GROUNDWATER CONSERVATION DISTRICTS

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Groundwater Conservation Districts: Overview of Authority, Groundwater Planning and Export, and Legislative Updates

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I. Introduction

In Texas, "a landowner owns the groundwater below the surface of the landowner's land as real property."[1] While this is settled Texas law, this fundamental principle—remains surprisingly unfamiliar, even among legal practitioners. Many assume that groundwater, like surface water, is owned by the state. That assumption is incorrect. Groundwater in Texas is privately owned, and much like mineral rights a landowner owns groundwater both at the surface, once it is removed, and "in place" beneath the surface of the land.[2]

Although groundwater is the private property of landowners, the Texas Constitution's "Conservation Amendment" charges the Legislature with the duty of conserving the state's water resources, including groundwater.[3] Thus, regulation of groundwater production requires an "interplay between groundwater ownership and groundwater regulation" that balances the landowner's right of ownership with the State's interest in conservation.[4]

The Legislature chose to carry out its groundwater conservation duties via Texas Water Code ("TWC") Chapter 36, which allows for the creation of "groundwater conservation districts."[5] Groundwater conservation districts ("GCDs") are charged with "balanc[ing] the conservation and development of groundwater" via "rules developed, adopted, and promulgated by a district in accordance with the provisions of [Chapter 36]."[6]

Importantly however, GCD's are not an arm of the legislative branch. Rather, as an entity created by statute, a GCD has only the power that the Legislature has "conferred upon it in clear and unmistakable language."[7] For example, groundwater conservation districts are empowered to require a permit to drill or operate a groundwater well within the district's jurisdictional boundaries.[8] Groundwater conservation districts may also adopt rules to regulate the spacing of wells and the production of groundwater.[9] However, in adopting any such rules, the groundwater conservation district must consider landowners "ownership and rights" and ensure the rules are

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[1] Tex. Water Code § 36.002(a); *see also Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 833 (Tex. 2012) ("Groundwater rights are property rights subject to constitutional protection.").
[2] *Day*, 369 S.W.3d at 838.
[3] *See* Tex. Const. art. XVI, § 59.
[4] *Day*, 369 S.W.3d at 833. 23.
[5] Tex. Water Code § 36.0015(b).
[6] *Id*.
[7] *Pub. Util. Comm'n v. City Pub. Serv. Bd.*, 53 S.W.3d 310, 315 (Tex. 2001); see *Tri-City Fresh Water Supply Dist. No. 2 v. Mann*, 142 S.W.2d 945, 948 (Tex 1940) ("The powers of such districts are measured by the terms of the statutes which authorized their creation, and they can exercise no authority that has not been clearly granted by the legislature.").
[8] Tex. Water Code § 36.113(a).
[9] *Id*. § 36.116(a).

"fair and impartial."[10] Moreover, GCD's are subject to legal challenges, both on the basis that their rules adopted exceed the statutory authority granted by the legislature, or that the scope of their regulation is a taking.[11]

And, like any other real property right, a landowner's interest in groundwater is protected by law and compensable by a takings claim.[12] Groundwater rights are property rights subject to constitutional protection, however difficulties may lie in determining adequate compensation for a taking. *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 833 (Tex. 2012) (holding that groundwater rights are property rights subject to constitutional protection subject adequate compensation for a taking).

This tension between constitutionally protected private property rights in groundwater and the Legislature's mandate to conserve groundwater via regulation creates a delicate and continually evolving balancing act. Both GCDs and permittees must navigate a legal landscape shaped by this dual mandate—ensuring the prudent development and use of groundwater while safeguarding private ownership interests against arbitrary or excessive regulation. What follows is an overview of the key regulatory issues that both groundwater conservation districts and permit holders must confront in striving to achieve this balance.

II. Joint Planning and Desired Future Conditions

A. The DFC Framework

Desired Future Conditions ("DFCs") are a key planning tool used by GCDs for groundwater management, designed to balance groundwater development with long-term sustainability. Codified under Chapter 36 of the Texas Water Code, DFCs are quantitative descriptions of the desired condition of a groundwater resource at a specified time in the future decades from now.[13] Essentially, DFCs are how local groundwater districts aim to strike a balance between using the water needed today and keeping enough in the ground for tomorrow.

DFCs are adopted by GCDs within Groundwater Management Areas ("GMAs") and serve as the regulatory foundation for determining Managed Available Groundwater ("MAG") by the Texas Water Development Board ("TWDB").[14] DFCs usually describe how much water can be used from an aquifer while still keeping it healthy over the long term—looking 50 years into the future. This might mean setting limits on how much water levels can drop (modeled available

[10] *Id*.
[11] *See Guitar Holding Co., L.P. v. Hudspeth Cty. Underground Water Conservation Dist. No. 1*, 263 S.W.3d 910, 918 (Tex. 2008) (holding the District's transfer rules exceed the District's statutory authorization and are this invalid); *see also Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 833 (Tex. 2012).
[12] *Id*.
[13] Tex. Water Code § 36.108.
[14] *Id*. §§ 36.108, 36.1084.

drawdown), keeping springs flowing (spring flow maintenance), or using other metrics to track the condition of the aquifer.[15]

The statutory process governing the adoption of DFCs is detailed in Texas Water Code §§ 36.108 and 36.1085, which require GCDs to undertake a deliberative and participatory process. Districts must consider the following nine statutory factors when setting the DFCs:

> (1) aquifer uses or conditions within the management area;
> (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, 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;
> (8) the feasibility of achieving the desired future condition; and
> (9) any other information relevant to the specific desired future conditions.[16]

The process is designed to be transparent and inclusive: GCDs must publish proposed DFCs, solicit public comment, and formally respond to those comments before final adoption. Once adopted, DFCs are submitted to the TWDB for review and are later incorporated into the MAG for that GCD.[17]

Although the state adheres to the rule of capture as a default doctrine for groundwater ownership, DFCs represent an attempt to reconcile private property rights with the broader need to manage aquifers responsibly over time. Under Texas Water Code § 36.0015, GCDs are granted broad authority to regulate groundwater production to "protect property rights, balance the conservation and development of groundwater to meet the needs of this state." The Legislature gives legal force to DFCs by requiring this same balancing test when adopting long-term planning goals: "[DFCs] must provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area."[18] As such, ultimately DFCs are intended to shape groundwater permitting, conservation initiatives, and water supply strategies across the state.

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[15] Mace, R. E., *et al.*, *A Streetcar Named Desired Future Conditions: the New Groundwater Availability for Texas (Revised)*, State Bar of Texas' Changing Face of Water Rights in Texas (2008).
[16] Tex. Water Code § 36.108(d).
[17] *Id*. §§ 36.108, 36.1084.
[18] *Id*. § 36.108(d-2).

B. Challenges with DFC Adoption

GCDs face several significant challenges in developing DFCs, many of which stem from the inherent tension between localized groundwater management and the broader regional realities of aquifer systems. Although GCDs are directed to use the best available science under Chapter 36, one of the most pressing challenges is the scientific uncertainty associated with groundwater modeling and forecasting. Aquifers are complex, three-dimensional systems, and predicting their behavior decades into the future involves significant assumptions about recharge rates, pumping volumes, land use changes, and climate variability.[19] While the TWDB provides groundwater availability models ("GAMs") to support this process, there are critiques that these models have limitations when assessing groundwater-surface water interactions and impacts over a local scale versus large spatial scale.[20]

Another major challenge is the diversity of stakeholder interests that GCDs and GMAs must reconcile. Within a single GMA, districts often represent varying constituencies such as agricultural irrigators, urban water suppliers, rural landowners, and environmental advocates – all with different uses and aquifer demands. Each of these stakeholders may have different preferences for how much drawdown is acceptable or how water should be allocated. Consequently, disagreements over DFCs can lead to contested case hearings, litigation, or formal challenges at the TCEQ through the petition process used to evaluate a GCD's operations.

Additionally, GCDs must navigate the jurisdictional fragmentation inherent in Texas's groundwater management framework. Many aquifers underlie multiple GCDs. This often leads to a "patchwork" of regulatory standards within a single aquifer, undermining efforts to achieve meaningful long-term sustainability. Moreover, some areas of the state remain unregulated by a GCD, increasing pressure on adjacent districts.

C. How to Address Challenges with DFCs

Addressing the challenges that GCDs face in developing DFCs requires a combination of legal, institutional, scientific, and stakeholder-driven reforms. One key solution lies in enhancing the scientific and technical capacity of both GCDs and the TWDB. Investing in more refined, site-specific groundwater models that account for localized hydrogeological variability would improve DFC forecasts. For example, several GCDs have invested in 3-D modeling to assist with improved forecasting. Efforts like this should be supported through increased state funding for modeling, monitoring infrastructure (e.g., observation wells and metering), and data-sharing platforms to ensure that all districts are working from the most accurate and up-to-date information available.

Another critical reform is improving inter-district coordination by further defining mechanisms within GMAs. Legislative changes could provide clearer statutory standards for

[19] B.R. Scanlan, et al. *Groundwater Recharge in Texas*, Bureau of Economic Geology, University of Texas, n.d.
[20] C. Rubinstein, V. Puig Williams, *Improving Water Planning in Texas: The Critical but Overlooked Link Between Desired Future Conditions and the State Water Plan*, Environmental Defense Fund (2023).

evaluating the "reasonableness" of DFCs or what it means to "consider" the nine factors under Texas Water Code § 36.108(d), which would reduce legal ambiguity and potential litigation.

III. Groundwater Export

A. Projected Water Demand in Texas: A Growing Challenge

Texas faces a significant challenge in meeting its future water needs due to a rapidly growing population and a declining water supply. According to the TWDB in its 2022 State Water Plan, the state's population is projected to increase by 73% between 2020 and 2070.

As a direct consequence of this population growth, the demand for municipal water is expected to rise sharply—by approximately 66%, or an increase of 3.3 million acre-feet per year.[21] Municipal water demand encompasses the water needs of households, businesses, and institutions, and such a steep increase indicates substantial stress on urban infrastructure and water management systems.

Simultaneously, the state's existing water supply is projected to decline by 18% over the same period, primarily due to aquifer depletion.[22] Aquifers—critical underground sources of freshwater—are being depleted faster than they can naturally recharge, a situation exacerbated by prolonged droughts and increased extraction for agricultural and municipal use.

Together, these projections illustrate a looming imbalance between water supply and demand in Texas. Without significant investments in conservation, infrastructure, and alternative water sources, the state may face severe water shortages in the coming decades.

B. Legal Considerations for Groundwater Export

As Texas confronts growing water demand and regional supply limitations, groundwater exports are becoming a key—but often contested—mechanism in statewide water planning. In areas where they exist, GCDs play a significant role in any water supply strategy that involves moving water from the source of its production to its demand. GCDs are legally obligated to evaluate permit applications for groundwater exports under specific statutory standards laid out in the Texas Water Code.

According to Texas Water Code Annotated § 36.122(f), when considering an export permit, a GCD must evaluate three primary factors:

1. The availability of water within the district and in the proposed receiving area over the duration of the request. This ensures that the exporting district retains sufficient supply to meet its own long-term needs.

2. The projected effect of the proposed transfer on aquifer conditions, including depletion, land subsidence, and potential harm to existing permit holders or other

[21] TWDB, 2022.
[22] *Id*.

local groundwater users. This provision protects the ecological and economic stability of the source district.

3. The compatibility of the proposed export with planning documents, including the approved regional water plan and the district's own approved management plan. These plans provide long-term strategic direction for managing water resources sustainably.

In addition to these criteria, Texas law includes protections against discriminatory permitting practices. Under Texas Water Code § 36.122(c), a GCD is expressly prohibited from imposing more restrictive conditions on groundwater export permits than it does on in-district users:

> "[T]he district may not impose more restrictive permit conditions on transporters than the district imposes on existing in-district users."

Chapter 36 also states that:

> "The district may not deny a permit based on the fact that the applicant seeks to transfer groundwater outside of the district but may limit a permit issued under this section if the [availability of water in the district and in the proposed receiving area, effect on aquifer conditions, or approved regional water or district management plans] warrant the limitation."[23]

These clauses are designed to prevent districts from favoring local users, however, there are limits to the protections if the District can show hydrological or planning concerns with the export project. Additionally, Districts must ensure that their rules are consistently applied to all landowners or risk a determination that their rules are invalid. *Guitar Holding Co., L.P. v. Hudspeth Cnty. Underground Water Conservation Dist. No. 1*, 263 S.W.3d 910, 918 (Tex. 2008) (determining that a district's rules allow some landowners the ability to transport outside of the district while denying that right to others).

Together, these provisions establish a legal framework intended to balance local autonomy with regional water management goals.

There are several regulatory tools a GCD may use to manage export projects. GCDs are known to regulate export projects by setting of production limits, adopting long-term planning goals, and tailoring permits to address project-specific impacts. One of the most fundamental tools GCDs use is the ability to set production limits by capping how much groundwater can be withdrawn from a well based on acreage or tract size, acre-feet per acre or gallons per minute per well site per acre, managed depletion, or some other method.[24] A GCD may also use the modeled available groundwater (MAG) established by the adopted DFCs for long term planning to evaluate production limits across the district. In addition to these broader planning tools, GCDs review the

[23] Tex. Water Code § 36.122(g).
[24] *Id*. § 36.116(a)(2).

expected impacts of proposed export projects and can impose permit-specific special conditions or even reduce the amount of groundwater authorized for production. For large-scale projects with the potential to significantly draw down water levels, districts have negotiated mitigation agreements to address any negative impacts forecasted from the production, ensuring that the burden of managing stress on the aquifer does not fall solely on the district or local users.

IV. Legislative Developments Affecting Chapter 36 of the Texas Water Code in 2025

The 2025 Texas legislative session saw an unprecedented volume of proposed legislation affecting groundwater regulation and production, resulting in several significant amendments to Chapter 36 of the Texas Water Code ("TWC"). These amendments will impact how GCDs plan for and manage groundwater resources and will alter the regulatory framework applicable to permittees operating within GCD boundaries. Set forth below is a summary of the bills with the greatest impact on the issues addressed herein.

1. House Bill 1633 – *Consideration of Exempt Well Impacts in Permitting Decisions*
    a. Summary: HB 1633 amends TWC § 36.113(d) to require that GCDs consider whether a proposed use of groundwater would unreasonably affect *registered exempt wells* before granting or denying a permit or permit amendment.

       Impact: This provision imposes an additional permitting criterion focused on domestic and livestock wells that are otherwise exempt from permitting. Regulators must now make affirmative findings regarding impacts on these wells, potentially requiring new modeling, monitoring, and stakeholder engagement. For permittees, especially those proposing new or amended permits in rural or residential areas, this change may introduce new hurdles and increase the likelihood of protests based on neighboring exempt well interference.
2. House Bill 1689 – *Use of Export Fee Revenue Outside District Boundaries*
    a. Summary: HB 1689 amends TWC § 36.207(b) and adds § 36.207(c) to authorize GCDs to use groundwater export fees for mitigation of impacts on wells located outside the district *only* if the GCD enters into an interlocal agreement under Chapter 791 of the Government Code with the affected district.
3. House Bill 2078 – *Accountability in DFC Planning*
    a. Summary: HB 2078 introduces multiple amendments to TWC §§ 36.1071 and 36.108 to strengthen transparency and accountability in joint planning of DFCs. The bill requires that:
        i. Each district include in its management plan a plain-language explanation of how DFCs are being monitored and how performance is tracked over the preceding five-year period;

ii. District representatives review each other's management plans at least once every five years, including an evaluation of DFC progress;
iii. Any changes to a DFC be accompanied by a plain-language justification explaining why the revised DFC differs from the prior DFC; and
iv. DFCs include interim values for periods not exceeding 10 years to facilitate ongoing monitoring. Impact: HB 2078 adds transparency and enforceability to the DFC process, long criticized for its ambiguity and inaccessibility. Regulators must now provide clear, trackable explanations of their goals and performance, and coordinate more effectively within groundwater management areas. Permittees may benefit from greater predictability and accountability in the planning process but also face heightened scrutiny if their operations are perceived to threaten DFC attainment.

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