



# **GRP Review Committee Meeting**

**March 20, 2023**

# Item 1

## Call to Order

# Item 2

## Public Comments

# Item 3

## Approval of Minutes

# Item 4

## GRP Division Updates

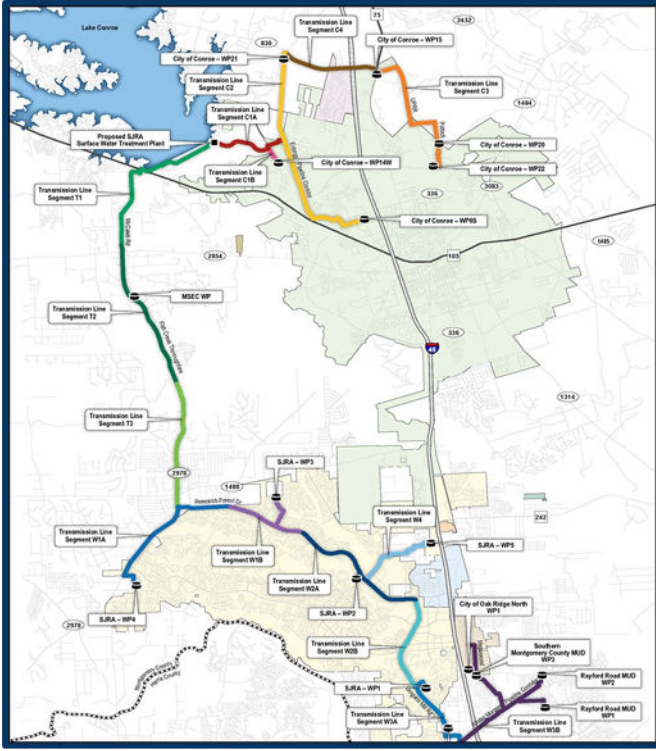
# Leadership Montgomery Class Presentation

## Coulson Tough Elementary, Destination Imagination – 5<sup>th</sup> and 6<sup>th</sup> Grade Tour



**Item 5**  
**Presentation and Discussion of the GRP  
Division's FY 2024 10-Year Project Plan**

# The GRP Division System



## Total Transmission System Assets:

- 54 miles of transmission system pipe diameter (12 - 60")
- > 2,000 valves and appurtenances
- **Approximate total assets = 3,000**

## Total Plant Assets:

- 173 pumps and motors
- Process equipment
- Piping and valves
- Chemical storage and delivery
- Power equipment
- Instrumentation and controls
- 2 ground storage tanks
- **Approximate total assets = 1,700**





## Likelihood of Failure (LOF)

Scale of 1 to 5

Determines the likelihood of an asset to fail defined in years.

## Consequence of Failure (COF)

Scale of 1 to 5

Determines the consequence of an asset failing in relation to social, environmental and financial impacts.

## Mitigation Factor (MF)

Up to 2.0

Determines any current mitigation to reduce LoF and CoF (redundancy, etc.)



# Asset Scoring



Condition or Performance	Rating	Estimated percent RUL	Estimated percent life consumed
Very good	A or 1	≥90	0 – 10
Good	B or 2	60 – 89	11 – 40
Fair	C or 3	30 – 59	41 – 70
Poor	D or 4	10 – 29	71 – 90
Very poor	F or 5	<10	91 – 100

# Membrane Replacement

## Pall Membrane Cartridge Replacement

Phase	Replacement
Project Period	FY 2025 - 2027
<b>Total Project Estimate</b>	<b>\$5.40 MM</b>

Membranes are planned for replacement in phases over a 3-year period.



# Process Water Discharge Optimization

## Process Water Discharge Optimization

<b>Phase</b>	New Project
<b>Project Period</b>	FY 2024 - 2027
<b>Total Project Estimate</b>	<b>\$2.93 MM</b>

Project Plan includes constructing a treatment unit to treat process water and return to plant rather than paying to dispose of as sanitary sewer.

Sanitary sewer still sent to Conroe.

- Current discharge is to City of Conroe
- Historical cost averages \$250k a year for discharge (\*this does not include annual rate increases going forward)
  - Additional cost for pretreatment and sampling
- Sewer rates charged are double due to being out of city
- Return on Investment = 10 - 11 years
- Service life of new asset = 25 years

# Project Cost / Funding Sources

Total Projected Costs (All Projects)	
Previously Funded	\$4.60MM
<b>FY 2024</b>	<b>\$3.00MM</b>
FY 2025	\$0.40MM
FY 2026	\$0.40MM
FY 2027	\$0.00MM
<b>Total</b>	<b>\$8,400,000</b>

Total Projected Costs (All Projects)	
FY 2028	\$0
FY 2029	\$0
FY 2030	\$0
FY 2031	\$0
FY 2032 – FY 2033	\$0
<b>Total</b>	<b>\$0</b>

# Questions

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**Item 6**  
**Lone Star Groundwater Conservation**  
**District Update**

# Lone Star Groundwater Conservation District



**UPDATE ON  
LSGCD  
SUBSIDENCE  
STUDY**

MARCH 20, 2023



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# OUTLINE

- Abbreviated History and Timeline for LSGCD
- Why Study Subsidence in Montgomery County?
- Phase 3 Update



# LONE STAR GCD HISTORY AND TIMELINE

<b>Formed with appointed board</b>	<b>2001</b>	
	<b>2005</b>	<b>Chapter 36 update -Joint Planning, DFCs</b>
<b>GRP development begins</b>	<b>2006</b>	
<b>First GRP contracts</b>	<b>2010</b>	<b>First DFCs adopted based on 64,000 afy recharge</b>



# LONE STAR GCD HISTORY AND TIMELINE

	<b>2011</b>	<b>Chap. 36 update – balancing test</b>
	<b>2012</b>	<b>Supreme Court issues Day decision</b>
<b>large users sue LSGCD alleging reduction rule is illegal</b>	<b>2015</b>	
<b>LSGCD DFCs are petitioned</b>	<b>2016</b>	



# LONE STAR GCD HISTORY AND TIMELINE

<b>Legislature changes LSGCD from appointed to elected board</b>	<b>2017</b>	<b>LSGCD concludes that 100,000 afy pumping is feasible based on “Strategic Planning Study”</b>
<b>DFC Petition successful</b>		
<b>Elected board takes office in November</b>	<b>2018</b>	



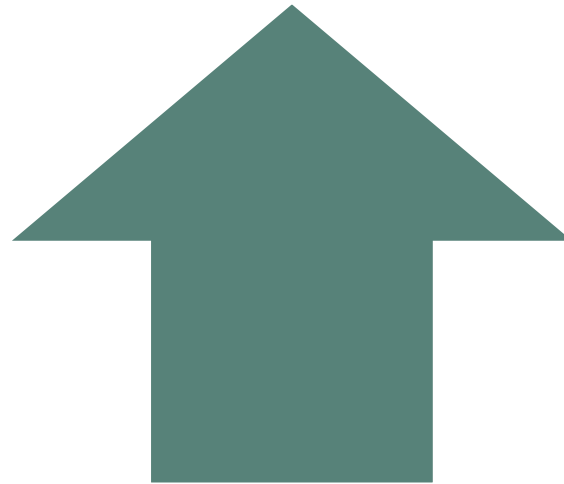
# LONE STAR GCD HISTORY AND TIMELINE

	<b>2019</b>	<b>State court invalidates LSGCD GRP rules</b>
	<b>2020</b>	<b>LSGCD amends rules to eliminate GRP and reduction rules</b>
	<b>2022</b>	<b>GMA 14 approves DFC with ~ 97,000 afy pumping in LSGCD</b>

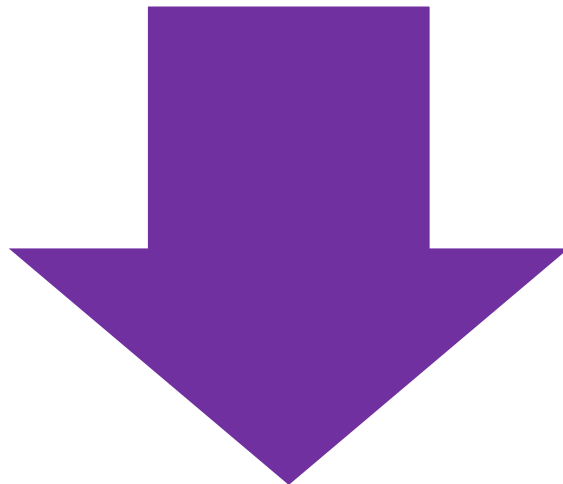


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# CHAPTER 36 BALANCING TEST – THE DFC MUST PROVIDE A BALANCE BETWEEN



highest practicable level of groundwater production



conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence



# 9 FACTORS TO CONSIDER IN DEVELOPING DESIRED FUTURE CONDITIONS

Aquifer Uses or  
Conditions

Supply Needs  
and  
Management  
Strategies

Hydrological  
Conditions

Environmental  
Impacts

Subsidence  
Impacts

Socioeconomic  
Impacts

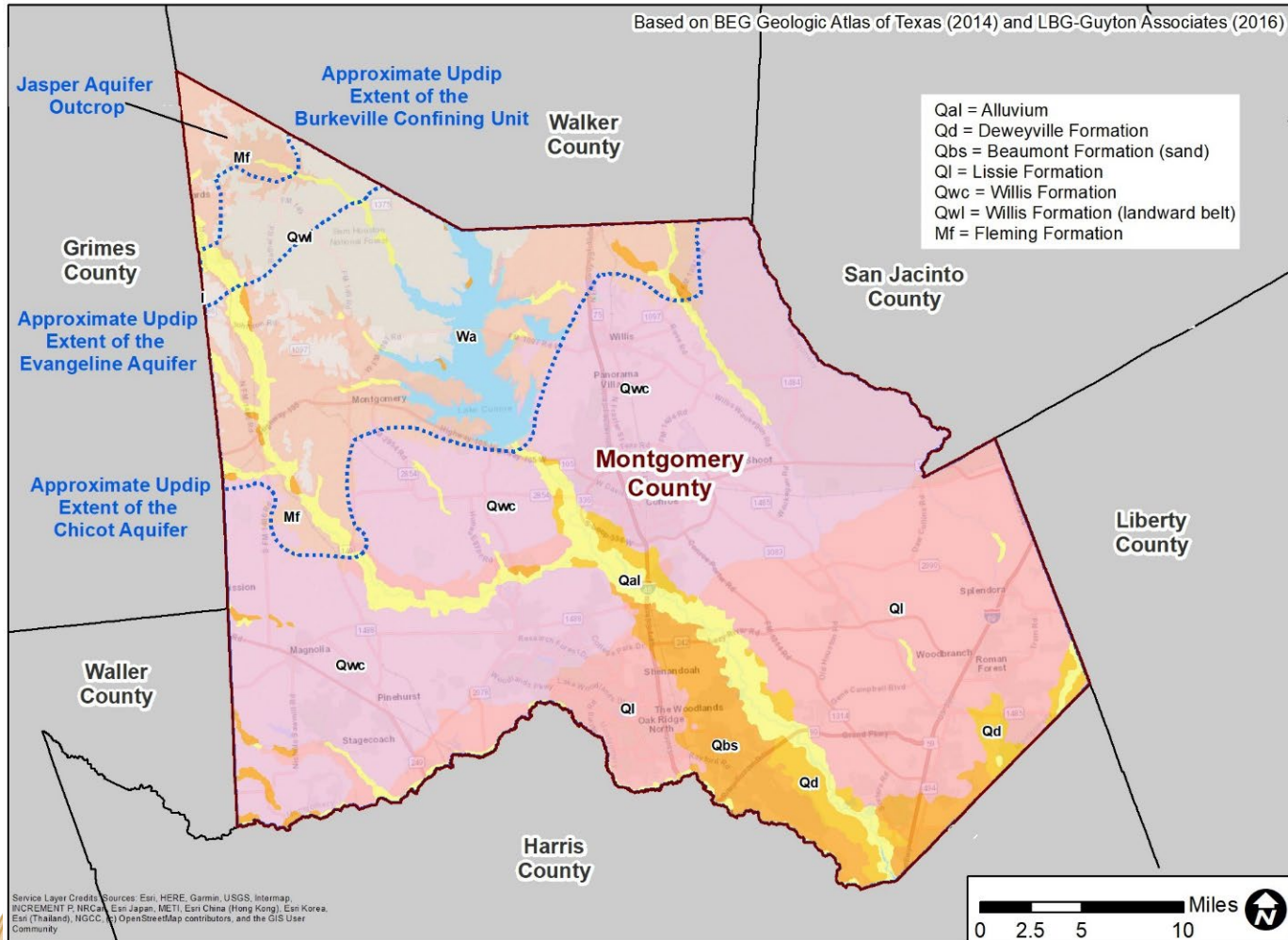
Private Property  
Rights

DFC Feasibility

Other Relevant  
Information



# GULF COAST AQUIFER SYSTEM



Epoch	Hydrogeologic Unit	Geologic Unit		
Holocene	Alluvium			
Pleistocene	Chicot Aquifer	Beaumont Clay		
		Lissie Formation		
Pliocene		Willis Formation		
Miocene	Evangeline Aquifer	Goliad Sand	Upper	
			Lower	
	Burkeville Confining Unit	Fleming Formation	Lagarto	Upper
				Middle
Upper Jasper Aquifer			Lower	
Lower Jasper Aquifer		Oakville		
Oligocene	Catahoula	Catahoula		





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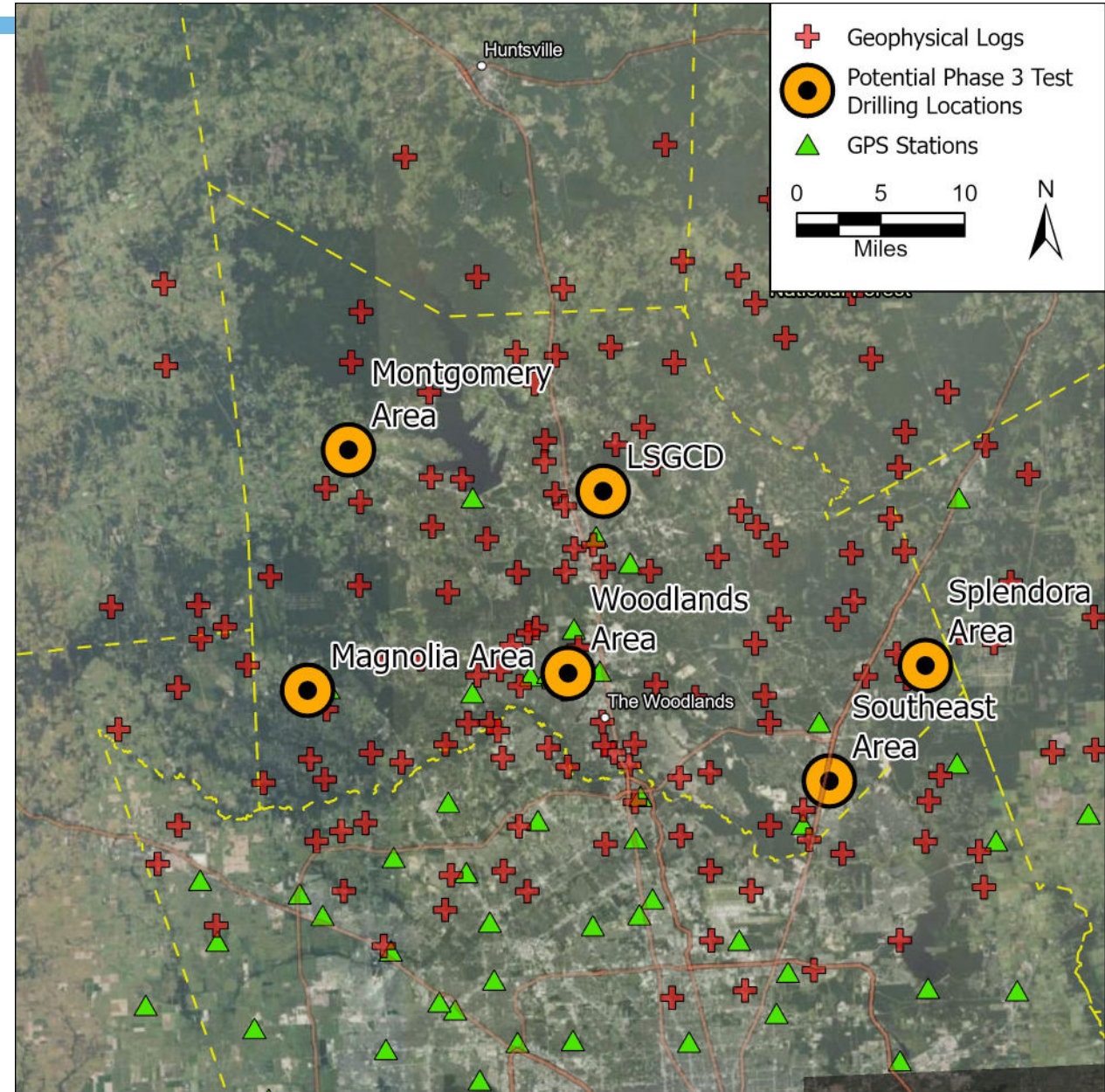
# PHASE 3 BENEFITS

- Obtain site-specific data in Montgomery County related to compaction
- Inform our understanding of past compaction
- Improve regulatory groundwater models
- Directly relates to data-driven resource management



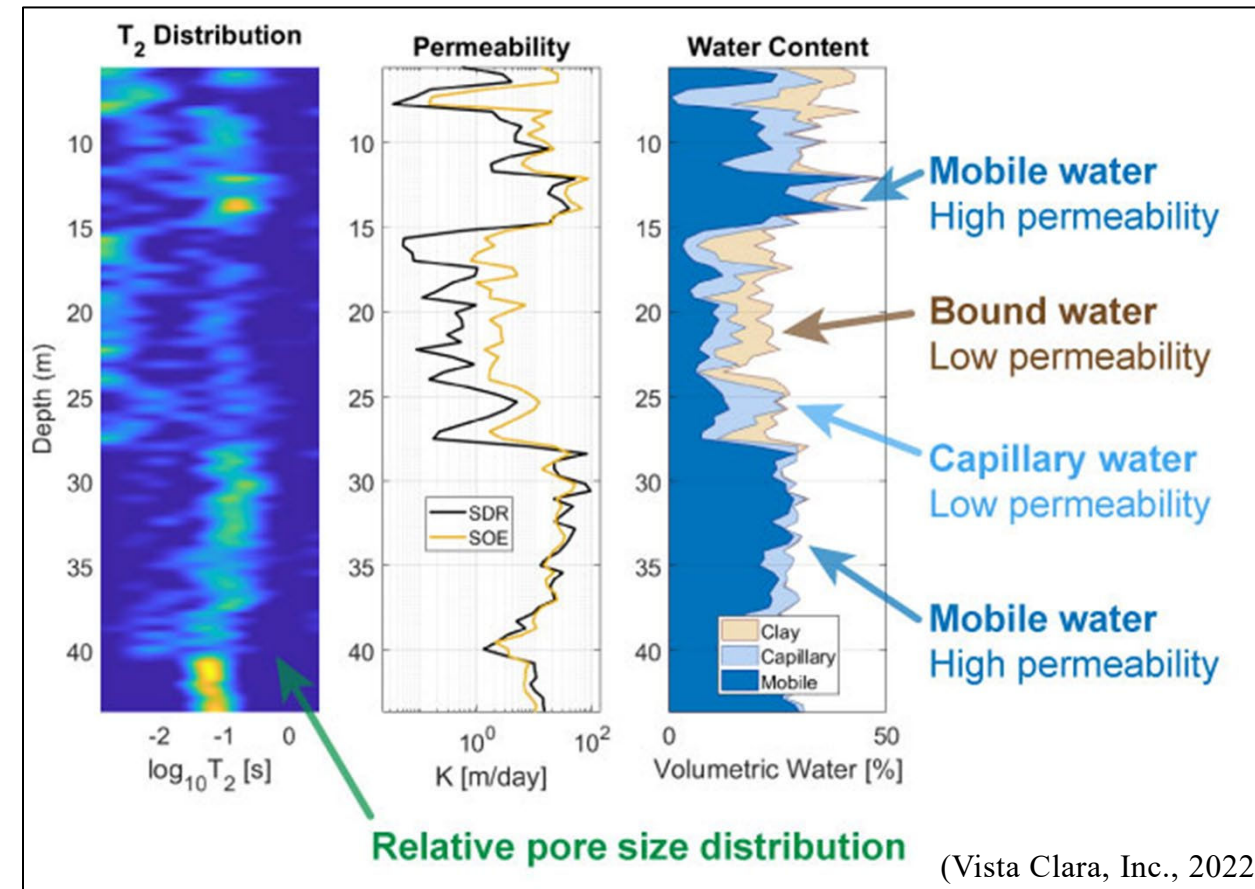
# PROPOSED LOCATIONS

- Six sites
- Spread across the county



# GEOPHYSICAL LOGGING

- Triple Combo (Resistivity, Natural Gamma, and Neutron/Density porosity)
  - Lithology
  - Water quality
  - Porosity
- Micro-normal/micro-inverse resistivity
  - Relative permeability (qualitative)
  - Water quality
- Spectral Gamma
  - Lithology
  - Clay mineral composition
- Magnetic Resonance
  - Permeability (quantitative)
  - Porosity
  - Movable water

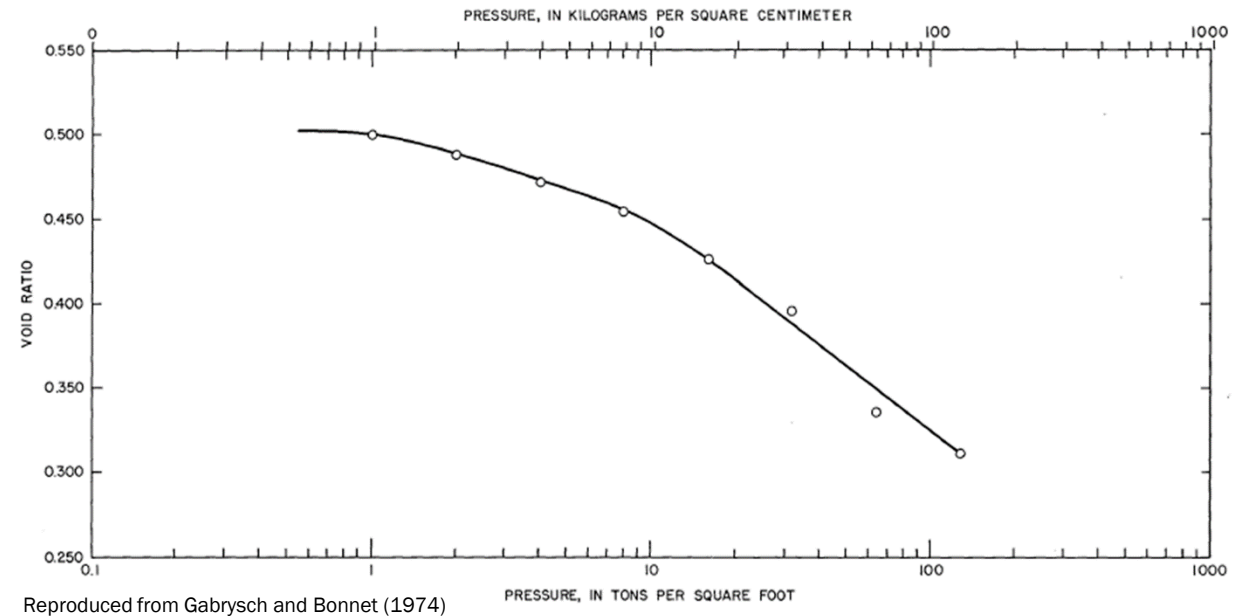


(Vista Clara, Inc., 2022)



# LAB ANALYSIS OF CORE SAMPLES

- Vertical permeability
- Clay mineralogy
- Oedometer testing
  - Void ratio change with increased pressure
  - Calculate porosity and compressibility change with increased pressure

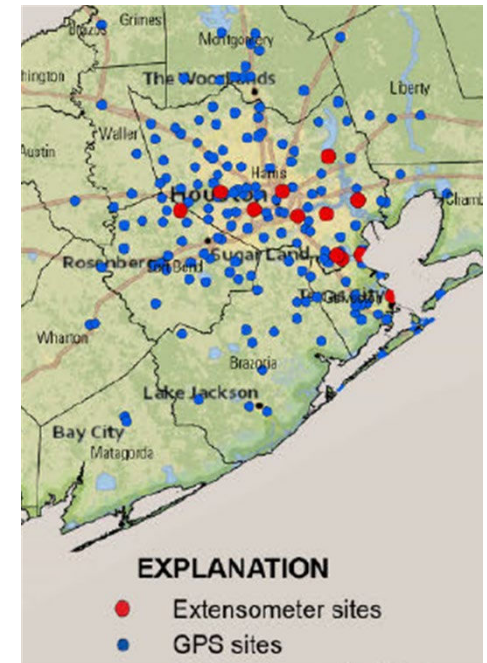


<https://videohive.net/item/geology-rock-drill-core-samples-in-wooden-box/25738481>



# EXTENSOMETER

- Used to measure compaction of aquifer sediments above the anchor point in the subsurface
- Currently 12 sites in Houston area
- Proposed extensometers
  - Anchored at top of the Burkeville
  - Measure compaction of the Chicot & Evangeline
  - Measure water levels in the deep Evangeline
  - Use local GPS station data for total compaction
- Paired water-level monitoring well completed in the Upper Jasper



Map from USGS GULF 2023 Update



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# PHASE 3 SUMMARY

- Obtain site-specific data in Montgomery County related to compaction
  - Advanced geophysics
  - Core sampling
  - Extensometers
- Inform data-driven resource management



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**THANK YOU**

**QUESTIONS?**



**Item 7**  
**GRP items for consideration by the**  
**SJRA Board of Directors on March 23, 2023**



# Item 8

## Attorney's Update

**Item 9**  
**Future GRP Review Committee Meeting**  
**Agenda Items**

**Item 10**  
**Future Meeting Schedule**

**April 24, 2023**

# Item 11

# Adjourn