Groundwater Availability as a Matter of Law:
A Discussion of the Statutory Model for Quantifying the Resource and Determining Water Availability

Efforts are underway to evaluate the groundwater availability of each of our states' key aquifers and to decide, on a long-term basis, acceptable (i) aquifer drawdown levels, (ii) groundwater quality, and (iii) spring flows, if applicable, as part of the Groundwater Management Area ("GMA") process. To aid in these policy decisions, the Texas Water Development Board ("TWDB") recently issued figures reflecting what is called the "Total Estimated Recoverable Storage" ("TERS") in these 30 primary aquifers. The numbers are substantial–indicating potentially *billions* of acre-feet of groundwater stored in Texas aquifers. For example, TWDB's TERS report indicates that there is between 98,750,000 and 296,250,000 acre feet of recoverable storage in the Carrizo Aquifer within Bastrop, Burleson, Lee, and Milam Counties alone, and over one *billion* acre feet statewide in that aquifer.[1] However, the 2012 State Water Plan warns that Texas will have a water supply shortfall of 8.3 million acre-feet in 2060.[2] So the question apparent: Is there really this much groundwater available in the Carrizo Aquifer and other aquifers and, if so, how much of that amount can be produced to solve the water deficit facing our state?

TWDB's disclaimer accompanying TERS figures is important: There is "no consideration for water quality [and] potential effects of pumping [include] water levels dropping below pumps, land surface subsidence, degradation of water quality, and changes to surface water-groundwater interaction."[3] TWDB's calculation of TERS was instituted by Senate Bill 660, passed by the Texas Legislature in 2011. The legislative intent behind identifying the amount of estimated recoverable aquifer storage was to provide additional data to policymakers responsible for setting the desired future conditions ("DFCs") of each aquifer. DFCs are defined as the desired, quantified conditions of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one more specified future times.[4] The Legislature mandated that TERS values, and eight other factors, must be considered by groundwater conservation districts ("GCDs") when developing the DFCs of the aquifers within their boundaries.[5]

Recoverable storage doesn't necessarily mean that it's *practicable* to maximize that amount of groundwater production. Chapter 36 of the Water Code now explicitly requires DFCs to provide a balance between "the highest *practicable* level of groundwater production and the conservation, preservation, protection, recharging, prevention of waste of groundwater and control of subsidence in the management area."[6] Further, TERS values are only <u>one</u> of the nine statutory factors required to be considered by GCDs when developing their DFCs for adoption. The factors that GCD representatives must consider are:

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[1] http://www.twdb.state.tx.us/groundwater/docs/GAMruns/Task13-035.pdf.
[2] Tex. State Water Plan, pg. 174.
[3] http://www.twdb.state.tx.us/groundwater/docs/TotalEstimatedRecoverableStorage.pdf, pg. 6.
[4] 31 Tex. Admin. Code § 356.10(6) (Tex. Water Dev. Bd., Definitions).
[5] *See* Tex. Water Code § 36.108.
[6] Tex. Water Code § 36.108(d-2).

(1) aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
(2) the water supply needs and water management strategies included in the state water plan;
(3) hydrogeological conditions, including for each aquifer in the management are the total estimated recoverable storage as provided by the executive administrator, and the average annual recharge, inflows, and discharge;
(4) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
(5) the impact on subsidence;
(6) socioeconomic impacts reasonably expected to occur;
(7) the impact on the interests and rights in private property, including ownership and the rights of management are landowners and their lessees and assigns in groundwater as recognized under Section 36.002;
(8) the feasibility of achieving the desired future condition; and
(9) any other information relevant to the specific desired future conditions.[7]

The statutory DFC development process requires that all GCDs participate in a regional GMA joint planning effort to establish DFCs for each of the aquifers in a defined geographic area.[8] Each GMA was required to jointly file its respective DFCs with the TWDB by the first statutory deadline of September 2010, with subsequent rounds of joint planning and adoption of DFCs required at least every five years thereafter.[9] The legislature extended the next deadline to May 1, 2016.[10]

Once a DFC is officially adopted by a GMA (after consideration of all factors mentioned above and upon approval of two-thirds of the representatives of each of the GCDs within the GMA[11]), the TWDB then incorporates the DFC parameters into its groundwater availability models to determine an acceptable quantity of water that may be withdrawn from each aquifer. These TWDB-generated models of available groundwater are critically important to anyone interested in knowing how much groundwater supply is available for use.

In 2011, the Texas Legislature changed the term "managed available groundwater" to "modeled available groundwater" and emphasized the importance of TWDB's efforts of employing groundwater availability models to estimate available groundwater supplies. Modeled available groundwater ("MAG") is defined by the Texas Water Code as the amount of

[7] Tex. Water Code § 36.108(d)(1)-(9).
[8] Tex. Water Code § 36.108(C).
[9] *Id.*
[10] Tex. Water Code § 36.108(d-5).
[11] Tex. Water Code § 36.108(d-2).

groundwater the TWDB Executive Director determines may be produced from an aquifer on an average annual basis in order to achieve a DFC.[12]

Each GCD's rules and permitting programs are also designed to achieve these DFCs, and take into consideration the MAGs. The GCDs use the MAGs that TWDB derives from DFCs of local aquifers as an annual "benchmark" upon which to balance between groundwater production and preventing unsustainable aquifer depletion on a *local* level. The amount of water already permitted in a GCD may exceed a MAG, in which case the GCD is responsible for ensuring that actual production does not impair the relevant DFCs. If actual production does exceed the MAG in a particular year, the GCD will then have to ensure that there is no impending threat of impairment to the DFC by adjusting production and permit decisions accordingly in the following years.

Section 36.1132 of the Texas Water Code establishes specifically how GCDs factor in DFCs and MAGs into their permitting and other regulatory programs:

> "A district, to the extent possible, shall issue permits up to the point that the total volume of exempt and permitted groundwater production will achieve an applicable desired future condition under Section 36.108."[13]
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> "In issuing permits, the district shall manage total groundwater production on a long-term basis to achieve an applicable desired future condition and consider: (1) the modeled available groundwater determined by the executive administrator [of the TWDB]; …" [14]

Additionally, the DFCs developed at the regional GMA level, which are used by TWDB to model groundwater availability, play a crucial role in the larger-scale picture of groundwater management in Texas. Regional Water Planning Groups ("RWPGs") are also now statutorily required to include MAG values in regional water planning efforts. In the current round of regional water planning, all RWPGs will be required to use the official MAG values generated from the GMA joint planning process to represent the amount of water available for production in the regional water plans.[15] The 2016 regional water plans and the 2017 State Water Plan will therefore incorporate all MAG values established through the DFC joint planning process, unifying two formerly separate systems for water planning in the state - the state water planning process and the localized joint planning of GCDs through the GMA/DFC process – ultimately creating a much more comprehensive and cohesive approach to water management in the state of Texas.

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[12] *See* Tex. Water Code § 36.001(25).
[13] Tex. Water Code § 36.1132.
[14] *Id.* at (1).
[15] *See* Tex. Water Code § 16.053(e)(3)(A) (mandating that RWPGs shall submit to the TWDB a plan that identifies each source of water supply in the area, including information on the MAG values generated by TWDB).