

# Petronila & San Fernando Creeks WPP: *Septic System Workgroup*

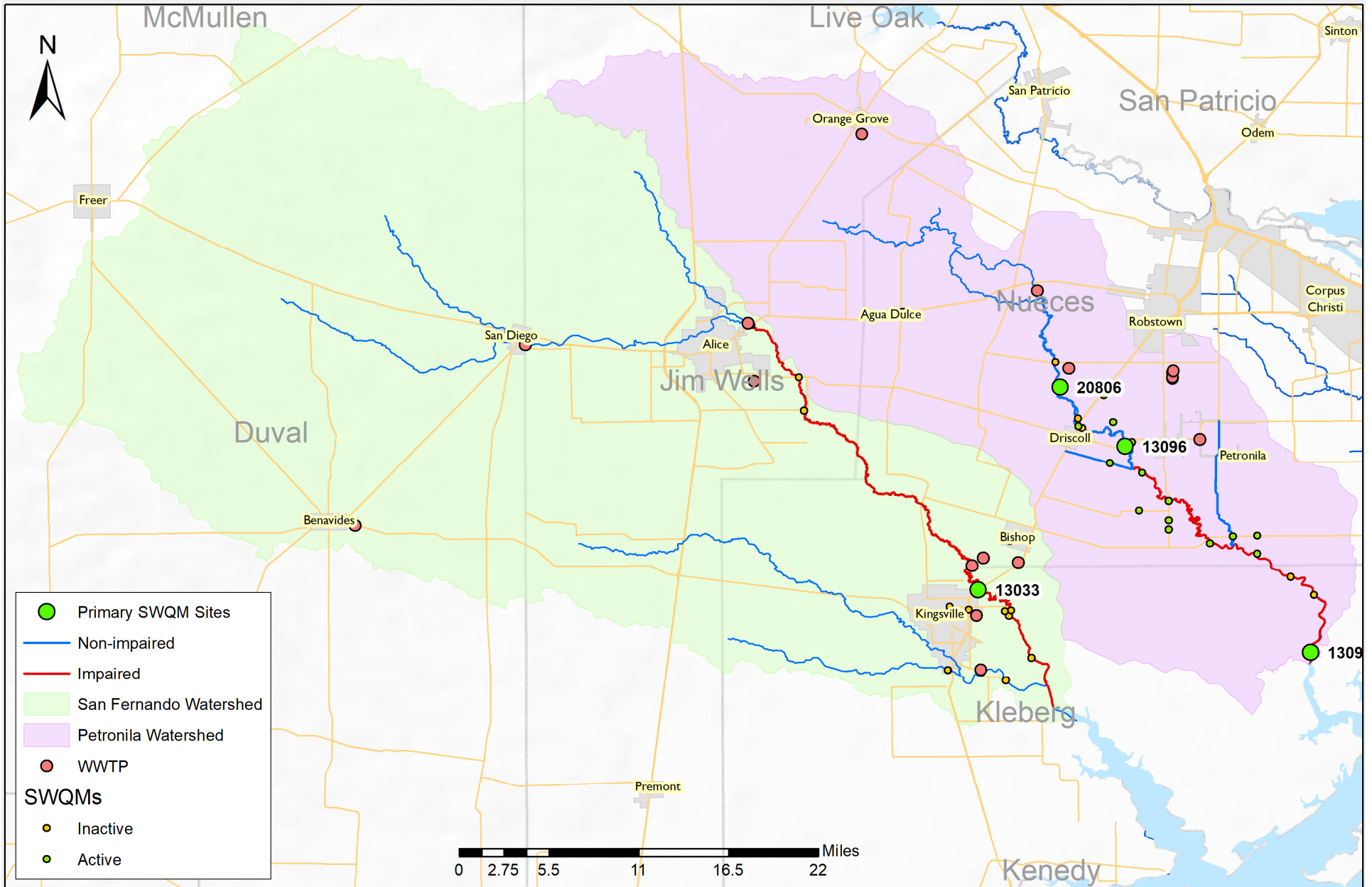
*Texas Water Resources Institute*  
*April 12, 2021*



# Meeting Outline

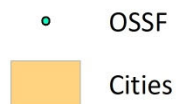
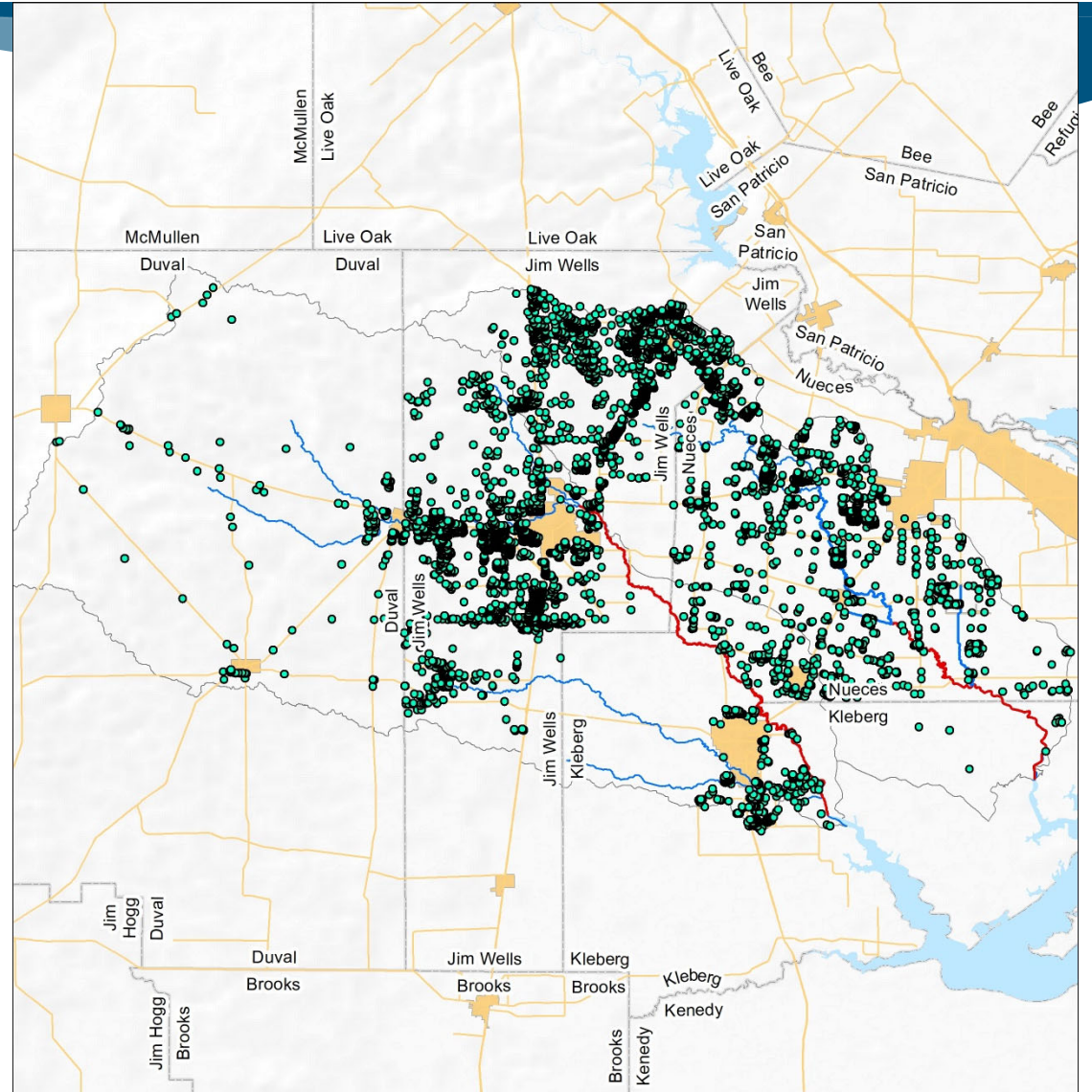
- ⦿ Present and discuss septic systems estimates in the watershed
- ⦿ Introduce the SELECT model as a tool to help identify priority areas for management recommendations
- ⦿ Discuss potential septic system related management measures

# Petronila & San Fernando Creek



# OSSF Point Map

- Estimated using
  - Coastal Zone OSSF dataset
  - 911 address points
- 9,086 OSSFs estimated in watershed**



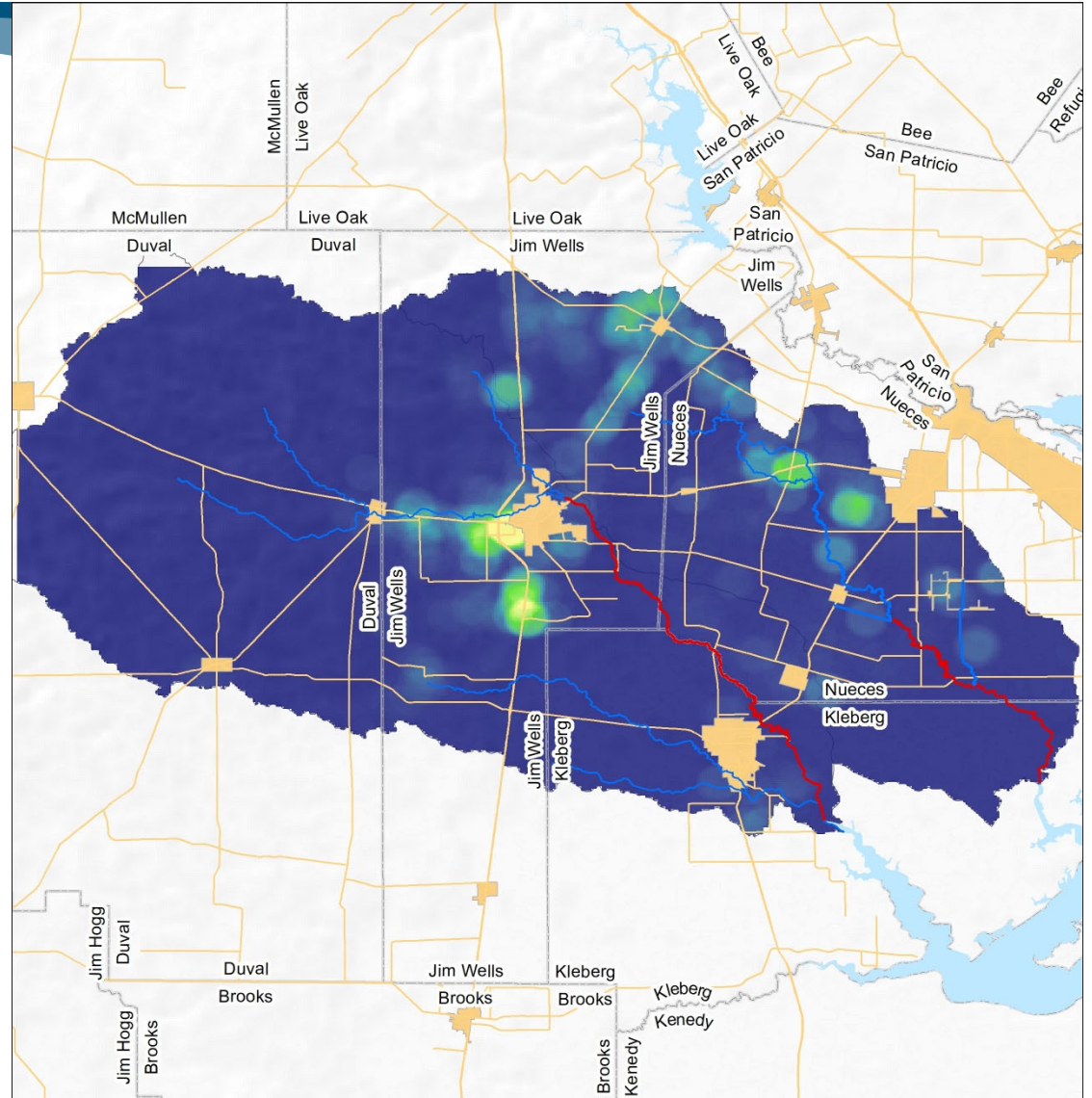
## Petronila & San Fernando Creek

Sources:  
OSSF Density - Derived from 911 Address Data  
Stream Segments - TCEQ  
Counties, Cities, Roads - TNRIS

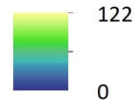


# OSSF Density Map

- ⦿ Estimated using
  - ⦿ Coastal Zone OSSF dataset
  - ⦿ 911 address points
- ⦿ **9,086 OSSFs estimated in watershed**

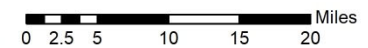


**OSSF per square mile**



**Petronila & San Fernando Creek**

Sources:  
 OSSF Density - Derived from 911 Address Data  
 Stream Segments - TCEQ  
 Counties, Cities, Roads - TNRS



# OSSF Assessment Questions

- ⦿ Do these estimates look reasonable?
- ⦿ Are there any high growth areas that weren't included?
- ⦿ Are there areas where OSSFs are commonly failing?
- ⦿ Are there known issues that need to be resolved?
  - ⦿ Improper maintenance
  - ⦿ System deterioration
  - ⦿ Other?

# Estimating Potential *E. coli* Loads

*Spatially Explicit Load Enrichment Calculation Tool (SELECT)*

Characterizes *E. coli* sources based on spatial factors

- Land use
- Soil
- Source population density

Input Data:

- Land use/land cover data updated
- Watersheds delineated
- Source info (animal numbers, OSSFs, wildlife, WWTFs, etc.)
- Data layers used in SELECT:
  - Land use
  - Hydrography (stream network)
  - Urban areas
  - Watershed boundary
  - County boundary
  - Soils

## EXAMPLE

### *E. coli* Loads: OSSFs

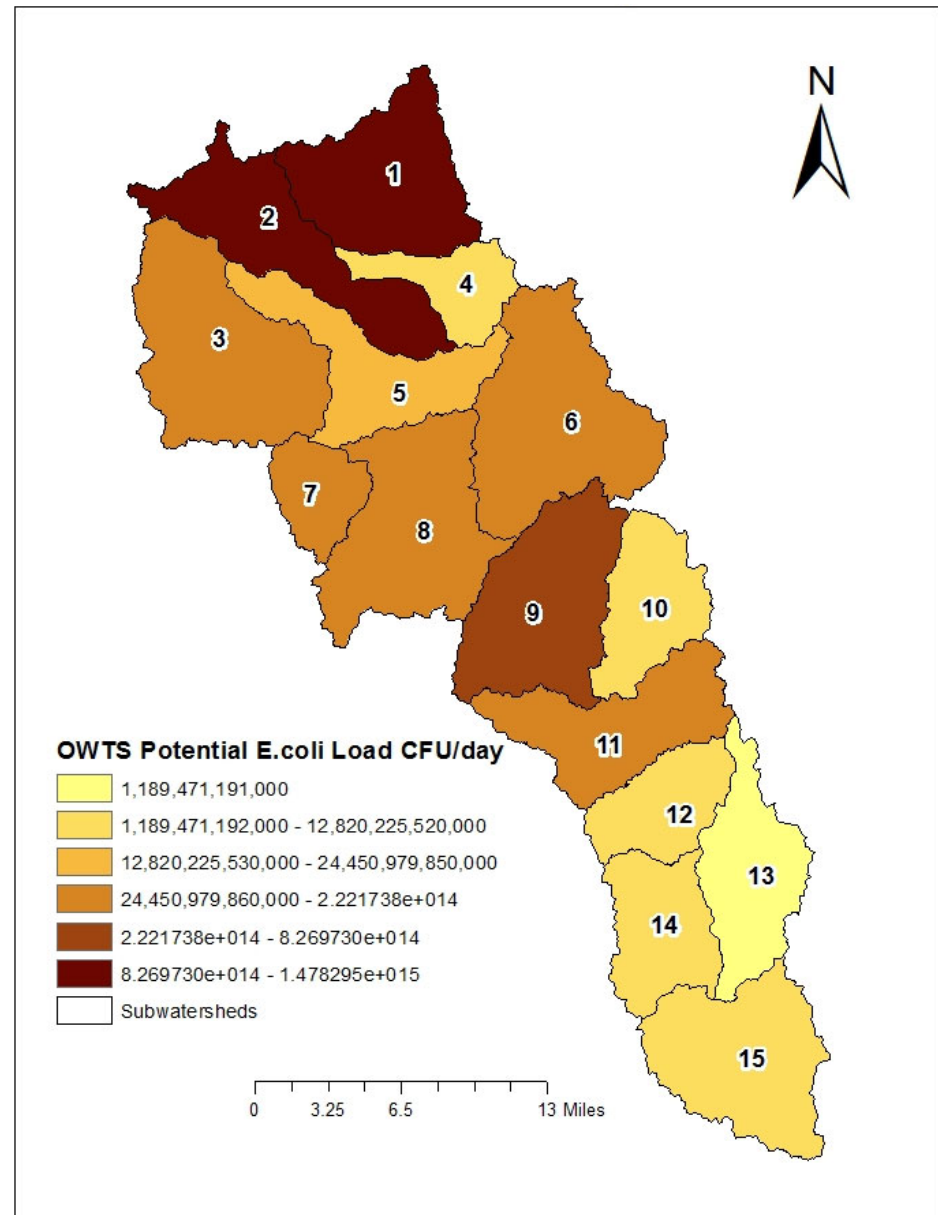
Estimated Population: 17,340

Based on estimated house count in rural  
areas

*E. coli* Load

$2.65 \times 10^{10}$  CFU/person/day

### OSSF Potential *E. coli* Load CFU/day





# What Do SELECT Results Tell Us?

- ⦿ Results demonstrate a ‘worst-case’ *E. coli* loading scenario
- ⦿ Shows relative ‘potential’ for *E. coli* loading from smaller subbasins within the larger watershed
- ⦿ Information can help prioritize where management practices are recommended for implementation

# Questions about SELECT?

- ⦿ Any questions about SELECT?
  - ⦿ What it does?
  - ⦿ How it is used?
  - ⦿ What it tells us?

## Next Steps:

- ⦿ Will run SELECT model to help prioritize management recommendations
- ⦿ Will show by watershed (Petronila and San Fernando)
- ⦿ Present outputs and next meeting

# Potential Management Measures

Potential Management Measures	Description	Potential Responsible Parties
Inspect and repair OSSFs	Develop a program to work with county designated reps and local stakeholders to identify, inspect and repair failing OSSFs.	
Create and distribute OSSF educational materials	Develop and deliver materials (postcards, websites, handouts, etc.) to educate homeowners on proper OSSF operation and maintenance.	
Education program delivery	AgriLife Extension currently operates an OSSF education, outreach, and training program for installer, service providers, and homeowners.	
Decommission priority OSSFs and connect to wastewater treatment plant	In certain communities, especially those near existing wastewater lines, stakeholder might be interested in connecting to existing infrastructure.	

Management Recommendations will be major topic of discussion at next meeting

# Questions?

Clare Escamilla  
Texas Water Resources  
Institute  
clare.entwistle@ag.tamu.edu

Lucas Gregory, PhD  
Texas Water Resources  
Institute  
lfgregory@ag.tamu.edu

*"This effort was funded through a State Nonpoint Source grant from the Texas State Soil and Water Conservation Board."*