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Bush School Capstone Report: Reorganizing Groundwater Regulation in Texas

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Reorganizing Groundwater Regulation in Texas



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A Bush School Capstone Report to
Hon. Glenn Hegar,
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Executive Summary

The Texas Water Development Board's (TWDB) 2012 State Water Plan paints a pessimistic picture of future availability of groundwater. Is this due to the physical limitations of the resource or a regulation-induced shortage? To answer this question, it was first necessary to determine how much groundwater the state currently has and how long that quantity is expected to last. These primary assessments were reached using data from the TWDB for each of the nine major aquifers including total estimated recoverable storage (TERS), annual recharge, and historical pumping rates. Additionally, interviews were conducted with the staff of each of the state's 97 groundwater conservation districts (GCDs). At current consumption rates, five of the nine major aquifers have unlimited years of supplies of groundwater. Even using historical growth rates in consumption, we obtained much the same result. The two exceptions are the Ogallala and Hueco-Mesilla Aquifers which have less than one hundred years supply. For the others, only if consumption is projected to grow at a rate of 2% annually (a highly unrealistic estimate), do the numbers decline dramatically. Yet even so, five of the nine aquifers would still have over a two-hundred year supply. These calculations reveal a misconception about the state's availability of groundwater. Most citizens believe groundwater is rapidly being depleted and want to protect it for local use. Our findings show there is a relative abundance of groundwater in all but two of the state's major aquifers. Furthermore, a review of the regulatory practices of the local GCDs supported the conclusion that Texas has a regulation-induced shortage of groundwater.

In attempting to examine alternative regulatory options, it is necessary to have basic criteria for evaluation of these options. We adopted the following criteria based on existing legal precedent, economics, basic equity considerations, and hydrology as follows:

- The protection of property rights,
- Using water at its highest and best use,
- Mitigating against landowner losses, and
- Managing aquifers in a prudent manner.

Using these criteria, we have evaluated the following four policy options:

Policy Option One maintains the existing GCD structure while reinstating the landowner's ability to treat groundwater as a property right. This option builds on best practices utilizing many of the features adopted by the Post Oak Savannah GCD. Under the current system, the power of GCDs to treat specific uses of groundwater differently has effectively usurped this property right. Therefore this policy would require GCDs to accept pumping permit applications regardless of use and implement a uniform, nondiscriminatory fee structure. Additionally, this policy would ensure each landowner receives an equal and fair share of groundwater by replacing the existing convoluted regulatory process with a simple formula-based system using a percentage of TERS, annual recharge, and correlative rights.

Policy Option Two proposes the replacement of the existing GCDs based on political boundaries with hydrological boundaries. Like Option One, it would use a simple formula for determining available groundwater and use correlative rights to assign pumping rates. This approach would allow for more effective regulation by treating groundwater consistently within each aquifer and reconciling the differences between adjacent GCDs.

Policy Option Three would create a statewide agency to protect, conserve, and regulate groundwater, using ideas similar to the Texas Railroad Commission's regulation of oil and natural gas. This statewide agency would retain elements of local input by dividing the state into 16 district offices, similar to the existing Groundwater Management Areas (GMAs). However, the state office would assume the responsibility for accepting permits, setting fees, and monitoring wells. This system would allow for economic certainty by creating consistent policy and should more easily facilitate the movement of groundwater from water abundant regions to water scarce regions.

Policy Option Four is based on a novel idea by Nobel Laureate economist, Vernon Smith who advocated the creation of groundwater bank accounts where each property owner owns the water under his/her land and has considerable flexibility to use it as he/she see fit. Groundwater bank accounts would encourage the development of a water market by using clearly defined property rights. The market established by this system promotes conservation by providing an incentive to keep the groundwater in the ground – as scarcity in the market increases, the price of groundwater will rise. Interestingly, this system would utilize the individual GCDs as their "local banks", while aquifer-wide authorities would measure recharge and administer mitigation.

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