Agenda Item 6. Presentation: Draft Update to the Conceptual Groundwater Flow Model of Kinney County, Texas

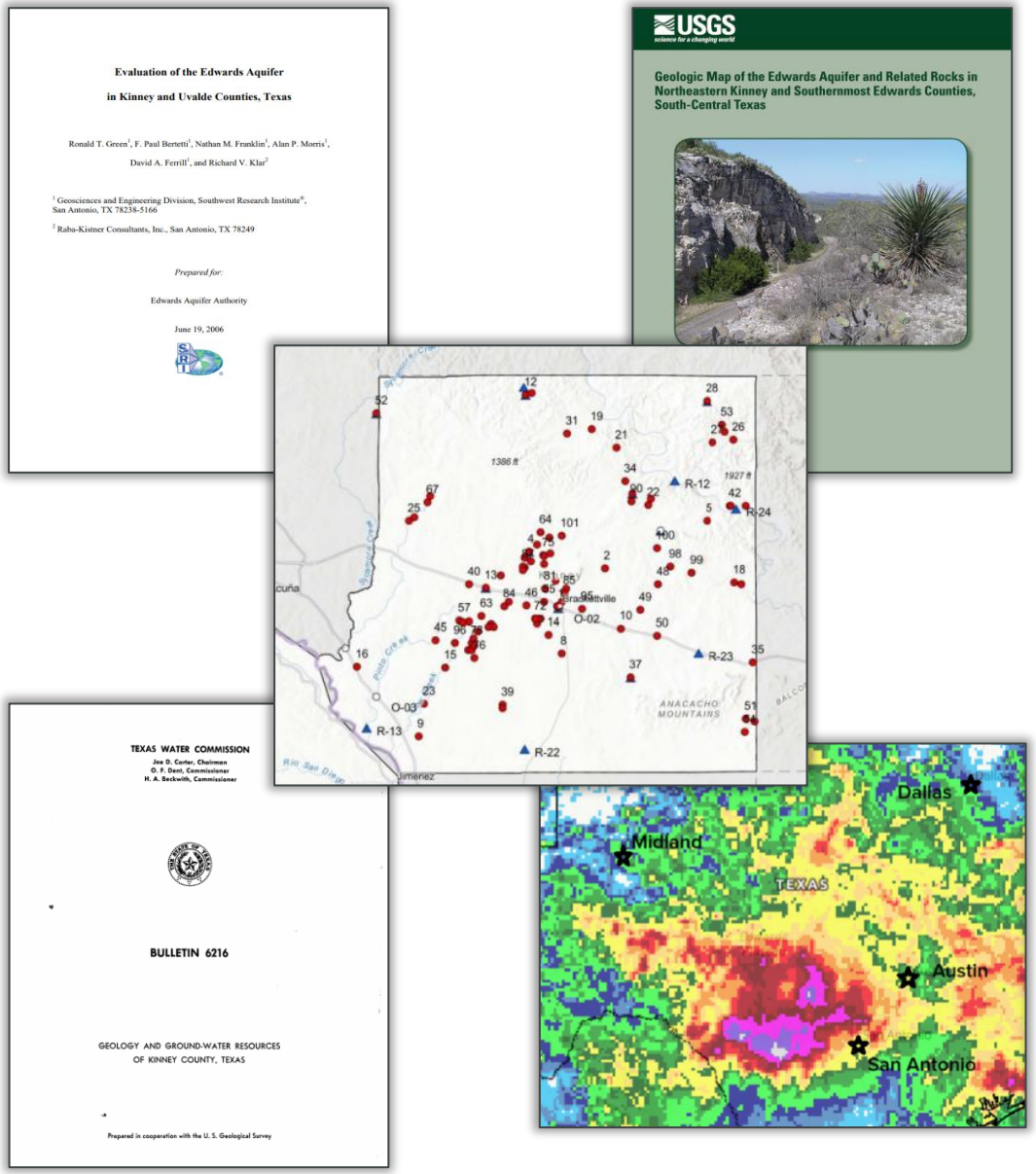
Kinney County Groundwater Conservation Regular Meeting

October 27, 2026 6 p.m.

Presenter: Vince Clause, PG, Freese and Nichols, Inc

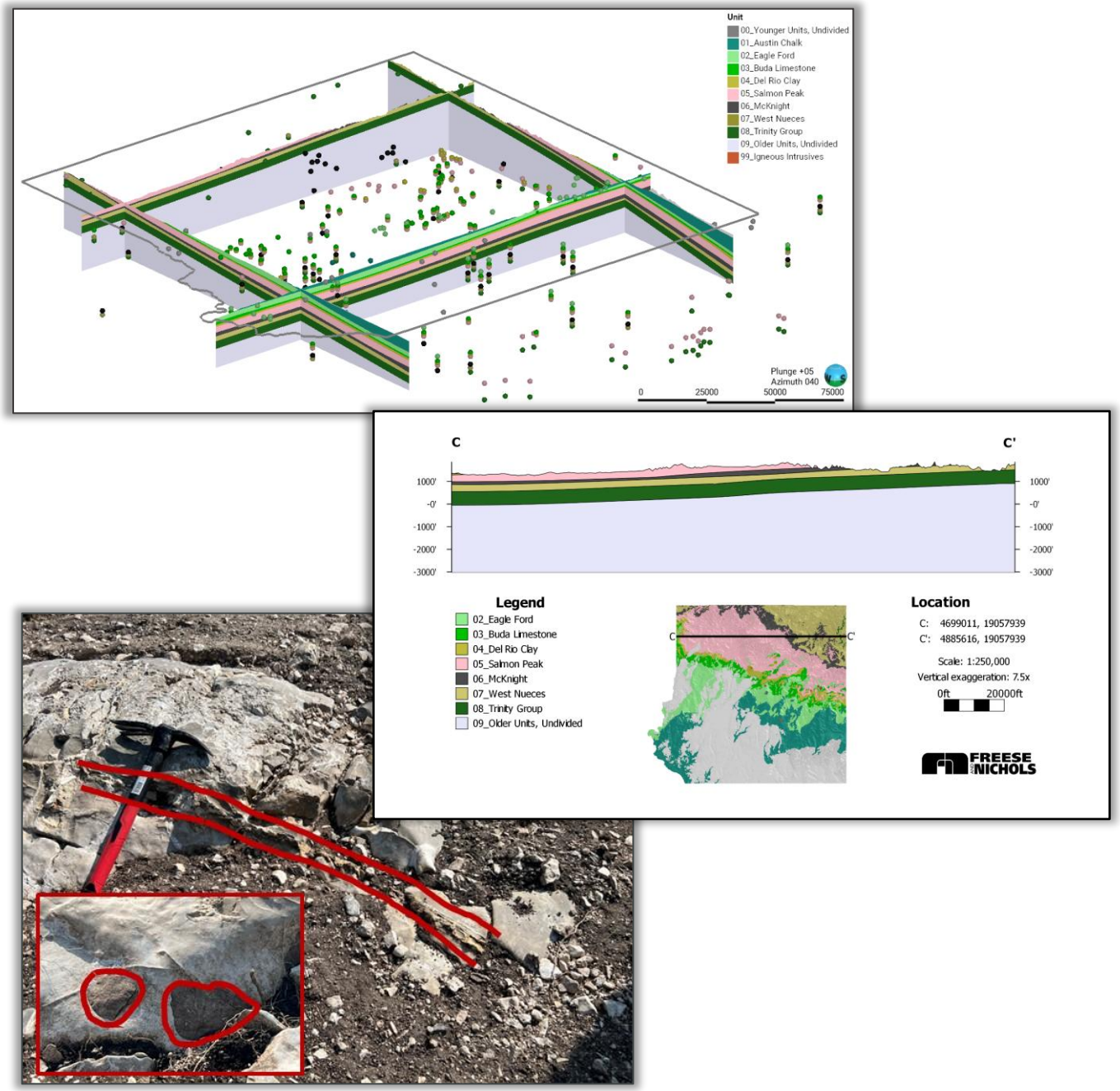
Building on More Than a Century of Groundwater Research

- Historical research and groundwater monitoring data
- Updated three-dimensional geologic model
- Groundwater levels, chemistry, recharge, and discharge
- July 2026 rainfall observations



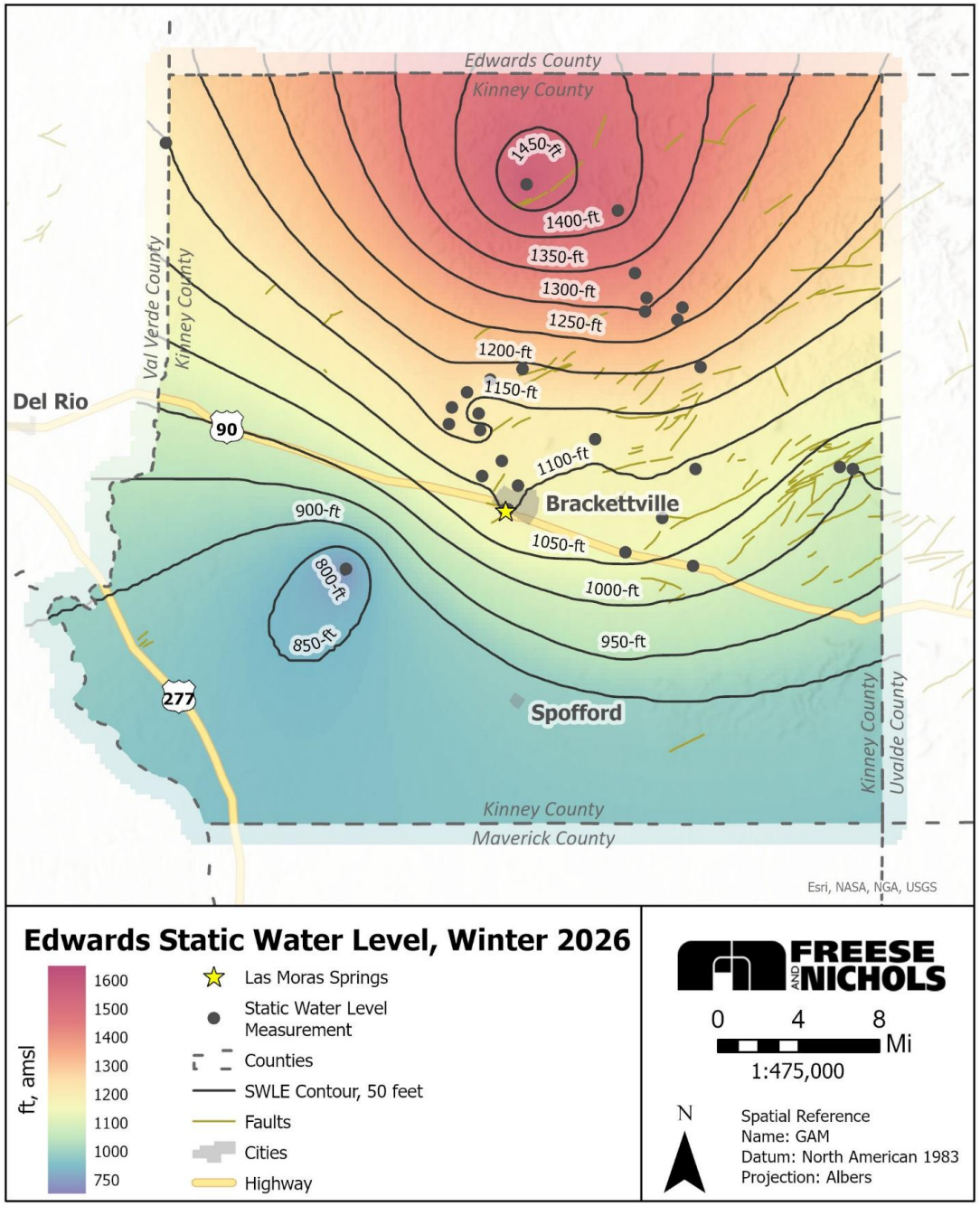
Geology Provides the Framework for Groundwater Flow

- Salmon Peak Formation – important groundwater producing interval
- McKnight Formation – contributes to groundwater flow, particularly in Pinto Valley
- Glen Rose Formation – potential for groundwater contribution remains uncertain
- Faults, fractures, folds and igneous intrusions influence groundwater movement



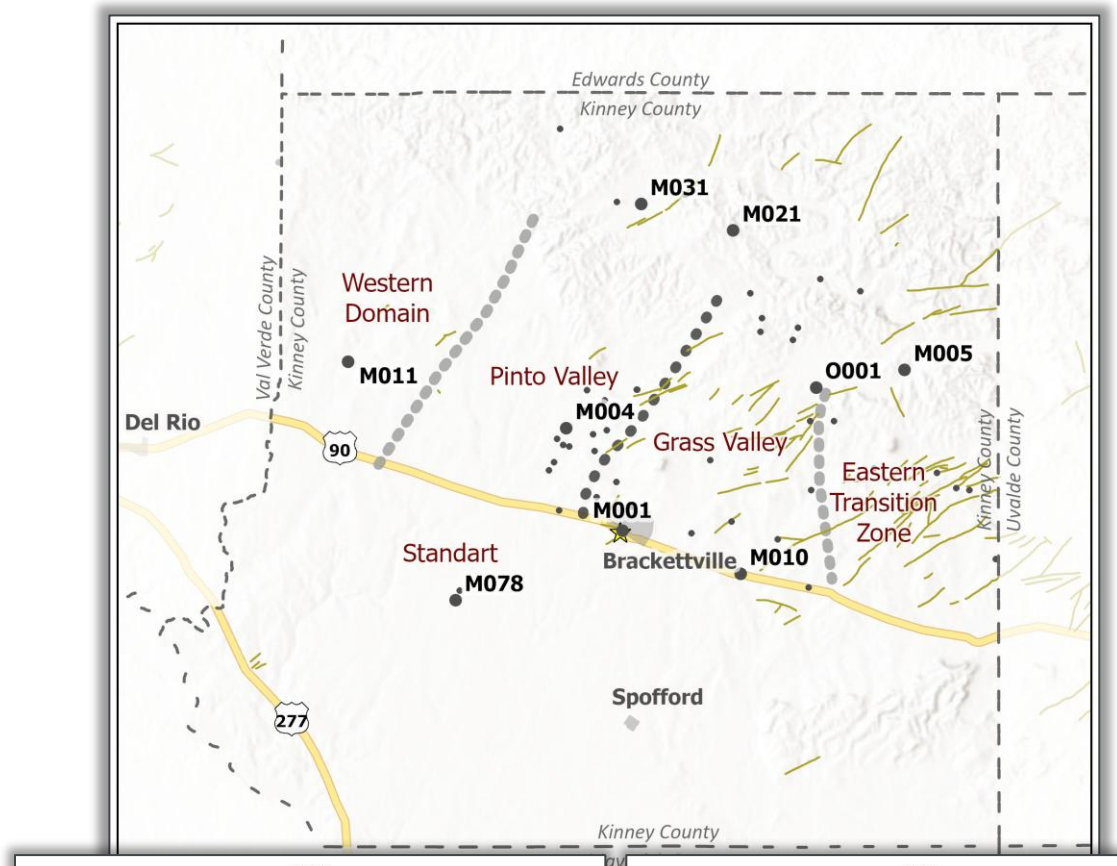
Groundwater Does Not Flow Uniformly Across Kinney County

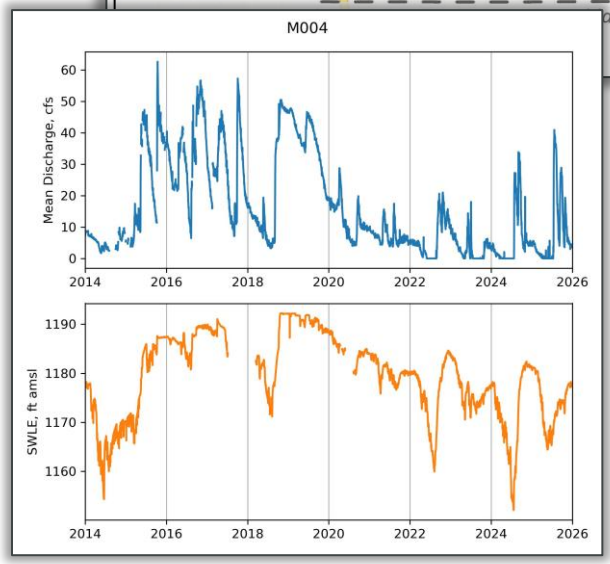
- Regional groundwater movement is generally north to south
- A recurring groundwater divide occurs in central Kinney County
- Groundwater west of the divide generally moves southwest
- Groundwater east of the divide generally moves southeast

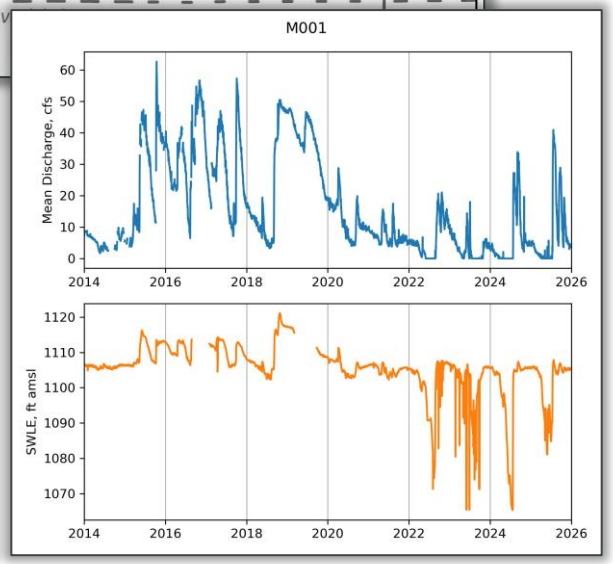


Groundwater Responds Differently in Pinto Valley and Grass Valley

- Differences in groundwater level responses to recharge and pumping
- Differences in groundwater temperature and chemistry
- Different apparent contributions from the Salmon Peak and McKnight formations
- Different relationships with Las Moras Springs Discharge

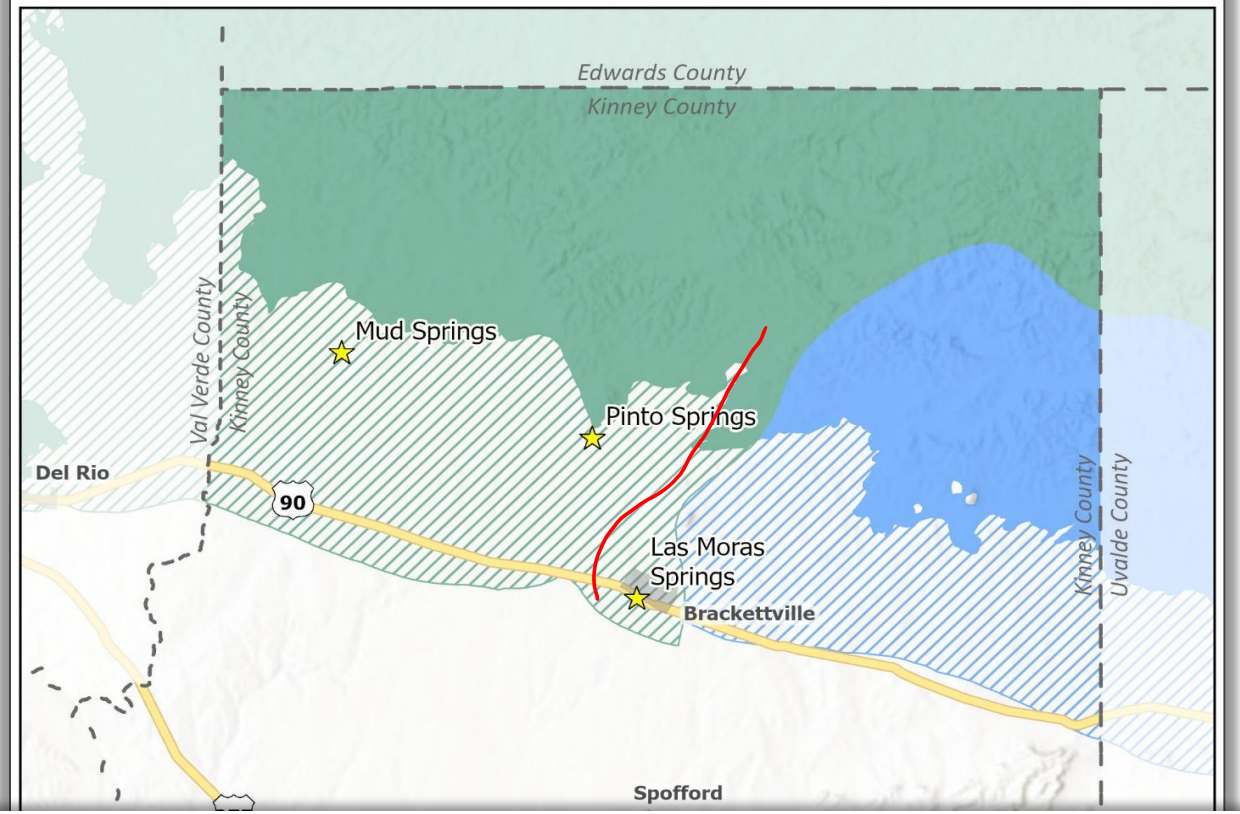


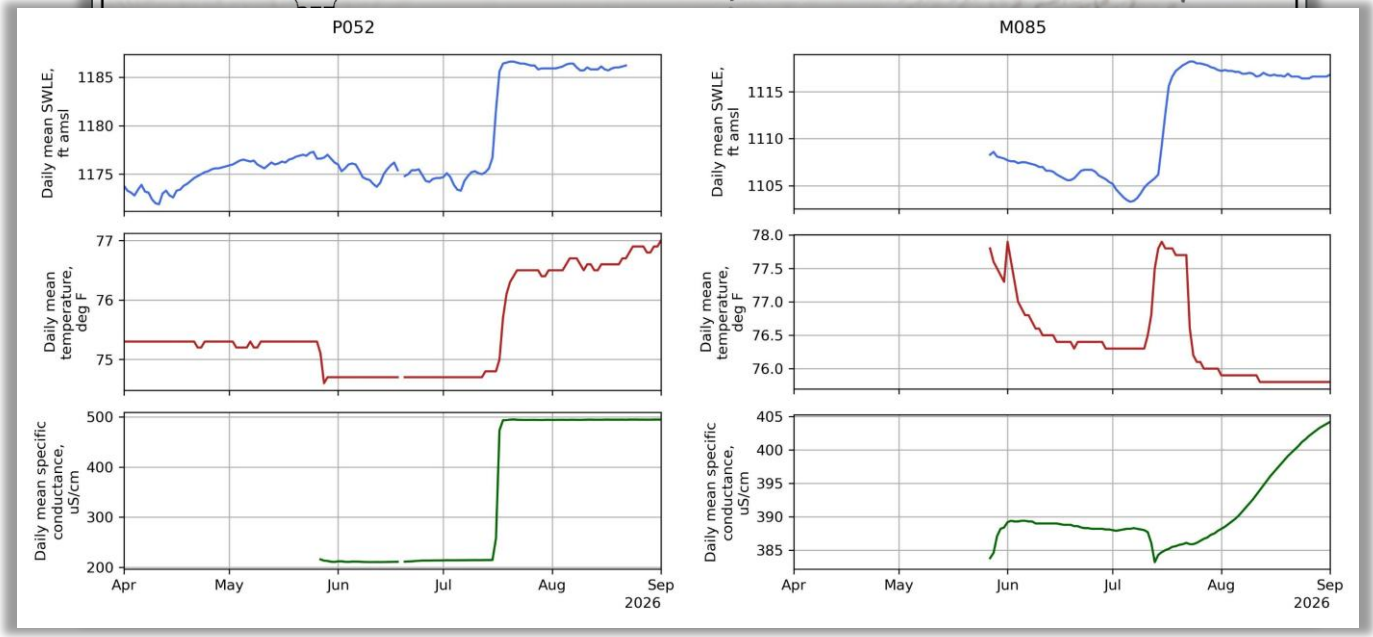




An updated Interpretation of the Edwards Aquifer Boundary

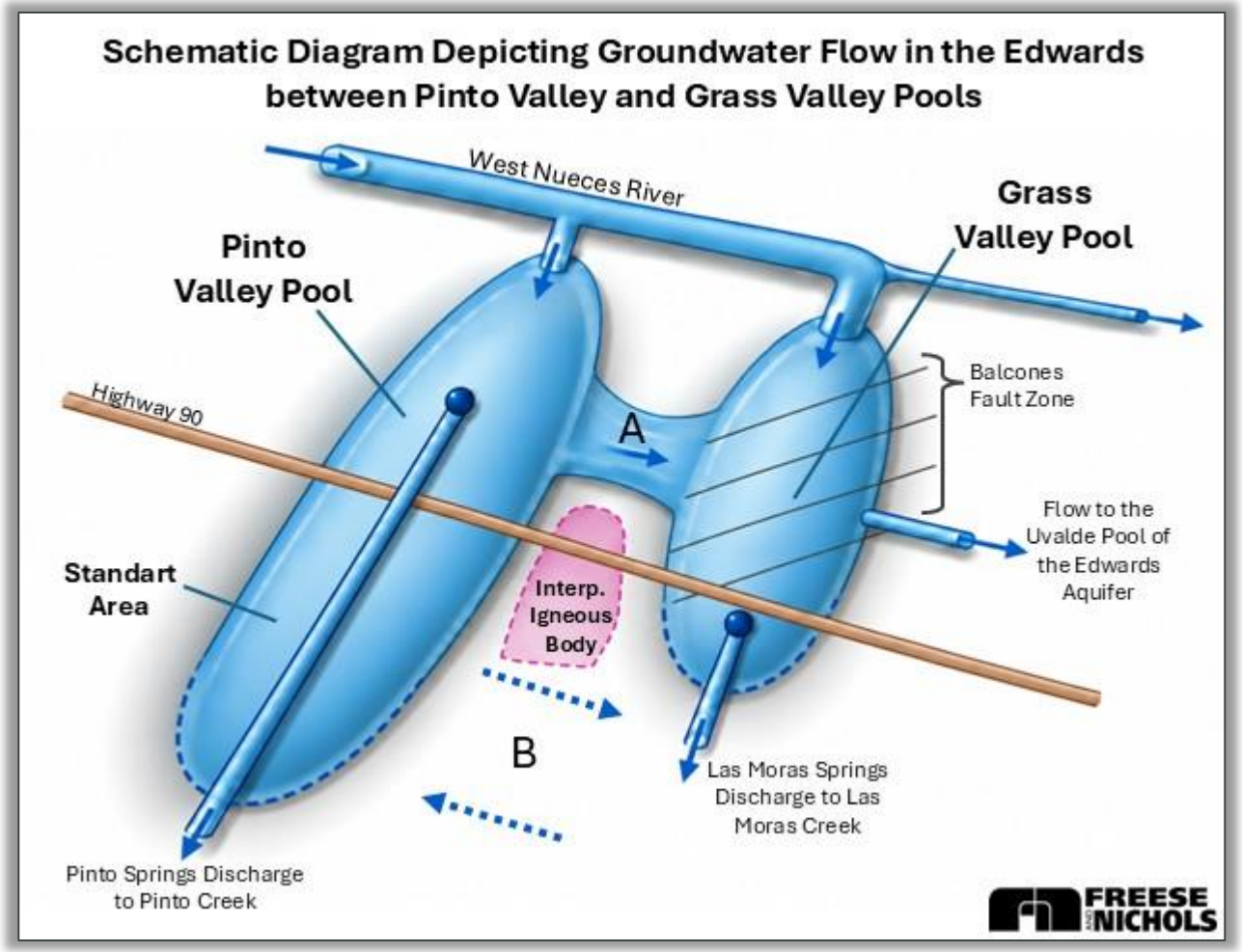
- Pinto Valley Pool – associated with the Edwards-Trinity (Plateau) groundwater flow system
- Grass Valley Pool – associated with the Edwards (BFZ) groundwater flow system
- The interpreted groundwater divide provides an approximate conceptual boundary, not a continuous physical barrier to flow
- This is not a formal change to TWDB aquifer boundaries.





Hydraulic Connections May Change with Groundwater Conditions

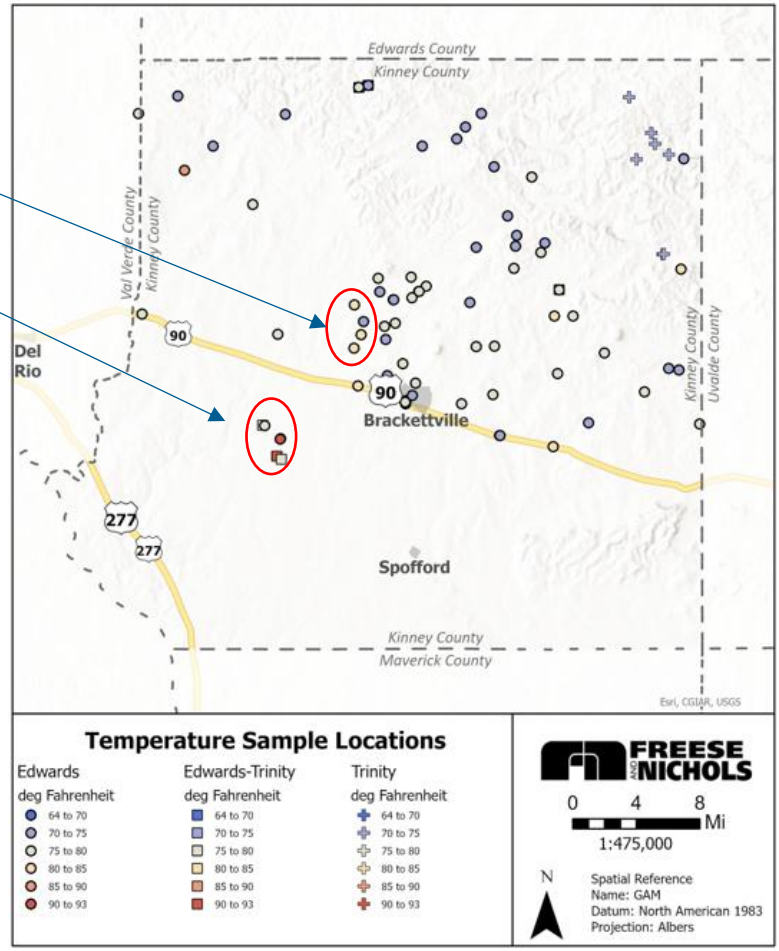
- The divide is a hydraulic feature, not a continuous physical barrier
- Groundwater exchange may occur when gradients and permeable pathways are favorable
- Pumping in Standart may influence local gradients and groundwater movement
- The magnitude and timing of groundwater exchange still remains uncertain

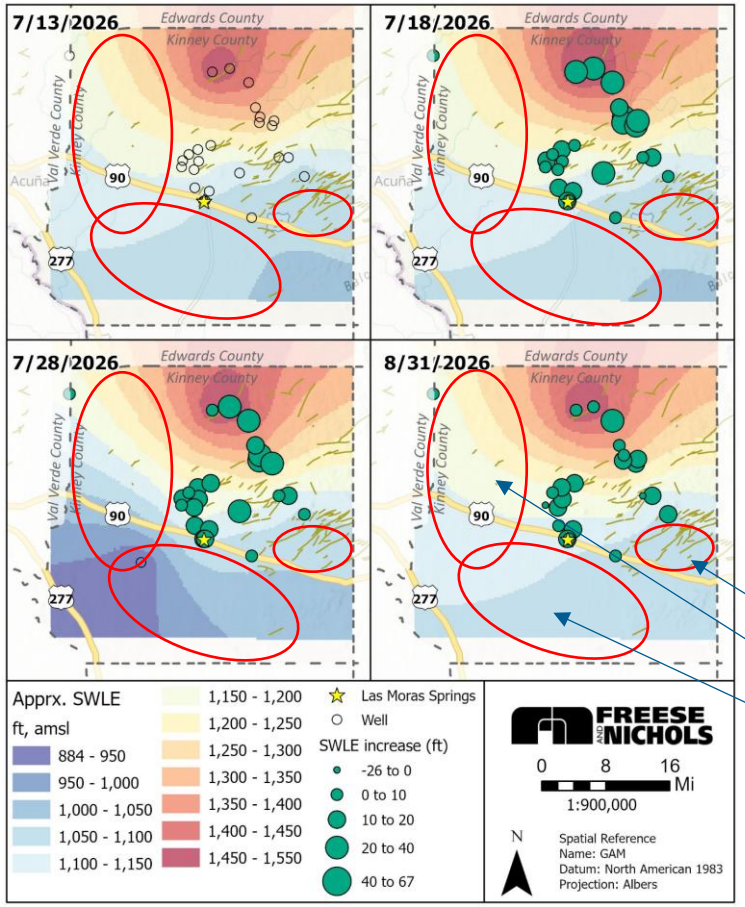


Where Additional Data Would Improve Our Understanding

- Four recommended investigations:
  - Improve well construction and completion records.
  - Collect additional aquifer hydraulic property data
  - Investigate the contribution of the Glen Rose Formation
  - Expand groundwater level monitoring near the divide and other data gaps

Areas of uncertain well completion and possible influence from Glen Rose

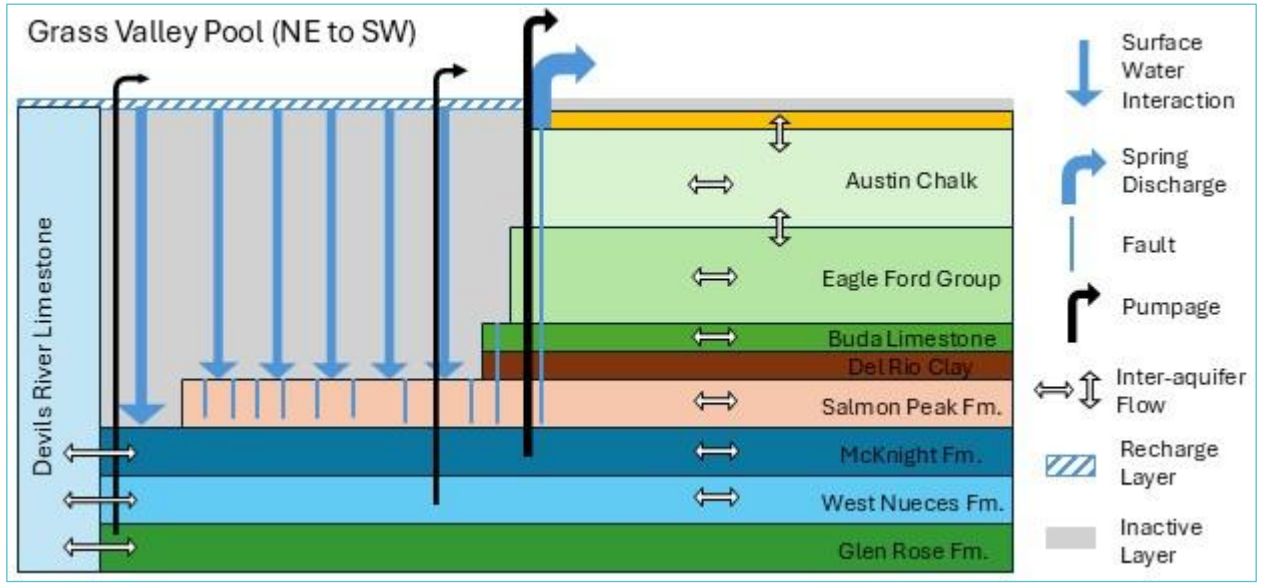


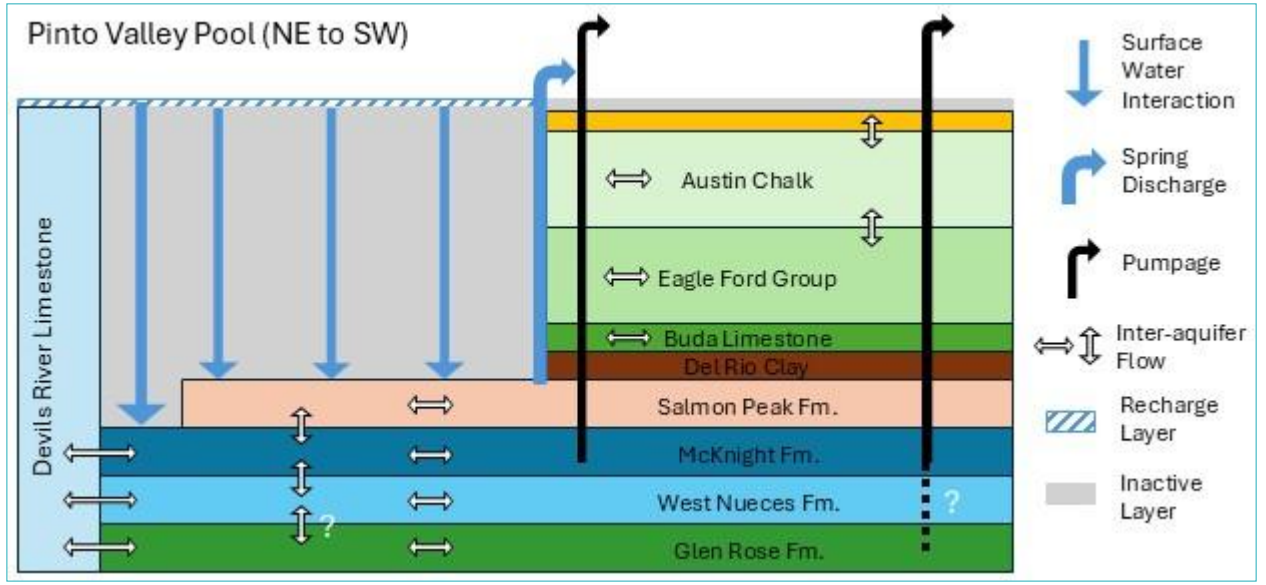


Groundwater Monitoring Data Gaps

What We Have Learned and Where We Go From Here

- Three Takeaways:
  - The groundwater system is more complex than previously represented
  - Pinto Valley and Grass Valley are distinguishable groundwater pools that are hydraulically connected
  - The updated conceptual model provides a stronger foundation for future investigations and groundwater management evaluations.





Next Steps: Workshop?

Thank You!

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FREESE AND NICHOLS