

Aquifer Storage and Recovery in Texas: Case Study for the San Jacinto River Authority

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Abstract

The mission of the Texas Water Development Board (TWDB) is to lead the state's efforts in ensuring a secure water future for Texas and its citizens. To accomplish this goal the TWDB provides water planning, data collection, financial assistance, and technical assistance services across the state. The Innovative Water Technologies (IWT) Department at the TWDB was created in 2002 and is focused on alternative water supplies including aquifer storage and recovery (ASR) and aquifer recharge (AR). ASR uses injection wells for the storage and subsequent recovery of water within an aquifer for beneficial use. AR is the intentional recharge of an aquifer through an injection well or other means of infiltration at the surface. In Texas, ASR and AR have been used to store and recharge surface water, groundwater, and reclaimed water. Both technologies are of growing interest across the state due to growing demand for water and overutilization of other, more traditional supplies. In 2019, the 86th Texas Legislature passed HB 721, which tasked the TWDB with two ASR and AR related legislative mandates. The first of these mandates was to conduct a statewide survey to determine the relative suitability of all Texas aquifers for ASR and AR. The second was to work with interested people to conduct studies on ASR and AR across the state.

One project IWT is currently working on is an aquifer characterization to support a potential future ASR project for the San Jacinto River Authority (SJRA) in Montgomery and Harris counties. This project is focused on the Jasper aquifer of the Gulf Coast aquifer system. The Jasper aquifer is upper Oligocene to middle Miocene age and includes the Oakville Sandstone and the Lower Lagarto Formation and are primarily composed of interbedded sands and clays deposited in fluvial and coastal plain environments. This area of the Gulf Coast aquifer system is characterized by normal faults that run parallel to shore, which create additional stratigraphic complexity. Data for this project was gathered from several sources including oil and gas geophysical logs, water well geophysical and drillers logs, and surficial geology maps. This presentation will discuss the preliminary stratigraphic and lithologic analyses for this study and discuss what work is currently ongoing.