New Tools for Quantifying Hydro-Economic Well Performance

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Groundwater Management Area 12

Joint Planning Meeting

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Bureau of Economic Geology

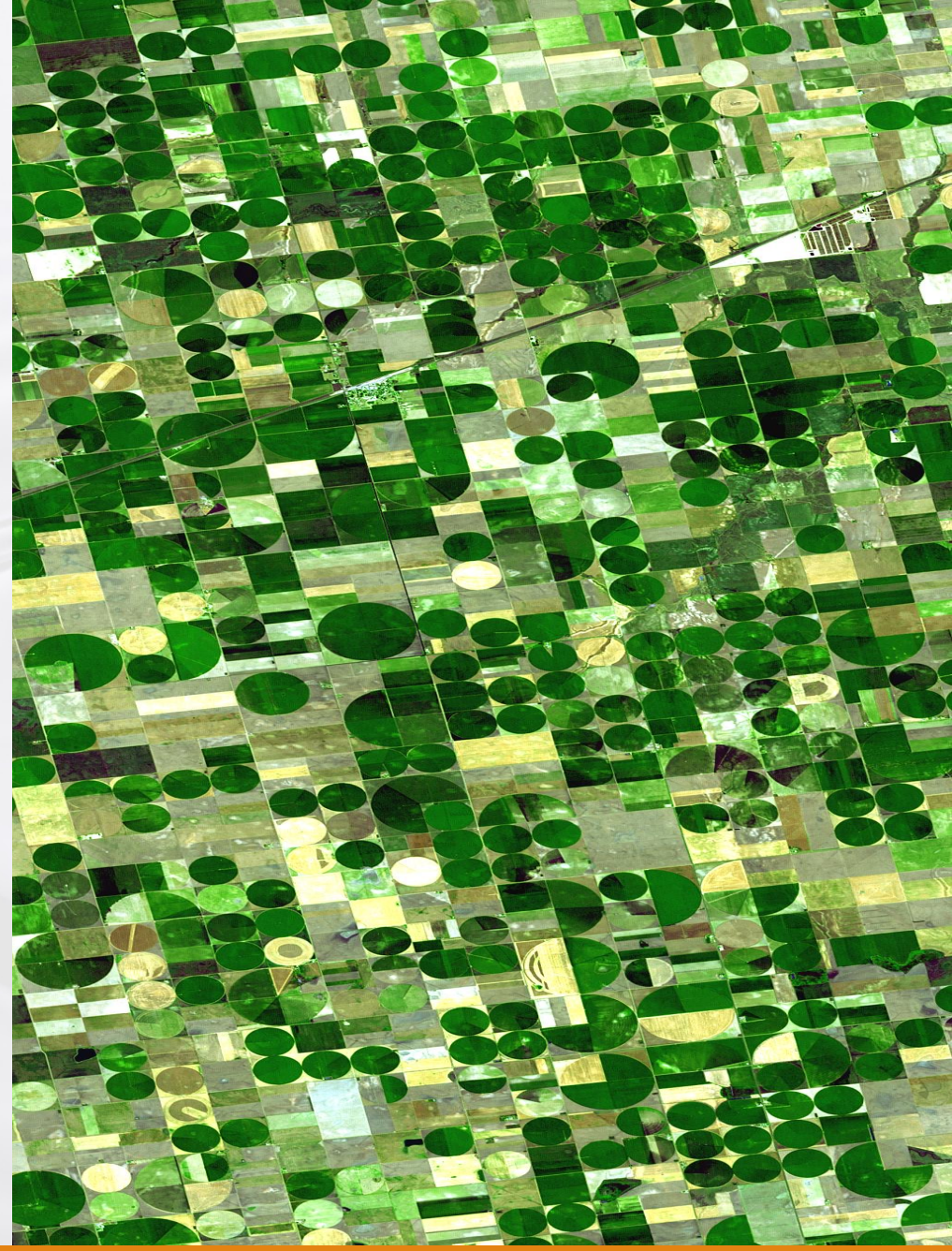
TEXAS Geosciences
The University of Texas at Austin
Jackson School of Geosciences

MOTIVATION

DFC Considerations

- Total Estimated Recoverable Storage (TERS)
  - **Arbitrary** recovery constraints
  - No consideration for well performance

- Socioeconomic Impacts
  - TWDB studies on the impact of water deficits
    - **Not DFC impacts** “reasonably expected to occur”
  - No common methods as of 2021 planning cycle



HYDRO-ECONOMIC APPROACH

How does well performance change as DTW increases?

1. Operational Impacts

Capacity **falls** with increasing DTW

Model: How water levels in the well respond to pumping

Q: Can the well meet pumping demand without failing?

LIMIT: DTW + drawdown = pump or screen top

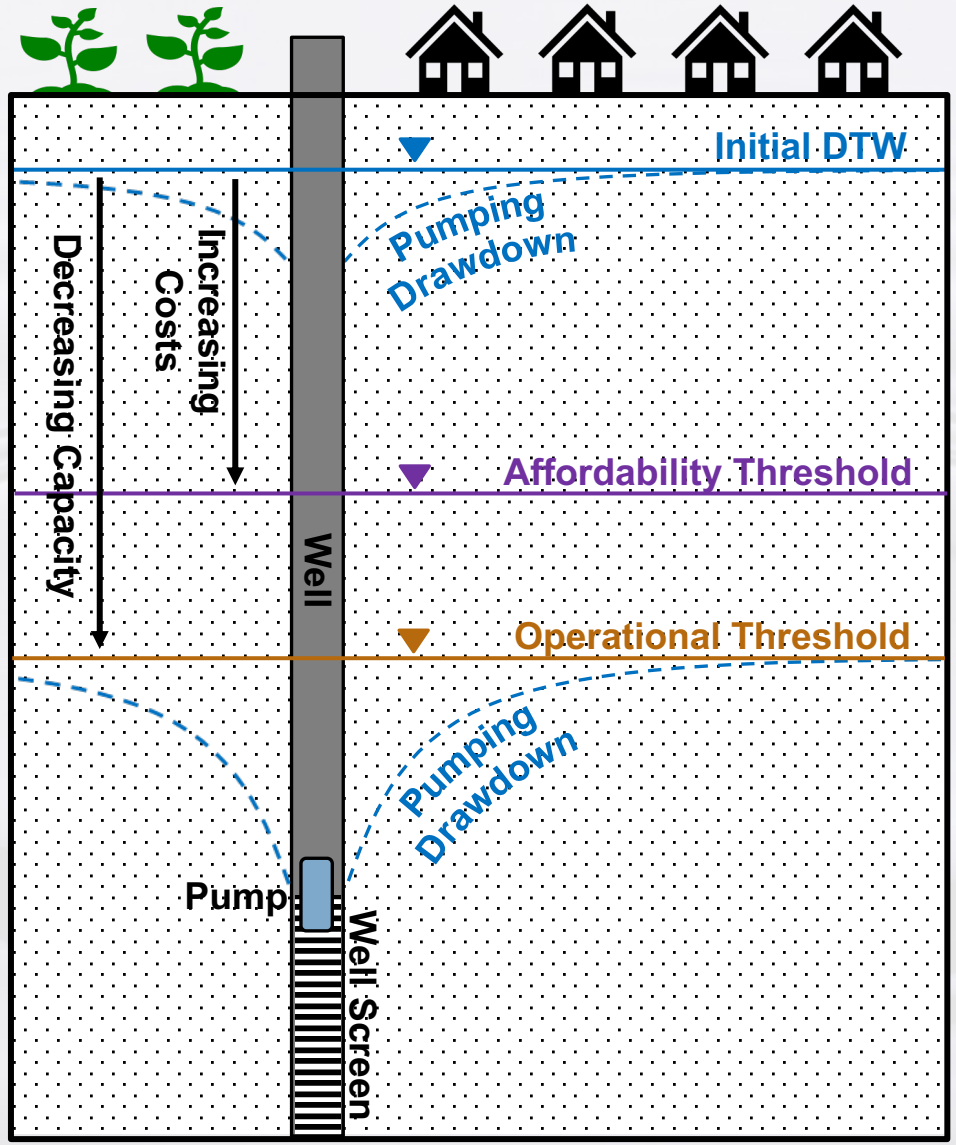
2. Economic Impacts

Costs **rise** with increasing DTW

Model: How pumping / remediation costs change

Q: Are pumping / remediation costs affordable?

LIMIT: pumping costs = willingness-to-pay



OUTCOMES

New Tools

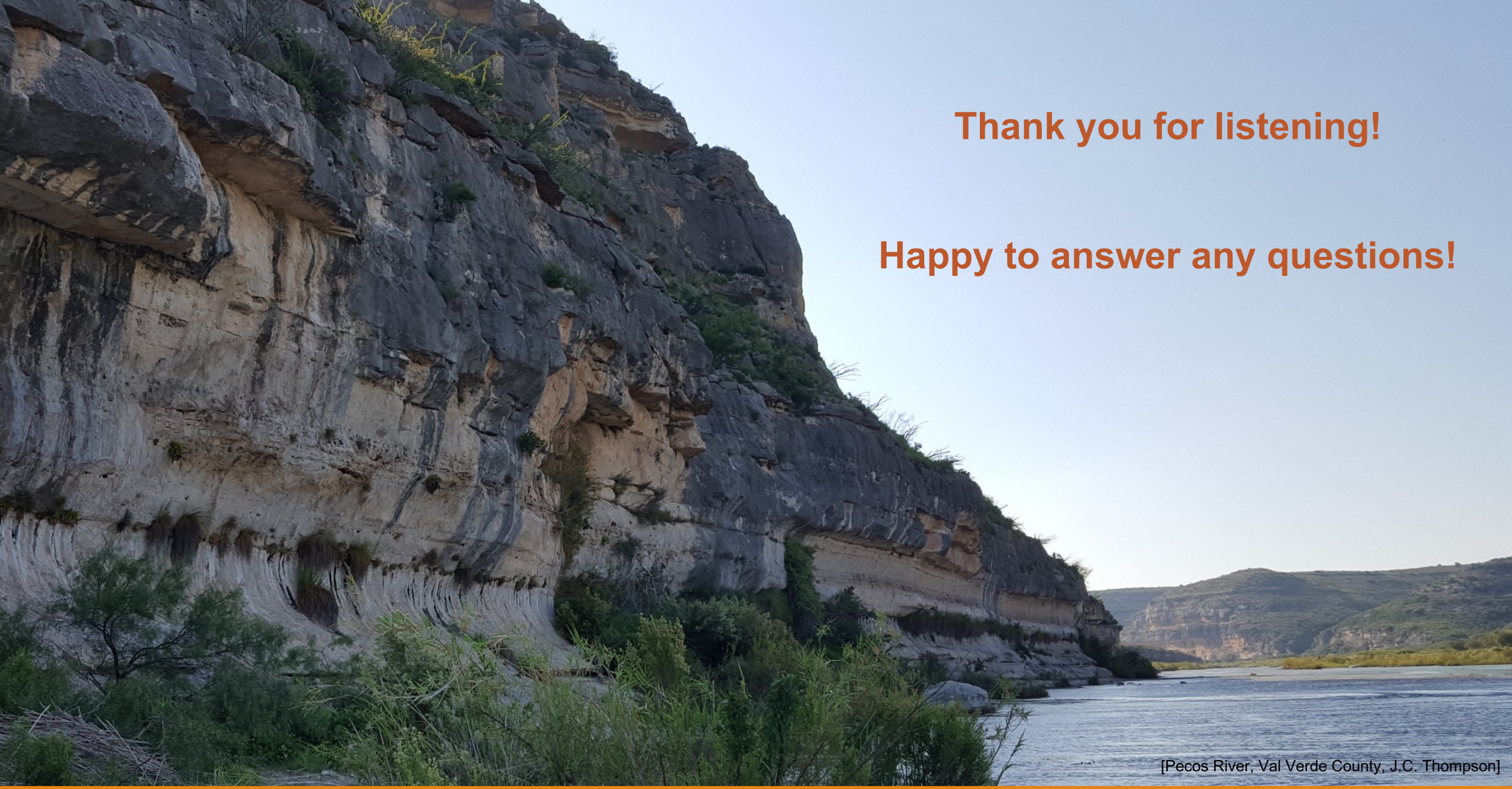
- BEG is developing this approach into a decision support tool
  - Feasible yields: operational or affordable
  - Quantified hydro-economic impacts of DTW changes
- Goal: Free web platform for stakeholder, district, and GMA use

Pilot Program

- Understand district and stakeholder needs
- Assess the available input data and desired outputs
- Test alpha-version tools and troubleshoot

Opportunity

- Legislative support for this and other BEG water research



Thank you for listening!

Happy to answer any questions!

[Pecos River, Val Verde County, J.C. Thompson]