SPECIAL LAWS FOR PERMITTING GROUNDWATER USE IN TEXAS: THREE CASE STUDIES

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I. INTRODUCTION

This discussion highlights the background, regulatory framework, and horizon issues for three groundwater districts: The Panhandle Groundwater Conservation District, the Edwards Aquifer Authority, and the Lone Star Groundwater Conservation District. There are approximately 100 districts currently authorized to regulate groundwater use in Texas, if you count two entities that were created as subsidence districts with particular powers. The three districts discussed here were chosen for their differences, and the choice highlights the diversity in regulation of critical groundwater resources in Texas today.

Despite their differences however, the three districts share a common challenge – they all are called upon to manage shortage. Limitations on groundwater use are precipitated by projections of a future that would occur when growing population and increasing groundwater use collide with declining water levels. When a groundwater district implements its regulations, fortunes shift. This is no small burden for groundwater districts to bear. The case studies discussed are offered with high personal and professional regard for all of those charged with responsibility for the regulatory processes that govern groundwater production and management.

The discussion here also cannot adequately convey what is at stake in that process for the regulated community. For example, when historical access to groundwater is reduced, those who carry the responsibility to provide essential public utilities for their communities are faced with a challenge not wholly unlike a catastrophic loss of water supply, albeit with advance warning but also with permanent effect. Individual groundwater users may find themselves suddenly embroiled in regulatory controversies that they never imagined. There is no easy answer for managing shortage or living with it. Both the adoption and implementation of regulatory reductions and the search for alternative water supply solutions take place amidst all the pressures that local, and even statewide, politics have to offer.

Section II of this discussion provides some general context for considering groundwater use permitting and the forces that drive it. The case studies begin with Section III.

II. SOME TOOLS OF CONTEXT FOR GROUNDWATER MANAGEMENT IN TEXAS

A. The Nature of Groundwater Interests

This discussion of special laws for permitting groundwater use pertains to groundwater that "percolates" beneath the surface of the ground. The term groundwater does not include "underground rivers" or the underflow of state watercourses, both of which would be state water subject to the prior appropriation doctrine and the statewide jurisdiction of the Texas Commission on Environmental Quality. *See generally,* TEX. WATER CODE ANN. §§ 35.002(5), 36.001(5 (Vernon and Vernon Supp); 31 TEX. ADMINISTRATIVE CODE § 356.22(3) (Rules of the Texas Water Development Board). Water occurring naturally underground in Texas is presumed to be percolating. For more information on the classification of groundwater, *see, e.g*., *Texas Co. v. Burkett*, 296 S.W. 273 (Tex. 1927); *Denis v. Kickapoo Land Co.,* 771 S.W. 2d (Tex. App.–Austin 1989, writ denied).

Texas has not assumed state ownership of groundwater nor enacted statewide regulation of groundwater production, and groundwater management in Texas is unique among the states in that regard. Ownership interests in groundwater are incident to the ownership of land as part of the surface estate, although, from a property rights perspective groundwater interests may be reserved or severed in the same way that mineral estates may be reserved or severed.

B. Rule of Capture

The rule of capture in Texas for addressing conflicts over groundwater pumpage dates back more than 100 years, and at least to *Houston & T.C. Ry. Co. v. East*, 81 S.W. 279 (Tex. 1904). That case is famous, or infamous, among water law practitioners for the following language that the Texas Supreme Court borrowed from the

Supreme Court of Ohio: " [T]he existence, origin, movement, and course of [groundwaters], and the causes which govern and direct their movements, are so secret, occult, and concealed that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would, therefore, be practically impossible." *Id.* 281.

In essence, the rule of capture that the Supreme Court preferred in *East* is a common law theory of liability. It might better be described as a theory of non-liability, considering that it allows groundwater users to pump unlimited amounts of groundwater without concern for the effect on groundwater levels or other users. There are narrow exceptions, basically for waste, malicious harm, and land subsidence. *See, e.g., Sipriano v. Great Spring Waters of America*, 1 S.W. 3d 75 (Tex. 1999).

"Owners" of groundwater interests who have the right of virtually unrestrained pumping also have little or no protection from pumpage by others. Neighboring groundwater users from the same groundwater formation have only the "self-help" remedy of drilling deeper/bigger wells and pumping faster. Allowing the rule of capture to this result makes regulation of the resource potentially attractive both with regard to the reliability of supply and the ability to make commerce in water. In spite of the Texas courts' continued embrace of private groundwater ownership and the rule of capture, individual cases including *Sipriano* are clear that groundwater *can* be regulated by the State under the police power.

The Texas Legislature, when invited by the courts and others to address the merits of regulating groundwater use, has chosen to leave the necessary authority to regulate largely to local political entities. Today, the vast majority of groundwater pumpage comes from within local groundwater districts. Regulation within these districts is not inconsistent with the rule of capture as a theory of liability, since even within a groundwater district the rule would apply as between individual users. Outside of groundwater districts, the rule of capture and the corollary absolute ownership principle stand primary.

C. Authority for Regulation

Texas Water Code § 36.0015 directly speaks to local regulation by groundwater districts, stating that:

> In order to provide for the conservation, preservation, protection, recharging and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and to control subsidence caused by withdrawal of water from those groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution, groundwater conservation districts may be created as provided in this chapter. *Groundwater conservation districts created as provided by this chapter are the state's preferred method of groundwater management.*

TEX. WATER CODE ANN., § 36.0015 (Vernon and Vernon Supp.) (emphasis added).

The referenced section of the Constitution commonly is referred to as the Conservation Amendment. In addition to declaring it a public right and duty for the Legislature to conserve and develop the natural resources of this State, the Conservation Amendment authorizes the creation of conservation and reclamation districts, as follows:

> There may be created within the State of Texas, or the State may be divided into, such number of conservation and reclamation districts as may be determined to be essential to the accomplishment of the purposes of this amendment to the constitution, which districts shall be governmental agencies and bodies politic and corporate with such powers of government and with the authority to exercise such rights, privileges and functions concerning the subject matter of this amendment as may be conferred by law.

TEX. CONST. art. 16, § 59(b). The Conservation Amendment is the same constitutional authority that supports the creation of river authorities and other water districts.

Groundwater districts can be created by special act of the legislature, upon petition to the Texas Commission on Environmental Quality by landowners, or by the agency through the priority groundwater management area process. Most districts, however, have been created through the legislature and made subject to confirmation elections. The special powers granted to districts range very broadly, spanning the distance between districts that were created for very particular purposes and those that were created to exercise no more powers than the general law in Water Code Chapter 36 will support. Both Chapter 36 and the enabling legislation and orders for a district must be considered in tandem for examining issues related to particular regulations for the production of groundwater.

D. Local District Powers

Texas Water Code Chapter 36 addresses, but does not resolve, the relationship between groundwater users and groundwater conservation districts. Section 36.002 currently reads rather simply that:

> Sec. 36.002. OWNERSHIP OF GROUNDWATER.
>
> The ownership and rights of the owners of the land and their lessees and assigns in groundwater are hereby recognized, and nothing in this code shall be construed as depriving or divesting the owners or their lessees and assigns of the ownership or rights, *subject to rules promulgated by a district*."

TEX. WATER CODE ANN. § 36.002 (Vernon and Vernon Supp.) That provision was amended in the Regular Session of the 82nd Legislature amid some controversy, and will read as follows after September 1, 2011:

> Sec. 36.002. OWNERSHIP OF GROUNDWATER.
>
> (a) The legislature recognizes that a landowner owns the groundwater below the surface of the landowner's land as real property.
>
> (b) The groundwater ownership and rights described by this section: (1) entitle the landowner, including a landowner's lessees, heirs, or assigns, to drill for and produce the groundwater below the surface of real property, subject to Subsection (d), without causing waste or malicious drainage of other property or negligently causing subsidence, but does not entitle a landowner, including a landowner's lessees, heirs, or assigns, to the right to capture a specific amount of groundwater below the surface of that landowner's land; and (2) do not affect the existence of common law defenses or other defenses to liability under the rule of capture.
>
> (c) Nothing in this code shall be construed as granting the authority to deprive or divest a landowner, including a landowner's lessees, heirs, or assigns, of the groundwater ownership and rights described by this section.
>
> (d) This section does not: (1) prohibit a district from limiting or prohibiting the drilling of a well by a landowner for failure or inability to comply with minimum well spacing or tract size requirements adopted by the district; (2) affect the ability of a district to regulate groundwater production as authorized under Section 36.113, 36.116, or 36.122 or otherwise under this chapter or a special law governing a district; or (3) require that a rule adopted by a district allocate to each landowner a proportionate share of available groundwater for production from the aquifer based on the number of acres owned by the landowner.

See Act of May 29, 2011, 82nd Leg., R.S., ch. 1233, 2011 Tex. Sess. Law Serv. ___ (Vernon) (to be codified as an amendment to TEX. WATER CODE ANN. § 36.002).

It is not within the scope of this discussion to attempt to resolve continuing issues regarding the nature of the property interest in groundwater, by reference to the amended law or otherwise. The most relevant principle for the author's purposes here is simply that groundwater districts *do* have the power to regulate the exercise of private interests in groundwater and the responsibility to perform certain duties set out under law.

While groundwater districts exercise many functions, their authority to regulate wells, including limitations on production, are at the core of their powers. In the absence of special district legislation authorizing certain rules, it is Water Code Chapter 36 that both grants the power for and limits a groundwater district's rulemaking authority. Water Code § 36.101, for example, provides that "A district may make and enforce rules, including rules limiting groundwater production based on tract size or the spacing of wells, to provide for conserving, preserving, protecting, and recharging of the groundwater reservoir or its subdivisions . . .". TEX. WATER CODE ANN. 36.101 (Vernon and Vernon Supp.).

In this framework of local special laws and regulations, a permittee's grievances most likely will be about whether a particular district with particular powers has gone too far. The standards which apply to how far groundwater district regulatory authority over wells and production may go legally have been articulated in various cases, and will no doubt continue to be tested. Chapter 36 in some instances runs short on guidance regarding how particular powers may be exercised. The general law does not, for example, include any specific guidelines for how to reduce existing levels of groundwater production, although a current example of adjustment regulations is discussed in one of the case studies below.

In general, a groundwater district may only exercise those powers granted by statute, together with those necessarily implied from the statutory authority conferred or duties imposed. *See, e.g., Stauffer v. City of San Antonio*, 344 S.W.2d 158, 160 (Tex. 1961); *Guitar Holding Co. v. Hudspeth County Underground Water Conservation Dist. No. 1*, 209 S.W.3d 146, 160 (Tex. App.—El Paso 2006), *rev'd on other grounds*, 263 S.W.3d 910 (Tex. 2008); *South Plains Lamesa R.R., Ltd. v. High Plains Underground Water Conservation District No. 1*, 52 S.W.3d 770, 779-80 (Tex. App.—Amarillo 2001, no pet.).

E. Planning

The general law requires groundwater districts also to undertake various planning activities, that in turn effect management of groundwater production. A district must, for example, develop a management plan in coordination with the Texas Commission on Environmental Quality and then implement the plan subject to review by the State Auditor's Office. *See* TEX. WATER CODE ANN. § 36.1071 (Vernon and Vernon Supp; *see also* 31 TEX. ADMIN. CODE Chapter 356 (Rules of the Texas Water Development Board). Districts must also participate in joint planning with other districts in designated groundwater management areas, and their work is linked to the regional water supply planning process that contributes to the State Water Plan.

Joint planning has been very controversial in recent years leading up to the current requirements for designating "desired future conditions." Water Code § 36.108 requires that not later than September 1, 2010, and every five years thereafter, districts within the same groundwater management area must consider groundwater availability models and other data or information for the relevant aquifers within the management area. *Id.* § 36.108.

Identifying those conditions which are "desired," of course, can include some relatively subjective considerations. Districts *must* consider: (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) hydrological conditions, including for each aquifer in the management area 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 area landowners and their lessees and assigns in groundwater as recognized under Section 36.002 of the Texas Water Code; (8) the feasibility of achieving the desired future condition; and (9) any other information relevant to the specific desired future conditions. *See* Tex. Water Code § 36.108, as amended, Act of May 29,

2011, 82nd Leg., R.S., ch. 1233, 2011 Tex. Sess. Law Serv. ___ (Vernon).

Once desired future conditions have been adopted, submitted to Texas Water Development Board, and finalized, the Board will calculate estimates of what will be called *modeled* available groundwater based on them. "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." *Id.* Districts include these estimates of modeled available groundwater in their groundwater management plans. *See* TEX. WATER CODE ANN. § 36.1071(e)(3)(A) (Vernon and Vernon Supp.) Each groundwater conservation district also must "ensure that its management plan contains goals and objectives consistent with achieving the desired future conditions of the relevant aquifers as adopted during the joint planning process."

The statutory methods for challenging desired future conditions are considered by many to be unsatisfactory, although the recent Legislative Session did not resolve that debate. For now, desired future conditions will continue to lead the identification of groundwater shortages that in turn drive groundwater production management in Texas.

There are many worthy and more detailed published discussions regarding the nature of groundwater districts and the extent of their regulatory power. Among them are several chapters in the "Essentials of Texas Water Resources" published by the State Bar of Texas as a project of the State Bar's Environmental & Natural Resources Law Section. On the issue of desired future conditions, various presentations by Dr. Robert E. Mace, Texas Water Development Board also warrant particular mention. *See*, e.g., "A Streetcar Named Desired Future Conditions: The New Groundwater Availability for Texas (2006), available at www.twdb.state.tx.us/GAM/03-1_mace.pdf, and "A Streetcar Named Desired Future Conditions – Next Stop: The 82nd Legislature, presented at The Changing Face of Water Rights, 2011.

III. PANHANDLE GROUNDWATER CONSERVATION DISTRICT

A. Background

It would be fair to describe the Panhandle Groundwater Conservation District as a classic Water Code Chapter 36 district, even though the district actually precedes that particular codification significantly. Created in 1955 and expanded through the decades since, the district's jurisdiction now covers 6,309 square miles in Carson, Gray, Roberts and Wheeler Counties, and along parts of Armstrong, Hutchinson and Potter Counties. The District's economy is dominated by agricultural and petrochemical production.

The primary aquifer with the district's authority is the Ogallala. In the area of the district, this aquifer does not meaningfully replenish as recharge rates are relatively low due to high evaporation and a low infiltration rate. The Panhandle Groundwater Conservation District manages the groundwater resource with a goal of retaining, in 50 years, 50 percent of current supplies identified as a saturated thickness of the aquifer. The 50-year period began in 1998 and ends on December 31, 2048, although the District has a goal to extend the 50/50 trend line through at least 2058.

Within the District boundaries, there are over 4,400 irrigation wells capable of producing water to meet the needs of the agricultural community. The District has around 350 municipal or public supply wells and well over 400 wells for industrial use, and oil and gas secondary recovery operations. The remaining wells are registered, non-permitted water supplies for household and livestock consumption.

Faced with inevitably declining supplies, the districts' activities focus significantly on conservation and promoting efficient water use, enforcement and preventing waste, data acquisition, maintaining economic viability of the region, and even rainfall enhancement.

B. Regulatory Framework

Panhandle Groundwater Conservation District's rules are straightforward and relatively stable considering that managing aquifer depletion requires adaptation. The district's permitting rules depend on production rate and tract size. Any well drilled on less than 10 acres or producing

more than 17.4 gallons per minute must be permitted, and other wells must be registered. The amount of water allowed to a well permittee is based on acre-feet of water per contiguous surface acre of water rights owned or controlled, and includes a maximum rate of production. For agricultural use, the current average is about 1.25 acre-feet per acre and municipal use from a well field is likely a little higher. Well-spacing requirements apply, and the district also considers whether a proposed use constitutes a beneficial use without waste and whether a permit applicant proposes to achieve water conservation, protection of groundwater quality, and other permitting criteria. Transportation of groundwater out of the district is permitted, subject to rules specific to that activity and a water transport fee.

Despite the goal of maintaining a 50/50 trend line, new wells and new production still are allowed. Rather than embracing an historical-use approach to allocating production, the district chose to implement depletion rules as a preferred strategy. Broadly speaking, a permittee's authorized production is subject to being reduced, regardless of when a well was permitted, the maximum quantity authorized in any permit, when production was initiated, or whether that production is not in excess of certain pumping rates.

To determine reductions, the district conducts annual evaluation of saturated thickness and calculates percent decline. For these calculations, the district's territory is considered in management sub-areas, delineated on recognizable natural and built features and political and property lines. The rate of decline within any such area should not exceed a maximum allowable decline of saturated thickness. Each area has an assigned floor rate ranging from 0.1 to 0.5 acre-feet per acre, below which the district will not reduce allowable pumping. Floor rates are based on the volume of water that could be produced per acre in the sub-area and still meet the 50/50 standard if all sections in the sub-area were producing.

In practice, adjustment would be based on a five-year rolling average but implemented in stair-step fashion so that the regulated community has time to adjust. The district's board of directors reserves the ability to consider economic hardship when it regulates groundwater withdrawals by means of spacing, production limits, and even depletion. Any user may appeal to the board for discretion in enforcement of the provisions of the water supply deficit contingency plan, for example, on grounds of adverse economic hardship or unique local conditions. The district's rules in their entirety are available at www.pgcd.us.

C. Horizon Issues.

Designating Conservation Areas. Panhandle Groundwater Conservation District's regulatory framework also contemplates that designating "conservation areas" for more restrictive limitations may become necessary. As of the time of this writing, no conservation areas have yet been delineated, although the district has held hearings regarding a designation in Roberts County, and will do so again in July, 2011. If and when the district does delineate a conservation area, the district's rules call for special production limitations in the area and the possibility of a moratorium on new wells. The rules also require installation of meters of all wells capable of producing 25,000 gallons ore more per day within the area at the well owners expense.

Desired Future Conditions Litigation. It's no surprise that planning for future water use can be controversial in the Texas Panhandle. As a member of Groundwater Management Area 1, Panhandle Groundwater Conservation District coordinates with three other districts. Area 1 was one of the first to complete the process of identifying "desired future conditions," but the designation of those conditions was challenged. A groundwater enterprise proposing large-scale transportation of groundwater for sale, Mesa Water, LP, and others challenged Area 1's desired future conditions through the appeals process at the Texas Water Development Board. After the Board found the conditions to be reasonable, a petition was filed against the Board in Travis County District Court under docket number NO. D-1-GN-10-000819. The groundwater management area also was challenged through the Texas Commission on Environmental Quality with allegations that the participating districts have not met the requirements of amending their rules and updating their management plans. There is some expectation that all of

these particular challenges will be resolved with the consummation of Mesa Water, LP's recent sale of water rights beneath 211,000 acres of land in seven counties north of Amarillo to the Canadian River Municipal Water Authority.

IV. EDWARDS AQUIFER AUTHORITY

The Edwards Aquifer Authority has what is likely the most specific statutory authority of all the groundwater districts in Texas. Nevertheless, it has been suggested that the authority also may have the dubious honor of having been involved in more litigation than any other groundwater district in the state. In fact litigation, itself, forced the Legislature's hand in creating the particular powers that the authority exercises today.

A. Background

The Edwards Aquifer Authority has jurisdiction over 8,800 square miles across eight counties in south-central Texas, including all of Uvalde, Medina, and Bexar counties, plus portions of Atascosa, Caldwell, Guadalupe, Comal, and Hays Counties. The City of San Antonio, located in Bexar County, has been historically dependent on the Edwards Aquifer for water supply. The Edwards Aquifer was the first "sole-source" aquifer designated nationally by the Environmental Protection Agency for water quality protection purposes. The designation is appropriate in areas that have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon an aquifer for drinking water.

The most defining issue for the Authority is the nature of the Edwards groundwater resource itself. The Edwards is unique among the state's most significant aquifers in that it is for the most part both highly rechargeable and highly transmissive. Categorized in general terms as a karst aquifer, its saturated limestone formations are marked by high porosity and flow that is measureable even to lay people in terms of "flow" and "velocity." (A failed attempt to designate the Edwards as an underground river and bring it within the appropriative system for "state water" has been documented in various published discussions.)

The characteristics of the groundwater resource that the Edwards Aquifer Authority regulates, then, is starkly different than those of the Ogalalla Aquifer. Speaking in general terms, the Edwards Aquifer is geohydrologically capable of continuing to be an extremely prolific water supply for the City of San Antonio and the surrounding communities, industries, and agricultural interests that pump groundwater. The authority's Comprehensive Water Management Plan estimates total water in storage to be in the neighborhood of 175 million acre-feet.

The story of shortage in the Edwards Aquifer is rooted in the fact that the aquifer is hydraulically connected to springs at the headwaters of the Comal River in New Braunfels and the San Marcos River in the City of San Marcos. Those two rivers and others join together in the Guadalupe River, and other systems that are a source of surface water supply for downstream communities. The correlations can be simply stated: aquifer levels drop when pumping and other discharges exceed recharge; while growth in demand for pumping trends relentlessly upward, recharge also decreases periodically with drought; and, when aquifer levels decrease, springflow decreases. All aquifer uses, human and environmental are stressed until such time as increased recharge replenishes the aquifer and springflow rebounds.

Conflicts in Central Texas over water use also are not new, and include a notable 1960s dispute when San Antonio and the Guadalupe-Blanco River Authority clashed over the right to build Canyon Reservoir to supplement existing water sources after the 1950's drought. The Texas Supreme Court ultimately upheld a grant of reservoir rights to the river authority, with emphasis on protecting in-basin use of water and some attention to evidence offered to show that the level of San Antonio's continued reliance on the Edwards Aquifer did not present a dire situation. *City of San Antonio v. Texas Water Commission*, 407 S.W.2d 752 (Tex. 1966).

The 1966 case settled an isolated water permitting issue, and it clearly had broader ramifications for the local politics of, and the psychology of, water supply. It did not, however, resolve regional competition for

those supplies. With significant benefit for the downstream surface-water users, federal litigation under the endangered species act to protect critical habitat at the Edwards-fed springs became pivotal in the 1990s. *Sierra Club v. Lujan*, appeal dism'd *Sierra Club v. Babbitt*, 995 F2d 571 (5th Cir.1993) forced the Texas Legislature to move toward regional compromise and to craft the powers of the Edwards Aquifer Authority. The court ordered the State of Texas to limit groundwater use from the Edwards Aquifer and to take other measures necessary to protect the endangered spring species or risk additional federal supervision.

Legislation to create the Edwards Aquifer Authority (replacing also the existing Edwards Underground Water Conservation District) and to specifically craft its management goals was initially passed in 1993. The first state court litigation challenging the district soon followed. *See, e.g.*, *Barshop v. Medina County Underground Water Conservation District*, 925 S.W.2d 618 (Tex. 1996). With this major case decided in its favor and certain voting rights issues also resolved, the Edwards Aquifer Authority became operational and was able to focus on its important regulatory mission despite various issues that remained active in the courts. In a meaningful nod to regional interests, enabling legislation for the Edwards Aquifer Authority also included creation of a South Central Texas Water Advisory Committee for advising the authority's board on downstream water rights and issues, and continuing legislative oversight.

B. Regulatory Framework

The Edwards Aquifer Authority is a water conservation and reclamation district under the terms of the Texas Constitution, and it is a groundwater district within the meaning of Chapter 36 of the Water Code. However, the authority's specific enabling legislation, including through various amendments now approaches seventy-plus pages. The Edwards Aquifer Authority Act is available on the Internet at www.edwardsaquifer.org. A proposed amendment to the authority's enabling legislation during the most recent regular session would have, among other things, expressed that Chapter 36 does *not* apply to the authority. That legislation did not pass. *See* S.B. 1625 (82nd R.S.) (Hegar). A provision was added to the session's primary groundwater ownership bill, however, to exclude the authority from application of Water Code § 36.002, quoted above.

The authority's regulatory framework has several elemental components. First, total permissible production of groundwater from permitted wells was initially quantified and then the resulting total guided certain features of the permitting process for individual users. To arrive at that production that would be allowed to an individual groundwater user, the authority conducted an extensive program of application procedures and deadlines, proving up actual historical use during a statutory test period, and applying regulatory allowables to achieve a corps of "initial regular permits." The authority does not limit production from exempt domestic and livestock wells, and total annual production from such wells can be substantial.

To the extent that the total amount of water determined to have been beneficially used without waste exceeded the amount of water available for permitting, the authority was directed to adjust the amount of water authorized for withdrawal under the permits proportionately to meet the amount available for permitting. An existing irrigation user, however, was assured two acre-feet a year for each acre of land the user actually irrigated in any one calendar year during the historical period. An existing user who has operated a well for three or more years during the historical period was to receive a permit for at least the average amount of water withdrawn annually during the historical period.

Each permit specifies the maximum rate and total volume of water that the water user may withdraw in a calendar year. Very significantly, initial regular permits are issued without a term, and such permits remain in effect until the permit is abandoned or cancelled. However, actual production can be further "interrupted" as necessary to accomplish the authority's management strategies, including to protect springflow. Among other things, the Edwards Aquifer Authority is required to steward a critical period management plan that distinguishes between discretionary and non-discretionary uses in consideration of declining aquifer levels.

Finally, the drilling of new wells is prohibited, except for replacement, test, or exempt wells or to the extent that the authority approves an amendment to an initial regular permit to authorize a change in the point of withdrawal under that permit. To the extent water might have been available for permitting after the issuance of permits to existing users, the authority was authorized to issue *additional* regular permits, subject to limits on the total amount of permitted withdrawals. However, there has been no water available for such permitting. Legislation also contemplated term permits, but those would require a board of directors resolution to activate rules for issuance and that has not occurred.

What has occurred most significantly is that the primary features of the Edwards Aquifer Authority legislation, together with the unique transmissivity of the Edwards Aquifer and the success of the authority's permitting and enforcement programs, have given rise to a robust regional market in groundwater rights. It is that market, now, that allows new groundwater-dependant uses to develop in the region. The aquifer's largest user, San Antonio Water System, has been an active participant in the groundwater market, an avid proponent of water conservation as a water management tool, and still on the hunt to further diversify its water supply portfolio.

Recommended reading regarding the Edwards Aquifer Authority prominently includes Chapter 14 of the Essentials of Texas Water Resources cited above in this discussion, authored by the authority's General Counsel, Mr. Darcy Frownfelter.

C. Horizon Issues

The "EARIP." The Edwards Aquifer Authority's enhanced management responsibilities include protecting endangered species and preventing further federal intervention in managing the Edwards Aquifer. In that regard, a deadline is embedded in the authority's enabling legislation and is looming large for regional water supply planning efforts. The Edwards Aquifer Authority Act requires the authority to implement and enforce water management practices, procedures, and methods to ensure that, not later than December 31, 2012, the continuous minimum springflows of the Comal Springs and the San Marcos Springs are maintained to protect endangered and threatened species to the extent required by federal law.

Related to these duties to the species, the authority is participating in a multi-stakeholder initiative called the Edwards Aquifer Recovery Implementation Program, ("EARIP") that will prepare a habitat conservation plan to describe the anticipated effects of certain actions on the endangered species and how those effects will be minimized or mitigated. The plan is expected to include a flow regime to preserve the springs. The United States Fish and Wildlife Service will determine whether to approve the plan and whether to issue a permit for any incidental taking of the Edwards endangered species that may occur through pumping. Although the focus of this paper is groundwater production permitting, it is important to emphasis that a tremendous amount of effort and a great deal of money will be invested in strategies to avoid further mandatory reductions in authorized pumpage in order to achieve long-term biological goals for the species. Those strategies will range from habitat improvements, voluntary irrigation suspensions, and operating the San Antonio Water System's aquifer storage and recovery project in the Carrizo aquifer conjunctively with its Edwards pumpage to shift dependence to the stored supply during a severe drought. More severe critical plan management reductions in allowable pumpage would be implemented as an emergency measure.

More information regarding the EARIP process is available at a dedicated website, www.earip.org.

***Continuing Litigation*.** Exercise of a groundwater district's regulatory authority, requires acting on private property rights in groundwater, whatever the extent of those rights may be. This remains true also for the Edwards Aquifer Authority, despite the complexity of its enabling legislation and the broad range of its responsibilities. A number of the court cases directly involving the authority have pushed this issue to one degree or another, including the *Barshop* case mentioned above. Most recently, the authority is defending a pivotal case that could affect the entire groundwater community, *Edwards Aquifer Authority v. Day*, 274 S.W.3d 742 (Tex.App. -San

Antonio Aug 29, 2008) (NO. 04-07-00103-CV), rehearing overruled (Oct 17, 2008), review granted (Jan 15, 2010). The case is awaiting decision by the Texas Supreme Court.

As one would expect, the saga of the *Day* case began when the authority denied the authorization to produce groundwater, in that case by denying an application for initial regular permit. Underlying the case is a question regarding the extent to which a landowner's property right in groundwater exists "in place" or whether that interest "vests" only when the landowner has captured the groundwater and put it to a beneficial use. Finding against the authority, the San Antonio Court of Appeals issued its opinion that landowners have "some ownership rights" in groundwater beneath their property.

The Edwards Aquifer Authority explains in briefing its position to the Supreme Court that a holding that landowners have a constitutionally-protected ownership right in groundwater in place jeopardizes the ability of the Legislature to fulfill its mandatory duty under the Conservation Amendment of the Texas Constitution to provide for the regulation and management of groundwater resources. The authority also posits that the lower court's decision threatens the viability of the approximately 1,600 groundwater withdrawal permits issued under the Edwards Aquifer Authority Act and the market that has developed for the transfer of permitted rights.

Briefs in the *Day* case are available on the Internet on the Supreme Court's website, www.supreme.courts.state.tx.us, case #08-0964. Another case to watch is #04-11-00018-CV sent earlier this year to the Fourth Court of Appeals, styled Edward Aquifer Authority, and Karl Dreher in his official capacity as General Manager of the Edwards Aquifer Authority v. Glenn and JoLynn Bragg, also involving a regulatory takings claim.

V. LONE STAR GROUNDWATER CONSERVATION DISTRICT

The boundaries of the Lone Star Groundwater Conservation District are co-extensive with those of Montgomery County, Texas, making that entity an example of a "single-county district." Water use in Montgomery County today is sourced almost exclusively from the Gulf Coast Aquifer, despite the dominant presence of Lake Conroe in the northwestern part of the county. Because of the groundwater district's new proportional adjustment rules for limiting historic and future groundwater use, the landscape for water use throughout the county is in an uneasy process of change.

A. BACKGROUND

Lone Star Groundwater Conservation District was created as a Water Code Chapter 36 district by the Texas Legislature in 2001 and confirmed by local voters in November of that year. *See* Chapter 1321, Acts of the 77th Legislature, Regular Session, 2001 (as amended). The district's enabling authority does include some expressed powers. For example a statutory amendment specified particular authority to adopt different rules for each aquifer, subdivision of an aquifer, or geologic stratum and for different geographic areas of an aquifer or subdivision of an aquifer if the district finds that conditions in or use of the aquifer differs substantially from one geographic area to another, or to promote better management of groundwater resources. However, this power is not unlike general authority in Chapter 36. *See* TEX. WATER CODE ANN. § 36.1216(d) (Vernon and Vernon Supp.).

Early on, the groundwater district engaged with the San Jacinto River Authority to jointly study options for both regulating groundwater production and making alternative water supplies available from the river authority's surface water supply in Lake Conroe. A "Regulatory Study and Facilities Implementation Plan for Lone Star Groundwater Conservation District and San Jacinto River Authority" was published in 2006. The study reflects that levels of drawdown from groundwater pumpage are not uniform in the county, which would be expected in a county with pockets of particular growth overlying an aquifer formation that does not have the transmissivity of the Edwards Aquifer. The 2006 report is available on the district's website at www.lonestargcd.org. Even though the study identified several more limited or staged approaches to regulation, the district opted for uniform, county-wide reductions in historical pumpage that would be crafted based on quantified recharge.

Contrast the regulatory approach of the Panhandle Groundwater Conservation District for managing depletion in subdivisions.

Although groundwater use in the County occurs from several formations identified together as the Gulf Coast aquifer, the district's regulatory framework, discussed below, is based on a concept of combined "aquifer sustainable yield," identified as a ratio of annual recharge to the Gulf Coast aquifer to the area of the groundwater district in acres. The Gulf Coast aquifer sustainable yield currently is calculated at 64,000 acre-feet per year.

Considering its aquifer recharge number, Lone Star Groundwater Conservation District mandated reductions in use of groundwater by a date certain based on general powers in its legislation and in Water Code Chapter 36. The district does not have any specially legislated powers for groundwater reduction planning, however. In this regard, one might compare the kind of authority expressly granted to the Harris-Galveston Subsidence District, under which that district's board may require a person to completely or partially discontinue the use of groundwater "only if the person is able to: (1) acquire an alternative water supply needed to replace the water supply covered by the order; or (2) participate in a groundwater reduction plan or other agreement approved by the board that complies with the district's regulatory requirements." SPECIAL DISTRICT LOCAL LAWS CODE ANN. § 8801.163 (Vernon and Vernon Supp.).

B. REGULATORY FRAMEWORK

The instrument of Lone Star Groundwater Conservation District's reduction mandate was promulgation of a District Regulatory Plan ("DRP"), adopted in phases. Taken as a whole, the DRP addresses not only the required groundwater reductions but also requirements related to obtaining alternative water sources that would replace the groundwater supplies to which access will be denied. The DRP is available on the district's website under the category of rules and bylaws. Terms in the discussion below, such as "conversion obligation," are used consistently with use of those terms in the DRP.

Phase II(B) of the DRP sets out the actual regulatory requirements according to which large-volume groundwater users for municipal and industrial purposes in the county must reduce groundwater production within five years. The reduction requirement is steep – commencing in 2016, the regulated users may produce only 70% of their 2009 permitted use, which in most cases exceeds actual historical use only slightly. Alternative supplies must be secured for the balance of existing historical use and all future growth demands.

There is no process proposed through which existing groundwater users can come forward to demonstrate particular circumstances that warrant variances or extensions of the conversion requirement. Also, new wells will continue to be allowed. However, when a municipal or industrial pumper will cross the threshold of "large-volume use," that pumper will come within the regulations of the DRP. The volume threshold is 10 million gallons per year.

Without intending to diminish at all the technical and managerial expertise that is involved in assessing available groundwater supplies and the impact of pumping, it seems fair to say that the reduction component of a groundwater reduction plan can be relatively straightforward. The more complex issues appear to exist in making the reductions achievable and in factoring how the reductions impact the regulated community and even the community at large.

In addition to quantifying the conversion obligation and requiring the implementation of groundwater reduction by a date certain, Phase II(B) sets out a process by which large-volume groundwater users must demonstrate their acquisition of alternative water supplies to the groundwater district's satisfaction. Detailed and sufficient groundwater reduction plans for each large-volume were required by April 1, 2011.

To be sufficient, a groundwater reduction plan must include, among other things:

- population and water demand projections for years 2016, 2025, 2035 and 2045;
- additional information regarding service area;
- a water reuse feasibility assessment;

- evidence demonstrating that alternative water sources will be adequate in volume;
- a description of each alternative water source and supplier and/or conservation project;
- documentation that any supplier relied on has supplies and sufficient legal rights and is willing to provide the volume and rate necessary;
- if supply is based on a contract expiring before 2045, then also renewal information and/or additional available alternatives;
- design, engineering, construction, legal, financial and technical components;
- a description of any feasibility studies for development, siting, easements, and construction;
- a report of preliminary engineering on facilities to be constructed through 2016 and conceptual engineering for how future demands might be met through averaging;
- how alternative water supplies will be financed; and
- a timetable with deadlines for completing various components of the project.

The groundwater reduction plan must be signed and sealed by a professional engineer.

There has been and continues to be a good deal of controversy in Montgomery County regarding the groundwater district's regulations. Some, for example, have strongly objected that a Chapter 36 groundwater district has no claim to the particular expertise or capabilities necessary to develop and manage a municipal water supply system. Nor does the groundwater district have any responsibility for acting in the particular best interests of other political subdivisions' constituents. Questions also have been raised regarding the modeling to support the framework for quantifying recharge and the reasonableness of the regulatory approach. For it's part, the district has made it clear that the regulated community should prepare for reduction percentages that significantly exceed 30% "sooner rather than later."

The search for alternative water supplies has also been controversial. If not for the efforts of the river authority to propose a groundwater reduction plan that would be open to all large-volume groundwater users in the county, it is likely that many of the groundwater users affected by the groundwater district's reduction requirements would not be able to comply with those requirements. The river authority's county-wide solution is feasible because the groundwater district's regulations allow for a kind of pooling under which some participants in a joint groundwater reduction plan over-convert to alternative supplies and others under-convert.

Another unknown, however, is whether or not absent the driving force of the groundwater district's alternative water supply requirements, the river authority's proposal to commence large-scale supply of surface water from Lake Conroe to support the river authority's countywide groundwater reduction plan would achieve critical mass. Some participants in the plan are required to take and pay for treated surface water, and others are not. All participants will pay a fee on the groundwater that they continue to produce and all will remain ultimately responsible for their total water supply. The amount of the fee, and the rate paid for treated surface water delivered is to be designed to approach equilibrium. The plan contract and historical documents related to it are available on the river authority's website at http://www.sjra.net/h2all/index.html.

A high percentage of the large-volume groundwater users affected by the groundwater district's reduction requirements have signed the San Jacinto River Authority's contract. Other affected groundwater users have declared their intent to pursue paths for regulatory compliance that are independent of the river authority's groundwater reduction plan. Options are few, considering that Lake Conroe is the only surface-water supply source of significant quantity in the county, and the river authority has made it clear that it will not sell water from the reservoir outside of its groundwater reduction plan. Water reuse and groundwater pumped from formations that are not currently subject to proportional adjustment under the groundwater district's regulations remain as other supplies. (This latter source is discussed below as a horizon issue.)

C. HORIZON ISSUE

Deep and/or Brackish Groundwater Supplies. In defining "Alternative Water Source" to mean water other than groundwater produced from the Gulf Coast Aquifer within Montgomery County or any county that adjoins Montgomery County, the groundwater district *opened* the door to pumpage of groundwater that comes from beneath the aquifer formations that are subject to proportional adjustment.

The development of deep or brackish water has become a viable alternative water supply for some Montgomery County users, as demonstrated by the recent certification of several groundwater reduction plans that include that source. That was not always the case, as the district's initial regulatory requirements could have effectively precluded exploration of the supply. For one thing, the rules initially required that to be an alternative water source, the deep groundwater had to *require* demineralization before use. Indeed, recent test wells have shown the deep groundwater to be fresh enough in some areas to allow blending.

Additional district rulemaking is anticipated. The groundwater district's production permitting rules were crafted at a time before the groundwater reduction requirements were adopted and large-volume water users were required to prove alternative supplies. It is an artifact of timing that the district's production permitting rules are not an easy procedural fit for application to alternative water supply wells that do produce mineralized water and the timelines of the alternative water supply requirements. For example, the groundwater district's permitting regulations currently do not provide for obtaining a production permit significantly in advance of actual production. The practical implication of the rules if they are not further amended is that, for a desalination project, very significant facility construction would need to occur before a permit for production is secured. Also, when Lone Star groundwater district does issue a permit under its current rules, that permit is for a term of one year. Although there is statutory precedent for recognizing that longer-term permits should be issued for projects that involve the construction of significant transportation infrastructure, no such statutory or regulatory protections currently exist for projects that require the construction of desalination facilities for *in*-district use.

Even considering additional rulemaking, certain regulatory and litigation risks associated with a deep or brackish groundwater supply must be recognized. Production needs to be authorized by the groundwater district after application and opportunity for a contested proceeding. An applicant to operate alternative supply wells bears the burden of proof to establish that production will not impair water quantity or water quality in the Gulf Coast Aquifer. Knowledge about the deep aquifer formations in Montgomery County is increasing quickly, but without a history of production from those formations opinions about how the formations will react to production must come from test wells and expert technical extrapolations. In the nature of a "buyer beware," Lone Star Groundwater Conservation District has stated that if production from a permitted alternative water supply well begins to impair water resources in the Gulf Coast Aquifer, production authorization will be reduced or even withdrawn.

The possibility of future production restrictions also is very significant. Such authority as the groundwater district has to require reduction of historical pumpage levels due to perceived overproduction would apply also to deep, and/or brackish groundwater. That being the case, estimating the reliability of supplies based on production of water from deep, or alternative water supply wells requires analysis of projected water availability together with anticipated demand. In this case, Lone Star also has expressly admonished potential applicants for alternative groundwater well projects that the production from such wells may become subject to future proportional adjustment or other regulatory controls. And, significantly, desired future conditions for the deep formations in Montgomery County have yet to be identified.

V. CONCLUDING REMARKS

It would be customary for case studies to have "conclusions," but regulation of groundwater use is an evolving process. Those issues that have been identified as on the horizon for the districts support this view.

The take-away from the three studies as a whole is the importance of individual involvement in the local regulatory process. With so many districts exercising local discretion, the interest in groundwater use must be actively advocated at every step. The best time to advocate those interests with an existing district is while rules and planning are being developed, so that the districts can better consider the regulated community's perspective. Early cooperation can make compliance with groundwater production regulations, and the enforcement of them, more efficient and effective.

The success of regulation will exist in the continued prosperity of people, business, and environmental values that depend on use of the resource. A century ago when the *East* case was decided, the Supreme Court emphasized a second perspective on the nature of groundwater regulation, one that has been less heralded but is nevertheless significant. Also borrowing from the Ohio court, the Texas opinion expresses the importance of not following a regulatory scheme that works "to the material detriment of the commonwealth, with drainage and agriculture, mining, the construction of highways and railroads, with sanitary regulations, building, and the general progress of improvement in works of embellishment and utility." *East* at p. 281. It is a similar sentiment, after all, that led the state to the prior appropriation system for surface water development and statewide regulation.

More information about groundwater generally, including useful maps, is available at the Texas Water Development Board's Groundwater Resources Division page, www.twdb.state.tx.us/gwrd/pages/gwrdindex.html. The Board also has compiled and shares information about individual districts through a list published on its website at www.twdb.state.tx.us/GWRD/GCD/gcdinfo1.htm. Another excellent resource for information, including legislative issues for groundwater, is the Texas Alliance of Groundwater Districts. The alliance website is at www.texasgroundwater.org.

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