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SJRA to Research Brackish Groundwater as a Possible Alternative Source of Supply

Lake Conroe, Texas, March 10, 2011

In an effort to thoroughly evaluate all alternatives and to possibly save money for the participants in its Groundwater Reduction Plan (GRP) and slow the use of surface water from Lake Conroe, the San Jacinto River Authority (SJRA) is considering ways to effectively incorporate brackish groundwater as an additional supply in its countywide water plan. Because available scientific data cannot currently support the long-term reliability of brackish groundwater as a sole source of supply in Montgomery County, the SJRA believes that more thorough research, possibly in conjunction with the Lone Star Groundwater Conservation District, should be conducted on the feasibility of brackish supplies as a supplement to long-term supplies of surface water. This approach is similar to the method being used to incorporate wastewater reuse as a component of the SJRA's overall GRP.

Brackish groundwater is slightly-to-moderately salty water that is typically found in aquifers located below the freshwater aquifers generally used for public water supply. The Lone Star Groundwater Conservation District's rules currently treat brackish groundwater as an "alternative supply," which means that water suppliers can use brackish water sources to meet the District's regulatory requirement to reduce pumpage of fresh groundwater, but the practical issues and challenges for a public water supplier are extremely complex. When an entity submits a GRP to the District, it must identify in its plan the water sources it intends to rely upon for the entire 30-year planning period. The burden is on the water supplier to

demonstrate that its chosen source of supply is reliable, and this reliability must be verified by a professional engineer.

A couple of recent test wells have found reasonably fresh water in the deeper, brackish aquifers in certain areas of Montgomery County, while results in other areas have been unsuccessful, but a test well can only estimate how much water you can pump from a given location today. It does not tell you anything about how long the water will be available or what will happen to the quality of the water over time. Aquifer studies and long-term modeling are necessary to develop any kind of certainty about the long-term yield, reliability, and quality of a particular aquifer.

Given the fact that there has been no historic use of brackish groundwater in Montgomery County, that the brackish aquifers are not even included in the current or upcoming groundwater model for this region, and the tremendous uncertainty related to the long-term water quality of the brackish aquifers, the SJRA is considering a partnership with certain customers in its GRP to develop brackish groundwater wells and to then gather data on the quality and reliability of the water supply. If the quality or productivity of the brackish wells begins to decline over time, the customers can be switched back to shallower groundwater or surface water supplies. If the data indicates that the supplies will be reliable over the long term, this program will provide more certainty to our GRP participants and others regarding where those supplies exist and who can safely rely on them.

"These aquifers have never been used for water supply in our area," explained Mark Smith, GRP Administrator for the SJRA. "We really need a longer-term study involving multiple wells so we can answer some critical questions before we begin relying on these aquifers as a source of supply. What will happen if the water becomes saltier over time or if undesirable constituents begin to appear as the water starts to move through the sands? At least one local entity has discovered that the water could be so hot that it may require cooling before it can be distributed to customers. What if the yield of the aquifer decreases over time? We have enough data in the freshwater aquifers to anticipate and deal with these issues, but there's just not enough known about the deeper aquifers. The best way to answer these questions is to begin using the brackish water as part of an overall study, but you need the ability to switch back to other supplies if any problems ever occur. If they don't, then great –

we'll be able to save money for everyone and supplement the supplies in Lake Conroe. If they do, then hopefully we've saved money for other entities that were planning to invest in wells in hopes that they would be reliable."

The SJRA's plan would utilize brackish groundwater as just one source in a broad portfolio of supplies. This approach provides a fall back in the event that the brackish aquifers begin to become less productive or more salty over time. In addition, by utilizing supplemental fresh groundwater, brackish groundwater, wastewater reuse, and water conservation, the potential exists to slow the rate of usage of surface water from Lake Conroe. This approach not only reduces costs for the SJRA's GRP participants, but it also has the potential to extend the County's valuable surface water supplies.

The City of Willis is one of the SJRA's GRP participants actively considering partnering on a brackish well. "We see a real opportunity here that could save money for both our city customers and for all of the participants in the GRP," stated Arthur Faiello, Director of Public Works for the City of Willis. "We still need a lot more information to determine if this is a viable, long-term supply, but developing a well in partnership with everyone else in the SJRA GRP protects us all from the risks associated with testing this unproven supply."

Commenting on the SJRA plan, County Judge Barb Sadler said "I am glad to see the river authority continuing to work hard to develop additional supplies of water. They have the ability to take a thorough look at the brackish aquifers that can benefit all users in the county and potentially lessen our reliance on lake water. In fact, this could have a significant impact on the economic study being conducted by Texas A&M. We need to be sure to account for this possible new water supply."

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