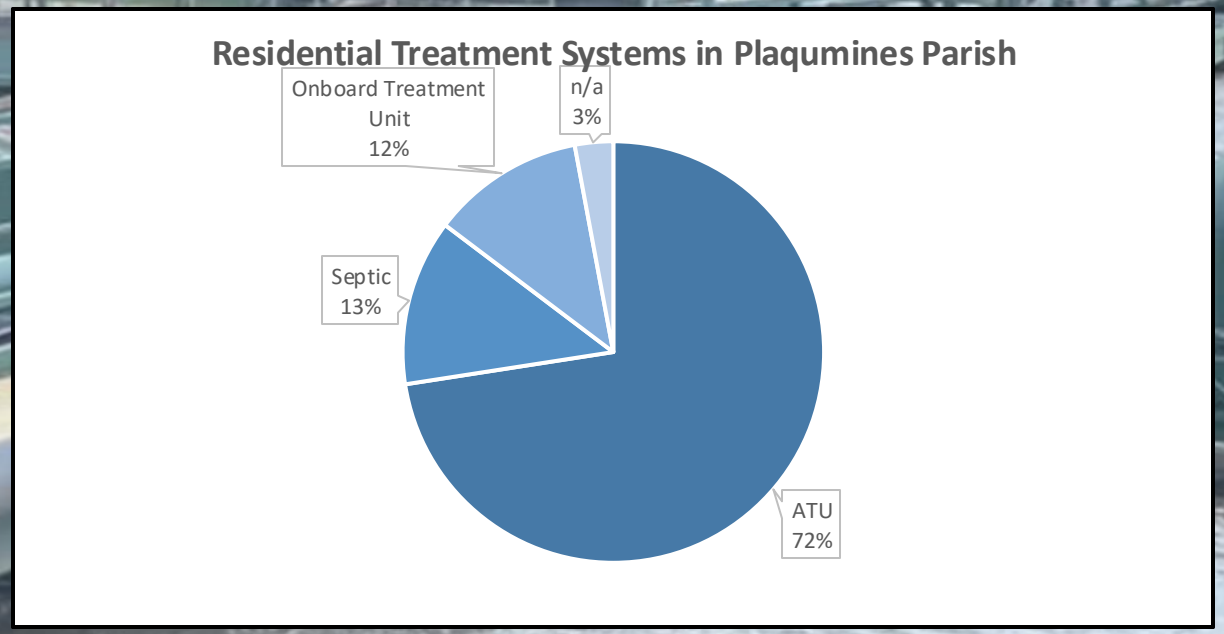
Plaquemines Systems

- 102 residential, 42 commercial
  - ❖ATUs are the most common type of system



ATUs make up 72% of residential systems and 93% of commercial systems.

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Plaquemines Systems cont.

- 65% failure rate for residential inspections
  - ❖Aerators non-functioning or missing
- 38 of 42 commercial systems in noncompliance
  - ❖Chlorination

Broken or missing aerators lead to system build up and premature pump-outs.

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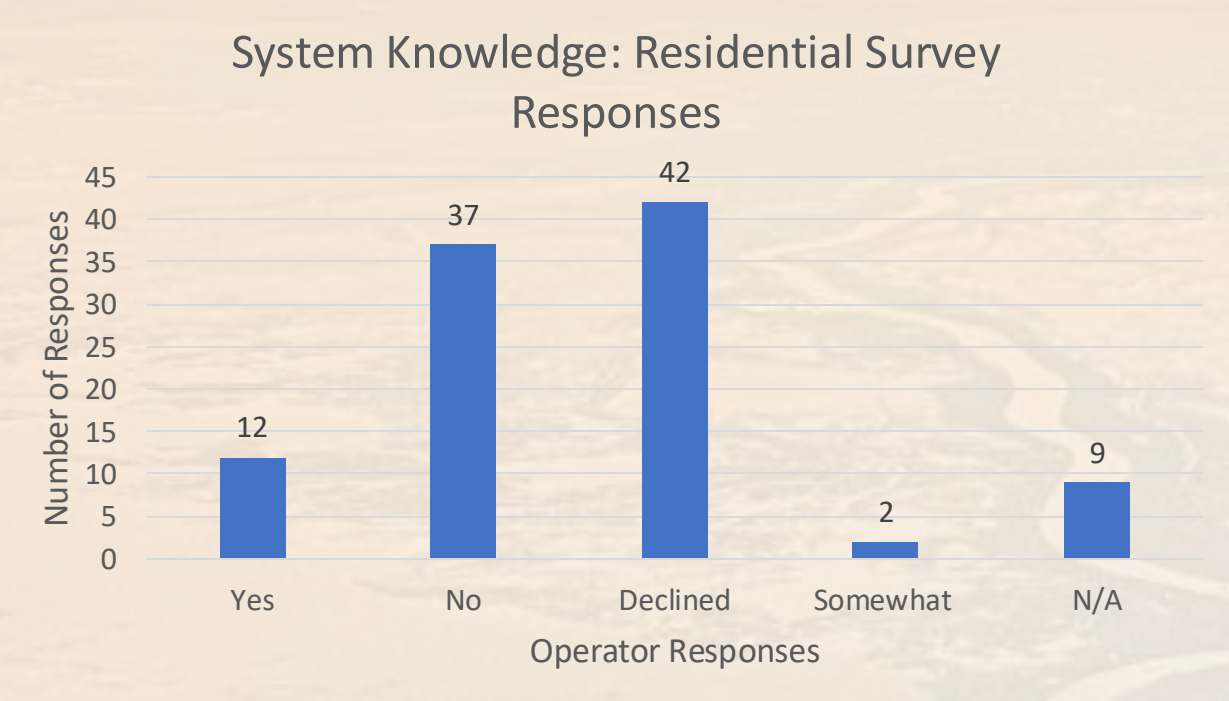
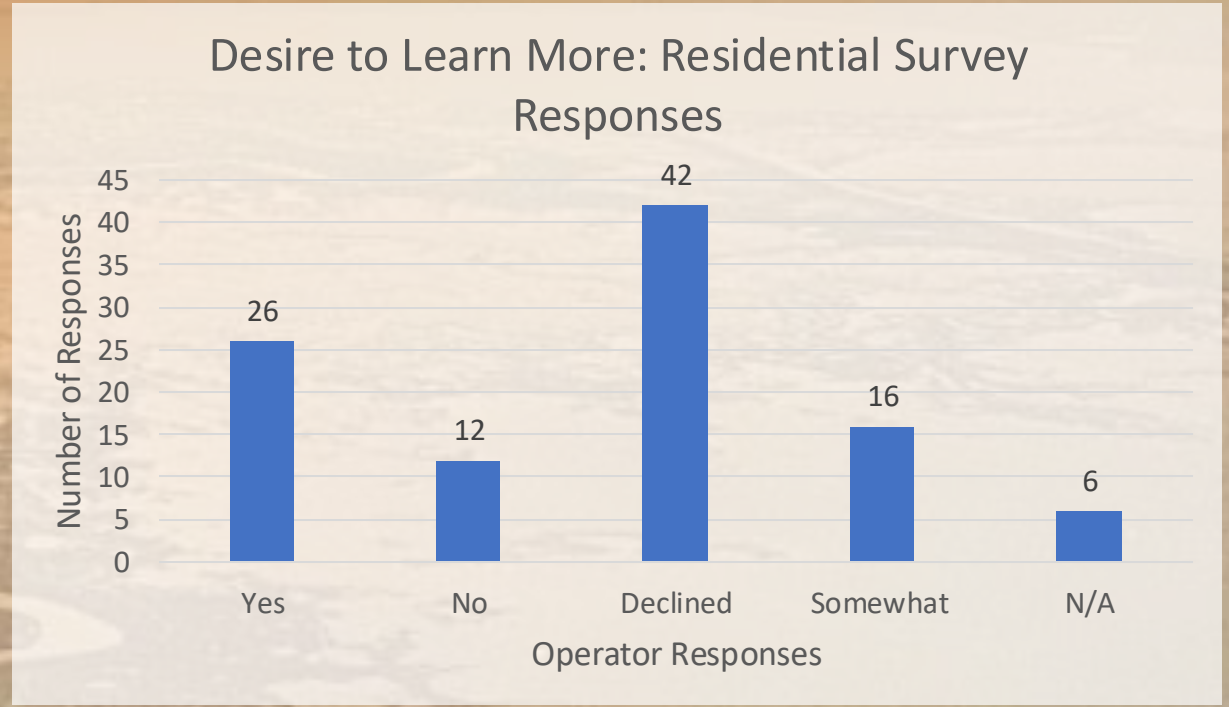
Residential Knowledge vs. Interest





35% of residential operators felt they did not have enough knowledge to maintain their systems. 25% expressed the desire to learn more.

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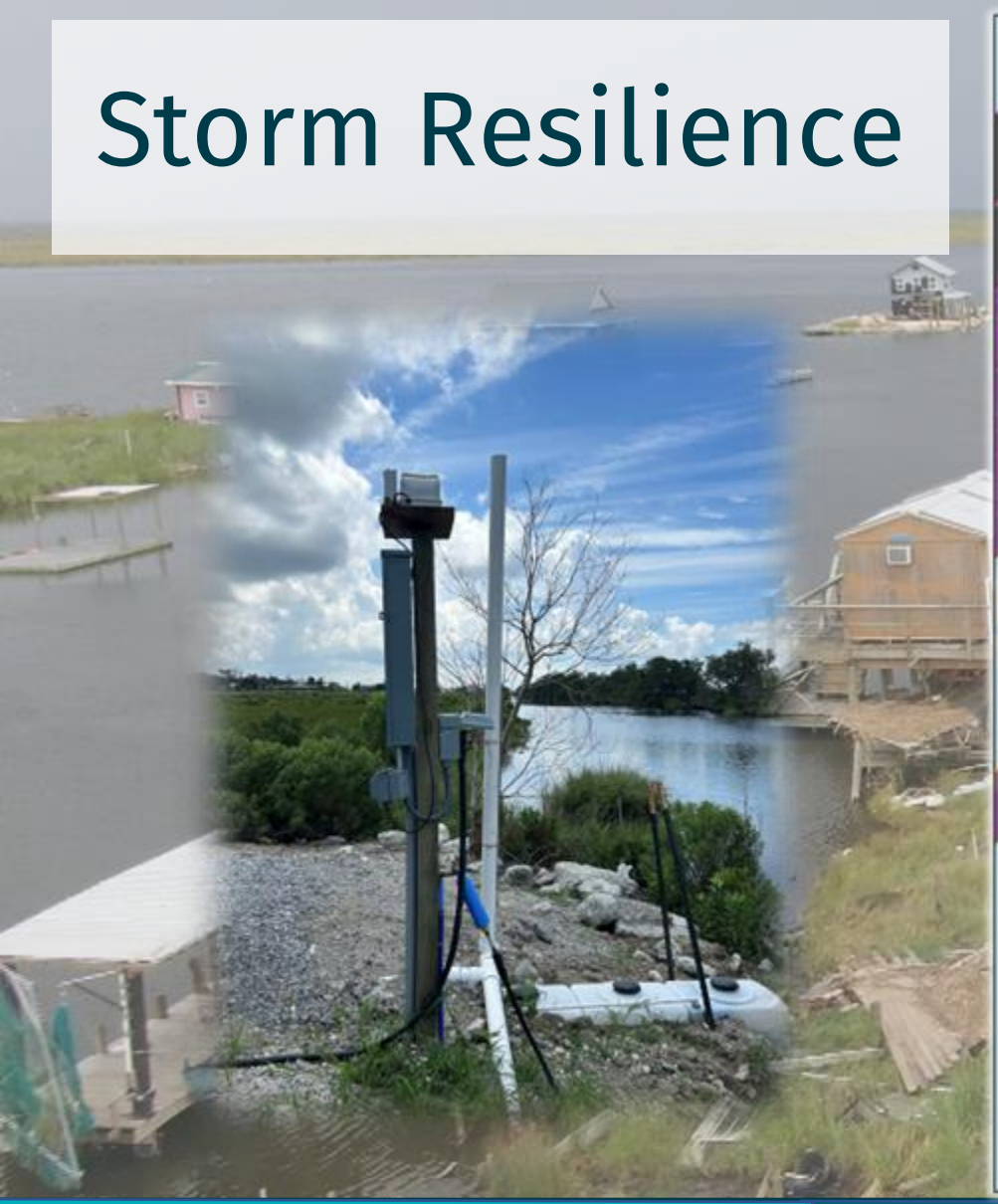
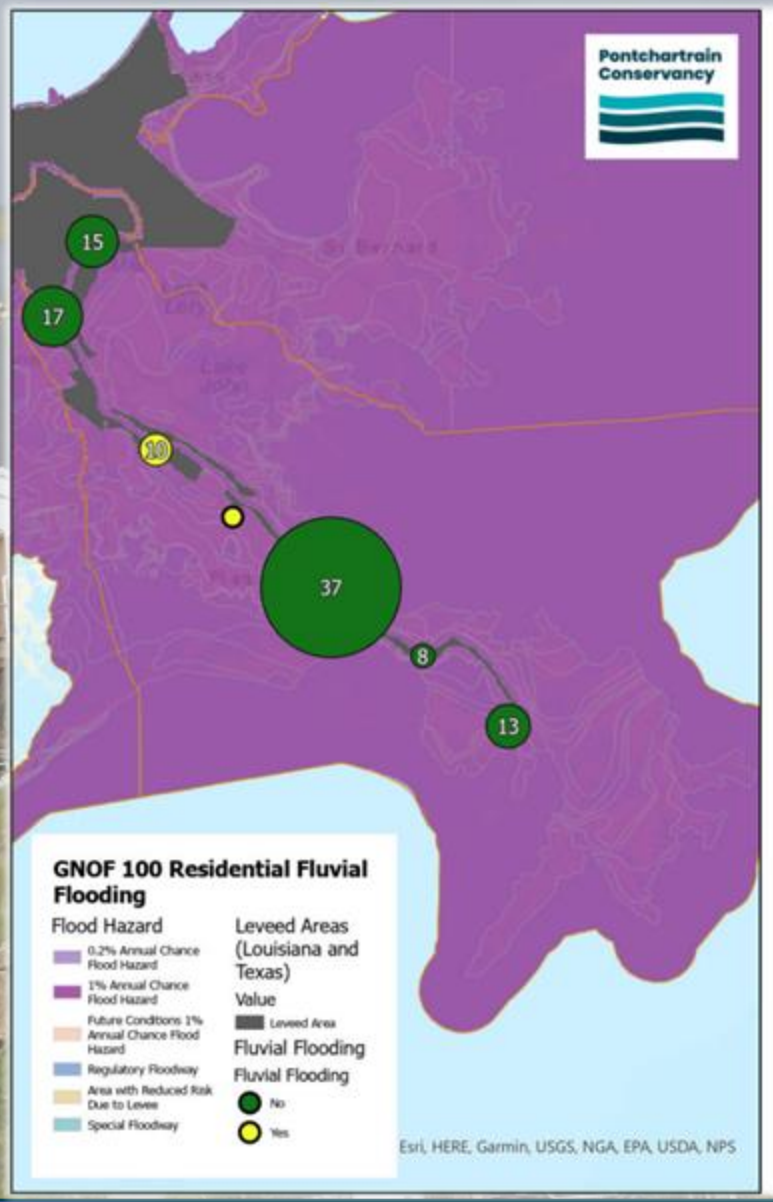
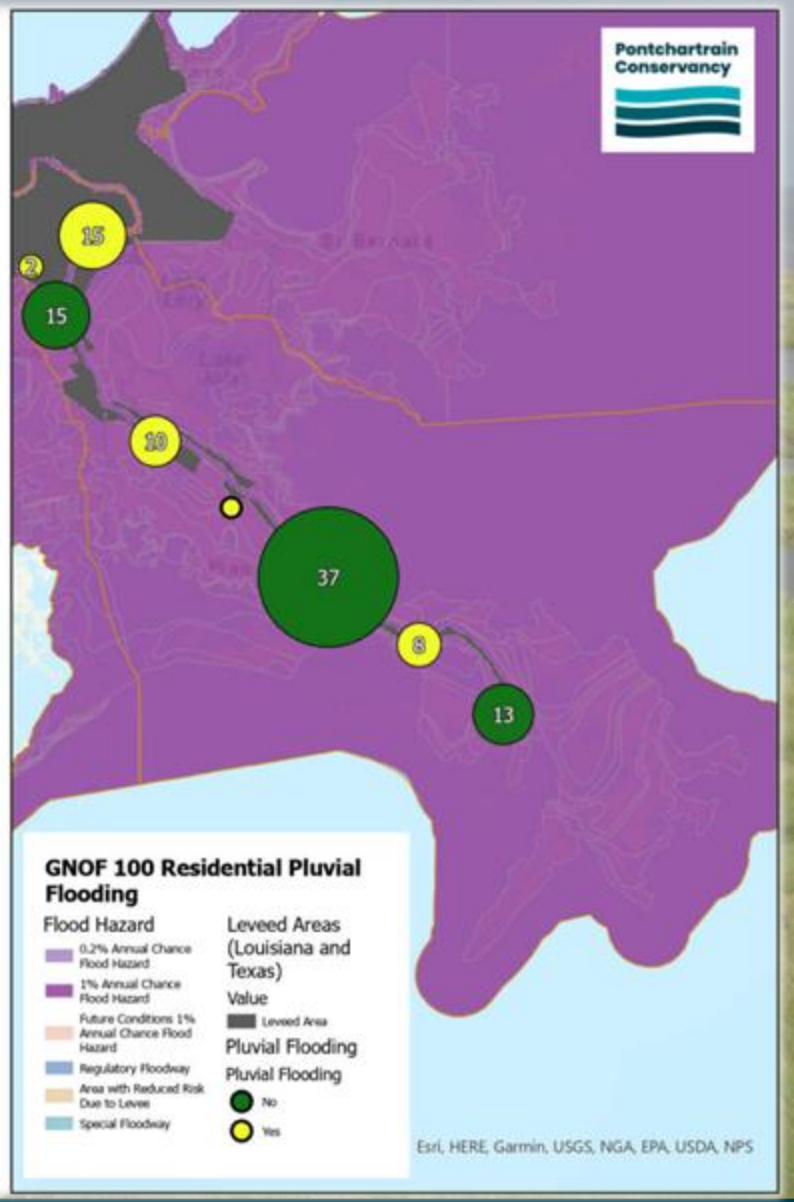
Storm Resilience







Systems in Plaquemines, particularly outside of the levee system, are incredibly vulnerable to flooding from normal rain events and storm surge.

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Conclusion

- Observed a higher residential failure rate than the previous 50% failure rate of more inland parishes
  - Coastal and river parish vulnerabilities – more frequent storm surge and pluvial events, particularly outside of the levee system
- Most operators have a lack of knowledge as to how their systems work or how to get them back online
  - System education is vital and will lead to better storm resilience and less costly failures

Stronger, functioning systems lead to improved water quality and healthier ecosystems. With the education, tools, and resources operators will maintain their systems!

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Thank you & Questions

Acknowledgements
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Citations

- [1]https://ldh.la.gov/page/wastewater#:~:text=Highlighted%20Facts,have%20enacted%20onsite%20sewage%20ordinances.
- [2] data.census.gov/profile/Plaquemines_Parish_Louisiana