New Tools for Quantifying Groundwater Recoverability in Texas

Justin C. Thompson, Ph.D.

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The University of Texas at Austin Jackson School of Geosciences

MOTIVATION

DFC Considerations

- Total Estimated Recoverable Storage (TERS)
 - Arbitrary recovery constraints; 25% & 75% of total storage
 - No consideration for well performance or economics
- 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



MOTIVATION | Approach | Opportunity

APPROACH

Quantifying changes in recoverability with changes in depth-to-water (DTW) by assessing well response

1. Capacity Impacts

Ability of well and aquifer to meet pumping demand?

Capacity **falls** with increasing DTW

LIMIT: DTW + drawdown = pump or screen top depth 2. Socioeconomic Impacts

Affordability of pumping costs? Remediation costs?

Pumping costs **rise** with increasing DTW

LIMIT: pumping costs = willingnessto-pay



APPROACH



Motivation | **APPROACH** | Opportunity

OPPORTUNITY

New Tools

- BEG is developing these methods into a decision support tool
- Goal: a free web platform for district and stakeholder use

Development and Testing Pilot Program

- Building a limited cohort of districts and stakeholders
- Grant financed, no cost to participants
- Objectives:
 - Understand district and stakeholder needs
 - Assess the range of available input data
 - Evaluate potentially desired output data
 - Test alpha-version tools and troubleshoot
 - Retain feedback



Motivation | Approach | **OPPORTUNITY**

Thank you for listening!

Happy to answer any questions!

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

EXAMPLE

Post Oak Savannah GCD

DTW Thresholds

- Hypothetical wells
- Pumping = 70 GPM
- WTP = \$100 / acre-foot
- White cells = capacity failure
- Black cells = unaffordable



EXAMPLE