

# Guadalupe County GCD

Phase 1  
IMPACT  
ASSESSMENT  
Update

SEPTEMBER 22, 2022

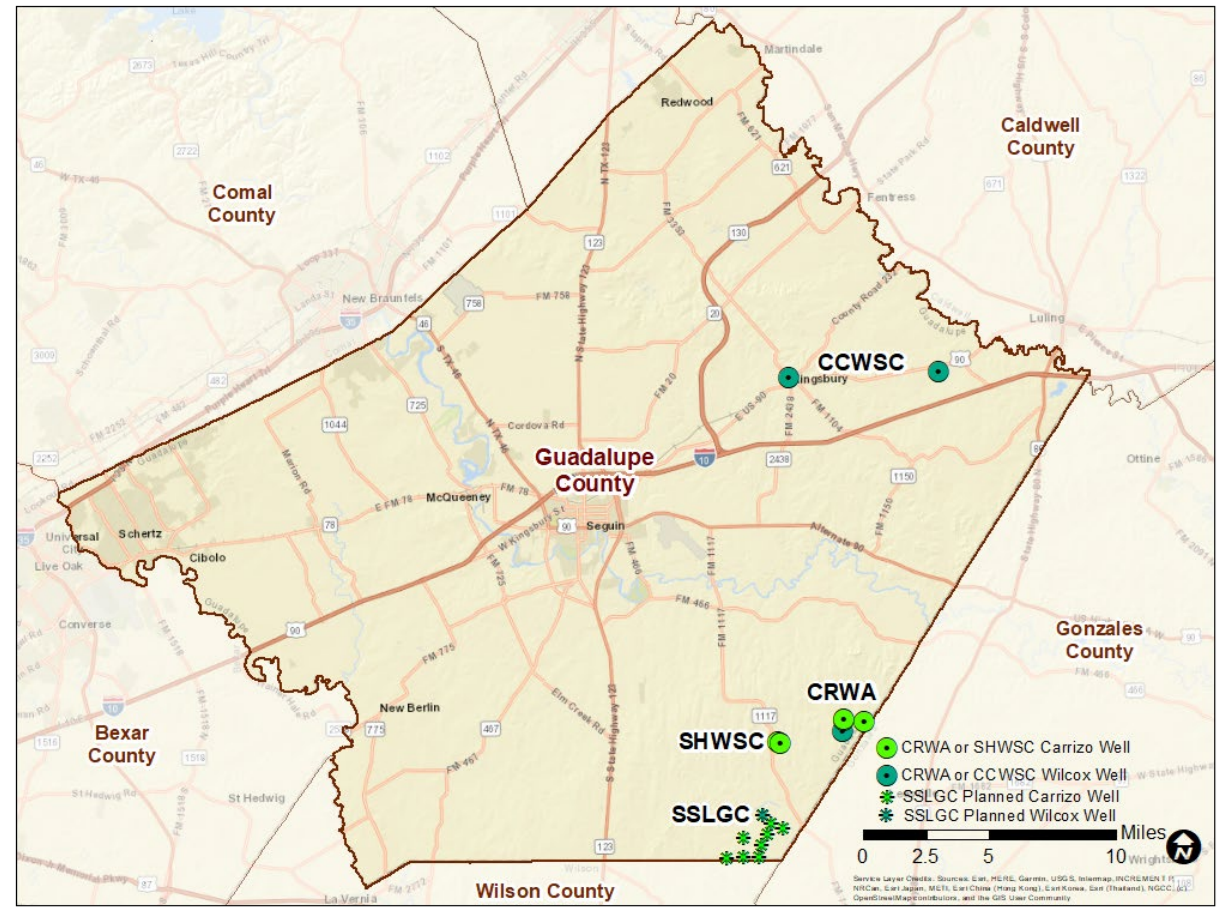
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## SCOPE OF STUDY

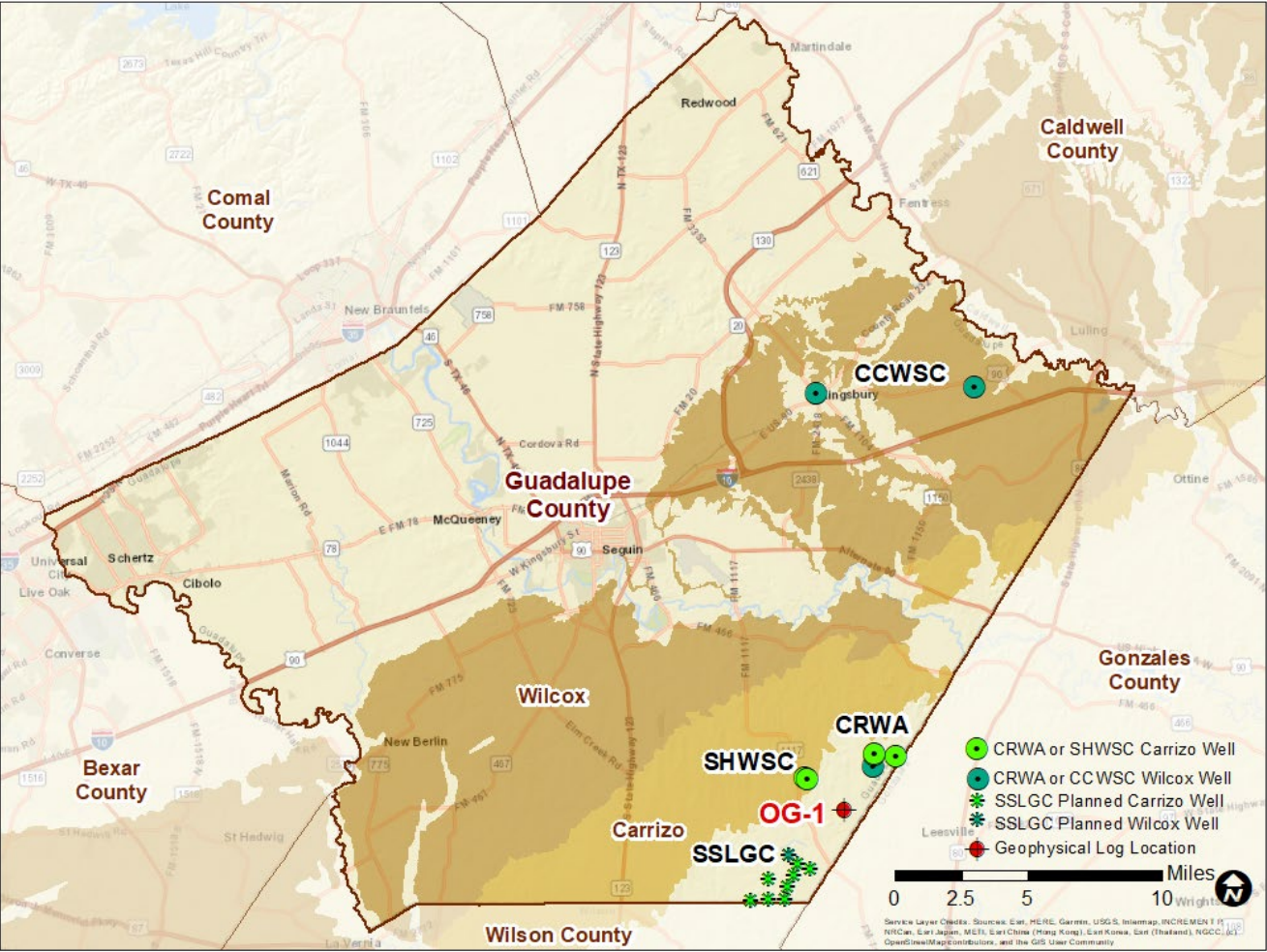
1. Review status of District hydrogeologic data and water level monitoring program
2. Refine the pumping estimates and hydraulic properties in the TWDB Southern Carrizo Wilcox GAM as necessary to complete analysis
3. Assess GCGCD database of wells in the Carrizo and Wilcox Aquifers, specifically regarding screened intervals in both aquifers
4. Identify data deficiencies and provide recommendations to the District for improvements
5. Stakeholder Meeting – work with GCGCD to provide a workshop for permittees and stakeholders to describe approach, assumptions, and limitations and gather feedback and suggestions on approach

# REVIEW STATUS OF DISTRICT HYDROGEOLOGIC DATA AND WATER LEVEL MONITORING PROGRAM

- Carrizo and Wilcox aquifer stratigraphy
- Monitoring network and water level measurements
- Available wells in database
  - Screen intervals
  - Uncertainty of pump settings



# Carrizo and Wilcox aquifer stratigraphy

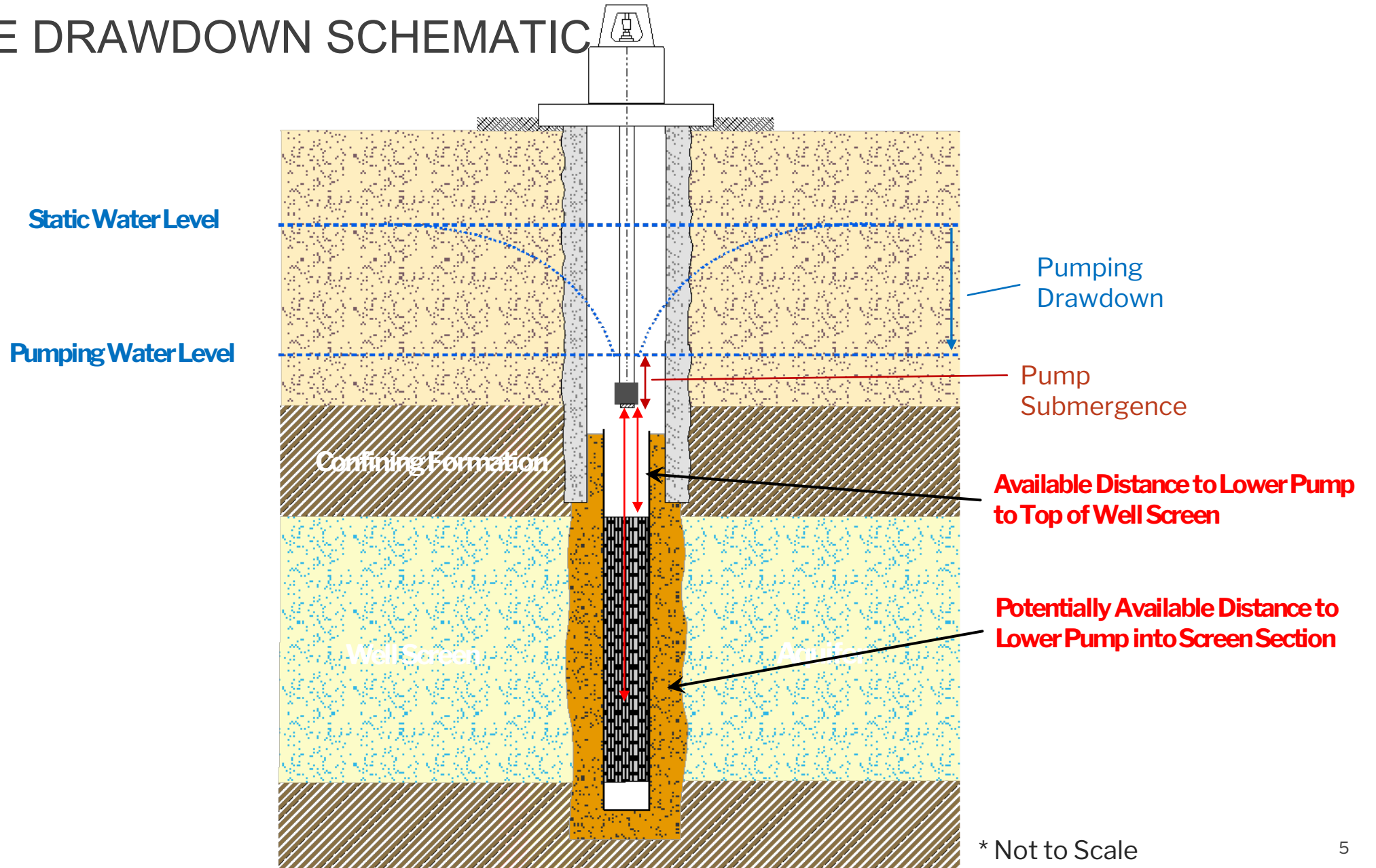


**Base of Carrizo Aquifer  
Depth: 613 feet, bls**



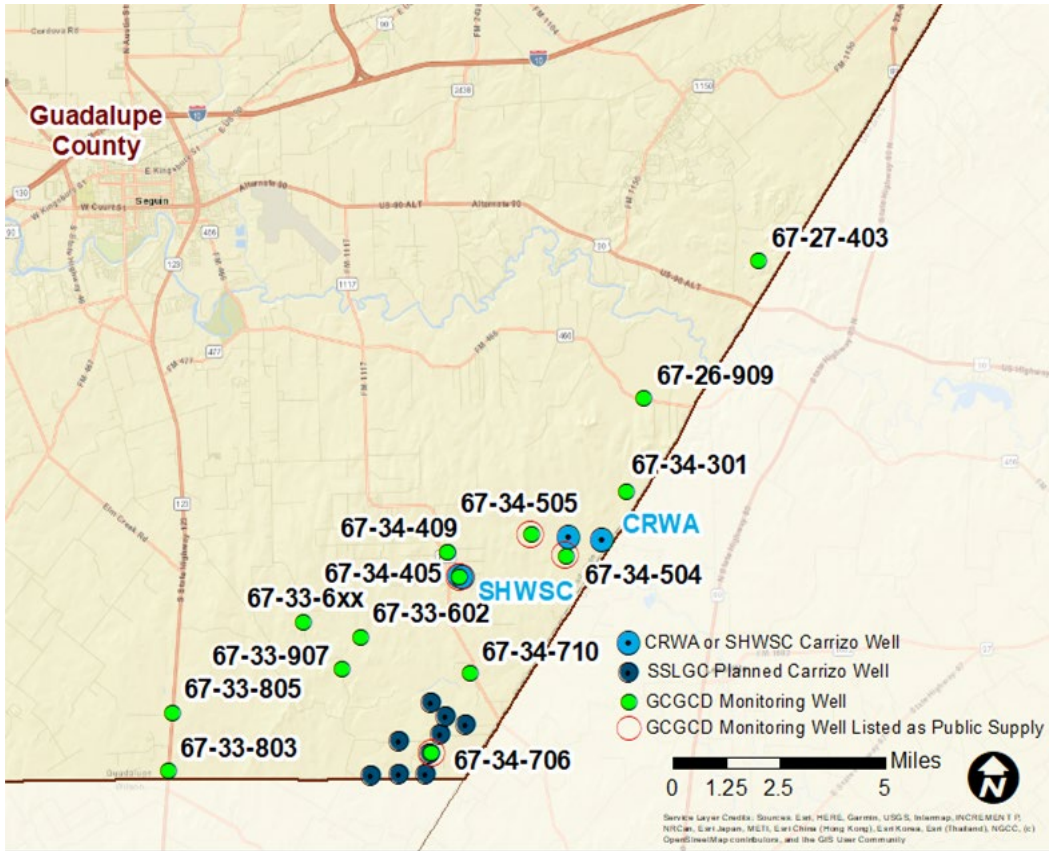
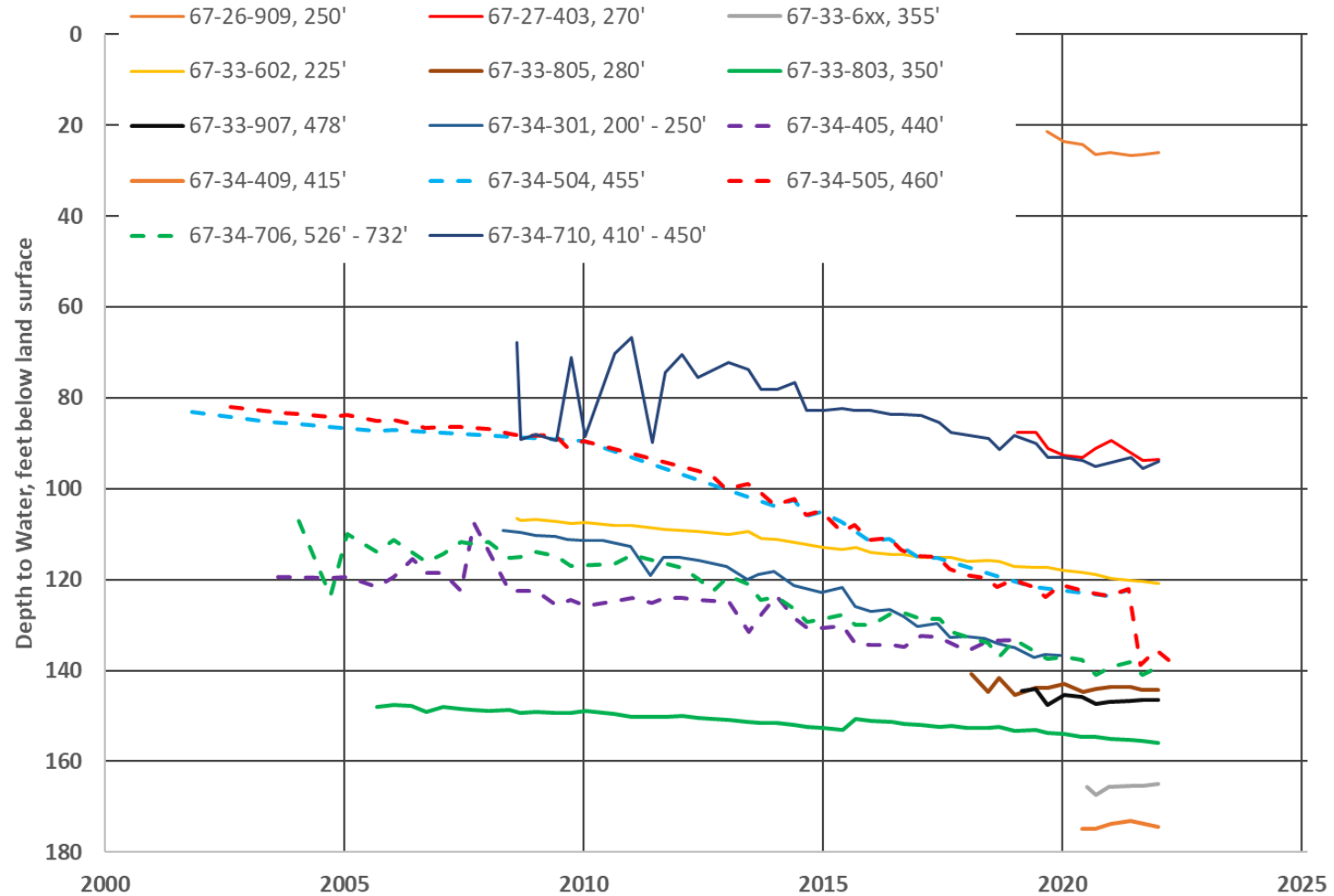


# AVAILABLE DRAWDOWN SCHEMATIC

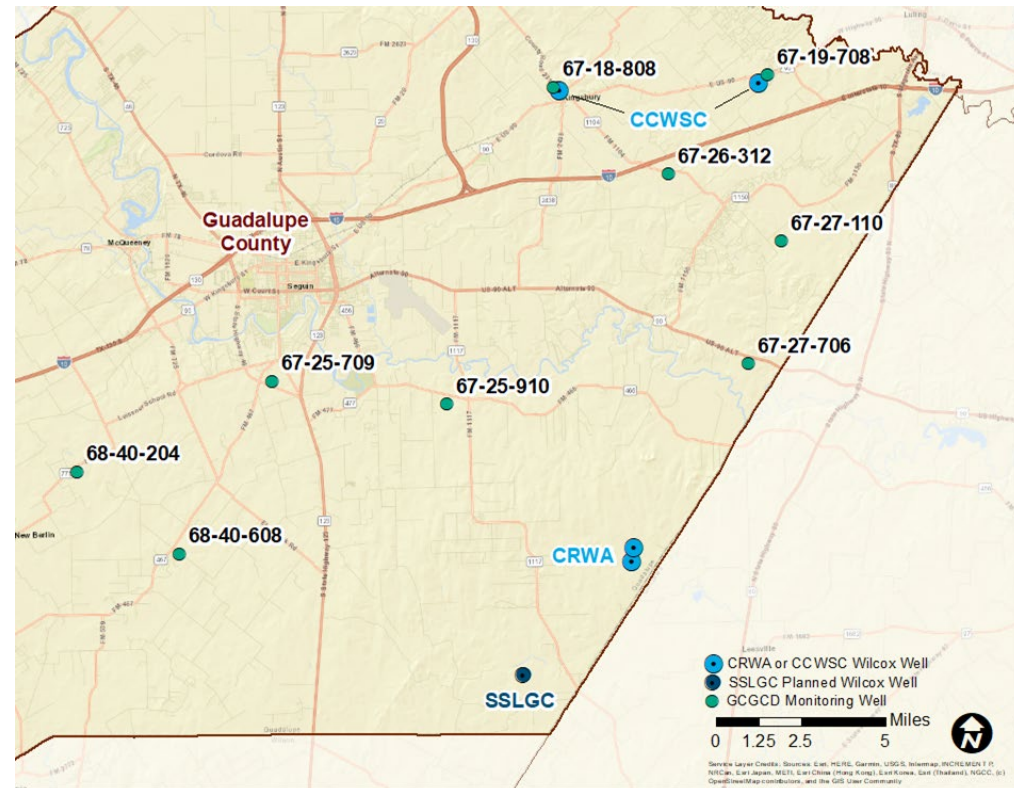


# CARRIZO WATER LEVEL MEASUREMENTS

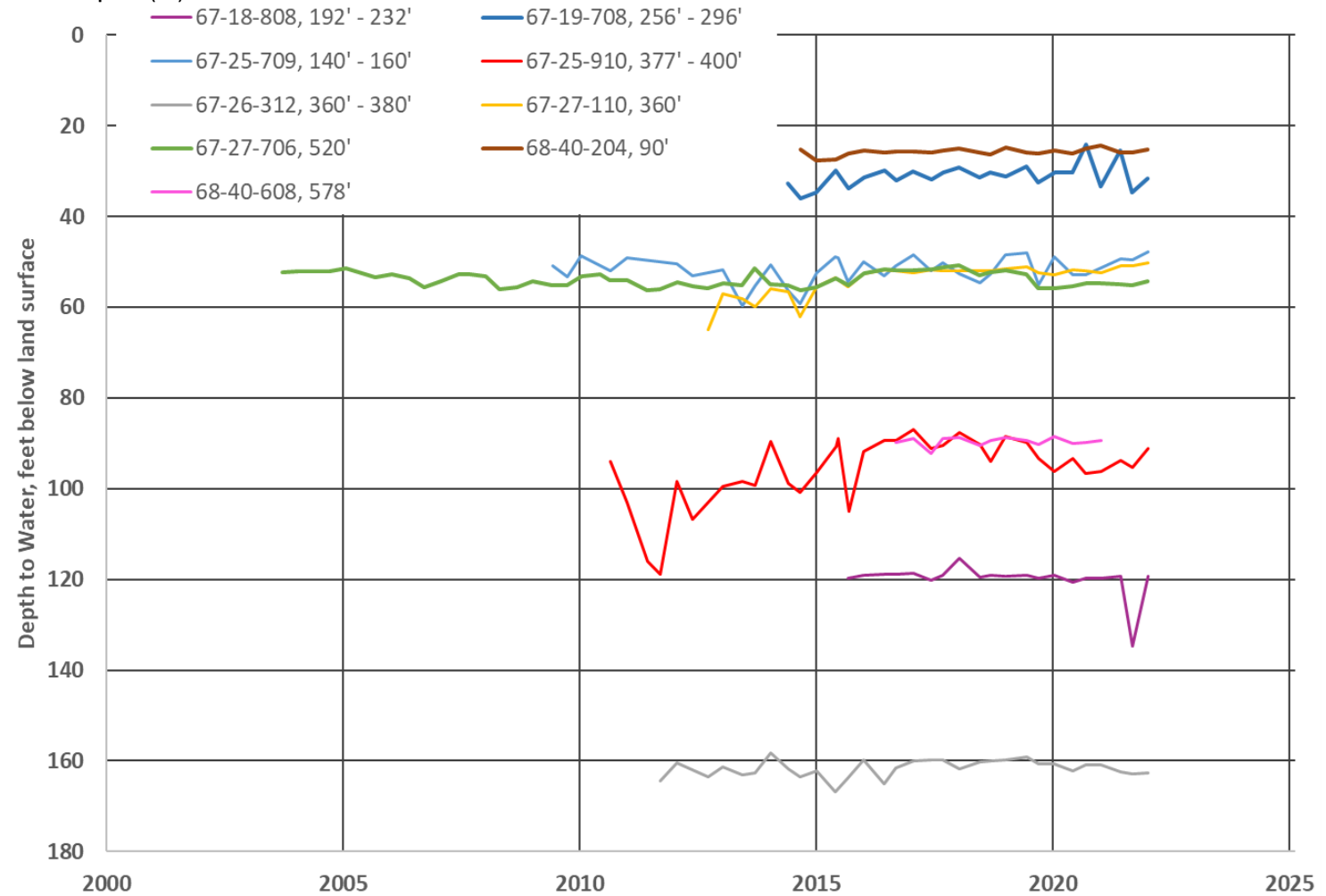
State Well Number, Screened Interval (ft) or Total Depth (ft)



# WILCOX WATER LEVEL MEASUREMENTS



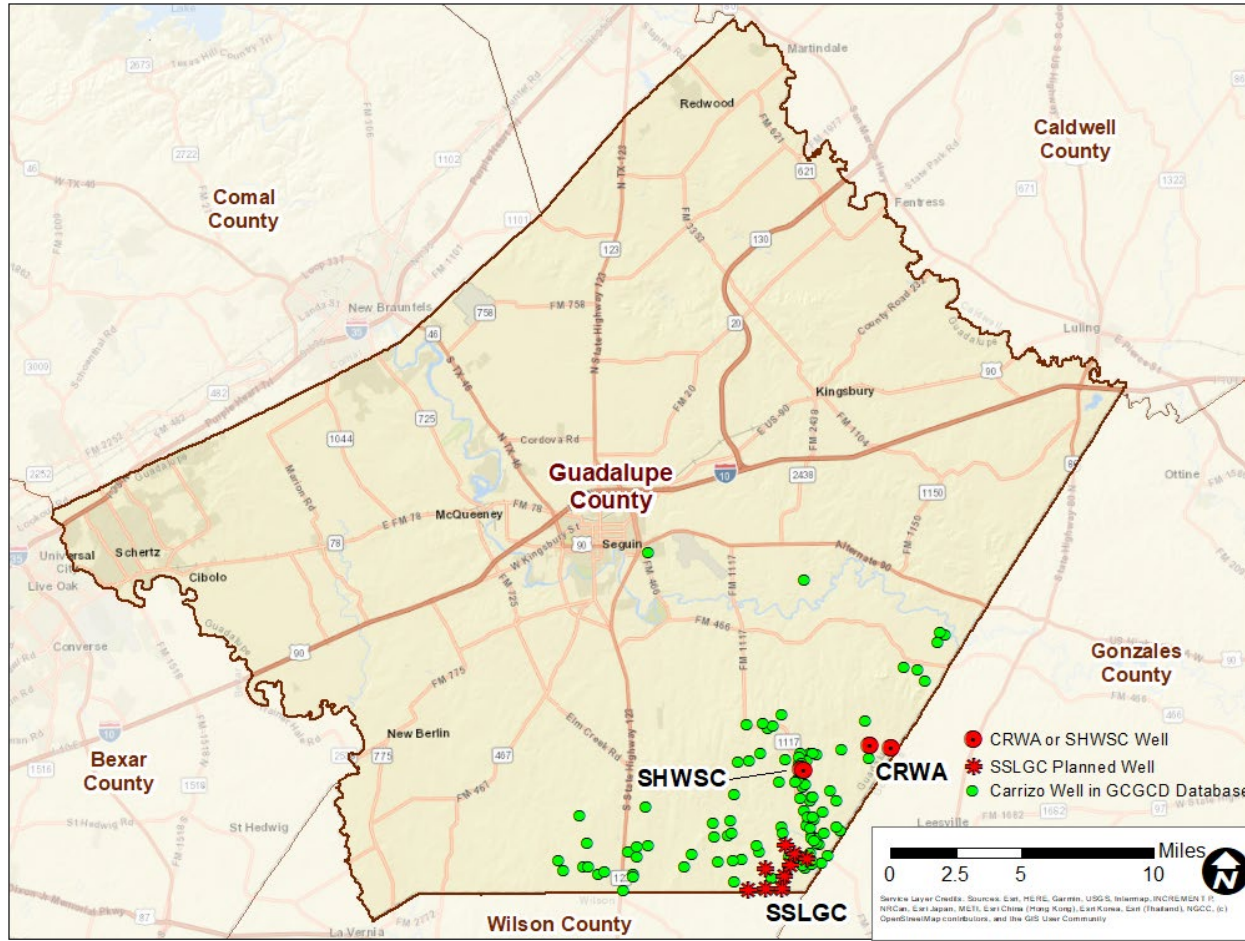
State Well Number, Screened Interval (ft) or Total Depth (ft)



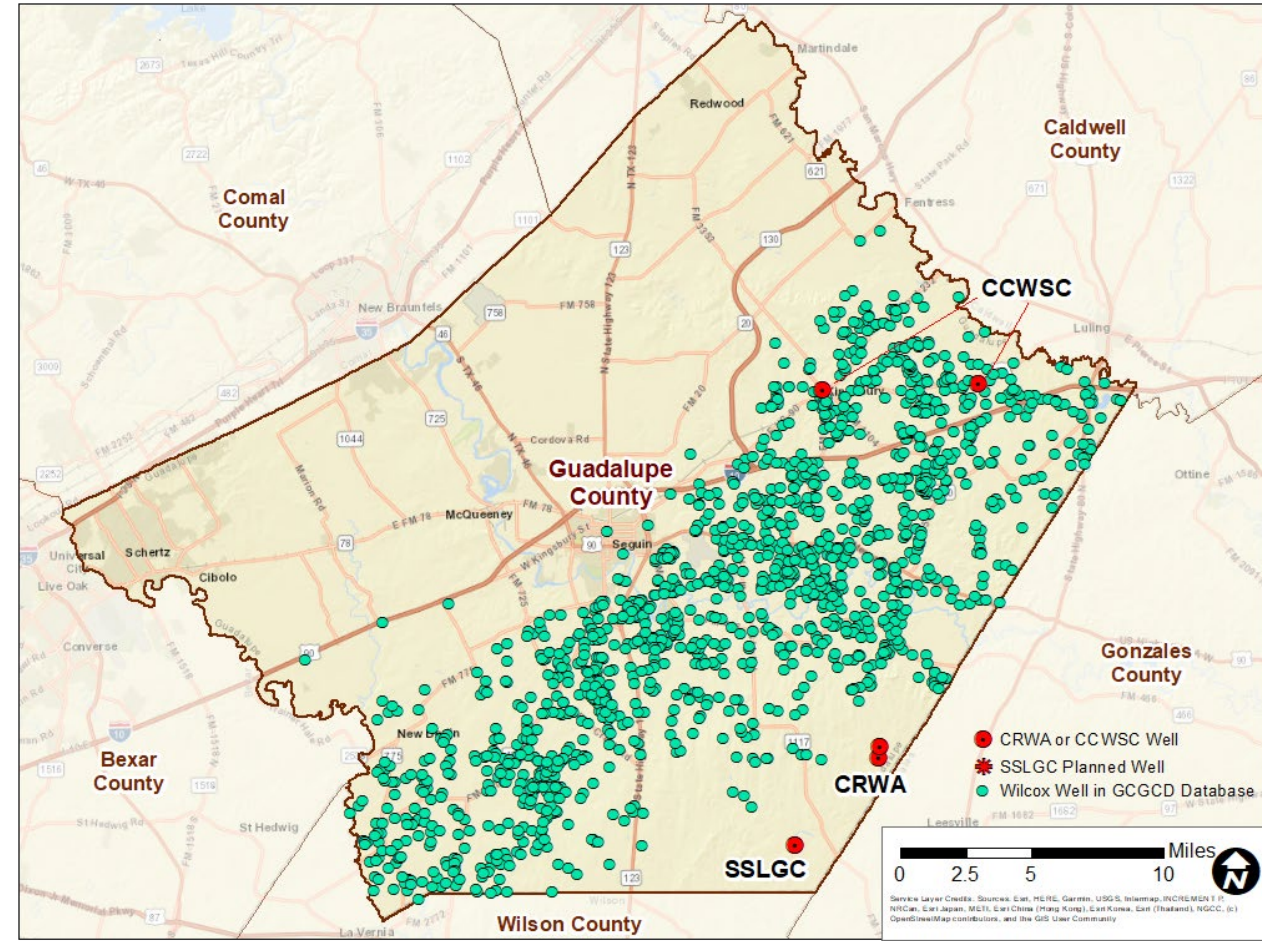


# ASSESS GCGCD DATABASE OF WELLS IN THE CARRIZO AND WILCOX AQU

## Carrizo Wells



## Wilcox Wells





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# IDENTIFY DATA DEFICIENCIES AND PROVIDE RECOMMENDATIONS

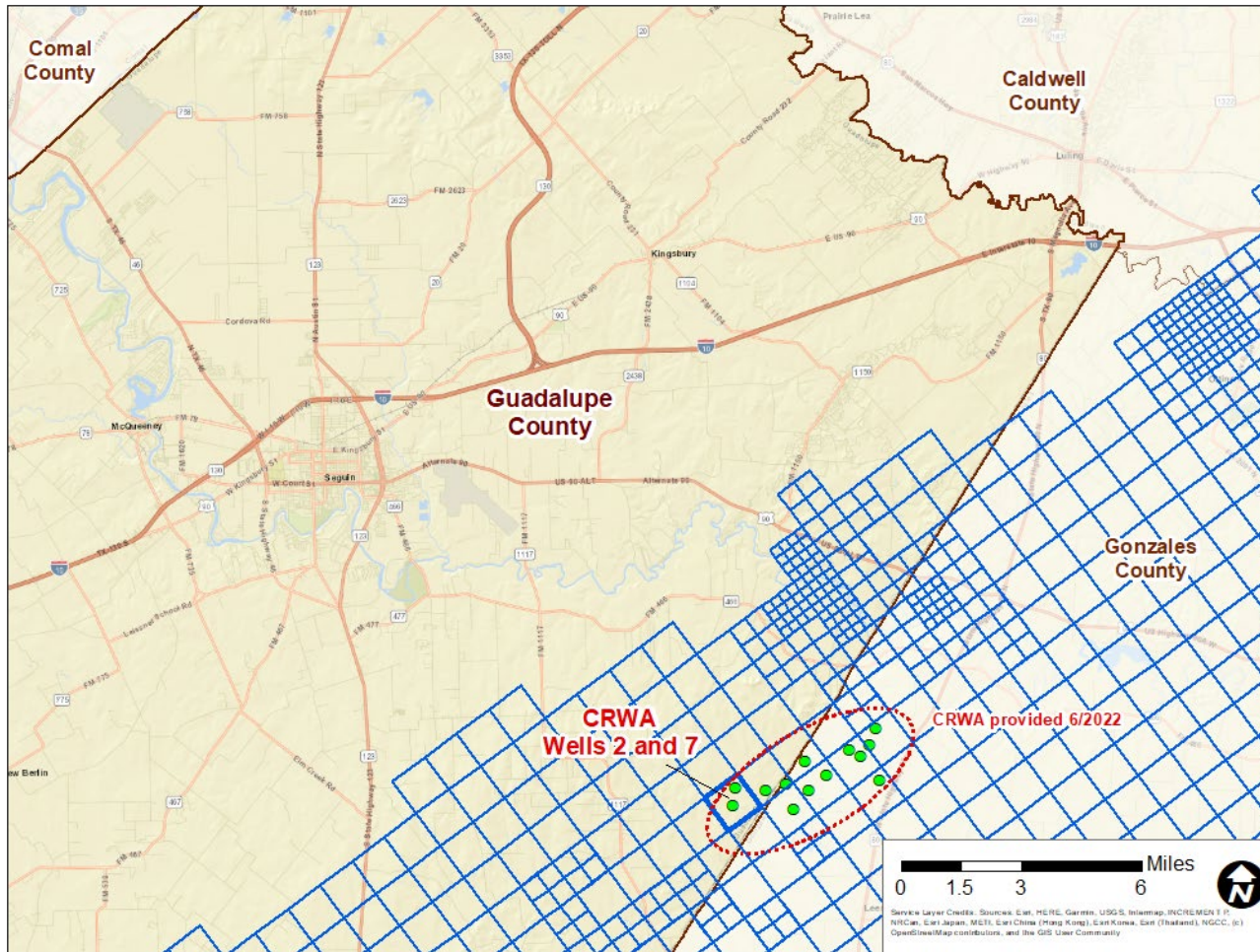
- Well history
  - Construction
  - Screen interval
  - Production
- Pump settings

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# REFINE THE PUMPING ESTIMATES AND HYDRAULIC PROPERTIES IN THE T GAM

- Pumping test data for Permitted wells
- Hydraulic properties
- Historic pumping from permittees
- Current permitted pumping and projections

# CARRIZO AQUIFER PUMPING TEST DATA & HYDRAULIC PROPERTIES



## ■ Pumping test data for Permitted wells

### ➤ CRWA Carrizo Wellfield (Guadalupe County)

❖ Well 2: **47,500gpd/ft**

❖ Well 7: **78,000gpd/ft**

## ■ Hydraulic properties (Updated QCSCW GAM, 2022)

### ➤ Carrizo/Upper Wilcox (Layer 7): R: 61 / C 171

❖ Top: 435.3 ft, rsl Bottom: 52.7 ft, rsl

■ Thickness: 382.6 ft, K = 1.17 ft/day

■ Transmissivity: **3,348gpd/ft**

■ Sy = 0.005



# WILCOX PUMPING TEST DATA & HYDRAULIC PROPERTIES

## ■ Pumping test data for Permitted wells

### ➤ CRWA Wilcox Wellfield (Guadalupe County):

❖ Well 3: **12,100gpd/ft**

❖ Well 6: **10,500gpd/ft**

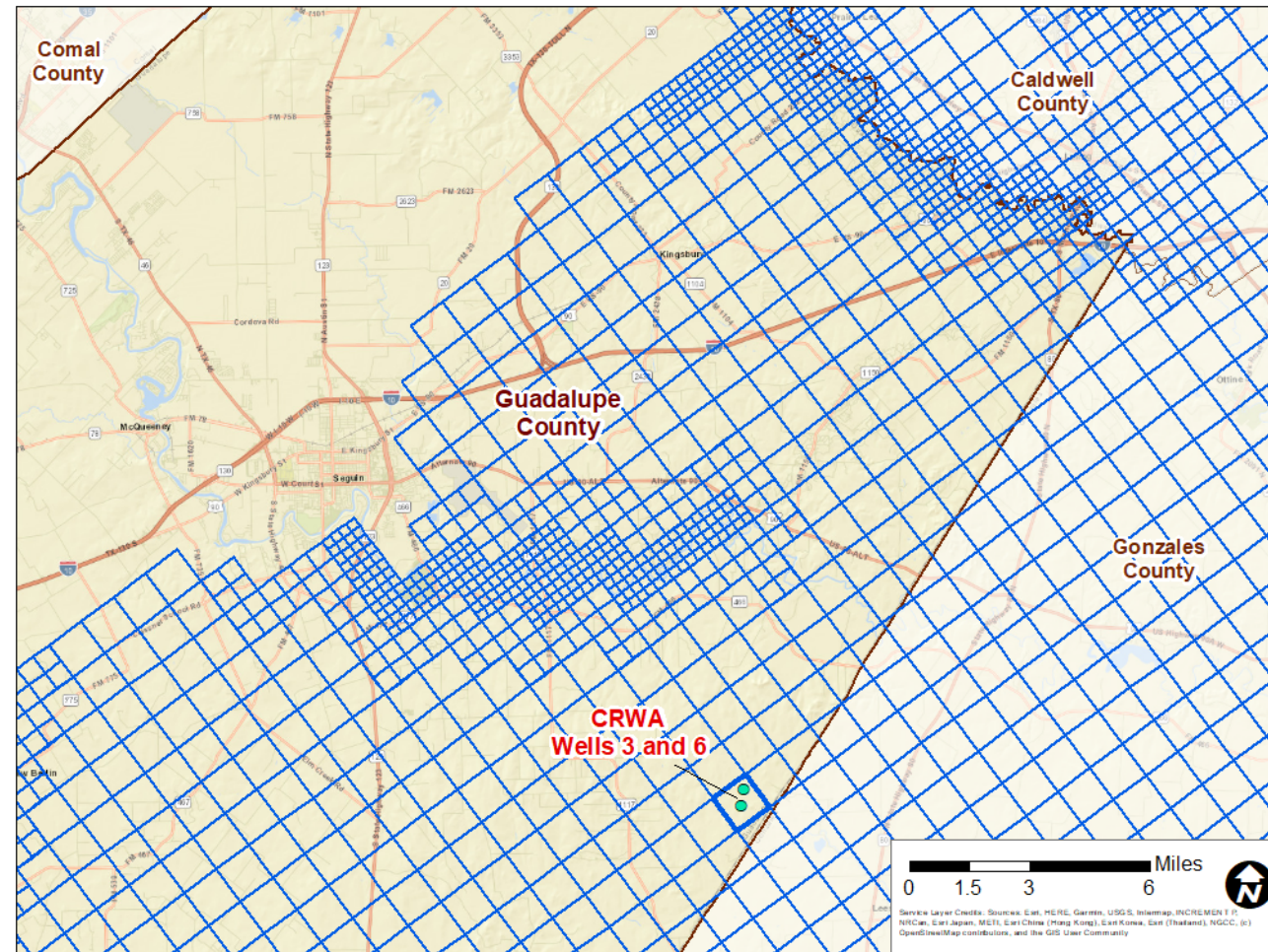
## ■ Hydraulic properties

### ➤ Lower Wilcox (Layer 9): R: 61 / C 171

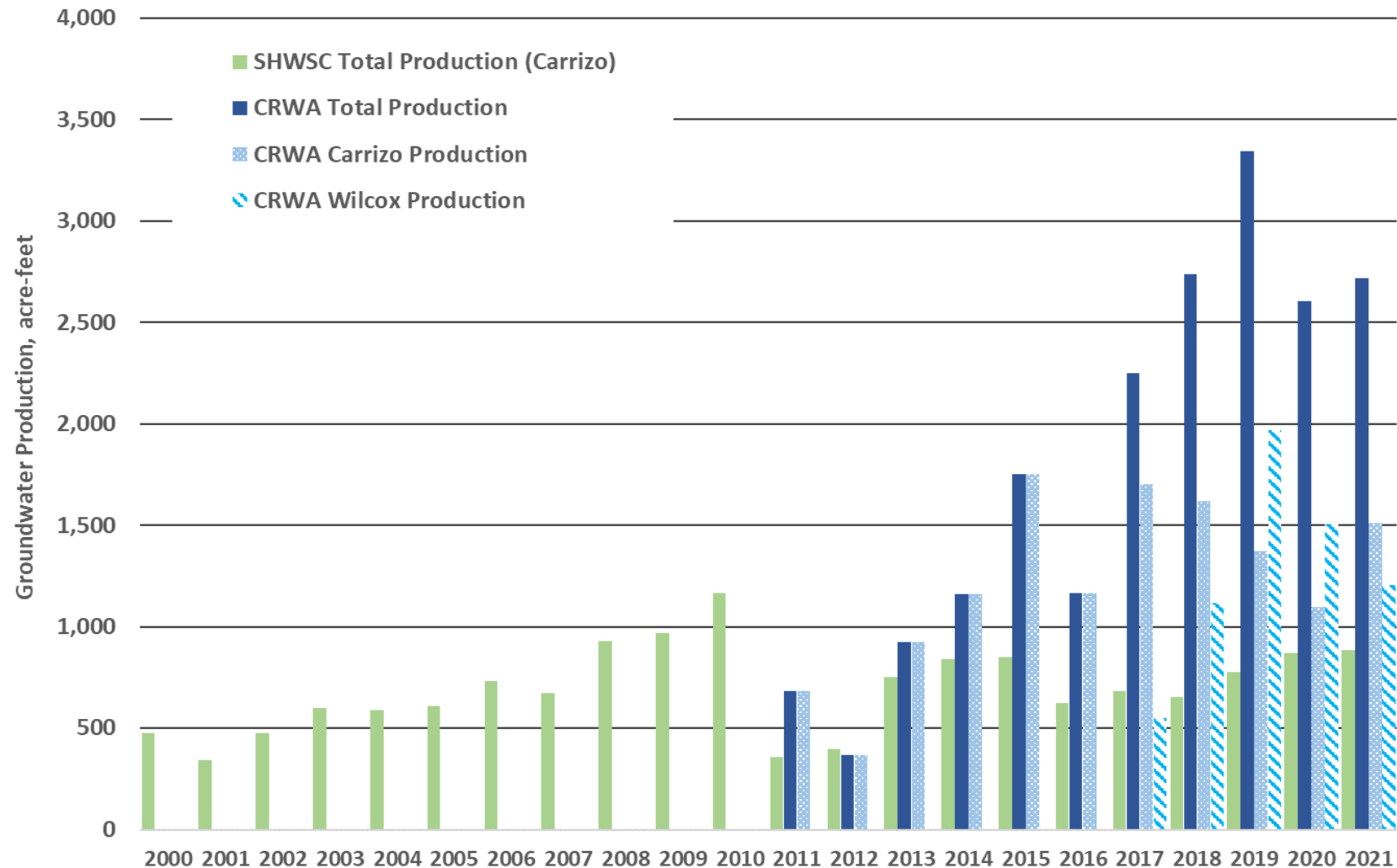
❖ Top: -253.79 ft, Bot: -1,085.44 ft. rsl

■ Thickness: 831.7 ft,  $k = 2.64$  ft/day

■ Transmissivity: **16,423gpd/ft**

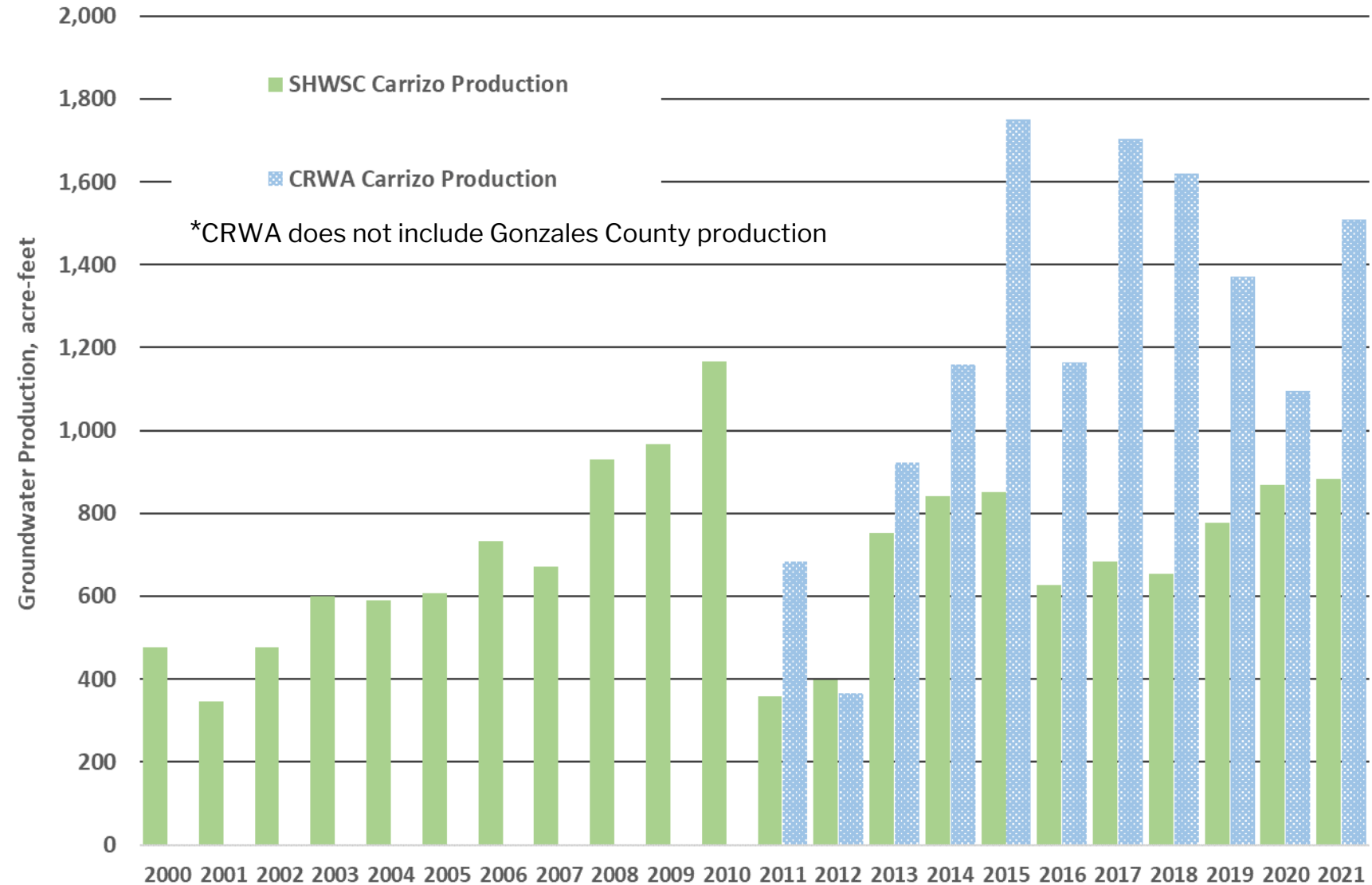


# HISTORICAL GROUNDWATER PRODUCTION FROM PERMITTEES IN GUADALUPE COUNTY



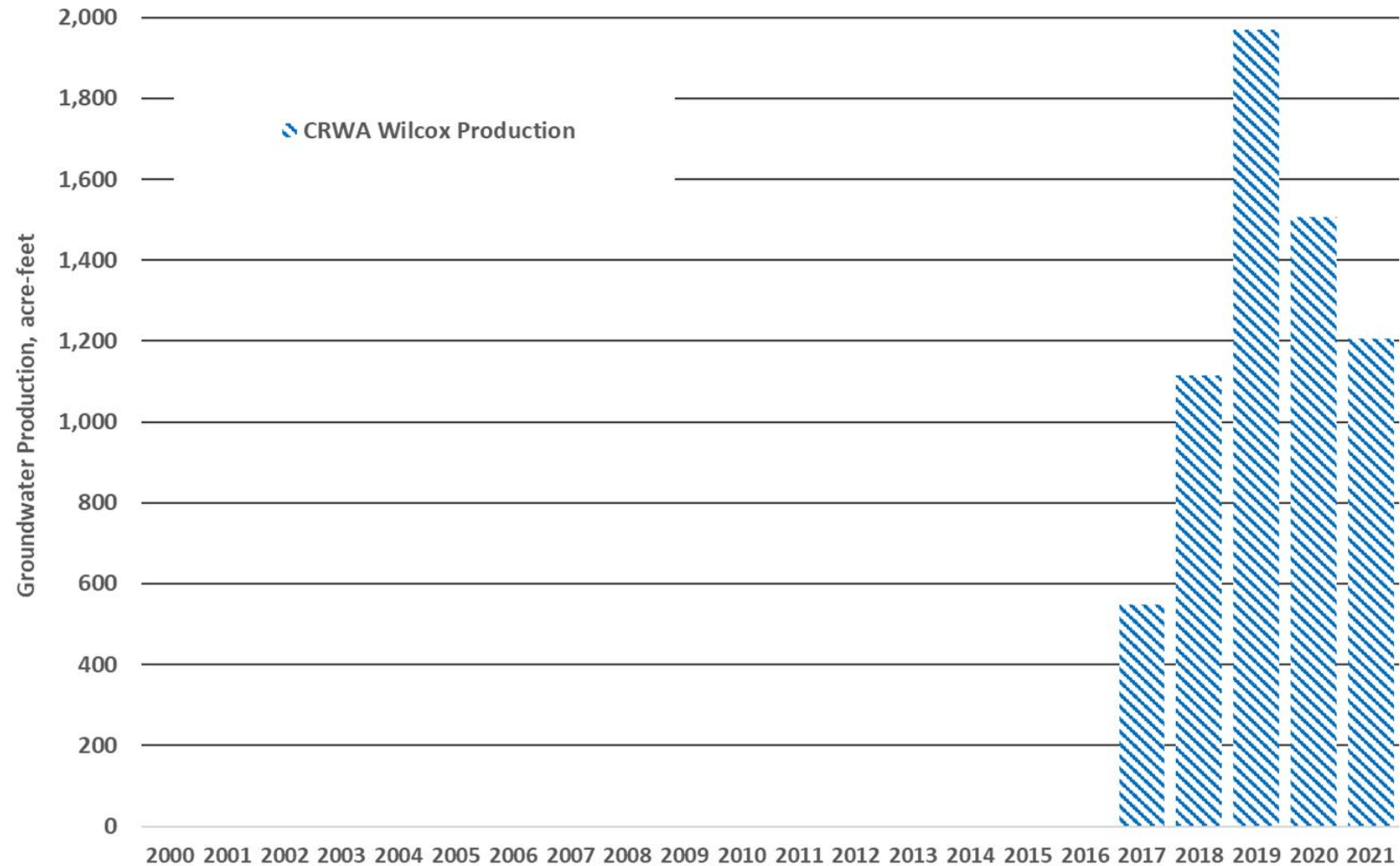
\*CRWA does not include Gonzales County production

# GUADALUPE COUNTY PERMITTED CARRIZO GROUNDWATER PRODUCTION

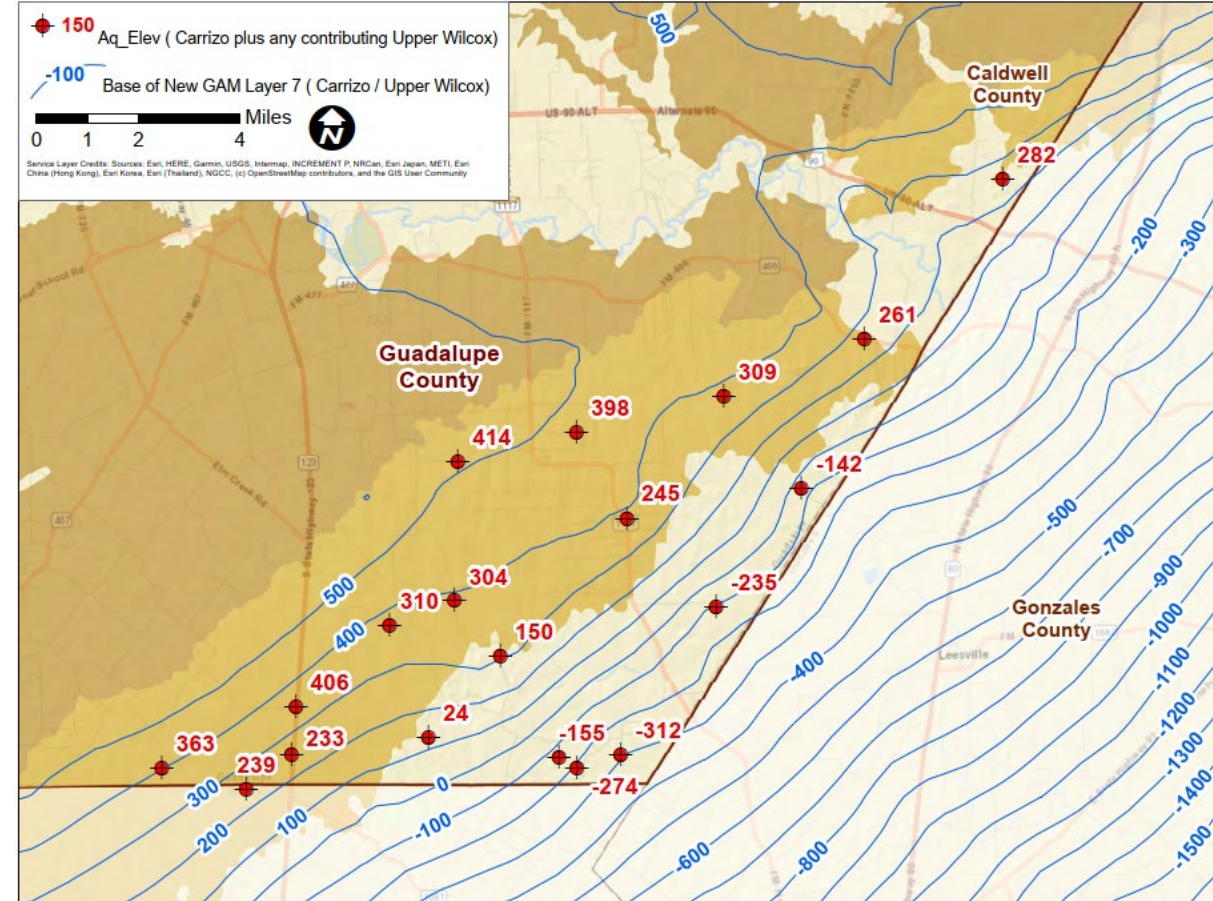
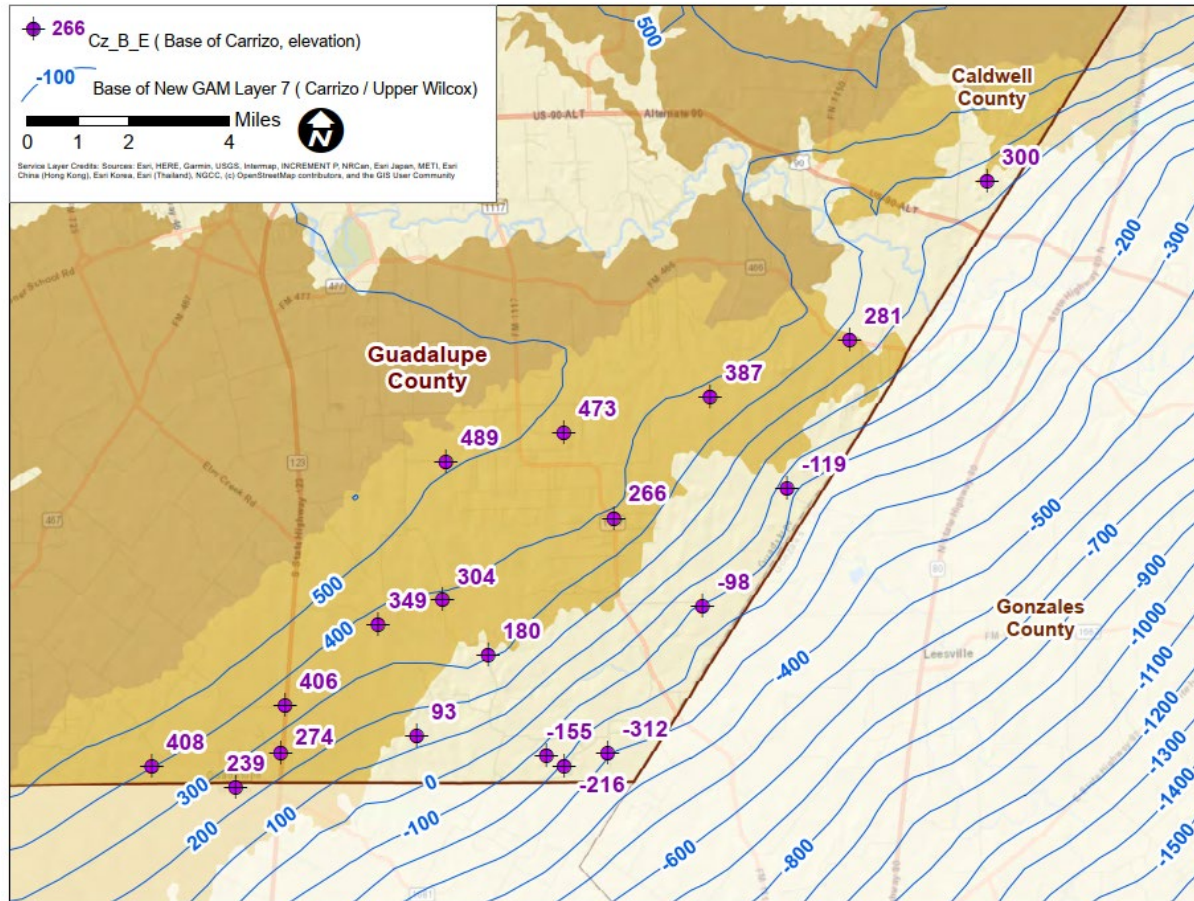




# GUADALUPE COUNTY PERMITTED WILCOX GROUNDWATER PRODUCTION



# CARRIZO STRUCTURE



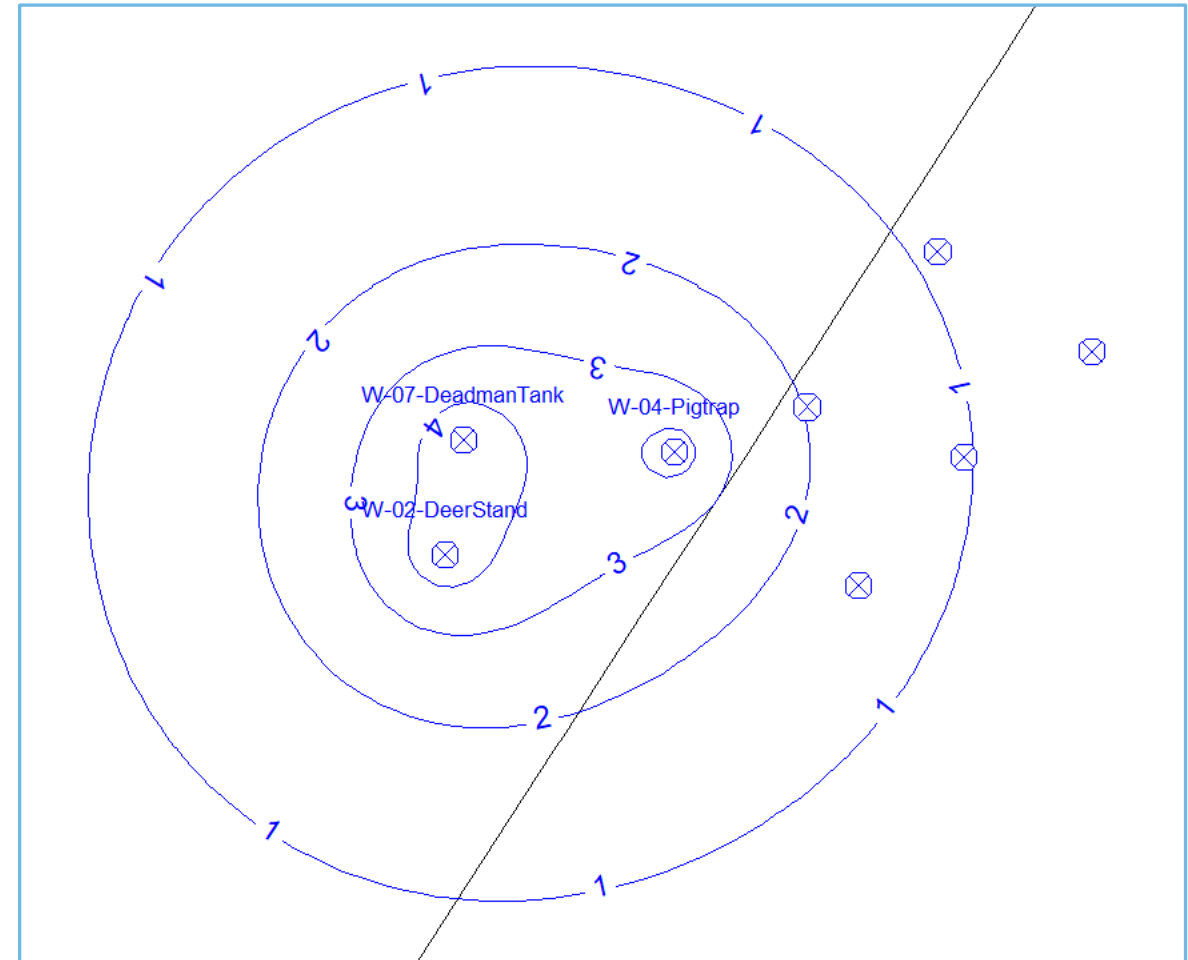
# GENERAL APPROACH TO ASSESS IMPACTS

1. Estimate impacts from actual production by each PWS permittee
  - Analytical drawdown model
    - ❖ Quick and easy
    - ❖ Less appropriate over long periods or complex aquifers (variability, leakage, recharge)
  - TWDB GAM
    - ❖ Assess calibration of new GAM in Guadalupe County and surrounding area
    - ❖ Make adjustments as appropriate
    - ❖ Remove regional impacts and isolate impacts from local permittees
  - Develop subregional model
  
2. Verify modeling with water level measurements



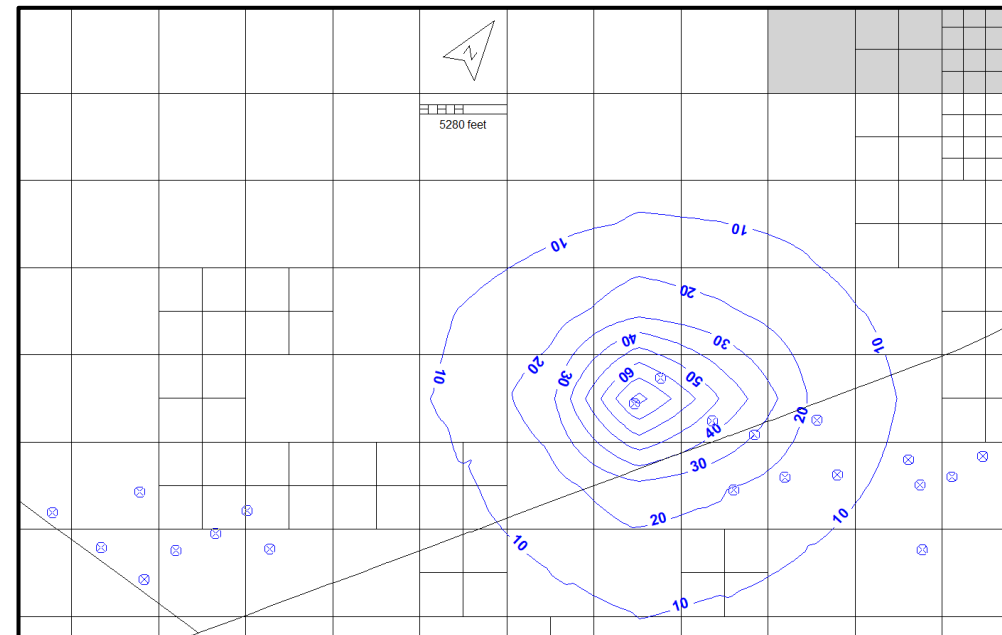
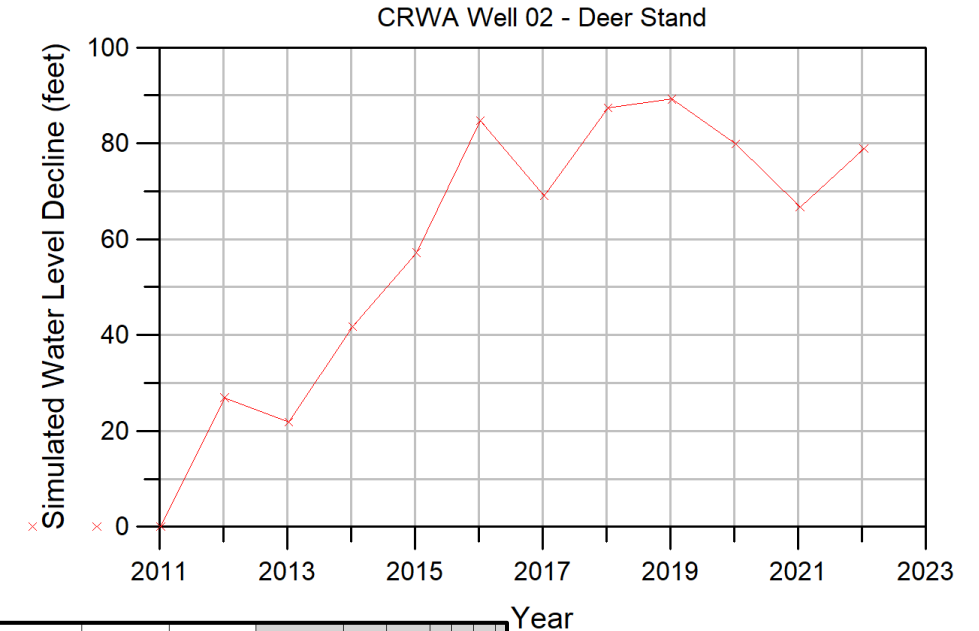
# Analytical drawdown model example

- CRWA – 3 wells in Guadalupe Co.
- Carrizo Impact from Guadalupe pumping only (2011-2021)
- Their drawdown solution



# TWDB GAM example

- CRWA – 3 wells in Guadalupe Co.
- Carrizo Impact from Guadalupe pumping only (2011-2021)
- Draft Updated Southern Carrizo-Wilcox GAM



**!!!!** Simulated water level decline is greater than measured water level decline in Carrizo for ALL ACTUAL production in the region

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# STAKEHOLDER INPUT

- Thank you!
- Comments?
- Questions?