

Environment - Water Research; University of Texas Austin Researchers Detail New Studies and Findings in the Area of Water Research (A Hydro-Economic Approach for Quantifying Well Performance Thresholds and Recoverable Groundwater Yields in Texas)

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2024 MAR 15 (VerticalNews) -- By a News Reporter-Staff News Editor at Ecology, Environment & Conservation -- Current study results on water research have been published. According to news originating from the University of Texas Austin by VerticalNews correspondents, research stated, "Groundwater overdraft may increase the depth of the potentiometric surface, or depth-to-water, over time; reducing potentiometric head available to support well operation and increasing the cost of pumping."

Our news journalists obtained a quote from the research from University of Texas Austin: "These hydro-economic impacts create well failure thresholds. Understanding these impacts and thresholds is a critical issue for groundwater management but tools to assess them are not widely available or established. Therefore, an analytical model developed in this study quantifies changes in well performance with depth-to-water, calculates well failure thresholds, and estimates feasible storage yields for variable uses, wells, and aquifers. The model is developed and tested using both a single well and a regional analysis of the Carrizo-Wilcox Aquifer in Texas, U.S.A., where a contemporary groundwater dataset is available and management is depth-to-water-based. Results reveal how storage conditions drive well performance and suggest that performance in shallow and unconfined settings may be more limited by operational thresholds than affordability thresholds, while performance in deep and confined settings may be inversely limited. At the tested parameters for a single well, failure to account for drawdown would overestimate operationally feasible yields by 98% - 108% and economically feasible yields by 24%."

According to the news reporters, the research concluded: "The model could directly support manager, stakeholder, and policymaker consideration of desired future conditions."

For more information on this research see: A Hydro-Economic Approach for Quantifying Well Performance Thresholds and Recoverable Groundwater Yields in Texas. Texas Water Journal, 2024,15(1). The publisher for Texas Water Journal is Texas Water Journal.

A free version of this journal article is available at <https://doi.org/10.21423/twj.v15i1.7160>.

Our news editors report that additional information may be obtained by contacting Justin C. Thompson, **Bureau of Economic Geology**, University of Texas at Austin. Additional authors for this research include Michael Young.

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