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Texas Groundwater and Tragically Stable “Crossovers”

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Texas Groundwater and Tragically Stable “Crossovers”

Zachary Bray*

ABSTRACT

One recurring question in the academic literature on common-pool resources relates to the persistence of “tragic” commons regimes—systems that encourage, or at least tolerate, the inefficient, wasteful, hazardous, or unfair exploitation of a resource that is easily accessed for and diminished by individual use and consumption. Of course, not all commons are tragic: some common-pool resources invite individual access in efficient, fair, and durable ways. Yet many commonly held resources do lie under systems of governance that are not just tragic but persistently and stubbornly so. Often the tragic aspects of such commons regimes are well known; indeed, for some tragic commons regimes, they are almost self-evident.

Such persistent and obvious tragic commons regimes invite the obvious question: why do they endure? Some persistent tragic commons regimes are particularly puzzling in this respect, because at times they may appear to hesitate right on the verge of positive transformation, only to revert back to tragic stasis when apparent moments of change present themselves. In this Article, I claim that Texas groundwater law represents just such a persistent and puzzling tragic commons regime.

Recent literature has pointed out the ways in which tragically stable commons regimes can resist forces of change and emerging values from rival institutions and analogous commons contexts. In this Article, I pursue a related line of inquiry to examine a different and previously under-examined phenomenon. Using Texas groundwater as an example, I show how an internally dynamic commons regime on the cusp of positive change can be tragically stabilized by values and legal doctrines drawn

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from rival institutions and analogous commons contexts. I then argue that unless this tragic crossover is decisively broken, the law and institutions that govern Texas groundwater are likely to remain tragically stable.

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INTRODUCTION

Texas has a state water plan, which begins by admitting that there is not enough water in the state and continues to predict that water shortages will probably get much worse.¹ While both the admission and the prediction may seem to lack some of the spirit of the Alamo, the state’s history reveals a widespread recognition and acceptance of water scarcity and the limits it imposes on human activity.² Historically, awareness of the consequences of water scarcity has been particularly acute in Texas at times of drought,³ and this

1. TEX. WATER DEV. BD., 2012 STATE WATER PLAN, III (noting that “[t]he primary message of the [State Water Plan] is a simple one: In serious drought conditions, Texas does not and will not have enough water,” and detailing the “economic losses likely to occur if these water supply needs cannot be met”). The 2012 plan is the current plan; the Texas Water Development Board is required by statute to develop a state water plan every five years.

2. See JAMES A. MICHENER, *TEXAS v* (1985) (“Water, not oil, is the lifeblood of Texas . . .”); Anne Dingus, *More Colorful Texas Sayings*, TEX. MONTHLY, Dec. 1994 (listing, inter alia, numerous allegedly timeworn Texas expressions regarding water scarcity, such as “[it is s]o dry the trees are bribing the dogs” and “[it is s]o dry my duck don’t [sic] know how to swim”).

3. E.g., CHARLES R. PORTER, JR., *SPANISH WATER, ANGLO WATER: EARLY DEVELOPMENT IN SAN ANTONIO* 3–21 (2009); see also *In re* Adjudication of the Water Rights of Upper Guadalupe Segment of Guadalupe River Basin, 642 S.W.2d 438, 441 (Tex. 1982) (“The story of water law in Texas is also the story of its droughts.”). Texas history and Texas water law have been

decade has brought severe drought to Texas, much as it has to many other states.⁴

The story of water use and water scarcity in Texas has been marked particularly deeply by issues related to groundwater.⁵ Groundwater is an important component of water supply in many U.S. jurisdictions, but it is especially important in Texas, where groundwater withdrawals provide over half of the total water used in the state.⁶ Groundwater withdrawals in much of Texas have long exceeded many of the relevant aquifers’ recharge rate, but although conflicts over groundwater “mining” of some particularly high-profile aquifers in Texas are decades old, the full extent of the state’s groundwater depletion has only recently begun to attract appropriate levels of attention.⁷

Far more attention has traditionally been paid to Texas’s unusual doctrinal approach to groundwater, especially by scholars and commentators outside the state. Although groundwater law is far from uniform across U.S. jurisdictions,⁸ Texas, with its retention of the old

particularly marked by the state’s propensity for frequent and severe droughts, but the connection between periods of drought and heightened interest in water scarcity and water law issues is a well-studied phenomenon not limited to Texas. *See, e.g.*, Richard C. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L.J. 191, 191 (1978) (noting that the prolonged drought of the summer of 1977 “focused public attention on long-range water resource problems” across the country).

4. *See, e.g.*, Michael Wines, *West’s Drought and Growth Intensify Conflict Over Water Rights*, N.Y. TIMES, Mar. 16, 2014, at A1 (using a vignette from Mumford, Texas, to introduce and summarize water conflicts throughout the U.S. during recent widespread and severe drought).

5. Groundwater is water that has “seep[ed] into the ground much like a glass of water poured onto a pile of sand.” *E.g.*, U.S. GEOLOGICAL SURVEY, *What Is Ground Water?*, Open File Report 93-643, April 2001, available at <http://pubs.usgs.gov/of/1993/ofr93-643/>. Some water that seeps through the surface continues to pass downward through the ground until it reaches a relatively impermeable layer, at which point it fills the empty spaces and cracks in the earth above that impermeable layer. The water that fills these subterranean empty spaces and cracks is called groundwater, and the area of permeable subterranean material through which groundwater can easily move is called an aquifer. When water seeps down from precipitation on the surface to fill the empty spaces in an aquifer, it is known as “recharge” water, and the aquifer is said to be “recharging.” *Id.*

6. *See, e.g.*, Sriroop Chaudhuri & Srinivasulu Ale, *Long-term (1930-2010) Trends in Groundwater Levels in Texas: Influences of Soils, Landcover and Water Use*, 490 SCI. TOTAL ENV’T 379, 380 (2014) (gathering authorities and statistics and noting that in Texas, “groundwater provided 60% of the total . . . water used in the state”). In the U.S. generally, groundwater supplies roughly 20% of the total water withdrawn daily. *See, e.g.*, ROBERT ADLER, ROBIN K. CRAIG & NOAH D. HALL, *MODERN WATER LAW* 173 (2013).

7. *E.g.*, Niina Heikkinen, *The Future of Texas’ Groundwater Supply May Be Precarious, Experts Say*, CLIMATEWIRE (July 23, 2014), available at <http://www.cenews.net/stories/1060003333>. For a study of decreasing groundwater levels in Texas over the past eight decades, see generally Chaudhuri & Ale, *supra* note 6.

8. *See, e.g.*, ADLER ET AL., *supra* note 6, at 178–79 (summarizing the various groundwater

common-law rule of capture, is widely considered to be the biggest outlier.⁹ Most scholars and commentators who have reviewed the issue, especially those outside the state, have criticized Texas's retention of the rule of capture for groundwater.¹⁰ Most criticisms of Texas's retention

doctrines that can be found in other U.S. jurisdictions, such as the "American Rule" of reasonable use, correlative rights, the Restatement approach, and prior appropriation systems).

9. See, e.g., Barton H. Thompson, *Tragically Difficult: The Obstacles to Governing the Commons*, 30 ENVTL. L. 241, 252 n.70 (2000) ("Texas, alone among the United States, continues to follow a rule . . . that permits overlying owners to pump to their hearts' content."). For an example of the practical effects of this rule, see Nicole C. Brambila, *Wells Run Dry During Irrigation Season North of Lubbock*, LUBBOCK AVALANCHE-JOURNAL, April 26, 2014 (describing well water shortages affecting dozens of rural residents, and citing local officials who note "[t]he ag[ricultural] producers are not breaking any rules. It's just that their wells are deeper and the water will go to the deeper well."). There are partial exceptions to this baseline "rule of the deepest well" or "rule of the biggest pump," the most important of which involves landowners in areas governed by local or regional water regulators, like the Edwards Aquifer Authority or groundwater conservation districts ("GCDs"), which will be discussed extensively in Parts II–IV, *infra*. Far less important, because they are rarely invoked, are exceptions for malice, waste, and subsidence, which will not be discussed at greater length in this article for reasons of space. For further discussion of these additional exceptions, see, for example, ADLER ET AL., *supra* note 6, at 181–82, and Russell S. Johnson, *Groundwater Law and Regulation*, in ESSENTIALS OF TEXAS WATER RESOURCES, 4–5 – 4–7 (Mary K. Sahs ed., 2014).

10. A full list of the many criticisms of Texas's continued adherence to the rule of capture would fill many pages. For representative recent examples, see Craig Anthony Arnold, *Adaptive Water Law*, 62 U. KAN. L. REV. 1043, 1045 (2014) ("In [an] example of maladaptive water law . . . [t]he Texas Supreme Court has repeatedly held that the rule of capture governs groundwater rights in Texas, even though virtually every other state has overruled or abandoned this rule."); Joseph W. Dellapenna, *The Rise and the Demise of the Absolute Dominion Doctrine for Groundwater*, 35 U. ARK. LITTLE ROCK L. REV. 291, 327 (2013) (gathering sources and noting that "[c]ommentators increasingly criticize the rule of capture in Texas"); Robin Kundis Craig, *Defining Riparian Rights as "Property" Through Takings Litigation: Is There Property Right to Environmental Quality?*, 42 ENVTL. L. 115, 117–18 (2012) ("Because [the] rule [of capture] causes fairly obvious problems in terms of groundwater competition, depletion of aquifers, and effects on connected surface waters, most states have eliminated it, and the . . . rule is now most relevant in parts of Texas"); Gerald Torres, *Liquid Assets: Groundwater in Texas*, 122 YALE L.J. ONLINE 143, 150 (2012) ("The segregation of groundwater [and its subjection to the rule of capture gives] . . . owners of the overlying land . . . a potential monopoly, [thus] seriously impeding the rational development of this resource in the face of Texas's heavy dependence on groundwater."); ROBERT GLENNON, UNQUENCHABLE: AMERICA'S WATER CRISIS AND WHAT TO DO ABOUT IT 129 (2009) ("[C]onsider the state of Texas, which uses the right of capture to govern (or, more accurately, not govern) groundwater withdrawals."); Michael J. Booth & Ross Richard-Crow, *Regulatory Dance: Rule of Capture and Chapter 36 District Perspective*, in 100 YEARS OF RULE OF CAPTURE: FROM EAST TO GROUNDWATER MANAGEMENT 19, 19–20 (William F. Mullican, III & Suzanne Schwartz eds., 2004) ("Even after 100 years, [the rule of capture] amazingly is still viable . . . [despite] ridicule from commentators throughout the United States."); A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric*, 76 N.D. L. REV. 881, 900 (2000) (noting that "ground water aquifers . . . were initially allocated by a rule of capture out of scientific ignorance" that in turn wrought havoc on groundwater supplies, especially in western states). *But see* Dylan O. Drummond, Lynn Ray Sherman & Edmond R. McCarthy, Jr., *The Rule of Capture in Texas – Still So Misunderstood After All These Years*, 37 TEX. TECH L. REV. 1, 14 (2005)

of the rule of capture stem from the same general source. Groundwater is a natural commons, which has been extensively analyzed in the commons literature.¹¹ According to the standard account, under traditional common-law approaches, each individual groundwater user will pump as much as she can get out of her well, even when it foreseeably leads to overdrafts on the aquifer.¹² In fact, this standard account—of groundwater under the rule of capture as a tragic commons—has become so well known in the literature that it is frequently used as an example to illustrate some of the recurring pathologies of commons dilemmas.¹³

At the heart of this generally one-sided debate about the merits of Texas's continued retention of the rule of capture lies a fundamental question that has largely remained unanswered: Given the state's heavy reliance on groundwater and its relatively long experience with water scarcity, why has Texas continued to retain the rule of capture in the first place? It is true that Texas's political culture tends to be highly skeptical of regulatory controls¹⁴ and this skepticism has certainly contributed to Texas's approach to groundwater regulation. But many other states have a political culture characterized by substantial skepticism towards regulation, and yet they regulate groundwater in less idiosyncratic ways. So why has Texas groundwater law remained such a persistent outlier?

No single explanation can provide a complete answer to this frequently posed question, but this Article contends that something more specific and idiosyncratic than the state's general skepticism towards regulation has contributed to the tragic stability of Texas groundwater law. In addition to their unusual retention of the rule of

(acknowledging the existence of "many academic jeremiads lamenting the rule of capture," but defending the merits of the rule and arguing that it has been consistently applied by Texas courts). Criticism of Texas water law is particularly widespread among academics, as Drummond et al. point out, but it is not exclusively the province of academics. Even some courts located in Texas have been highly critical of Texas groundwater law. *See, e.g.,* *Martinez v. Maverick Cnty. Water Control & Improvement Dist.*, 219 F.2d 666, 670 (5th Cir. 1955) (quoting approvingly an observation made by the district judge, a former attorney general and governor of Texas, who stated that "the Texas water laws and decisions are in hopeless confusion").

11. *See, e.g.,* Thompson, *supra* note 9 (gathering sources).

12. ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* 106–07 (1990) (noting that "[o]verextraction [is] the logical outcome of the way groundwater rights were defined" at common law, because "the common law does not provide secure rights for an overlying landowner").

13. *E.g.,* Thompson, *supra* note 9.

14. *E.g.,* Dave Owen, *Taking Groundwater*, 91 WASH. U. L. REV. 253, 260 (2013).

capture for groundwater, Texas courts—as well as Texas legislators, politicians, activists, lawyers, academics, legal commentators, and developers—tend to relate groundwater law to the law of oil and gas to an unusually frequent degree, and at a level that goes far beyond an ordinary legal analogy.¹⁵ The widespread identification of groundwater with oil and gas in Texas is more than a mere quirk or a rhetorical device: this Article will show that the tragic stability of Texas groundwater law is due in large part to this “crossover” from oil and gas law into groundwater law.¹⁶ I call this phenomenon a crossover because it is both a series of episodic appearances, many of which can and will be analyzed individually below, as well as a larger role, in which antique precedents and stylized tropes from oil and gas law, removed from their usual context, pop up to play a part that has become familiar, if tragic, in the context of groundwater law.

15. See, e.g., *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 831–32 (Tex. 2012) (“We now hold that [the law regarding ownership of oil and gas in place] correctly states the common law regarding the ownership of groundwater in place.”); *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 26 (Tex. 2008) (Willett, J., concurring) (citing MICHENER, *supra* note 2, and claiming that if water is the lifeblood of Texas, “oil and gas are [the state’s] muscle, which today fends off atrophy”); Susan Berfield, *There Will Be Water*, BLOOMBERG BUSINESSWEEK (June 11, 2008), available at <http://www.bloomberg.com/bw/stories/2008-06-11/there-will-be-water> (quoting T. Boone Pickens regarding his groundwater development plans in the Texas panhandle: “Heck, isn’t it [groundwater] like oil? You have to come back to who owns the water. The groundwater is owned by the landowner. That’s it.”); *The Next Oil: Water – and the Risks to Business*, RURAL URBAN RESOURCES, http://www.ruralurbanresources.org/next_oil_water.htm (last visited Aug. 6, 2014). Further examples of this tendency will, of course, be examined throughout the Article.

16. I use the term “crossover” in this Article based on one of the meanings the term holds regarding various forms of print and televised fiction: namely, to signify situations in which characters and/or storylines begin in one book, show, or series, and later “cross over” into another. See, e.g., Cross Over, TV TROPES, <http://tvtropes.org/pmwiki/pmwiki.php/Main/CrossOver> (last visited Aug. 8, 2014) (defining a crossover as a situation involving thematic similarities across multiple works in which “a popular character” or “a storyline will begin in one series and cross over into the next one”). Examples of the device range from characters in *Cheers* and *Frasier*, *Buffy the Vampire Slayer* and *Angel*, *Happy Days*, *Laverne and Shirley*, and *Mork and Mindy*, to the appearance of Orpheus, Heracles, and other Argonauts with their own mythical narratives in the tale of Jason and the Golden Fleece, or the appearance of figures from the Trojan War or other Greek myths and tragic dramas in the *Aeneid*. Crossovers may be identified by future work in other contexts as well, but the law of groundwater is a natural place to find such a phenomenon, given the substantial blending between old and new norms, practices, and information that tends to characterize groundwater doctrine and institutions. See, e.g., Joseph W. Dellapenna, *Law and the Provision of Water for Megacities*, 2014 INT’L. ENVTL. L. COMM. 6 (suggesting that most systems of water law, due to their social and highly localized nature, exist in a state of “[i]nstitutional and legal bricolage,” which involves “an uneven blending of old practices and norms with new practices and norms . . . and the reinvention of tradition”).

In describing this tragic crossover, this Article seeks to do more than identify deep flaws in Texas groundwater law—it also seeks to illuminate a previously under-examined potential pathology of the commons. In the account provided here, instead of working as agents for potentially useful change,¹⁷ institutions that have developed for one type of commons (oil and gas) may wind up exercising a tragically *stabilizing* influence over institutions developed for and emerging values developing around another commons (groundwater). More specifically, prior to very recent judicial and legislative developments and after decades of tragic stasis, Texas groundwater law showed signs of internal dynamism, which many observers believed would finally lead to a transformation away from the overconsumption and waste fostered by the rule of capture. But this transformation did not occur, due in large part to the influence of a stylized picture of oil and gas law. Accordingly, by studying the tragic crossover from Texas oil and gas to groundwater law, this Article shines a light on a new and previously under-examined type of commons problem.

Before proceeding, a few caveats are in order. This Article is not intended as a criticism of contemporary Texas oil and gas law—indeed, for reasons of space, it does not even purport to provide anything like a full account of Texas oil and gas law. It is, however, intended to provide a critical account both of the rule of capture as applied to groundwater law in Texas generally and of recent trends in Texas groundwater law more specifically. Embedded in this Article’s analysis is the notion that unless the tragic crossover from oil and gas law to groundwater law is clearly identified and broken, future attempts to reform Texas groundwater law are likely to be frustrated because of the crossover’s tragically stabilizing influence.

The remainder of the Article will proceed as follows: Part I will provide a brief general history of groundwater law. Part II will provide a brief account of the history of Texas groundwater law, its continued adherence to the rule of capture, the creation and evolution of groundwater conservation districts (“GCDs”) and their relation to the rule of capture, and the origins of Texas oil and gas law in early Texas groundwater cases. Part III will further explore the tragic crossover from Texas oil and gas law to Texas groundwater law, focusing on how

17. Cf. Brigham Daniels, *Emerging Commons and Tragic Institutions*, 37 ENVTL. L. 515 (2007) (examining the tragic stability that is sometimes generated by certain commons institutions even as new values, knowledge, and norms from rival contexts and outside institutions emerge). Professor Daniels’s work will be discussed at greater length in Part III, *infra*.

this crossover acts as a force for tragic stability with regard to Texas groundwater. Part IV will examine some of the most recent developments in Texas groundwater law, with particular attention given to the ways in which the tragic crossover from oil and gas law has arrested momentum for change within Texas groundwater institutions in recent years.

I. IGNORANCE AND THE ROOTS OF GROUNDWATER LAW

Today, our understanding of the basic elements of the hydrologic cycle can be accurately depicted in a single picture designed for young children.¹⁸ We know that groundwater is not some mysterious and occult substance, but merely another phase in an ongoing cycle, connected to the water we see on the surface and falling from the sky through a number of natural processes.¹⁹ We can monitor and observe changes in even the most complex groundwater systems with a high degree of precision and specificity.²⁰ But it was not always so. For much of human history, erroneous theories about the origin and nature of underground water, and its relationship to water on the surface and precipitation, were at least as prominent as theories that resemble our current understanding. In short, the courts, lawyers, and parties who helped develop the common law of groundwater were overwhelmed by ignorance—often by their own admission—about the nature of the resource at issue.²¹

Due in part to this long-standing confusion about the relationship between surface water, groundwater, and the larger water cycle, as well as the relative difficulty in observing groundwater resources compared to surface water resources, separate doctrines evolved under the common law for surface water and groundwater. For a number of reasons, this division in the legal treatment of ground and surface water

18. See, e.g., U.S. Geological Survey, “The Water Cycle for Kids,” available at <http://water.usgs.gov/edu/watercycle-kids.html> (“You may think that every drop of rain that falls from the sky, or each glass of water that you drink, is brand new, but it . . . is a part of The Water Cycle.”).

19. For a slightly more adult version of the previous diagram, see U.S. Geological Survey, “The Water Cycle,” available at <http://water.usgs.gov/edu/watercycle.html>.

20. See, e.g., U.S. Geological Survey, “High Plains Water-Level Monitoring Study,” available at <http://nc.water.usgs.gov/ogw/hpwlms/> (providing summary statistics, informative written briefs, and a host of animated and full color maps and diagrams regarding changes in use rates, water levels, and water storage in the Ogallala aquifer).

21. E.g., Joseph W. Dellapenna, *A Primer on Groundwater Law*, 49 IDAHO L. REV. 265, 267 (2013).

has been problematic.²² While this division between the law of surface water and the law of groundwater may, in many jurisdictions, be somewhat less pronounced today than in the past, many of its problematic consequences have proven to be unfortunately persistent.²³ Although the law of groundwater developed separately from the law of surface water, it did not develop uniformly across all jurisdictions—nor, indeed, did it develop much at all until the twentieth century. Before the invention of improved pumping technology in the early twentieth century, groundwater tended to be a relatively unimportant source of water in many U.S. jurisdictions: most groundwater was for domestic use, conflicts over its use occasioned little litigation, and its nature was so poorly understood that any systematic approach for groundwater management, whether scientific or legal, was almost inconceivable.²⁴

On the rare occasions when early- or mid-nineteenth-century English or U.S. courts were called upon to resolve disputes over groundwater, the approach they tended to follow was the rule of capture,²⁵ frequently treating the issue as one of first impression, without any relevant precedent from the more extensive law of surface water.²⁶ Whether treating the issue as one of absolute first impression or not, the earliest common law decisions applying the rule of capture repeatedly emphasized human and especially legal ignorance about the nature of groundwater as a justification for the rule.²⁷ The classic and

22. Owen, *supra* note 14, at 266–67 (noting that fundamental misconceptions about the nature of groundwater, lasting into and beyond the nineteenth century, prevented American states “from developing private—or public—law systems for limiting overall consumption or for dividing aquifers into shares for competing users”).

23. Barton H. Thompson, *Beyond Connections: Pursuing Multidimensional Conjunctive Management*, 47 IDAHO L. REV. 273, 294 (2011).

24. *E.g.*, Dellapenna, *supra* note 21, at 266–67, 270–71.

25. *See* ADLER ET AL., *supra* note 6, at 179 (“The doctrine of capture is the oldest groundwater doctrine in the United States, originating from the English rule of capture established in *Acton v. Blundell*.”).

26. *See, e.g.*, *Acton v. Blundell*, (1843) 152 Eng. Rep. 1223 (Ex. Ch.) 1234 (noting, in a dispute over groundwater between a cotton mill and a coal mine, that “[n]o case has been cited on either side bearing directly on the subject in dispute” because “no direct authority can be cited from our books”); *Roath v. Driscoll*, 20 Conn. 533, 541–43 (1850) (citing *Acton v. Blundell* and even earlier U.S. cases, but noting that “[t]he law has not yet extended beyond *open running streams*,” from which, in a dispute over groundwater, no “light [can] be obtained”).

27. *See, e.g.*, *Acton*, 152 Eng. Rep. at 1233–34 (“But in the case of a well . . . the water which feeds it from a neighbouring soil does not flow openly . . . but through the hidden veins of the earth . . . no man can tell what changes these underground sources have undergone in the progress of time . . . [N]or, for the same reason, can any trace of a positive law be inferred . . . whilst the very existence of the underground springs . . . may be unknown . . .”); *Roath*, 20 Conn. at 542 (“Again, no proprietor knows what portion of water is taken from beneath his own soil . . . [o]n the contrary,

oft-cited formulation of both this fundamental ignorance, and its justification for the rule of capture, is seen in a mid-nineteenth-century Ohio case, *Frazier v. Brown*:

Because the existence, origin, movement and course of [underground] waters, and the causes which govern and direct their movements, are *so secret, occult and concealed* . . . an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would be, therefore, practically impossible.²⁸

While ignorance about the nature of groundwater remained relatively deep and widespread through the late nineteenth century, this approach to groundwater law continued to hold sway in most U.S. jurisdictions.²⁹ However, knowledge about hydrology rapidly began to improve in the late nineteenth and early twentieth centuries, and as it did, both the traditional justification for the rule of capture and its popularity began to decline.³⁰ Although Texas continues to apply the rule of capture, it is an extreme outlier: the overwhelming majority of U.S. jurisdictions have abandoned the rule, and, as noted above, Texas's retention of the doctrine tends to be criticized by most commentators.

For over a century in Texas, courts resolving groundwater disputes have dipped into the well of oil and gas law, a process which imposed an unusual stability on the development of Texas groundwater law that will be explored further below. In recent years, even as many observers believed that the institutions governing Texas groundwater were near substantial change, repeat appearances of this tragic crossover helped

until the well is sunk, and the water collected . . . there cannot properly be said . . . to be any flow of water at all.”).

28. 12 Ohio St. 294, 311 (1861) (emphasis added). As will be seen below, the “secret, occult[,] and concealed” language from *Frazier v. Brown* has had a long life in Texas groundwater law.

29. See, e.g., A.W. Walker, Jr., *Theories of Ownership and Control of Oil and Gas Compared with Those of Ground Water*, WATER L. CONF. PROC. 121 (University of Texas 1956) (noting the difficulty in formulating any other approach to groundwater beyond the rule of capture in early cases, given the dearth of scientific knowledge about groundwater in the late nineteenth and very early twentieth century).

30. See, e.g., ADLER ET AL., *supra* note 6, at 179 (observing that “modern understanding of groundwater hydrology has lessened [the rule of capture’s] popularity,” and noting that it only survives in a few jurisdictions, most notably Texas); see also Dellapenna, *supra* note 21, at 272–73 (tracking rapid changes in the understanding of groundwater around the turn of the twentieth century, and noting that the traditional legal rules for groundwater “received considerable revision . . . by the early twentieth century because hydrologists and engineers, and eventually lawyers and jurists, learned more”).

arrest the trend toward increased regulation, ultimately resolving the open question of rights in uncaptured groundwater by borrowing heavily from oil and gas law.³¹ As traditionally applied to groundwater, the rule of capture combined two ideas: first, the idea that groundwater is reduced to individual ownership once pumped out of the ground and physically controlled, or captured, on the surface; and second, the related idea that the new owner could not be held liable to neighbors for injury resulting from this withdrawal.³² But what about groundwater under the ground, before the surface owner pumps and captures it? Under the rule of capture, who (if anyone) holds rights in that resource, and how strongly are they held?

The answers to such superficially straightforward questions have been tremendously difficult for courts to provide, not least because the rule of capture was, in most jurisdictions, abandoned as knowledge about groundwater improved within a few short decades of cases like *Frazier*.³³ Moreover, in Texas, the leading jurisdiction where the rule of capture for groundwater was retained, courts steadfastly refrained from addressing questions about potentially competing public and individual rights in groundwater in place. It is easy to sympathize with the historical reluctance of most courts to address questions about potential ownership in place of groundwater in capture jurisdictions: the early doctrine of capture was based on multiple and conflicting justifications with very different implications for potential groundwater ownership rights.³⁴

Thus, despite some claims to the contrary, the early roots of the rule of capture as applied to groundwater provide only muddled answers, at best, to questions regarding potential ownership of groundwater in place. At bottom, the rule of capture was traditionally and fundamentally understood as a rule of non-liability between neighbors,

31. See *infra* Parts III, IV.

32. *E.g.*, ADLER ET AL., *supra* note 6, at 179.

33. See, *e.g.*, *Meecker v. City of E. Orange*, 74 A. 379, 384 (N.J. 1909) (noting that the rule of capture was traditionally justified based on “the mere difficulty of proving the facts respecting water that is concealed from view,” observing that increasingly “this difficulty is often readily solved,” and concluding that when the difficulty is solved the justification for the rule of capture “at once vanishes”).

34. See, *e.g.*, Dellapenna, *supra* note 21, at 271–74 (noting two “altogether different rationale[s]” in the early groundwater capture cases, one based on a pure rule of capture, suggesting no or only weak ownership rights of groundwater in place, and another based on the doctrine of *ad caelum et ad infernos*, according to which any groundwater beneath the surface estate simply belonged to the land in which it was found).

and this rule of non-liability does not necessarily entail any ownership rights in the groundwater in place before capture³⁵—as even advocates of strong individual property rights in groundwater in place recognize.³⁶ If anything, the conceptual structure and very name for the rule of capture itself would seem to suggest that there are no, or at least no strong, individual ownership rights in groundwater in place.³⁷ Yet Texas courts have recently reached the opposite conclusion. The story of how this happened will be briefly described in Part II below, and an account of *why* this happened—including the role of the tragic crossover from oil and gas to groundwater law—will be discussed in Part III.

II. THE EVOLUTION OF GROUNDWATER LAW IN TEXAS

The Texas Supreme Court adopted the rule of capture in 1904 in *Houston & Texas Central Railroad Co. v. East*.³⁸ After considering the reasonable use alternative to the rule of capture emerging in other U.S. jurisdictions, the court in *East* expressly adopted the rationale set forth in *Frazier v. Brown* and similar cases, including the formulaic language regarding the practical impossibility of applying any alternative rule given the “secret, occult, and concealed” nature of underground waters.³⁹ Indeed, *East*’s adoption of the reasoning set forth in *Frazier*

35. *E.g.*, ADLER ET AL., *supra* note 6, at 179 (noting that “[i]n essence, the doctrine of capture is a doctrine of non-liability,” and pointing out the importance of “understand[ing] that ownership of water once ‘captured’ from groundwater is different from owning the groundwater itself, just like owning a fish caught from a stream is different from owning the fish in the stream”).

36. *See* Drummond et al., *supra* note 10, at 60 (arguing that oil and gas law provides much needed insight to groundwater law, and tracing the “separate and distinct” regimes of capture and ownership in place through Texas case law); Johnson, *supra* note 9, at 4–9 (citing a 2008 Texas appellate court decision and noting the distinction between ownership in place and the rule of capture, the latter of which “is a tort rule denying a landowner any judicial remedy and was developed as a doctrine of nonliability for damage, not a rule of property”).

37. Indeed, the very nature of the terms for the “rule of capture,” and the fugitive nature of the resource, would seem to indicate that the surface landowner who captures and uses the groundwater beneath her land has no property in the groundwater until the water is captured after being pumped to the surface. *See, e.g.*, Dellapenna, *supra* note 21, at 269–70, 273. (“The rule of capture . . . [seems to] indicat[e] by its terms that the water user has no property in the groundwater until the water is pumped from a well, which might lead one to expect that courts that use this phrase would have the easiest time moving from the rule of capture to one of the other approaches to groundwater law. Curiously, this does not seem to be the case in Texas, where the courts most often use the phrase ‘rule of capture.’”). Explaining the reasons for this “curious” fact about Texas groundwater is, of course, one of the central aims of this Article.

38. 81 S.W. 279, 280–81 (Tex. 1904).

39. *Id.* at 281 (quoting the “secret, occult, and concealed” passage from *Frazier v. Brown*, 12 Ohio St. 294, 310 (1861)).

and similar cases was so complete that the Texas Supreme Court opined that it would be "useless" to attempt to add or improve upon them.⁴⁰

Over a century later, *East* and its invocation of the "secret, occult, and concealed" nature of groundwater remain an oft-invoked touchstone of Texas groundwater law. Texas courts have repeatedly rejected alternatives to the rule of capture and cited *East's* justification from ignorance even as knowledge about groundwater has dramatically improved and alternative rules have gained sway in almost every other U.S. jurisdiction.⁴¹ But while *East* affirmed the core principles of non-liability for withdrawal and ownership of groundwater once reduced to physical possession at the surface, it did not directly decide whether private ownership rights existed in uncaptured groundwater lying beneath a surface owner's land. Moreover, although this question was sporadically raised in litigation, it was repeatedly ducked by Texas courts facing groundwater disputes for over a century. *East* also did not set forth what rights or duties, if any, the public or state might have in or regarding such uncaptured groundwater, although it acknowledged the possibility that such public or state rights might exist and might be elaborated by the legislature. Texas courts remained similarly allergic to resolving this issue in the years following *East* as well, although Texas voters and the Texas legislature were not so shy.

In 1917, barely a decade after *East* and following multiple sustained droughts, Texas voters added the "Conservation Amendment" to the state constitution.⁴² The Conservation Amendment provides that the preservation and conservation of natural resources within the state are public rights and duties, and it authorizes the Texas legislature to pass whatever laws may be appropriate thereto.⁴³ Exactly how this ought to be done was left to the future; this section will discuss how the legislature and courts

40. *Id.* at 280.

41. *E.g.*, *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814, 823–24 (Tex. 2012); *Friendswood Dev. Co. v. Smith-Sw Indus., Inc.*, 576 S.W.2d 21, 25–27 (Tex. 1978); *City of Corpus Christi v. City of Pleasanton*, 276 S.W.2d 798, 802–03 (Tex. 1955).

42. TEX. CONST. art. XVI, § 59. Passage of the Conservation Amendment led to the creation, during subsequent years of the twentieth century, of a number of political subdivisions in Texas to control a wide range of natural resources, including both surface water and groundwater. For further discussion about the Conservation Amendment and the wide range of political subdivisions that have emerged pursuant to it, see, for example, Martin C. Rochelle, Brad B. Castleberry, and Cristina Ramage, *Meeting Water Supply Needs: Planning, Permitting, and Implementation*, at 2-2, in *Sahs, supra* note 9 and see generally Angela Stepherson, *Water Districts*, at ch. 7, in *Sahs, supra* note 9.

43. TEX. CONST. art. XVI, § 59.

worked out this mandate, as well as the tensions created between the Conservation Amendment's mandate and the rule of capture. For example, decades later, the mandate set forth by the Conservation Amendment would provide the authority and impetus for groundwater conservation districts ("GCDs"), as discussed below. But the development of this mandate, like the resolution of the potential private rights in subterranean groundwater left ambiguous after *East*, would only begin to be addressed in detail by Texas courts after many years.

A. *The Roots of Texas Oil and Gas Law in East*

Indeed, *East's* most dramatic impact, at least in the short term, was not on the slow-developing field of groundwater law at all, but rather on the rapidly developing field of oil and gas law. In the early twentieth century, as substantial oil and gas discoveries were made in the state, Texas courts applied the rule of capture to subterranean oil and gas, derived in no small part from groundwater precedent set in *East*.⁴⁴ The first and most obviously relevant aspect of this original crossover is its extent: Texas groundwater law had substantial influence over the adoption of the rule of capture in these early oil and gas cases.⁴⁵ Indeed, some commentators have claimed that early oil and gas law in Texas could be described as an offshoot of groundwater law, albeit one which rapidly overtook its parent given the incredibly rapid development of the oil and gas industry.⁴⁶ Moreover, the substantial influence of early groundwater precedent on the

44. See, e.g., *Brown v. Humble Oil & Ref. Co.*, 83 S.W.2d 935, 940 (Tex. 1935). ("The rule in Texas recognizes the ownership of oil and gas in place . . . [and o]wing to the peculiar characteristics of oil and gas, the foregoing rule of ownership of oil and gas should be considered in connection with the law of capture," as elaborated by *East* and elsewhere).

45. Joe R. Greenhill & Thomas Gibbs Gee, *Ownership of Groundwater in Texas: The East Case Reconsidered*, 33 TEX. L. REV. 620, 621 (1955) ("Beyond doubt the [*East*] decision influenced the formative stages of the Texas law of oil and gas as the courts developed the ownership-in-place rationale.").

46. Drummond et al., *supra* note 10, at 59 (2004) ("In this sense, oil and gas law is an offshoot of groundwater law, but oil and gas law developed more quickly because of the rapidity with which an oil and gas market emerged."); see also Robert A. McCleskey, Comment, *Maybe Oil and Water Should Mix-At Least in Texas Law: An Analysis of Current Problems with Texas Ground Water Law and How Established Gas and Oil Law Could Provide Appropriate Solutions*, 1 TEX. WESLEYAN L. REV. 207, 213-14 (1994) (claiming that "*East* influenced early oil and gas law as well as water law," and noting that the oil and gas industry, and related legal doctrines, grew extremely quickly in the early 1900s after major oil discoveries in Texas).

development of early oil and gas law has been a matter of more than academic interest: Texas courts have repeatedly noted the influence of groundwater law on oil and gas law as well.⁴⁷

The second aspect of the origins of Texas oil and gas law relevant to this Article concerns the combination of the rule of capture in oil and gas law with a rule of ownership of oil and gas in place.⁴⁸ Unlike the early Texas groundwater cases, which left individual ownership rights in subterranean groundwater as an open issue, the early Texas oil and gas cases combined the non-liability component of the rule of capture with a rule of ownership in place.⁴⁹ Somewhat ironically, the justification for recognizing this rule of ownership in place was the improved state of scientific knowledge of subterranean oil and gas relative to groundwater at the time of cases like *East*.

More specifically, by the time Texas courts began applying the rule of capture to oil and gas, they recognized that improvements in geology made it possible to approximate both the amount of subterranean oil and gas and the amount recoverable by various nearby surface owners in cases involving disputes between surface owners over blowouts or other forms of wasteful retrieval. Thus, these courts modified the rule of capture from its application to groundwater in order to suit these advances in knowledge as well as the fundamental differences between the resources.⁵⁰ A similar process, albeit one that

47. See, e.g., *Friendswood Dev. Co. v. Smith-Sw. Indus., Inc.*, 576 S.W.2d 21, 26 (Tex. 1978) (noting that *Brown*, 83 S.W.2d, one of the "basic cases recognizing private ownership of oil and gas in place," relied upon *East* and its elaboration of the rule of capture to derive this rule of ownership); see also *Coastal Oil & Gas Co. v. Garza Energy Trust*, 268 S.W.3d 1, 13 (Tex. 2008) (quoting 1 ERNEST E. SMITH & JACQUELINE LANG WEAVER, *TEXAS LAW OF OIL AND GAS* § 1.1(A) (2d ed. 1998), "The Rule of Capture may be the most important single doctrine of oil and gas law.").

48. See *supra* note 47; see also *Texaco Inc. v. R.R. Comm'n*, 583 S.W.2d 307, 310 (Tex. 1979) (citing *Brown*, 83 S.W.2d and *Corzelius v. Harrell*, 186 S.W.2d 1961 (Tex. 1945), and reiterating "that the rule in this state recognizes the ownership of oil and gas in place . . . [and] that such rule should be considered in connection with the law of capture, which is recognized as a property right").

49. See, e.g., *Elliff v. Texon*, 210 S.W.2d 558, 561 (Tex. 1948) (citing *Brown*, 83 S.W.2d at 940) (rejecting alternative rules from other jurisdictions regarding ownership in place, and noting that "[i]n Texas . . . a different rule exists as to ownership. In our state the landowner is regarded as having absolute title in severalty to the oil and gas in place beneath his land . . . The only qualification . . . is that it must be considered in connection with the law of capture and . . . police regulations.").

50. See, e.g., *Brown*, 83 S.W. 2d at 940 (justifying individual ownership rights of oil and gas in place because "[i]t is now, however, recognized that when an oil field has been fairly tested . . . experts can determine approximately the amount of oil and gas in place . . . and can also equitably determine the amount of oil and gas recoverable by the owner of each tract of land");

resulted in a different set of rules for a different resource, occurred in many U.S. jurisdictions with respect to the law of groundwater. Texas aside, courts in most other U.S. jurisdictions in the mid-twentieth-century tended to incorporate advances in hydrology and replace the traditional common law approach expressly rooted in ignorance about groundwater and the water cycle, in favor of reasonable use approaches tolerant of more individual control.⁵¹

In part, this is what makes the most recent examples of the crossover from oil and gas law to groundwater law particularly tragic: the crossover from oil and gas to groundwater law in Texas is not based on Texas oil and gas law of today, nor even Texas oil and gas law of the mid- to late-twentieth century, but rather on archaic principles and outdated reasoning, both of which are ripped out of context.⁵² In other words, this crossover is a fossil. And when it is invoked it pushes the institutions that govern Texas groundwater to reiterate the same punishing inquiry into the relationship of capture and ownership that Texas oil and gas institutions evolved past many decades ago,⁵³ while precluding the consideration of the specific characteristics of the underlying resource which aided the evolution of oil and gas law. Section II.B provides a more detailed account of Texas's retention of the rule of capture for groundwater throughout the twentieth century, the increasingly outlier status of Texas's groundwater law more generally, and the central role played by the tragic crossover in this story.

Elliff, 210 S.W.2d at 561 (same).

51. See, e.g., Robert E. Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEX. L. REV. 391, 408 (1935) (“In view of the set course which the oil cases followed after the courts got their bearing from the water cases, it is rather curious that in many jurisdictions the courts themselves without any legislative prodding or assistance, changed the common law rule with respect to the right of unlimited production of percolating waters.”).

52. See, e.g., Susana Elena Conseco, *Landowners' Rights in Texas Groundwater: How and Why Texas Courts Should Determine Landowners Do Not Own Groundwater in Place*, 60 BAYLOR L. REV. 491, 514–515, 517 (2008) (pointing out that recent advocates for the combination of ownership in place and the rule of capture for groundwater base their arguments on “ancient” doctrinal approaches that “ignore[] oil-and-gas law’s progress”). For a discussion of Texas oil and gas law’s sometimes halting progress away from its historic tragic tendencies, see Weaver, *infra* note 155 and accompanying text.

53. See Conseco, *supra* note 52, at 514 (noting that the institutions that govern oil and gas law in Texas “eventually clarified oil-and-gas law property concepts [relatively] early in oil and gas law’s evolution, whereas groundwater law is only beginning to face the dilemma”).

B. The Rule of Capture for Groundwater in Texas

In the first half of the twentieth century, while most jurisdictions were moving toward more extensive regulation of groundwater, Texas saw very little groundwater litigation or legislation.⁵⁴ Just over half a century after *East*, and a couple of decades after affirming the rule of capture for oil and gas,⁵⁵ the Texas Supreme Court reaffirmed *East* and the rule of capture for groundwater.⁵⁶ Of course, this reiteration of the rule of capture in *City of Corpus Christi v. City of Pleasanton* occurred as other jurisdictions were moving away from the rule as applied to groundwater, citing improvements in hydrology and geology that rendered the main justification for the rule obsolete.⁵⁷

The *Corpus Christi* majority’s decision to reiterate the rule of capture may have been tragic, but it was at least well-informed, for it was written over an incisive dissent that expressly pointed out the outdated nature of the rationale set forth in *East*, *Acton*, and *Frazier*, discussed the hydrological cycle, and noted Texas courts’ increasing isolation on the rule of capture generally.⁵⁸ Although *Corpus Christi* represented a strong reiteration of the rule of capture for groundwater, the court did not rule on the issue of ownership of groundwater in place. In fact, *Corpus Christi* recognized a limitation on the surface owner’s rights in groundwater once captured, holding that the surface owner’s ultimate rights in the captured water were qualified by a broad beneficial purpose limitation—in other words, recognizing that wasteful retrieval or use provided an exception to the rights secured under the

54. Curious readers who wish to review periods passed over lightly for reasons of space in this Article may wish to consult a useful timeline of Texas water law, available at *Texas Water Timeline*, LEGIS. REFERENCE LIBR. OF TEXAS, <http://www.lrl.state.tx.us/legis/watertimeline.cfm> (last visited Mar. 3, 2015).

55. See *supra* notes 42–49 and accompanying text.

56. *City of Corpus Christi v. City of Pleasanton*, 276 S.W.2d 798, 802–03 (Tex. 1955).

57. Harry Grant Potter, III, *History and Evolution of the Rule of Capture*, in 100 YEARS OF RULE OF CAPTURE: FROM EAST TO GROUNDWATER MANAGEMENT, *supra* note 10, at 1, 3 (citation omitted) (noting that “[h]alf a century after *East*—at a time when other jurisdictions were abandoning the [rule of capture] in favor of the ‘reasonable use’ rule—the Texas Supreme Court reaffirmed the rule of capture in *City of Corpus Christi* . . .”).

58. *Corpus Christi*, 276 S.W.2d at 805 (Wilson, J., dissenting) (“I am convinced that the rationale of *Frazier v. Brown* has been rebutted and answered by [developments, including the Conservation Amendment] and the entire trend of our jurisprudence since that decision and since the *East* case. Although this court can close its eyes to the advancement of scientific and legal knowledge . . . as the majority do here, I do not believe that this court will always do so . . .”). Unfortunately, Justice Wilson’s predictive powers were not as keen as his powers of observation and analysis.

rule of capture.⁵⁹

Although the Texas Supreme Court reiterated the rule of capture in the middle of the twentieth century, subject to the qualifications noted above, the great drought of the 1950s prompted further changes in groundwater law directed by the legislature, including the creation of the first GCDs.⁶⁰ Throughout the state's history, Texas water law has been characterized by the state's frequent droughts,⁶¹ but the drought of the 1950s was uniquely harrowing, so much so that it remains the benchmark by which future droughts have been assessed.⁶² Even before the drought began to take serious bite, startling estimates of groundwater depletion and inadequate recharge in some parts of the state were beginning to be publicized.⁶³ For example, in 1949, the Texas Legislature passed the Texas Underground Water Conservation Act, which authorized the creation of groundwater conservation districts to exercise the duties set forth

59. *See id.* at 802 (finding that “under the common-law rule adopted in this state an owner of land [can] use all of the percolating water he [can] capture from wells on his land for whatever beneficial purposes he needed it . . .”) (majority opinion) (emphasis added).

60. Act of June 2, 1949, 51st Leg., R.S., ch. 306 (codified at TEX. REV. CIV. STAT. art. 7880-3c), *repealed by* Act of Apr. 12, 1971, 62d Leg., R.S., ch. 58, § 2. For a brief discussion of the history and evolution of GCDs, their powers, duties, rights, and statutory authority, see generally Johnson, *supra* note 9, Michael Booth, Trey Nesloney, and Deborah Trejo, *Chapter 36 Groundwater Conservation Districts and Subsidence Districts*, in *ESSENTIALS OF TEXAS WATER RESOURCES*, *supra* note 9.

61. *See supra* notes 42–43 and accompanying text.

62. For background regarding the drought in Texas of the 1950s and a comparison with more recent droughts, see, for example, Farzad Mashhood, *Current Drought Pales in Comparison with 1950s ‘Drought of Record,’* AUSTIN AMERICAN-STATESMAN, Aug. 4, 2011, <http://www.statesman.com/news/news/local/current-drought-pales-in-comparison-with-1950s-d-1/nRdC5/>. For a good, short account of the drought of the 1950s with specific examples and personal accounts by those who lived through it, see, for example, John Burnett, *How One Drought Changed Texas Agriculture Forever*, NPR (July 7, 2012), <http://www.npr.org/2012/07/07/155995881/how-one-drought-changed-texas-agriculture-forever>.

63. *See* Timothy L. Brown, *A Primer for Understanding Texas Water Law*, LEGIS. REFERENCE LIBR., OF TEXAS 29 (June 2006), available at http://www.lrl.state.tx.us/legis/water_Primer.pdf (“In 1950, it was estimated [at a conference at the University of Texas] that . . . [almost two million] acre-feet of groundwater was removed from the Ogallala Reservoir when only 50,000 acre-feet of natural recharge occurred.”). Of course the Ogallala, the largest aquifer in America, is itself a frequent subject of extended study, with an importance that stretches far beyond Texas alone or the other High Plains states whose way of life it supports. *See, e.g.*, MARC REISNER, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER* 436–37 (1993) (“The irrigation of the Ogallala region, which has occurred almost entirely since the Second World War . . . [is] one of the most profound changes visited by man on North America; only urbanization, deforestation, and the damming of rivers surpass it.”). For obvious reasons of space, only the problems and challenges related to the mining of the Ogallala in Texas will be discussed here.

under the Conservation Amendment.⁶⁴ In this Act, the Texas legislature opted against comprehensive statewide controls for groundwater production and distribution and in favor of locally controlled districts with broad and flexible mandates.⁶⁵ The first GCD, the High Plains Underground Water Conservation District, was created in 1951, located in thirteen counties largely above the Ogallala Aquifer in the Texas Panhandle.⁶⁶ Only a handful of GCDs were created in the decades after the 1949 legislation, largely in West Texas and the Panhandle.⁶⁷

While Texas groundwater law remained relatively stagnant in the first half of the twentieth century (with few published opinions, little legislation, and even less impetus for change until the record drought of the 1950s), oil and gas law in Texas and elsewhere developed much more quickly, rapidly outpacing its origins in the law of groundwater.⁶⁸

64. See *supra* note 60.

65. Booth & Richard-Crow, *supra* note 10, at 20 (“The Act, however, was not a comprehensive approach to groundwater management but rather optional regulation through locally controlled districts.”).

66. *E.g.*, Johnson, *supra* note 9, at 4-13.

67. *E.g.*, Brown, *supra* note 63, at 29.

68. Indeed, the law of oil and gas in Texas so quickly outstripped its roots in water law that groundwater was subordinated to oil and gas when water issues impinged upon Texas oil and gas decisions. For example, oil and gas rights in Texas are considered to be part of the dominant mineral estate, whereas water rights have been held to be part of the surface estate, and therefore subject to the dominant/servient estate theory, which implies a wide variety of rights in favor of the mineral estate. See *Sun Oil v. Whitaker*, 483 S.W.2d 808, 810-11 (Tex. 1972) (“The oil and gas lessee’s estate is the dominant estate and the lessee has an implied grant . . . of free use of . . . so much of the premises as is reasonably necessary . . . [w]ater . . . has been held to be part of the surface estate.”); ERNEST E. SMITH & JACQUELINE LANG WEAVER, 1 TEXAS LAW OF OIL & GAS § 2.1[B][1], at 2-14-2-15 (2d ed. LexisNexis Matthew Bender 2011) (noting that it is “well established . . . that the mineral fee is the dominant estate and that the owner of the mineral estate can enjoin actions by the surface owner or lessee that interfere with the reasonable use, operation and development of the mineral estate”). Although Texas also recognizes the accommodation doctrine, which requires mineral rights holders to accommodate, where reasonable, separately owned surface uses, the accommodation doctrine is subject to the dominant / servient estate theory, which limits its application. See SMITH & WEAVER, *supra*, at 2-20-2-22 (noting that “[i]f no established industry practices permit accommodation” of a surface use, or even if established industry practices exist for accommodation, but would be unreasonably expensive compared to the value of the mineral estate, “then the surface use must give way”). *Sun Oil* provides a useful practical example of the combination of accommodation and the dominant/servient estate theory as applied to groundwater. In *Sun Oil*, the Texas Supreme Court held that an oil and gas lease holder could withdraw hundreds of thousands of gallons from the Ogallala aquifer for a “waterflood”—a water-intensive secondary recovery operation—even though it would shorten the life of the surface owner’s water supply by several years. 483 S.W.2d at 811-12. For a counter-example from another jurisdiction, in which a surface owner on similar facts might possess a right of recovery against a mineral rights holder, see, for example, *Wiser Oil Co. v. Conley*, 346 S.W.2d 718, 721 (Ky. 1960) (noting that where a method of “withdrawing oil is employed . . . which will destroy or substantially damage the landowner’s

By the time *Corpus Christi* was decided in the mid-1950s, it was “well settled” in most U.S. jurisdictions that individual surface landowners had legally cognizable ownership rights in subterranean oil and gas in place, although the nature of the individual rights differed across jurisdictions.⁶⁹ In some states, the ownership interest was relatively weak, though still subject to some forms of protection.⁷⁰ In Texas, individual ownership rights in subterranean oil and gas in place were relatively more robust, and while commentators recognized that such strong individual rights in a subterranean resource in place represented a departure from oil and gas law’s roots in the early law of groundwater, they also recognized that the departure was justified based on the many differences between the resources in question.⁷¹ This decades-long process, in which oil and gas law moved beyond its roots in archaic groundwater cases like *East*, and towards the recognition of various forms of individual rights in subterranean oil and gas in place, was a long and difficult one.⁷² Moreover, unlike recent Texas cases and

remaining estates, principles of justice and humanity would require that reasonable compensation be paid the landowner for the devastation wrought”). Space does not afford a more sustained comparison of Texas oil and gas law with the law of other jurisdictions. Of course, the historic dominance of Texas oil and gas law over Texas groundwater law, especially when conflicts between use of the two are resolved by Texas institutions, is not the same thing as the tragic crossover discussed in this article; but equally obviously, this historic dominance has probably tended to strengthen the dependence of Texas courts on the tragic crossover. I thank Bret Wells for pointing out this convergence, and for helpful discussions about same.

69. Walker, *supra* note 29, at 130; *see also* Conseco, *supra* note 52, at 514–19 (discussing the development of different individual rights in oil and gas in place across jurisdictions, and comparing the evolution of those rights with then-contemporary groundwater cases).

70. *See* Walker, *supra* note 29, at 131 (noting that states other than Texas, because of the fugitive “nature of oil and gas and its migration across private property lines during the depletion of a reservoir, do not consider a landowner as having title to the oil and gas beneath his land, although they do recognize that he has a property interest in the oil and gas while still in place which is subject to legal protection.”).

71. *See id.* at 130–31 (“Some states, such as Texas, have taken the view that oil and gas, like solid minerals, comprise a part of the land, and that the landowner has title to them while they are beneath his land. There is, perhaps, more justification for this view in the case of oil and gas than there is with respect to ground water . . .”). For example, groundwater, “as part of the hydrologic cycle,” tends to move much more freely beneath surface private property boundaries than subterranean oil and gas, at least until human development changes the structure and pressure of the formations in which oil and gas are found. *Id.*

72. *See, e.g.,* D. Edward Greer, *The Ownership of Petroleum Oil and Natural Gas in Place*, 1 TEX. L. REV. 162, 162 (1923) (“It has always been the boast of common-law lawyers that the system was so flexible and adaptable . . . that it afforded an adequate remedy in any case or state of facts . . . [but t]his claim has been put to a severe test in determining the rights of the owner of land to petroleum oil and natural gas underlying the same.”); Conseco, *supra* note 52, at 515 (“Courts struggled with the common law’s recognition of property rights when they could offer no remedy to

legislation regarding individual ownership rights in groundwater in place, the process of identifying ownership rights in subterranean oil and gas in place was characterized by legal institutions' reliance on developments in the scientific knowledge of hydrocarbons, as well as distinctions between different types of subterranean resources.⁷³

After the great drought of the 1950s, and aside from the continued slow growth of the first GCDs, Texas groundwater law remained relatively stagnant in the second half of the twentieth century, with the state's continued adherence to the rule of capture for groundwater marking it out as an increasingly lonely outlier. Unlike the institutions that governed Texas oil and gas law, and contrary to the predictions of Justice Wilson's dissent in *Corpus Christi*,⁷⁴ Texas groundwater institutions continued to ignore developments in scientific knowledge about groundwater and legal reasoning about groundwater from other jurisdictions that postdated *East*. Texas groundwater institutions also continued to duck the difficult questions about the potential existence of individual ownership rights with respect to groundwater in place, and whether such rights could co-exist with the rule of capture, which had been addressed in the context of oil and gas decades before in Texas and elsewhere.⁷⁵

In particular, Texas courts in the second half of the twentieth century tended to use what one commentator has called "magic words" to discuss property rights in groundwater disputes, without directly addressing or deciding such issues, and while retaining the rule of

a landowner whose rights were harmed.").

73. See *supra* notes 50–53 and accompanying text; see also A.W. Walker, Jr., *Fee Simple Ownership of Oil and Gas in Texas*, 6 TEX. L. REV. 125, 125 (1928) ("Experience, and a better understanding of the nature of oil and gas and the economical and physical conditions surrounding its production, soon revealed that . . . oil and gas was a species of property peculiar unto itself, and that rules of law that worked very well when applied to other types of property were wholly inadequate and unjust . . . when applied to oil and gas."). Ironically, given the existence and nature of the tragic crossover examined in this article, in which the institutions that govern Texas groundwater have repeatedly eschewed this kind of analysis, the incorporation of advances in scientific knowledge and a reliance on the specific characteristics of the resource at hand to shape departures from old common-law norms was particularly pronounced in Texas oil and gas law in the first half of the twentieth century. See, e.g., *id.* ("And nowhere has this process been more marked, or taken more novel and striking form than in Texas.").

74. See *supra* note 58 and accompanying text.

75. Indeed, as will be discussed at greater length below, the issue of individual ownership of groundwater in place would not be resolved by either Texas courts or the Texas legislature until very recently—the better part of a century after such issues were resolved in the oil and gas context—in the *Day* case and its related legislation. See *infra* notes 190–209 and accompanying text.

capture with only slight modifications.⁷⁶ By examining one example of these “magic words” at slightly greater length, it is possible to see an example of the tragically stabilizing crossover from oil and gas law at work.⁷⁷ In *Friendswood Development Co. v. Smith-Southwest Industries, Inc.*, the Texas Supreme Court considered a lawsuit over ground subsidence allegedly caused by massive withdrawals of groundwater around Houston.⁷⁸ *Friendswood* reaffirmed the rule of capture, while recognizing an exception to the non-liability component of the rule of capture for surface landowners who cause subsidence to their neighbors through extreme negligence in withdrawing groundwater.⁷⁹ However, the *Friendswood* opinion announced that this newly recognized exception should only apply prospectively, rather than to the defendants at hand, because “rules of property” were involved in the dispute—without, of course, ever specifying what those property rules might be, or how they might relate to or depart from the rule of capture that the opinion also affirmed.⁸⁰

As more than one commentator has pointed out, *Friendswood* thus serves as an excellent example of the “confused state” and relative stasis that characterized Texas groundwater law for much of the second half of the twentieth century.⁸¹ It also provides an excellent and representative example of how the tragic crossover from oil and gas law to groundwater law helped create and perpetuate this confusion and stasis. If one examines the case just a bit more closely, one can see how the tragic crossover from oil and gas to groundwater law simultaneously allowed the *Friendswood* court to skirt the issue of potential individual property rights while fostering confusion, uncertainty, and stasis in groundwater law more generally.

The *Friendswood* court essentially began its analysis by reaffirming

76. Conseco, *supra* note 52, at 505.

77. For more detail on the tragically stabilizing effects of the crossover, and for more recent examples that will be explored in greater detail, see *infra* Parts III and IV.

78. 576 S.W.2d 21 (Tex. 1978). Subsidence in the Houston-Galveston area was such a substantial problem that the Texas legislature, just a few years prior to the suit, had created a local regulatory body, the Harris-Galveston Coastal Subsidence District, with powers for new well permitting, metering, and additional rules broadly similar to GCDs. For a brief discussion of the history of subsidence in the area, and the powers granted to subsidence districts in Texas, see *id.* at 23–24. Because GCDs are much more numerous today than subsidence districts, subsidence districts will not be considered at greater length in this article.

79. *Id.* at 22, 30–31.

80. *Id.*

81. Conseco, *supra* note 52, at 501.

Texas’s commitment to the common law of groundwater as set forth in antique cases such as *East* and *Frazier v. Brown*.⁸² It then noted that although other jurisdictions had long been moving away from this approach, the “English rule” had been reaffirmed in *Corpus Christi*, which it quoted at approving length. The *Friendswood* court then invoked *Brown v. Humble Oil*, “one of the basic cases recognizing private ownership of oil and gas in place,” as another example of Texas courts’ tendency to confirm *East* and the rule of capture, but it did not decide whether similar ownership rights for groundwater in place should be recognized.⁸³ Instead, the *Friendswood* court first noted that in the oil and gas context, Texas courts had declined “to afford protection against the rule of capture of oil and gas” until the legislature had acted.⁸⁴ Next, the *Friendswood* court suggested that some sort of legislative action was similarly appropriate in the groundwater context. The *Friendswood* court then acknowledged that the legislature *had* acted by creating subsidence districts, which seemed to recognize some sort of property interests in underground water, but the court failed to consider at greater length either the nature of these potential property interests, how these interests might modify the rule of capture, or how the law of groundwater might perhaps differ from the law of oil and gas at any greater length.⁸⁵

Friendswood thus serves as an excellent representative example, not only of the confusion and stasis that generally characterized groundwater law in Texas in the second half of the twentieth century, but also of the role played by the tragic crossover from oil and gas law in perpetuating that confusion and stasis. By using precedents like *Brown v. Humble Oil*, courts relied on a highly stylized characterization of oil and gas law to justify Texas’s retention of the rule of capture for groundwater, despite the state’s increasing isolation as other jurisdictions adopted approaches to groundwater based on improved scientific knowledge. More specifically, the rule of capture for groundwater tended to be justified by allusions to individual property rights in oil and gas in place, without any sustained analysis of whether such individual rights might also be appropriate for groundwater, and without any definitive statement as to whether such rights should actually apply to groundwater. In addition, opinions like *Friendswood*

82. 576 S.W.2d at 25.

83. *Id.* at 26.

84. *Id.*

85. *Id.* at 27.

tended to place great emphasis on the legislative and regulatory activity that helped to tame many of the tragedies that accompanied the development of Texas oil and gas law, and the absence of similar legislative or regulatory activity with respect to groundwater—even if, as in *Friendswood*, specific legislation relevant to the groundwater issues at hand had recently passed the legislature! The result, for reasons that will be explored in Section III.A below, was uncertainty and stasis for much of the remainder of the twentieth century in Texas groundwater law.⁸⁶

Although Texas groundwater law in most of the twentieth century was relatively static and an increasing target of criticism as its outlier status became more pronounced, several avenues for potential change began to emerge in the late 1980s and early 1990s. One significant focus of debate and potential change was the Edwards Aquifer. The Edwards is responsible for the historic growth of San Antonio, as well as the support of unique ecosystems both above and below the ground, and its significance to the region has placed it at the center of enduring controversy.⁸⁷ Dozens of articles can and have been written about the litigation and legislation regarding the Edwards Aquifer, which can only be dealt with in summary fashion here.⁸⁸ In brief, litigation in federal court in the early 1990s regarding species listed under the Endangered Species Act resulted in federal court orders requiring the U.S. Fish & Wildlife Service to designate minimum flow amounts for surface springs connected to the Edwards.⁸⁹ Pursuant to the state constitutional Conservation Amendment, the Texas legislature responded by passing legislation to

86. Contrary to its portrayal in these Texas groundwater cases, the evolution of Texas oil and gas law was marked by greater reliance on scientific advances and analysis of the specific characteristics of oil and gas as a resource. See *supra* notes 50–53, 73 and accompanying text. I make very few claims here for the utility of Texas oil and gas law or its development as a positive model for groundwater law or anything else. I simply claim that the characterization of Texas oil and gas law that can be found in *Friendswood*, *Day*, *Bragg*, and elsewhere has very little to do with how Texas oil and gas law actually developed, and that this characterization has been tragic for the development, or lack thereof, of Texas groundwater law. For a more detailed account of the commons tragedies present in the evolution of Texas oil and gas law, see Weaver, *infra* note 155.

87. See, e.g., Owen, *supra* note 14, at 8–9 (noting that the Edwards “might be the nation’s highest-profile aquifer”). If the Edwards is not the nation’s highest-profile aquifer, that dubious honor probably belongs to the Ogallala, discussed *supra* and *infra* at notes 63 and 172–179 and accompanying text.

88. E.g., Todd H. Votteler, *The Little Fish That Roared: The Endangered Species Act, State Groundwater Law, and Private Property Rights Collide Over the Texas Edwards Aquifer*, 28 ENVTL. L. 845 (1998).

89. *Sierra Club v. Lujan*, No. MO-91-CA-069 (W.D. Tex., Feb. 1, 1993), *appeal dismissed*, *Sierra Club v. Babbitt*, 995 F.2d 571 (5th Cir. 1993).

create the Edwards Aquifer Authority (“EAA”), a new regional authority with greater staff, resources, and powers than the pre-existing GCD,⁹⁰ in order to avoid federal management of the Aquifer under the federal court order.⁹¹

Since its creation, the EAA has been a focus for litigation,⁹² some of which sheds light on the tragic crossover between Texas oil and gas and groundwater law, and will be discussed in Part IV below. But although the EAA has been a central figure in the disputes over groundwater that have helped define groundwater rights in Texas in recent years, with unique enabling legislation and unusually robust resources, it is only one among many local entities charged with monitoring and controlling groundwater against the backdrop of the rule of capture. In addition to creating the EAA, in the mid-1990s the Texas legislature also consolidated and revised legislation that had been passed in previous decades regarding GCDs.⁹³

This legislation, as well as subsequent legislation in 1997 and 2001, imposed new planning and management duties on districts, while also giving them additional powers, including the ability to set production limits on wells; the ability to limit the water produced based on tract size or acreage; the ability to impose amendments to increase use authorized by existing permits; and the ability to impose additional fees for water captured and exported outside the district boundaries.⁹⁴ Following these measures, the number of groundwater districts

90. The pre-existing GCD, the Edwards Underground Water District, had been created in 1959, but it was unable to stem substantial withdrawals that threatened listed species and depleted supply to some human users. For more detail about the history and regulatory authority of the EAA, see, for example, Darcy Alan Frownfelter, *Edwards Aquifer Authority*, in *ESSENTIALS OF TEXAS WATER RESOURCES*, *supra* note 9, at 17-1.

91. Edwards Aquifer Authority Act, 1993 Tex. Gen. Laws 2350. The EAAA remains uncodified, but an unofficial compilation, cited by the Supreme Court of Texas, can be found on the Authority’s website, EDWARDS AQUIFER AUTHORITY, *Legislation and Rules*, (2013) available at <http://www.edwardsaquifer.org/legislation-and-rules/the-eea-act>.

92. See Robin Kundis Craig, *Does the Endangered Species Act Preempt State Water Law?*, 62 U. KAN. L. REV. 851, 875 (2014) (“Existing water users who have either been denied permits or been issued permits to pump reduced amounts of water from the Edwards Aquifer have sued continuously to stop implementation of the Act.”).

93. Act of May 25, 1995, 74th Leg., R.S., ch. 715, 1995 Tex. Gen. Laws 3755. These measures were codified into chapter 36 of the Texas Water Code, which is why such GCDs are often referred to as “Chapter 36” districts. See, e.g., Booth & Richard-Crow, *supra* note 10. For more background on this consolidation legislation, see generally Johnson, *supra* note 9.

94. *Id.*; see also Act of June 1, 1997, 75th Leg., R.S., ch. 1010; Act of May 27, 2001, 77th Leg., R.S., ch. 966. For a general discussion of this legislation, see generally Johnson, *supra* note 9, at 4-15-4-19; and Booth & Richard-Crow, *supra* note 10, at 21-22.

increased tremendously, more than doubling from just under forty GCDs in 1995 to over eighty GCDs by 2005.⁹⁵ Additional legislation in the early twenty-first century also added new planning processes and duties for GCDs and for broader regional groundwater management areas (“GMAs”), with each GMA encompassing multiple GCDs.⁹⁶

Following these reforms, the powers and responsibilities of GCDs fall into three broad categories. First, GCDs have permitting and regulatory authority over groundwater wells within a district, including the ability to set spacing and production limits, subject to certain exemptions.⁹⁷ Second, GCDs may collect relevant data on local water conditions and uses, which they must then share, upon request, with the state water development board and the state commission on environmental quality.⁹⁸ Third, GCDs are tasked with helping to prepare management plans for future water use in the area, in coordination with the aforementioned state agencies and with GMAs.⁹⁹

While the developments of the mid-1990s led to substantial numbers of new GCDs and the creation of the EAA, it also led to substantial litigation over the powers of these local and regional authorities and their interaction with individual claims over groundwater. Two of these cases are relevant to the tragic crossover explored in Part III below and will briefly be discussed here. The first of these cases involved a challenge to the EAA by plaintiffs who claimed that the enabling legislation interfered with their pre-existing rights to use groundwater in place in the Edwards Aquifer, beneath land individually owned by plaintiffs on the surface, amounting to an unconstitutional taking.¹⁰⁰ In response, the State in *Barshop v. Medina County Underground Water Conservation District* argued that individuals had no vested rights until underground water is brought to

95. LAURA MARBURY & MARY KELLY, UPDATE: SPOTLIGHT ON GROUNDWATER CONSERVATION DISTRICTS IN TEXAS I (2005).

96. For a good general discussion of the “desired future condition” (“DFC”) process, the interaction between GCDs and GMAs at the DFC planning stage, and the relevant legislation leading to this process, see generally Johnson, *supra* note 9, at 4-16 – 4-18.

97. TEX. WATER CODE ANN. §§ 36.113–36.116. Exemptions include wells used solely to supply water for a rig actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas. *Id.* § 36.117(b)(2). This exemption will be discussed at greater length at notes 259–64, *infra*.

98. TEX. WATER CODE ANN. §§ 36.106–36.109, 36.120.

99. TEX. WATER CODE ANN. §§ 36.1071–36.1072, 36.108, 36.1082. For further information about GCDs’ powers and responsibilities, see Booth et al., *supra* note 60, at 16-16–16-28.

100. *Barshop v. Medina Cnty. Underground Water Conservation Dist.*, 925 S.W.2d 618, 625–26 (Tex. 1996).

the surface and reduced to possession.¹⁰¹ *Barshop*, in other words, presented issues very similar to those seen in *Corpus Christi*, *Friendswood*, and the cases discussed in Part IV below; however, the *Barshop* court declined to resolve the issue of individual ownership of groundwater in place, holding that plaintiffs had failed to show that the EAA’s enabling legislation would deprive surface landowners of their alleged ownership rights in all circumstances.¹⁰²

The second case from this time period relevant to the tragic crossover examined in this Article did not involve the Edwards Aquifer. In fact, it did not involve a GCD at all, but rather a simple and straightforward attempt to overturn the non-liability portions rule of capture itself.¹⁰³ In *Sipriano v. Great Spring Waters of America*, a number of surface owners sued a neighboring bottled-water company for excessive and therefore unreasonable withdrawals of groundwater that negligently drained their wells.¹⁰⁴ After an extensive account of the history of the rule of capture in Texas running all the way back to *East*, as well as a discussion of the legal and scientific advances that had occurred in the intervening century, a majority of the court in *Sipriano* found that there were “compelling” reasons to abandon the old rule in favor of increased regulation.¹⁰⁵

However, the *Sipriano* majority ultimately pulled up short of such a revision, noting the substantial legislative and regulatory reforms enacted earlier in the decade, and holding that it was “more prudent” to wait to see if said legislation and regulation had its desired effect.¹⁰⁶ At the same time, the *Sipriano* majority expressly left open the possibility of further judicial revision of the common law in future decisions, should the then-recent legislative and regulatory reforms fall short of their intended effect.¹⁰⁷ In doing so, the majority also noted that the chief

101. See *id.* at 625 (“The State insists that, until the water is actually reduced to possession, the right is not vested and no taking occurs. Thus, the State argues that no constitutional taking occurs under the statute for landowners who have not previously captured water . . .”). In other words, the State’s argument in *Barshop* was based first on recognition of the difference between the rule of capture as a rule of non-liability and a potential rule of ownership of groundwater in place, and second, on a claim that only capture as non-liability had previously been recognized by Texas courts.

102. *Id.* at 631. Although *Barshop* concluded that the plaintiffs could not make a facial takings challenge, it left the door open for future as-applied takings challenges to the EAA based on similar facts. *Id.*

103. *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75 (Tex. 1999).

104. *Id.* at 75–76.

105. *Id.* at 80.

106. *Id.*

107. *Id.*

justification for the rule of capture advanced in *East*—the “secret and occult” nature of groundwater and its subterranean movement—no longer held much water, and that advances in geological and hydrological knowledge since *East* generally tended to justify exceptions to and departures from the rule of capture.¹⁰⁸ These concerns were amplified by a strongly worded concurrence, which argued that the main problem with groundwater management in Texas was the rule of capture, which had been repudiated by every other jurisdiction in the intervening century.¹⁰⁹

In short, after nearly a century of stasis, marked only by sporadic legislative and judicial modifications, in the early twenty-first century it seemed likely to many that Texas soon would cease to recognize the rule of capture for groundwater.¹¹⁰ Some argued that the ultimate departure from the rule of capture would likely come from the courts, while others suggested that legislative revision of such a long-standing rule was both appropriate and more likely. While opinions differed about the appropriate vehicle for change, many observers agreed that Texas groundwater would soon cease to remain such a relative outlier.¹¹¹ Moreover, in light of the increasing skepticism voiced by Texas courts about both the effects and the fundamental justifications for the rule of capture, as well as the multiple rounds of legislative activity expanding

108. See *id.* at 77 (noting that since *City of Corpus Christi v. City of Pleasanton* was decided in 1955, “what was ‘secret [and] occult’ to us in 1904” was no longer so, and that exceptions to the rule of capture were appropriate as knowledge of groundwater expanded). A comparison of this language from *Sipriano* and the language excerpted *infra* in note 109, with the dramatically different treatment of *Corpus Christi, East*, and *Frazier v. Brown* in, for example, *Friendswood*, discussed *supra* at notes 78–85 and accompanying text, shows why so many observers thought Texas groundwater was poised for dramatic change in the years prior to *Day*, and how close Texas groundwater institutions came to breaking the tragic crossover from oil and gas law examined elsewhere in this article.

109. *Id.* at 81–82 (Hecht, J., concurring) (“What really hampers groundwater management is . . . the common law of capture When this Court adopted the rule of capture . . . in [*East*,] we believed it to have been adopted in England and . . . in every state [but one] Now there is but one lone holdout: Texas.”).

110. See, e.g., Potter, *supra* note 57, at 9 (concluding that “it is unlikely that the Supreme Court will forever use deference to the Legislature to justify maintaining the rule of capture in the face of changing circumstances”).

111. See, e.g., Martin Hubert, *Senate Bill 1, The First Big and Bold Step Toward Meeting Texas’s Future Water Needs*, 30 TEX. TECH L. REV. 53, 68–69 (1999) (noting that outright repeal or substantial revision of the rule of capture was “[n]oticeably absent from recent legislation,” but suggesting that such repeal or revision seemed likely after substantial “public education”). Senate Bill 1, referred to in the title of Hubert’s article and discussed *supra* at note 94 and accompanying text, was part of the legislative flurry in the late twentieth and early twenty-first century providing new duties and powers to GCDs.

the duties and powers of GCDs, some observers concluded that the rule of capture soon would be replaced with a system of correlative rights or reasonable use more nearly resembling models from other jurisdictions.¹¹²

These predictions have largely proved to be incorrect. Contrary to the academic and judicial predictions discussed above, in the roughly fifteen years since *Sipriano*, the Texas Supreme Court has recognized individual ownership rights over groundwater in place while reiterating its commitment to the rule of capture as expressed in *East* and elsewhere.¹¹³ This story, and the role that the tragic crossover from oil and gas law has played in causing Texas groundwater law to remain an outlier despite the apparent momentum towards change in relatively recent years, will be examined in Parts III and IV below.

III. THE TRAGIC 'CROSSOVER': TEXAS OIL AND GAS LAW AND TEXAS GROUNDWATER LAW

Parts I and II above have traced the common origins of Texas groundwater and oil and gas doctrine;¹¹⁴ the relatively more rapid development of oil and gas law, despite its initial reliance on groundwater doctrine;¹¹⁵ the increasing isolation of Texas groundwater law from groundwater law in other U.S. jurisdictions;¹¹⁶ the introduction and evolution of GCDs along with the rule of capture;¹¹⁷ and finally, Texas courts' longstanding aversion to deciding whether the rule of capture for groundwater should be combined with a rule of

112. *E.g.*, Hubert, *supra* note 111, at 68. For a useful summary of groundwater doctrines in other jurisdictions such as correlative rights and the "American Rule" of reasonable use, see, for example ADLER ET AL., *supra* note 6, at 178-79.

113. *See infra* notes 199-12 and accompanying text. Of course, many—including the author of this article—have argued that the rule of capture and a rule of ownership in place will prove difficult to reconcile with each other. *See supra* note 37 and accompanying text. As a result, it is possible that the Texas Supreme Court's decision in *Day*, which attempts to embrace both the rule of capture and strong ownership in place rights, either represents or will eventually lead to the functional abandonment of the rule of capture, at least as it has been traditionally understood, in favor of what may turn out to be an equally idiosyncratic rule recognizing particularly strong individual ownership in place rights. No such predictions are offered here, except as follows: for the reasons given in Parts III and IV below, Texas groundwater law is likely to remain tragically idiosyncratic so long as it remains subject to the influence of the crossover from oil and gas law discussed in this Article.

114. *See supra* notes 33-48 and accompanying text.

115. *See supra* notes 49-54, 70-74 and accompanying text.

116. *See supra* notes 55-60, 75-87 and accompanying text.

117. *See supra* notes 61-68 and accompanying text.

individual ownership in place of the resource, as with oil and gas.¹¹⁸ While Texas groundwater law remained quite static throughout much of the twentieth century, in the early twenty-first century many predicted that the judicial and legislative developments discussed at the end of Part II signaled a likely end to the rule of capture and the outlier nature of Texas groundwater law.¹¹⁹ Ultimately, however, these predictions, much like the similar predictions voiced in Justice Wilson's dissent in *Corpus Christi v. Pleasanton*,¹²⁰ have not been realized.

What explains the tragic stability of Texas groundwater law over so many decades in the face of substantial outside criticism and Texas groundwater institutions' own apparent internal momentum for change just a few years ago? Parts III and IV of this Article suggest that recurring appearances of the tragic crossover from oil and gas to groundwater law, first sketched in Part II, have played a substantial role in the surprising recent stability of many aspects of Texas groundwater law. More specifically, as will be shown below, in the last few years, due in large part to the tragic crossover from oil and gas law to groundwater, Texas courts and the Texas legislature have at once reaffirmed the state's commitment to the rule of capture for groundwater and recognized substantial individual ownership rights in groundwater in place, threatening to stall or reverse the practical impact of the developments discussed above.

There are some—particularly within Texas—who believe that it is good and useful to incorporate substantial components of oil and gas law into groundwater law.¹²¹ But it is far easier to think of reasons why it might be a mistake to rely too heavily on any of the apparent similarities between hydrocarbons and groundwater: in sum, the differences between the resources are at once far more numerous and far more significant. To begin, groundwater on the one hand and oil and

118. See *supra* notes 57–60, 79–86, 100–02 and accompanying text.

119. See *supra* notes 103–13 and accompanying text.

120. See *supra* note 59.

121. See, e.g., Marvin W. Jones & Andrew Little, *The Ownership of Groundwater in Texas: A Contrived Battle for State Control of Groundwater*, 61 BAYLOR L. REV. 578, 590 (2009) (“No one would now seriously argue that oil and gas does not belong to the landowner by virtue of his ownership of the soil itself. Nor can anyone now seriously contend that groundwater should be treated any differently.”); see also Drummond et al., *supra* note 10, at 59–61 (discussing the ways in which “oil and gas law provides much needed insight” to the law of groundwater); Edmond R. McCarthy, Jr., *Mixing Oil and Gas with Texas Water Law*, 44 TEX. TECH L. REV. 883 (2012); McCleskey, *supra* note 46; Nathan Weinert, Note, *Solutions for Interstate Groundwater Allocation and the Implications of Day*, 44 TEX. ENVTL. L.J. 105, 138–142 (2014) (discussing the potential, and potential pitfalls, of oil and gas law as a “useful framework” for groundwater law in Texas).

gas on the other are fundamentally very different resources: for example, unlike most uses of oil and gas, many uses of groundwater lack ready substitutes; additionally, oil and gas are nonrenewable resources, whereas groundwater, although it may be locally nonrenewable, is part of a larger renewable resource cycle.¹²²

Moreover, groundwater is often used on the surface land tract from which it is produced, whereas oil and gas, once extracted, are much more frequently consumed far from their subterranean reservoir.¹²³ Similarly, until the reservoir is accessed by human industry, subterranean oil and gas tends to be relatively less mobile, whereas groundwater is much more likely to be unconfined and to move naturally without human intervention.¹²⁴ In addition, water valuation may be particularly tricky, much more so than oil and gas, for multiple reasons beyond differences in the goods' substitutability. First of all, the existence of abundant or renewable supplies of groundwater may have unique cultural significance to a community in ways that typically are not present with respect to hydrocarbons.¹²⁵ More prosaically, when groundwater supplies are locally depleted in arid areas, the value of the surface land may decrease drastically, far more than when hydrocarbon reservoirs are depleted, because the surface land becomes unsuitable for almost any other human use.¹²⁶ The medium and long-term financial consequences of such over-exploitation are potentially devastating, both for individual landowners and for entire communities that depend on property tax revenues to fund necessary public services.¹²⁷

122. See, e.g., GLENNON, *supra* note 10, at 316 (“[T]here is no substitute [for water], regardless of price . . . [W]e can shift from coal to oil, or oats to wheat, or hydroelectric power to power generated by fossil fuels,” but we cannot shift away from water); see also Forrest Wilder, *The Texas Supreme Court Turns Water Into Oil in a Landmark Groundwater Decision*, TEX. OBSERVER, Feb. 25, 2012 (pointing out that it is easy and important to differentiate between water and oil and gas because “[o]il and gas are finite commodities non-essential to human life,” with “[t]heir value . . . determined in a global marketplace in terms of dollars per unit,” whereas “[w]ater . . . is absolutely essential to human life, in all places at all times”).

123. Conseco, *supra* note 52, at 518–19 (citing Walker, *supra* note 29, at 130, who pointed out that “ground water is usable on the land where it is found, whereas oil and gas are not”).

124. Walker, *supra* note 29, at 131 (noting that “there is [usually] no appreciable movement of . . . oil and gas across [surface] private property lines until pressure changes in the reservoir have been caused by development and producing operations,” whereas “ground water, as part of the hydrologic cycle, is generally in constant movement in a state of nature although the rate of movement may be very slow in some formations”).

125. PORTER, *supra* note 3, at 8–14 (discussing the cultural importance of water in San Antonio from the historic role of *acequias* to the marketing of Pearl Beer).

126. See CHARLES R. PORTER, *SHARING THE COMMON POOL: WATER RIGHTS IN THE EVERYDAY LIVES OF TEXANS* 112–16 (2014).

127. See *id.* at 113 (noting that for many Texas communities, “the troublesome consequence

In what follows, this Article will occasionally refer to many of the potential problems identified above that accompany analogies between groundwater and oil and gas, but it will also leave this well-tilled field to break new ground, analyzing the ways in which the incorporation of a highly stylized picture of oil and gas law into Texas groundwater law has acted as a force for tragic stability, even as Texas groundwater institutions appeared to be generating momentum for dynamic and positive change. More specifically, Section III.A immediately below situates the tragic crossover discussed in this Article in the context of the larger legal academic literature on tragic commons, focusing on recent accounts that attempt to explain other tragically stable commons institutions. Next, Section III.B discusses some of the tragic tendencies of Texas oil and gas law. Section III.B also introduces some of the ways in which the tragic tendencies from oil and gas law have negatively affected Texas groundwater law in recent years, focusing on the development of GCDs in Texas. Finally, Part IV discusses the tragic influence of the oil and gas model on the very recent development of Texas groundwater doctrine in the courts in *Edwards Aquifer Authority v. Day*¹²⁸ and subsequent related developments.

A. The Structure of Tragically Stable ‘Crossovers’

While the problems caused by Texas’s approach to groundwater are substantial and likely to substantially increase, they are relatively easy to spot and predict. As noted above, the commons literature has long identified the tragic consequences of groundwater regimes characterized by institutions that fail to limit individual rights to withdraw water, such as a reliance on the rule of capture.¹²⁹ Indeed, the tragic consequences of capture-based approaches to groundwater are so well known that such approaches have been used as case studies in other recent work focusing on the causes of persistently tragic commons institutions.¹³⁰ Similarly, using various examples from water law, other recent work has

of water scarcity . . . will be a decrease of land values leading to a weakened ad valorem tax base,” threatening “the funding of our most cherished public services, like education and health care”).

128. 369 S.W.3d 814 (Tex. 2012).

129. See, e.g., OSTRUM, *supra* note 12, at 136 (noting that “[a] pumping race is the first-order dilemma . . . where legal rights to withdraw water are not limited,” as everyone with a right to access such a supply “has a dominant strategy to pump as much water as is privately profitable and to ignore the long-term consequences on water levels and quality”).

130. See generally Thompson, *supra* note 9 (suggesting that persistently tragic commons are difficult to resolve because of loss-framing effects, scientific and social uncertainty, and discounting problems).

examined the "tragic stability" that is sometimes generated by certain commons institutions even as new values and knowledge regarding the relevant resource emerge.¹³¹ The tragic aspects of Texas groundwater law, therefore, fit easily into a familiar frame—indeed, they have been sketched before in recent work.¹³² These tendencies are problematic enough when they work within tragically stable commons institutions to internally reinforce stubbornly persistent commons regimes, as previous work has observed. However, in the example of Texas groundwater, these tendencies are particularly acute because of the tragic crossover from oil and gas law, as detailed below.

To date, much of the work on persistently tragic commons has focused on one of two types of analysis. Some recent work on persistent pathologies of the commons has focused on standard sorts of problems that tend to recur across different types of frequently tragic commons, such as groundwater or fisheries.¹³³ Other recent work has focused on the ways in which tragically stable institutions resist potentially felicitous changes developed by rival institutions and for different resources.¹³⁴ This Article draws on both strands of the literature, by focusing on the root causes of the persistently tragic nature of Texas groundwater law and analyzing this commons regime in light of both rival institutions and analogous commons contexts. In the remainder of this Section, I draw upon recent literature on persistently tragic and tragically stable commons institutions to show generally how such a tragic crossover can occur.

For example, one factor contributing to persistently tragic commons identified by previous research is the role that framing certain actions as gains or losses can play.¹³⁵ It is well established that whether an action or a series of changes is framed as either a gain or a loss tends to make a substantial difference in how that action or those changes are perceived—people resist changes that are framed as causing losses, and they are more receptive to changes that can be characterized as

131. See, e.g., Daniels, *supra* note 17, at 542–44, 554–59 (2007) (discussing a variety of factors contributing to tragic stability in the commons context and using the evolution of water law in western U.S. states as an example).

132. See *supra* note 109.

133. E.g., Thompson, *supra* note 9, at 247–54.

134. See generally Daniels, *supra* note 17 (noting that while much of the previous commons literature has focused on the importance of building and maintaining stable commons institutions, many common-pool resource systems are tragically administered *because* of existing and tragically stable institutions).

135. Thompson, *supra* note 9, at 256–58.

providing gains.¹³⁶ In the commons context, however, framing can be particularly problematic, because reforming persistently tragic commons institutions frequently involves convincing current resource users to accept a lower level of access or use than they previously enjoyed, at least in the short term.

This is difficult to do, even when the tragedy at hand is substantial and nearly self-evident. Resolving a persistently tragic commons almost inevitably involves requiring current resource users to accept a lower level of access or use than they previously enjoyed.¹³⁷ Thus, even rational resource users in a clearly tragic commons situation may resist certain types of solutions, despite self-evident collective gains, if those solutions are readily framed as imposing individual losses. Moreover, as previous work has noted, such framing problems in the commons context often become particularly acute when a jurisdiction recognizes individual property rights in common access to a particular resource, because this tends to strongly reinforce the difficult framing of many commons solutions.¹³⁸ Indeed, the prospect of losing such individual property rights can be doubly problematic because they can both reinforce the tragically stabilizing framing effect discussed immediately above and add to it a sense of entitlement grounded on intuitions about fairness.¹³⁹ Of course, this is exactly what has happened in Texas in the recent developments related to *Edwards Aquifer Authority v. Day*, discussed at greater length in Section III.C below.

Like framing effects, various sorts of uncertainty often contribute to persistently tragic commons by amplifying resource users' natural tendency toward self-serving biases. Previous work on the role of uncertainty in persistently tragic commons dilemmas has divided uncertainty into the two categories of scientific uncertainty and social

136. See, e.g., Christopher McCusker & Peter J. Carnevale, *Framing in Resource Dilemmas: Loss Aversion and the Moderating Effects of Sanctions*, 61 *ORG. BEHAV. & HUM. DECISION PROCESSES* 190 (1995).

137. This may occur even when there are both individual and collective gains from such a positive change—individual users may have to exchange some loss of access for greater long-term viability of the resource.

138. See, e.g., Thompson, *supra* note 9, at 257 (“Governments make the [framing] problem worse where they recognize property rights in common access to a resource, as many states have done with groundwater.”).

139. See *id.* (noting that in addition to exacerbating framing problems, recognized property rights in a commons “may focus resource users on their individual interests rather than on total societal well-being” by fostering a sense of entitlement that reinforces “the very dichotomy that underlies the tragedy of the commons”).

uncertainty.¹⁴⁰ Both forms of uncertainty can lead individual resource users into wishful thinking and self-serving interpretations of fairness.¹⁴¹ A good example of scientific uncertainty, and the wishful thinking that it can induce in persistently tragic commons dilemmas, can be seen in the persistence of the "secret, occult, and concealed" justification for the rule of capture of groundwater decades after hydrological and geological knowledge have substantially increased and therefore discredited that justification.¹⁴²

While the effects of scientific uncertainty on the tragic roots of Texas groundwater law are easy to see, the problematic effects of *social uncertainty*, which are heavily influenced by the crossover from oil and gas law to the groundwater context, are at least as relevant to the recent tragic stabilization of Texas groundwater law. By social uncertainty, I refer to uncertainty about the fair or right way to allocate burdens associated with saving a commons such as groundwater. As with the recognition of new property rights and the framing effects discussed above, social uncertainty contributes to persistently tragic commons regimes by encouraging self-serving biases and egocentric interpretations of fairness, which may exacerbate tragic commons dilemmas even when the tragedy, and potential solutions, seem relatively clear.¹⁴³ In the case of Texas groundwater, social uncertainty is exacerbated by the tragic crossover from oil and gas law, because reforms to existing groundwater institutions may appear to ask private groundwater rights holders to give up rights or access retained by analogous private oil and gas interests.

Beyond framing and uncertainty, the existing literature has identified problems associated with inter-temporal tradeoffs as another contributor to persistently tragic commons dilemmas. Here too the tragic crossover from Texas oil and gas law to groundwater substantially exacerbates the general problem identified by the existing literature. In general, in the case of persistently tragic commons, many of the problems related to inter-temporal tradeoffs relate to the reinforcement of resource users' natural optimism bias.¹⁴⁴ In the groundwater context, for example, prior research has recognized that resource users tend to minimize the cost of uncertain distant losses, in part based on a vague

140. *Id.* at 258–59.

141. *Id.*

142. *See supra* Part II.A and *infra* Part III.B.

143. *E.g.*, Thompson, *supra* note 9, at 258–61.

144. *Id.* at 264–65.

sense that any such uncertain distant losses related to aquifer depletion will be at least partially borne by the government.¹⁴⁵ In the context of Texas groundwater, the optimism bias and these problems of temporal framing for groundwater users are particularly acute because of the tragic crossover from oil and gas law to the groundwater context. Overcoming the optimism bias in tragic groundwater regimes is difficult enough, but when such problematic groundwater rights and institutions are repeatedly linked with the boundless optimism underlying Texas oil and gas law and practice, the task is exponentially more difficult.¹⁴⁶

B. Tragic Tendencies and Tragic Influence

The origins of the U.S. oil and gas industry lie outside Texas, but beginning in the early twentieth century, immense discoveries of oil and gas reservoirs within the state placed Texas oil and gas law at the center of the field.¹⁴⁷ For generations after the state's recognition of the rule of capture for oil and gas, Texas's leading role in both the oil and gas industry and as a leading jurisdiction for oil and gas law have been substantial sources of pride, both for the general populace and for the legislature and courts.¹⁴⁸ The prominence of the oil and gas

145. *Id.* at 265.

146. The general influence of Texas oil and gas institutions and doctrine are discussed immediately below in Part III.B. An excellent and succinct example of the optimism endemic to the Texas oil and gas industry, its governing institutions, and its wider cultural influence can be seen in the title of a recent law review article, taken from bumper sticker widespread in Texas in the mid-1980s: *Please Give Us One More Oil Boom – I Promise Not to Screw It Up This Time*. See Wells, *infra* note 162, at 321–22 n.15.

147. See, e.g., RON CHERNOW, TITAN 431 (1998) (noting that the Texas oil boom, which began in 1901 at Spindletop, “redrew the industry map,” and that “[b]y 1905 Texas accounted for more than a quarter of the crude oil being pumped in America”).

148. See, e.g., *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 27–28 (Tex. 2008) (Willett, J., concurring) (noting the “profound[] importan[ce]” of energy production and energy law to Texas and the state’s leading role nationally in these fields). The Supreme Court of Texas recognized the state’s leading role in oil and gas as early as 1935. See *Brown v. Humble Oil & Ref. Co.*, 83 S.W.2d 935, 938 (Tex. 1935) (“The oil industry in this state has become stupendous. . . . Texas is now the leading state in the production of oil and in oil refineries.”). Examples of the influence of the energy industry and oil and gas law in Texas beyond the courts are easy to find, from sports teams, to movies, to license plates, to political imagery. Perhaps the most succinct statement comes from the Texas State Historical Association: “For Texans, the 20th century did not begin on January 1, 1901, as it did for everyone else. It began nine days later, on January 10, when . . . the Lucas No. 1 well blew in at Spindletop near Beaumont.” Mary G. Ramos, *Oil and Gas: A Cultural History, in TEXAS ALMANAC* (2001), available at <http://www.texasalmanac.com/topics/business/oil-and-texas-cultural-history>. For a discussion of the historic place of Texas oil and gas law, and of the priority given to oil and gas in conflicts with other resources in Texas courts, see *supra* note 68.

industry and of oil and gas law is reflected in the two resources' treatment relative to other resources and their governing regulations and doctrine: even when courts and the Texas legislature recognize the importance of other resources, they tend to give substantive and rhetorical pride of place to oil and gas.¹⁴⁹ Moreover, the relative importance of Texas oil and gas law stretches beyond the boundaries of the state; notwithstanding Texans' general knack for self-promotion,¹⁵⁰ in many ways Texas oil and gas law is and has been a model for many other jurisdictions.

However, while Texas oil and gas law has often been a source of inspiration within the state and a model for other jurisdictions, it has not always been a *positive* model.¹⁵¹ Space does not permit anything like a full account of the history of Texas oil and gas law, nor does this Article attempt to provide a comprehensive analysis of the merits and faults of current oil and gas practice and doctrine. But in order to connect and fully appreciate the tragic crossover between oil and gas and groundwater law examined here with relevant recent commons literature, a few historically tragic aspects of the evolution of Texas's oil and gas law must be briefly examined. More specifically, the tragic potential of Texas oil and gas law for groundwater law can be seen in the state's historical approach to unitization and its past and present approach to flaring, both of which are discussed in greater detail below.

Unlike most states, Texas lacks a compulsory unitization statute, which allows a state agency to force all owners of oil and gas in a common field into a unit to avoid waste and increase total recovery.¹⁵² Unitization, however achieved, is almost universally recognized as the

149. For an example of how courts tend to recognize the preeminence of oil and gas law relative to the law governing other resources, see, for example, *Garza*, 268 S.W.3d at 27 (Willett, J., concurring) (noting that although water may be the “lifeblood of Texas,” the oil and gas industry and related law “are its muscle, which today fends off atrophy”).

150. See, e.g., Hendrik Hertzberg, *Yes, Texas Is Different*, THE NEW YORKER, Sept. 26, 2012, available at <http://www.newyorker.com/news/hendrik-hertzberg/yes-texas-is-different> (reviewing various instances of Texas exceptionalism at the opening of a museum of state history).

151. See, e.g., DANIEL YERGIN, *THE PRIZE: THE EPIC QUEST FOR OIL, MONEY & POWER*, 234–35 (3d ed. 2009) (detailing the “hot oil” smuggling, chaotic production, and pipeline sabotage in early 1930s Texas oilfields that threatened “the complete collapse of the oil industry as a whole”). Of course, like Texas oil and gas law, Texas groundwater law has often been a focus for negative attention as well. See *supra* note 10.

152. See, e.g., FRED BOSSELMAN ET AL., *ENERGY, ECONOMICS AND THE ENVIRONMENT* 271, 275–76 (3d ed. 2010) (noting that “[m]ost states have compulsory unitization statutes . . . which allow the conservation agency to force holdouts into a unit that is expected to increase the total recovery from the field” but that “Texas . . . does not”).

most efficient means to produce oil and gas.¹⁵³ The reasons for this are relatively straightforward: prior to consolidation through unitization, individual operators seeking to exploit a larger source of supply available to others may pursue strategies related to well spacing, drilling, retrieval, secondary recovery, and technological investment, which are individually rational but tend to be inefficient or even wasteful when viewed in terms of the efficient exploitation of the larger reservoir.¹⁵⁴

This means that Texas's lack of a unitization statute is not merely unusual: it is an outlier that is at least as striking and significant, in its own way, as Texas groundwater law's retention of the rule of capture.¹⁵⁵ And, for much of its history, Texas's lack of a compulsory unitization statute has been widely regarded as a negative outlier—again, much like Texas's continued adherence to the rule of capture in the groundwater context—although, unlike the continued criticism of Texas's continued adherence to the rule of capture in the context of groundwater, many believe that the negative consequences from Texas's idiosyncratic approach to unitization are much less significant today than in the past.¹⁵⁶ However, while Texas's unusual approach to unitization may have ultimately stabilized without a compulsory statute,¹⁵⁷ prior to this relatively recent stabilization, the state's rejection of compulsory unitization is widely acknowledged to have caused incredible waste—so much so that it has also become a classic tragic commons account.¹⁵⁸

153. *E.g.*, JACQUELINE LANG WEAVER, UNITIZATION OF OIL AND GAS FIELDS IN TEXAS: A STUDY OF LEGISLATIVE, ADMINISTRATIVE, AND JUDICIAL POLICIES 2 (1986).

154. *E.g.*, PATRICK H. MARTIN & BRUCE M. KRAMER, OIL AND GAS: CASES AND MATERIALS 877 (2011).

155. See Jacqueline Lang Weaver, *The Tragedy of the Commons from Spindletop to Enron*, 24 J. LAND RESOURCES & ENVTL. L. 187, 187 (2004) (“When I first started teaching . . . I was stunned to learn that Texas . . . was the only [state] without a compulsory unitization law,” which is “universally recognized as necessary to assure the maximum efficient recovery of oil and gas while also allocating fair shares . . .”).

156. BOSSELMAN ET AL., *supra* note 152, at 276 (noting that historically, “[i]ndependent operators generally received far more than their fair share of a reservoir’s bounty under the peculiar (and very inefficient) prorationing and drilling permit system used in Texas for decades,” while also noting that many “of the largest fields in Texas have been unitized because the Railroad Commission arm-twisted the operators”).

157. WEAVER, *supra* note 153, at 4 (“While the good is second to the best, it is nonetheless a monumental achievement by a state administrative agency and by the Texas judiciary to have secured as much unitization as now exists without legislative support . . .”).

158. See, *e.g.*, Weaver, *supra* note 155, at 187, 190 (noting that “waste in [Texas’s] oil fields in the first decades of the twentieth century was staggering” and that “Texas, the state without any compulsory unitization statute, heads the list of marginal, idle, and orphan [oil and gas] wells”); BOSSELMAN ET AL., *supra* note 152, at 253–55, 270–71, 275–77.

Beyond unitization, scholars have also identified Texas's past and recent treatment of "flaring" as another standard example of a tragic commons regime within the state's oil and gas law. Subsurface petroleum reservoirs are typically comprised of a mixture of liquid and gaseous hydrocarbons, and even when a reservoir tends to produce mainly liquid crude oil, the extracted oil is accompanied by some measure of natural gas called "casinghead gas," which was originally dissolved in the pressurized oil underground.¹⁵⁹ When the oil is extracted through drilling and capture at a well, thereby lowering the pressure of the oil and gas solution, the gas comes out of solution, much like carbon dioxide is released when a can of Coca-Cola is opened.¹⁶⁰ And when casinghead gas is burned off at the wellhead—in other words, when it is treated as an unwanted byproduct of the captured oil, despite its potential value—the practice is known as "flaring."¹⁶¹ Of course, the decision to flare by an individual well-driller may be individually rational, especially when local markets for oil are substantially more profitable for individual producers than local markets for natural gas. At the same time, however, flaring has been identified as yet another classically tragic approach to a commonly held resource: the practice is environmentally damaging, it literally burns up as byproduct a potentially valuable resource, and it can degrade reservoir pressure.¹⁶²

Despite long-standing and widespread academic criticism of the practice, at this point, the reader will probably not be surprised to learn that the practice of flaring has a long and wide history, both in the U.S. generally and in Texas more specifically.¹⁶³ In Texas during the first half of the twentieth century, long-standing prohibitions against wasting natural gas did not apply to active oil wells, and repeated attempts in the state legislature to strengthen the relevant regulatory body's authority repeatedly failed.¹⁶⁴ While the collective waste and potential value of the flared gas were recognized even at the time, individual operators focused on oil extraction flared immense amounts of casinghead gas, on

159. *E.g.*, BOSSELMAN ET AL., *supra* note 152, at 240–41.

160. *Id.*

161. *Id.* at 259.

162. *See, e.g.*, Bret Wells, *Please Give Us One More Oil Boom – I Promise Not To Screw It Up This Time: The Broken Promise of Casinghead Gas Flaring in the Eagle Ford Shale*, 9 TEX. J. OIL, GAS & ENERGY L. 319, 328 (2013) ("Flaring represents a classic tragedy of the commons.").

163. BOSSELMAN ET AL., *supra* note 152, at 259 (noting the widespread frequency of flaring nationwide until the 1950s); Wells, *supra* note 162, at 325 ("Flaring has a long and storied history in Texas.").

164. *E.g.*, Wells, *supra* note 162, at 326.

a scale that is virtually impossible to estimate or measure today beyond anecdote and analogy.¹⁶⁵ This tragic collective misuse of a common-pool resource occurred despite then-contemporary analysis about problematic aspects of widespread flaring, the potential value of the wasted gas, and the role of Texas's idiosyncratic approach to oil and gas law in fostering such problems.¹⁶⁶

Over time, much as with Texas's approach to unitization, the widespread and patently wasteful flaring of the early twentieth century was curbed due to incremental reform by the state regulatory agency, the resolution of decades of litigation by individual well owners related to piecemeal regulatory reforms, and the development of substantial infrastructure during and after World War II.¹⁶⁷ But the patchwork of regulatory and informal fixes applied in the mid-twentieth century to address widespread flaring have, in recent history, proved insufficient. In roughly the last half-decade, the exploitation of unconventional shale formations in west Texas and elsewhere has led to another round of widespread flaring, based on a pattern strikingly similar to that in the first half of the twentieth century: individual drillers, choosing to maximize returns from producing crude oil as quickly as possible, have chosen to flare and have not been deterred from doing so despite the depletion of this common-pool resource.¹⁶⁸ As in the past, awareness of the costs of this recurring tragedy of the commons are not confined to legal academics: the popular press and industry representatives have

165. *Id.*; see also *Exxon Corp. v. Middleton*, 571 S.W.2d 349, 352 (Tex. Civ. App. 14th 1978), rev'd in part, 613 S.W.2d 240 (Tex. 1981) (noting that "at one time, one could drive . . . at night through the East Texas Oil Field without turning on the lights of one's vehicle," and that "[f]rom the air, West Texas was said to look as if campfires of all of the armies in the history of the world were burning below").

166. For a good example of such then-contemporary analysis, see Robert E. Hardwicke, *Evolution of Casinghead Gas Law*, 8 TEX. L. REV. 1 (1929).

167. *E.g.*, DAVID F. PRINDLE, *PETROLEUM POLITICS AND THE TEXAS RAILROAD COMMISSION* 66–70 (1981); see also *Middleton*, 571 S.W.2d at 351–54.

168. *E.g.*, Wells, *supra* note 162, at 328–29. For a useful recent examination of the individual incentives behind this problem, as well as the individual and collective rewards at work in the Eagle Ford, see, for example, Melissa Block, *Drilling Frenzy Fuels Sudden Growth in Small Texas Town*, NPR SPECIAL SERIES (April 10, 2014), <http://www.npr.org/2014/04/10/295332292/drilling-frenzy-fuels-sudden-growth-in-small-texas-town>. For further discussion of hydraulic fracturing, the technique that has led to much of the growth in the Eagle Ford and elsewhere, see *infra* notes 254–64 and accompanying text. The recent phenomenon of widespread flaring related to the exploitation of oil and gas in unconventional reservoirs is not limited to Texas alone. See, e.g., Brad Quick & Morgan Brennan, *Inside North Dakota's Latest Fracking Problem*, CNBC.COM (Aug. 22, 2014), available at <http://www.cnbc.com/id/101934384> ("In the Bakken, flaring has become synonymous with drilling.").

noted the inefficiency presented by contemporary flaring in unconventional shale formations as well as the collective environmental costs brought on by the practice.¹⁶⁹ Yet the flaring continues—it is a familiar problem with many critics but few solutions in sight.¹⁷⁰

This section has sought to establish two points: first, Texas oil and gas law has proven to be a remarkably influential model, especially within the state; and second, despite its positive connotations within the state, Texas oil and gas law is subject to certain deep-seated, recurrent, and well-recognized tragic tendencies, all of which resonate particularly strongly with the tendencies towards problematic framing effects, uncertainty, and optimism biases in tragically stable commons. Part IV will explore how additional recent examples of the crossover have tragically stabilized the development of Texas groundwater law in the legislature and the courts. But before turning to these most recent examples of the crossover in Part IV, this section will conclude with one final example of the tragic crossover that predates *Day* and its related legislation—one which shows the deep roots of the tragic crossover beyond any recent legislation or judicial decision, and the problems that the crossover can cause in public debates about groundwater in Texas.

As discussed above, the earliest GCDs in Texas were created in the Panhandle and over the Ogallala Aquifer, during the record Texas drought of the 1950s.¹⁷¹ Compared to more recently established GCDs elsewhere in the state, these Panhandle GCDs are relatively well-established, well-funded, and well-known to their communities.¹⁷²

169. See, e.g., John Tedesco & Jennifer Hiller, *Up in Flames: Flares in Eagle Ford Shale Wasting Natural Gas*, SAN ANTONIO EXPRESS-NEWS, August 25, 2014 (quoting industry officials, regulators, and activists decrying widespread flaring as a “disastrous” waste and “burning up money” with substantial negative environmental consequences).

170. See, e.g., Anna Driver & Bruce Nichols, *Shale Oil Boom Sends Waste Gas Burn-Off Soaring*, REUTERS, July 25, 2011 (quoting energy analysts and environmental critics describing recent flaring practices in Texas’s Eagle Ford field as “just burning money” and the inevitable byproduct of “drilling so many wells down there”).

Of course, not every critic of contemporary flaring is so resigned to the inevitability of the problem or the apparent difficulty of obtaining a solution. For a thorough and detailed set of potential solutions to flaring in the Eagle Ford, see Wells, *supra* note 162, at 325–55.

171. See *supra* notes 63–65 and accompanying text.

172. Moreover, the management goals of the Panhandle GCDs tend to sanction withdrawals of the underlying aquifer far beyond its rate of recharge—in other words, the GCD’s plan is to permit withdrawals that will ‘mine’ the Ogallala over time. For example, the High Plains Water District seeks to preserve only 50 percent of the remaining capacity of the Ogallala in its area within 50 years. See, e.g., Nicole C. Brambila, *High Plains Water District Rules To Require Metering*, LUBBOCK AVALANCHE-JOURNAL, May 22, 2014, available at <http://lubbockonline.com/local-news/2014-05-22/high-plains-water-district-rules-require-metering-no-new-meters>.

Beginning in the late 1990s, even as the Texas legislature was expanding the rights and responsibilities of GCDs, a group of investors began buying up substantial land in the Panhandle overlying the Ogallala.¹⁷³ The intent behind this investment was entirely transparent: the idea was to pump up massive amounts of groundwater from the Ogallala and then to ship this water, via pipelines, to distant and thirsty metropolitan areas.¹⁷⁴ The justification was equally transparent: in the eyes of the relevant investors, the groundwater at issue was essentially identical to oil and ought to be treated in the same way that oil is treated, full stop. As the lead investor was repeatedly quoted: “Heck, isn’t it [groundwater] like oil? You have to come back to who owns the water. The groundwater is owned by the landowner. That’s it.”¹⁷⁵ Similar views were echoed in the popular media and the legal academic literature by commentators who had defended the historic dependence of Texas groundwater law on the characterization of oil and gas law described in this Article.¹⁷⁶

In fact, for all the reasons suggested in this Article and elsewhere, regardless of whether the Panhandle water pipeline was a good idea or a bad one, the groundwater resource at issue was in fact *not* just like oil, and there are a host of good reasons to treat the two resources differently.¹⁷⁷ But by associating their efforts so closely with the stylized characterization of oil and gas law examined in this Article, advocates for the Panhandle water pipeline were able to tap into all of the framing, uncertainty, and optimism biases associated with the tragic crossover and discussed in Section III.A above.¹⁷⁸ Ultimately, the Panhandle water

173. *E.g.*, Susan Berfield, *supra* note 15; *see also* Nicholas E. Arrott, Comment, *Caution! T. Boone Pickens Plans to Permanently Alter Texas’s Landscape Above and Below Ground, from the Panhandle to Metropolis*, 9 TEX. TECH. ADMIN. L.J. 265 (2008) (collecting sources and providing a thorough summary of the conflict through 2008).

174. *See, e.g.*, Berfield, *supra* note 15 (“If water is the new oil, T. Boone Pickens is a modern-day [Rockefeller,] who hopes to sell [water from the Panhandle] to Dallas, transporting it over 250 miles.”).

175. *See, e.g., id.* (quoting Pickens).

176. *See supra* note 121 and accompanying text.

177. *See supra* notes 125–27 and accompanying text.

178. Although this article is the first to label and analyze the tragic crossover from oil and gas law to groundwater law, and although this article is highly critical of arguments that make use of this crossover, most of the arguments advanced by Panhandle pipeline supporters were entirely straightforward, if perhaps misguided or short-sighted. More generally, whether advanced by private interests, the state legislature, or Texas courts, attempts to use reasoning that depends on the tragic crossover may be both confused and confusing, and therefore tragically promote both scientific and social uncertainty, but such attempts are usually not under-handed in any way—indeed, as the Panhandle pipeline story shows, the efficacy of arguments based on such reasoning depend in part upon their popular appeal and apparent transparency. The following quote and anecdote provides an example

pipeline project was dropped, following multi-million dollar purchases of land and water rights coordinated by Panhandle GCDs,¹⁷⁹ the intervention by the federal Department of Justice, which was concerned about potential Voting Rights Act violations related to the creation of GCDs comprised entirely of employees of the proposed pipeline’s investors,¹⁸⁰ and the investors’ decision that wind, rather than water, might be the “new oil” after all.¹⁸¹

While the Panhandle water pipeline may have been abandoned, it was not abandoned because of any real failure of the arguments its advocates advanced about how Panhandle groundwater ought to be treated and valued. This debate took place soon after *Sipriano* and the legislation of the 1990s that provided new authority and responsibilities to GCDs: a time when many observers predicted that Texas groundwater institutions would soon decisively reject the rule of capture and replace it with a new approach more congenial to local and regional regulation. Nevertheless, advocates of the Panhandle pipeline project were broadly successful in lower-court litigation related to the project,¹⁸² and outside of the legal academic literature their arguments about the equivalence that ought to be drawn between the law of

of the transparent association of such arguments with the tropes and biases associated with the tragic crossover identified in this Article: “Well[,] if you’re T. Boone Pickens and you’re 70-something years old, and you say in an open forum that the [local GCD’s] plan for water for 50 years doesn’t interest [you] because [you’re] not going to be around – then to me that means he wants to sell as much water as he possibly can today.” Colleen Schreiber, *High Court Rules that Landowner Rights Also Include Groundwater*, LIVESTOCK WEEKLY / HILL COUNTRY ALLIANCE (Mar. 8, 2012), available at <http://www.hillcountryalliance.org/HCA/News031912> (quoting Greg Ellis, former general manager of the EAA and former executive director of the Texas Alliance of Groundwater Districts).

179. See, e.g., Brian Brown, *The Last Drop: America’s Breadbasket Faces Dire Water Crisis*, NBC NEWS (July 6, 2014), available at <http://www.nbcnews.com/news/us-news/last-drop-americas-breadbasket-faces-dire-water-crisis-n146836> (noting that instead of building the pipeline and transporting the water to Dallas, “[i]n 2011, [Pickens] sold his water rights for \$103 million to 11 water-impooverished cities nearby, including Lubbock and Amarillo”).

180. See, e.g., Dellapenna, *supra* note 10, at 345–46 (summarizing the Department of Justice’s opposition to Pickens’s plan “to preclude a water district from restricting his right to export groundwater by creating a groundwater district in which the only two persons eligible to vote were his employees, as were the persons elected to the district board”).

181. See *id.* (noting that the water pipeline investors announced the suspension of the project in 2008 “ostensibly because of the greater potential profitability of a wind farm project on the land”); see also Dan Reed, *Texas Oilman T. Boone Pickens Wants To Supplant Oil with Wind*, USA TODAY, July 11, 2008, available at http://usatoday30.usatoday.com/money/industries/energy/2008-07-08-t-boone-pickens-plan-wind-energy_N.htm.

182. *S. Plains Lamesa R.R. v. High Plains Underground Water Conservation Dist. No. 1*, 52 S.W.3d 770 (Tex. App. 2001). For a useful short summary of *South Plains Lamesa*, its relationship to the Panhandle pipeline dispute as well as to broader trends in Texas groundwater law, see, for example, Dellapenna, *supra* note 10, at 343–45.

groundwater and the law of oil and gas was never seriously challenged. The recent developments discussed in Section IV below will likely prove more significant for the development of Texas water law in the short term, but in a real sense the example sketched immediately above is nearly as important, because it illustrates the resonance that the tragic crossover discussed in this Article can have for Texas groundwater institutions and the broader public beyond debates that reach the state legislature or the state's highest court.

IV. RECENT EXAMPLES OF THE TRAGIC CROSSOVER: *EDWARDS AQUIFER AUTHORITY V. DAY* AND BEYOND

The most visible and significant recent examples of the tragic crossover from Texas oil and gas law to Texas groundwater law occurred in the course of the *Edwards Aquifer Authority v. Day* case and its related legislation,¹⁸³ which together resolved the issue of individual rights in groundwater in place long left open by Texas courts and the Texas legislature. As noted above, around the turn of the twenty-first century, many academic observers, government officials, and advocates for greater groundwater regulation believed that Texas courts and the Texas legislature might definitively reject the rule of capture and allow greater local regulatory control of private groundwater withdrawals.¹⁸⁴ Advocates of greater regulation and critics of Texas water law were also buoyed by the fact that Texas courts had begun to note the increasing idiosyncrasy of their groundwater doctrine.¹⁸⁵ At the same time, however, the increasing number of GCDs and their increasing activity led to conflict with property-rights advocates and local landowners who believed that their rights to capture unlimited amounts of groundwater was being infringed.

This conflict led to litigation, much of which revolved around the potential exposure of Chapter 36 GCDs and the Edwards Aquifer Authority (“EAA”) to takings litigation based on alleged individual surface landowners’ property rights in uncaptured subterranean

183. 369 S.W.3d 814 (Tex. 2012); Act of Sept. 1, 2011, Bill Analysis, 82d Leg., R.S., ch. 1207, § 1, sec. 36.002, 2011 Tex. Gen. Laws 3224 (often referred to as S.B. 332).

184. See *supra* notes 108–12 and accompanying text.

185. See, e.g., Torres, *supra* note 10, at 147 (2012) (noting that *Day* “was decided on a foundation of groundwater management that has haltingly sought to more closely align multiple water-rights regimes in Texas”).

groundwater.¹⁸⁶ In a very short period of time, *Day* and its related legislation have shifted the momentum for change that had been building in previous decades. Moreover, the tragic crossover from oil and gas to groundwater law has played a central role in that story: such arguments were repeatedly invoked prior to the *Day* opinion and its related legislation, and they were adopted by *Day* and some of its pending successor cases, with tragic consequences that will continue to be felt in the future.

In the 1990s and early 2000s, advocates of greater groundwater regulation argued that the central issue in these takings suits could be resolved quickly and easily: in the context of groundwater, the rule of capture had never implied or entailed individual ownership rights in the underground resource, so the groundwater regulations at issue could not have taken any protected property interest. Other advocates of increased groundwater regulation, less vehement about the inherent absence of property rights under the rule of capture, nonetheless suggested that the substantial recent legislation expanding GCD’s powers and duties weighed against takings liability for most GCD actions because it reduced any serious investment-backed expectations that private surface landowners might have in uncaptured subterranean groundwater.¹⁸⁷ On the other side of the debate, some opponents of expanded GCD regulation argued that many takings claims against GCDs acting pursuant to the new legislation ought to proceed, often drawing upon Texas oil and gas doctrine to advance their conclusion that Texas courts ought to resolve admittedly ambiguous precedent in favor of individual ownership of groundwater in place.¹⁸⁸ Similarly, other advocates of strong individual ownership rights in groundwater in place also argued that the issue should and already had been resolved by oil and gas precedent—in other words, that the issue had been settled years

186. McCarthy, *supra* note 121, at 899 (“The battle line [that was drawn was] based upon an effort to insulate groundwater districts [from takings litigation when] groundwater *in situ* is taken for a public purpose.”). To date, *Day* is the most significant example of this litigation.

187. *E.g.*, Bill Hankins, *Part 5: ‘Rule of Capture’: The Changing Viewpoint*, THE PARIS NEWS (TEX.), Dec. 27, 2007, available at <http://texaslivingwaters.org/wp-content/uploads/2013/04/tlw-news-12-23-07.pdf>. This line of argument, which obviously draws upon the investment-backed expectation standard for regulatory takings set forth in *Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978), eventually proved to be central to the Supreme Court of Texas’s reasoning in *Edwards Aquifer Authority v. Day*. See *Day*, 369 S.W.3d at 839–44.

188. See, *e.g.*, Drummond et al., *supra* note 10, at 15, 60 (arguing that “substantially altering the rule of capture . . . presents considerable takings implications for the state” and claiming that “the last area where oil and gas law provides much needed insight [to groundwater law] concerns the difference in terminology between the rule of capture and the doctrine of absolute ownership”).

before, thanks to the kinds of arguments identified in this Article as the tragic crossover from oil and gas to groundwater law.¹⁸⁹

Among the many takings lawsuits related to these issues and filed in the early 2000s, the decisive blows were struck in *Edwards Aquifer Authority v. Day*, an appeal briefed and argued before the Texas Supreme Court in 2010.¹⁹⁰ The plaintiffs in *Day* filed suit after their permit application for 700 acre-feet of water, submitted to the EAA, was granted for only fourteen acre-feet of water.¹⁹¹ The plaintiffs argued that the denial of their permit request amounted to an unconstitutional taking: in other words, the plaintiffs argued that groundwater in place was the property of the landowner and constitutionally protected. Accordingly, the plaintiffs claimed that such a permit denial amounted to a taking of their property, which could not proceed without payment under the federal and state takings clauses. On the other hand, the state, on behalf of the aquifer authority, took the position that the groundwater in place belonged to the state prior to capture by the surface landowner, and therefore, that there were no individual ownership rights to be taken by the EAA's permit restrictions.

In other words, the question so long left ambiguous by the Texas Supreme Court regarding ownership of groundwater in place was squarely presented by the *Day* parties. Accordingly, the first issue that the court had to resolve in *Day* was whether it had ever resolved the issue of potential ownership rights in groundwater in place before.¹⁹² In its opinion, the court held that despite claims to the contrary, the issue had never been squarely presented or decided before: nothing in

189. *E.g.*, Jones & Little, *supra* note 121, at 588–91.

190. 369 S.W.3d 814.

191. *Id.* The use of terms of art like an “acre-foot” of water—the amount of water needed to cover an acre of land with water one foot deep, or 325,851 gallons of water—often complicates discussions about water use and water regulation, because they involve amounts developed in agricultural settings that are hard for most people to imagine in familiar terms. ROBERT GLENNON, WATER FOLLIES: GROUNDWATER PUMPING AND THE FATE OF AMERICA'S FRESH WATERS 32 (2002). The federal Bureau of Reclamation estimates that one acre-foot of water is enough to supply the household water needs of a family of four for one year. Dan DuBray, *Facts & Information*, U.S. BUREAU OF RECLAMATION (August 19, 2014), available at <http://www.usbr.gov/main/about/fact.html>. Some local governments, in Texas and elsewhere, estimate that a family will use less than an acre-foot per year. *See, e.g.*, *Facts About Water*, CITY OF PROSPER, TEXAS, available at <http://www.prospertx.gov/funfacts.aspx>. (estimating that “[o]ne-half acre foot is enough to meet the needs of a typical family for a year”).

192. *See supra* notes 77–87, 186–89 and accompanying text (noting the confusion and ambiguity about this issue caused by the tragic crossover examined here, and collecting arguments from both sides about whether this issue had already been resolved prior to *Day*).

East itself,¹⁹³ nor in any subsequent groundwater opinions,¹⁹⁴ had resolved whether individual surface land owners owned groundwater in place. Similarly, the *Day* court held that nothing in the rule of capture, which it reaffirmed with gusto, either required or was antithetical to individual ownership of groundwater in place.¹⁹⁵

Following briefing and oral arguments, *Day* sat pending before the Texas Supreme Court for over two years, during which time the arguments raised before the court continued to play out in public, in the press, and in legislative hearings. While *Day* was pending, in 2011 the Texas legislature considered two competing and essentially opposing bills, both of which purported to clarify the issue of ownership of groundwater in place left ambiguous in Texas for over a century after *East*. In reality, these competing bills essentially advanced the opposing positions on ownership of groundwater in place advanced by the litigants in *Day* and in the other similar takings suits percolating through Texas courts at the time.

Senate Bill 667 was essentially drafted to preclude individual ownership of groundwater in place, at least insofar as such rights might restrict GCDs' ability to set reasonable limits.¹⁹⁶ As originally drafted, S.B. 667 would have specified that landowners only had the "right to seek and attempt to capture groundwater that underlies the surface of the land," affirming the rule of capture as a rule of non-liability alone while ruling out any strong individual ownership rights in groundwater in place.¹⁹⁷ However, S.B. 667 was not enacted. In its place, the Texas legislature enacted S.B. 332, expressly designed to rebut the argument, advanced by supporters of expansive GCD regulations, that individual landowners lacked cognizable property rights in groundwater in place. Indeed, S.B. 332's identification with the litigating position of plaintiffs like those in *Day* was incorporated

193. See *Day*, 369 S.W.3d at 826 ("The effect of our decision [in *East*] was to give ownership of the water pumped from its well *at the surface*. No issue of groundwater *in place* was presented in *East*.").

194. See *id.* (noting that in several "cases since *East*, we have considered the rule of capture as applied to groundwater. In none of them did we determine whether the water was owned in place."). Among the cases referred to by the *Day* court were *City of Corpus Christi v. City of Pleasanton*, *Friendswood*, *Sipriano*, and *Barshop* cases, discussed *supra* at notes 57–60, 79–86, 103–09 and accompanying text.

195. *Id.* at 823.

196. S.B. 667, 82d Leg., Reg. Sess. (Tex. 2011).

197. *Id.* Senate Bill 667 was introduced by Texas Senator Robert Duncan, who represented a district in the Texas Panhandle with decades of experience with both GCDs and aquifer depletion.

in the Bill Analysis itself.¹⁹⁸ As enacted, S.B. 332 amended the Texas Water Code to recognize, expressly and for the first time, that “a landowner owns the groundwater below the surface of the landowner’s land as real property.”¹⁹⁹

Following the revised Texas Water Code after the enactment of S.B. 332, the Texas Supreme Court in *Day* finally resolved the issue of ownership in place so long avoided by Texas groundwater institutions. First, *Day* reiterated the rule of capture, relying on the chain of cases stretching back to *East* and beyond, including the usual quotation to the formulaic language regarding groundwater’s “secret, occult, and concealed nature” provided in *Frazier v. Brown*.²⁰⁰ Next, *Day* recognized, for the first time in Texas, that surface landowners have property rights in groundwater in place, albeit rights that cannot really be exercised against other individuals with access to the same groundwater supply, given Texas’s continued adherence to the rule of capture.²⁰¹ As will be shown at much greater length below, this move was repeatedly and expressly justified by what this Article refers to as the tragic crossover from oil and gas law.²⁰² Finally, based on the foregoing, *Day* held that because groundwater in place is constitutionally protected property of the landowner—at least protected against government regulation—a governmental entity could not constitutionally “take” a landowner’s groundwater through the imposition of regulations on uncaptured groundwater in place without providing compensation.²⁰³

198. In 1904 the Texas Supreme Court in [*East*] established the rule of capture in Texas . . . rul[ing] that a landowner has an ownership interest in the groundwater beneath [his] property. . . . Recently, landowners’ interest in groundwater below the surface has come into question in the courts. The argument being made by some GCDs is that the landowner does not have an interest in the water below the surface until they [sic] capture it. Act of Sept. 1, 2011, Bill Analysis, 82d Leg., R.S., ch. 1207, § 1, sec. 36.002, 2011 Tex. Gen. Laws 3224 (codified as amended at TEX. WATER CODE ANN. § 36.002 (West 2011)).

199. TEX. WATER CODE ANN. § 36.002(a) (West 2011). Section 36.002(b)(2) makes clear that the ownership rights recognized by the statute “do not affect the existence of common law defenses or other defenses to liability under the rule of capture.”

200. *Day*, 369 S.W.3d at 824–26.

201. *See id.* at 828–29 (holding that the absence of “common law liability for a landowner’s unlimited pumping” does not necessarily resolve “the ownership of groundwater in place” because the relationship between the rule of capture and individual ownership rights in the law of groundwater is and should be the “same” as in the law of oil and gas).

202. *Id.*; *see also* notes 197–211 and accompanying text.

203. *Id.* at 822 (“[W]e turn to whether Day has a constitutionally protected interest in the groundwater beneath his property and conclude that he does.”); *see also* McCarthy, *supra* note 121, at 899 (“On February 24, 2012, the Texas Supreme Court ended the battle.”).

Day attracted national attention²⁰⁴—although given the enactment and the timing of S.B. 332, the Texas Supreme Court’s published 2012 opinion in *Day* was perhaps less surprising than it might have been a few years earlier, when the tide in Texas courts seemed to be running out on the rule of capture and away from individual ownership rights in groundwater in place. Stepping back even a bit further, the core result in *Day*—a recognition of some ownership rights in subterranean groundwater in place—is not, in and of itself, necessarily tragic nor unusual in American groundwater law. As a recent comprehensive examination of American groundwater takings law has noted, many groundwater takings cases in other U.S. jurisdictions that do not follow the rule of capture have concluded, as did *Day*, that individual rights to use groundwater deserve constitutional protection and can, at least in theory, be enforced by takings suits.²⁰⁵ And even some advocates of increased regulation of groundwater believe that water shortages in Texas and across the United States require not just greater regulation but also greater reliance on market transactions, and more clearly defined individual property rights, in order to alleviate current and future shortages.²⁰⁶

What makes *Day* unusual, and particularly tragic, is the way it reaches this result, by attempting to combine exceptionally strong individual ownership rights with the rule of capture through the use of the tragic crossover from oil and gas to water law discussed in this

204. *E.g.*, Owen, *supra* note 14, at 258–59, 276–77 (noting that *Day* brought national attention to groundwater takings, and referring to it as probably the nation’s most prominent groundwater/takings case). Groundwater takings claims have proven to be tricky for courts to resolve in many jurisdictions, in part because of the diversity of groundwater law across jurisdictions, but more importantly because the nature, scope, and elements of individual rights in water have traditionally been hard to define. *E.g.*, Craig, *supra* note 10, at 118–19 (“With regard to [this] issue—if water rights are property rights, what are their defining aspects?—property rights in water are legitimately viewed as both normatively and pragmatically different from property rights in land.”); *see also* Carol M. Rose, *Property as the Keystone Right?*, 71 NOTRE DAME L. REV. 329, 351 (1996) (“If water were our chief symbol for property, we might think of property rights . . . in a quite different way[:]. . . more fluid and less fenced-in; we might think of property as entailing less of the awesome Blackstonian power of exclusion and more of the qualities of flexibility, reasonableness and moderation . . .”).

205. Owen, *supra* note 14, at 280–82.

206. *Compare* GLENNON, *supra* note 10, at 335 (thanking free market environmentalists for critical comments about his arguments in favor of a regulated market) *with, e.g.*, PETER W. CULP, ROBERT GLENNON, & GARY LIBECAP, SHOPPING FOR WATER: HOW THE MARKET CAN MITIGATE WATER SHORTAGES IN THE AMERICAN WEST 14–31 (The Hamilton Project / Stanford Woods Institute for the Environment 2014) (suggesting, among other reforms, measures to improve the clarity of individual and collective property rights in water, to minimize transaction costs for water transfers, and to create and improve market institutions to facilitate water trading).

article. The point will be considered at greater length below, in order to show the role that the tragic crossover from oil and gas law played in the court's relevant reasoning. But before plunging into how the court arrived at this combination, one can quickly see why this is a tragic combination: thanks to *Day's* retention of the rule of capture, the individual property rights in groundwater in place recognized by the court are exceptionally strong with respect to regulatory interference, but they are of no use against other individuals who wish to exploit the same groundwater supply. In other words, the property rights recognized by *Day* are good only against government regulation of the resource, though here they are very strong indeed. Thus, these strong but circumscribed property rights can do nothing to encourage or improve market-based solutions to water problems; indeed, they will be actively corrosive to market-based solutions.²⁰⁷ Accordingly, as will be seen below, *Day* is likely to create substantial problems for even the most modest local and regional regulation of groundwater, perpetuating the tragic stability of Texas groundwater institutions and encouraging unsustainable levels of groundwater exploitation.

As with many of the previous examples of the tragic crossover examined above, *Day's* attempt to link the law of groundwater with a stylized version of the law of oil and gas was straightforward and attracted swift attention from academics, the popular press, and the practicing bar²⁰⁸:

[W]hile the rule of capture does not entail ownership of groundwater in place, neither does it preclude such ownership. Although we have never discussed this issue with respect to groundwater, we have done so with respect to oil and gas, to which the rule of capture also applies We held long ago that oil and gas are owned in place[,] . . . [and] we see no basis in [the]

207. See, e.g., CULP ET AL., *supra* note 206, at 24 (citing *Day* and criticizing Texas's groundwater law as an example of an open access regime, and pointing out that "[o]pen access to groundwater thus inhibits the development of real markets for water and distorts the prices we pay").

208. See, e.g., Wilder, *supra* note 122; Jennifer Cornejo, *Texas Appellate Court Finds a Taking of Groundwater, Solidifies Formidable Future for Groundwater Districts Across Drought Stricken State*, VINSON & ELKINS WATER BLOG (Sept. 17, 2013), <http://water.vclaw.com/TexasAppellateCourtFindsTakingGroundwaterSolidifiesFormidableFutureGroundwaterDistrictsAcrossDroughtStrickenState.aspx> (describing *Day* as "a landmark decision which held that landowners have an absolute vested property right in place, just like oil and gas, and a constitutionally compensable interest in it"); William W. Wade, *Texas Groundwater, Regulatory Takings and the Day Decision*, MARZULLA LAW (September 19, 2013), available at <http://www.marzulla.com/texas-groundwater-regulatory-takings-and-the-day-decision/> (noting that *Day* "equated groundwater ownership to oil and gas").

differences [between groundwater and oil and gas] to conclude that the common law allows ownership of oil and gas in place but not groundwater.²⁰⁹

More specifically, by holding that individual surface landowners have property interests in uncaptured groundwater in place akin to oil and gas rights—interests that are potentially compensable under constitutional takings protections—the Texas Supreme Court in *Day* recognized a property right without any real private rights to possess or exclude, and without taking into meaningful account any of the features of groundwater that distinguish this resource from oil and gas.²¹⁰

In other words, *Day* used the tragic crossover to articulate a new property right in groundwater, which, thanks to the retention of the rule of capture, can only be exercised where the state or a local entity attempts to apply a management or conservation system.²¹¹ It is a right, therefore, which cannot be affected by drought or by a neighbor’s efforts to capture the same resource, even though the value of the right will be affected by such phenomena. And because the individual rights in groundwater recognized by the Texas legislature and courts in and after *Day* do not affect the rights of individual groundwater appropriators relative to one another under the non-liability aspects of the rule of capture, these rights seem likely to exacerbate the trend toward over-exploitation long identified in similar groundwater control systems.²¹²

Despite its recent vintage, *Day* has already attracted considerable criticism.²¹³ And, indeed, in light of the considerations advanced in this Article, *Day* deserves much of the criticism it has received. In one fell swoop, *Day* rejects over a century of dramatically improved knowledge about the state of groundwater in favor of reiterating the formulaic language of *East* and its obsolete justifications.²¹⁴ While

209. *Day*, 369 S.W.3d at 828, 831–32.

210. Torres, *supra* note 10, at 163.

211. *See id.* at 162.

212. *See* OSTROM, *supra* note 12, at 108–09 (describing classic problematic groundwater scenarios, and noting that in them “[n]o one pumper bears the full cost of full personal actions,” and thus, “[e]ach pumper is consequently led toward overexploitation”).

213. *See, e.g.*, Arnold, *supra* note 10 (criticizing *Day* for retaining the rule of capture, for undercutting the ability of GCDs to regulate and conserve the shared resource, and for incentivizing landowners to “race to extract more water faster than one’s neighbors who also overlie the same groundwater source”).

214. *See, e.g.*, Dellapenna, *supra* note 10, at 351 (noting that the *Day* majority did not “consider the possible relevance of the fact that both the absolute dominion rule and the rule of

doing so, *Day* reiterates the rule of capture, widely recognized to have tragic consequences when applied to groundwater, both generally and within Texas, despite the apparent inconsistency between the rule of capture and the strong individual ownership rights in groundwater in place that *Day* also recognizes.²¹⁵ In other words, *Day* and the legislation that virtually compelled its outcome at once “sow[ed] confusion about the capacity of the state to regulate natural resources, while ignoring the science that ought to drive policy decisions.”²¹⁶

It may be tempting for some readers, especially in light of the substantial and nearly immediate criticism discussed immediately above, to read *Day* and its related legislation as simply additional examples of the Texas legislature’s and Texas courts’ longstanding preference for individual property rights and concomitant suspicion of government regulation that interferes with such rights.²¹⁷ Others might be tempted to reduce *Day* and the unusually timed legislation that virtually compelled its outcome entirely to a public choice story,²¹⁸ in which the confusion and short-sightedness that repeatedly characterize Texas’s approach to groundwater are attributed to a state legislature and its highest courts that aim to serve moneyed land developers and energy interests rather than the broader public welfare.

While both of these readings may contain some elements of truth, neither captures the full story: *Day* and the legislation that compelled it are far more interesting, and their consequences far more tragic, than either a purely reductive public choice account or a straightforward narrative based on little more than Texans’ alleged anti-government

capture were [historically] based on a pervasive ignorance regarding groundwater rather than an affirmative decision regarding property rights”).

215. See, e.g., *id.* at 352–53 (noting the “basic inconsistency in holding that a person has a property right in underground water that cannot be taken without compensation but that the person can, by exercising that right, take his neighbor’s property without compensation”). Recognition of the inconsistency between the rule of capture and the strong individual ownership rights is not confined to academic articles—other state supreme courts have rejected the inconsistency affirmed by *Day* and enabled by the tragic crossover discussed in this Article. See, e.g., *State v. Michels Pipeline Construction, Inc.*, 217 N.W.2d 339, 347 (Wis. 1974) (“There is a basic inconsistency in saying that a person has a property right in underground water that cannot be taken without compensation, for when he exercises that right to the detriment of his neighbor, he is actually taking his neighbor’s property without compensation.”).

216. Torres, *supra* note 10, at 144.

217. See *supra* note 14 and accompanying text.

218. For a brief introduction to various contributions to public choice theory, see, for example, William N. Eskridge, Jr., *Politics Without Romance: Implications of Public Choice Theory for Statutory Interpretation*, 74 VA. L. REV. 275 (1988).

inclinations might suggest. First of all, an account of *Day* that is based on little more than Texas’s historical suspicion of government regulation is insufficiently detailed. As noted above, other courts in other jurisdictions have recognized individual property rights in groundwater in place,²¹⁹ and other jurisdictions are also marked by a general mistrust of government regulation.²²⁰ What makes *Day* unique is the way it also attempts to retain the rule of capture, and all of the antique justifications associated with it, by returning to the tragic crossover from oil and gas law.²²¹ Similarly, interpreting *Day* and its related legislation simply as a story in which well-organized and moneyed interests secured recognition of their own private rights at the expense of the public weal misses part of the tragic detail of the opinion and its relationship to past groundwater decisions.²²²

Ultimately, *Day* and its related legislation are most problematic not simply for what they do—recognizing individual property rights in groundwater in place—but for how they do it. Far worse than the actual result in the case is the way that *Day* combines very strong individual property rights, enforceable only against the government, with a reaffirmation of the rule of capture. This combination is justified by the tragic crossover examined in this Article, which has historically tended to feed the problematic framing effects, layered uncertainty, and

219. Owen, *supra* note 14, at 280–82.

220. *E.g.*, THOMAS FRANK, WHAT’S THE MATTER WITH KANSAS? HOW CONSERVATIVES WON THE HEART OF AMERICA (2004). I take no position on whether anything is, in fact, the matter with Kansas—Texas provides this article with quite enough to do. My point here is only that Texas groundwater law is a far greater outlier than Texas’s alleged anti-government ethos, and therefore any attempt to explain the former primarily by reference to the latter seems likely to be insufficient.

221. *See supra* note 212 and accompanying text.

222. Some recent commentators on *Day* have suggested that at least some of the Justices on the Texas Supreme Court who wrote or joined the *Day* opinion may have embraced *Day*’s use of the tragic crossover between oil and gas law and groundwater law out of a desire to *enhance* the possibility for additional regulation of groundwater. *See, e.g.*, Amy Hardberger, *The World’s Worst Game of Telephone: Attempting to Understand the Conversation Between Texas’s Legislature and Courts on Groundwater*, 43 TEX. ENVTL. L.J. 257, 299–302 (2013). Such a careful reading of the possible *intent* behind *Day*, at least as such intent might be ascribed to some members of the *Day* court, is not merely possible but perhaps indeed plausible, especially when one considers that *Day* was written, albeit for a unanimous court, by the author of the concurrence in *Sipriano*. *See, e.g.*, *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75, 82 (Tex. 1999) (Hecht, J., concurring) (criticizing the continued reliance on the “secret [and] occult” reasoning of *East*, and pointing out that “[t]he extensive regulation of oil and gas production proves that effective regulation” of subsurface substances “is not only possible but necessary and effective”). Such a reading is also entirely consistent with the analysis advanced in this Article above: whatever the *intention* (or, more likely, intentions) behind *Day*, for the reasons given elsewhere in this article, the *effects* of its reliance on the crossover from oil and gas law to groundwater law are likely to be tragic.

optimism biases that have rendered Texas groundwater law so persistently static. These aspects of *Day* and its related legislation are particularly problematic because they seem likely to produce even worse results in subsequent cases—and although *Day* was very recently decided, this has already begun to happen.²²³

To date, *Day's* tragic impact can be most readily examined in *Edwards Aquifer Authority v. Bragg*,²²⁴ another long-running case involving a takings suit against the EAA.²²⁵ The landowner plaintiffs in *Bragg*, longtime owners of commercial pecan orchards in central Texas, filed a takings suit against the EAA when it granted them a permit for slightly more than 120 acre-feet of water, substantially less than their alleged historical use and permit request.²²⁶ Relying heavily upon *Day*, in *Bragg* a Texas appellate court held that the EAA's permit limitations worked a taking on the landowner plaintiffs, and that the measure of takings damages should be based on the value of the landowner's property with *unlimited* access to aquifer groundwater.²²⁷ In reaching this result, the court in *Bragg* noted the decades of experience and ownership that informed the plaintiff landowners' investment-backed expectations²²⁸—however, the court did not reach just a few decades farther back, to the cataclysmic drought of the 1950s, and the impact that such a drought might have wrought on plaintiffs' water supplies or farming operation, nor did it reach to the centuries-old pattern of recurring drought that marks Texas history and Texas water law.²²⁹ The

223. By worse results, I mean results that continue to perpetuate the tragic stasis of Texas groundwater law, and that tend to do even more than *Day* and its related legislation to discourage GCDs and other similar local and regional bodies from imposing modest regulations designed to avoid well-known common-pool resource problems.

224. 421 S.W.3d 118 (Tex. Ct. App. 2013).

225. See *supra* notes 187–89 and accompanying text. The landowner plaintiffs in *Bragg* filed suit in 2006. 421 S.W.3d at 126. Even before this case, the Braggs were no strangers to litigation over groundwater rights. See, e.g., *Bragg v. Edwards Aquifer Authority*, 71 S.W.3d 729 (Tex. 2002). The previous litigation was one of the many pre-*Day* cases in which the Texas Supreme Court declined to address the issue of individual ownership rights in groundwater before capture, concluding that the EAA did not need to prepare takings impact assessments before adopting well-permitting rules. *Id.* at 738.

226. 421 S.W.3d at 126.

227. *Id.* at 153 (holding that the EAA's actions resulted in a taking, but that the appropriate basis for compensation should be the difference between the value of the land “as a commercial-grade pecan orchard with *unlimited* access to Edwards Aquifer water” and the value of the land as a commercial-grade pecan orchard subject to the permitted limits after 2005) (emphasis added).

228. *Id.* at 140–43.

229. For a useful graphical depiction of the recurring pattern of drought that characterizes Texas history, see PORTER, *supra* note 126, at 13.

matter is presently before the Texas Supreme Court, with briefing extended into early 2015²³⁰—which means that by the time briefing is completed in *Bragg*, the Texas legislature will be back in session.²³¹

Although the Texas Supreme Court has yet to opine in *Bragg*, the case has already attracted substantial attention, largely because both critics and defenders of recent developments in Texas groundwater law see the intermediate court opinion as an important, and perhaps inevitable, extension of the reasoning employed in *Day*.²³² As with *Day*, reactions to *Bragg* have been sharply polarized, with debate erupting both within the state and across the country about *Bragg*'s extension of *Day*'s reasoning almost immediately after the intermediate court's opinion was issued.²³³ While there is broad disagreement about *Bragg*'s merits, defenders of *Bragg* tend to agree with the opinion's critics that the plaintiffs' water needs were not static, but rather likely to increase over time.²³⁴ Similarly, there is broad agreement between critics and defenders of *Bragg* about its likely effects. Many commentators on both sides of the dispute think that *Bragg*, as an extension of *Day*, will force GCDs to look for new justifications for their regulatory decisions, even as water supplies come under increasing pressure from drought, climate

230. *Edwards Aquifer Authority v. Bragg*, Case Number 13-1023, Order of Oct. 22, 2014, Supreme Court of Texas (setting briefing schedule through January 2015).

231. The Texas Legislature, which meets every other year, will be back in session on January 13, 2015. LEGISLATIVE REFERENCE LIBRARY OF TEXAS, Texas Legislative Sessions and Years, available at <http://www.lrl.state.tx.us/scsessions/sessionYears.cfm>. The timing of both briefing and the legislative session may prove to be relevant, as they open the possibility for legislative intervention similar to S.B. 332, discussed *supra* at notes 195–202 and accompanying text, which virtually compelled the result, if not the reasoning, in *Day*.

232. See, e.g., Tiffany Dowell, *Did You Know?*, TXH2O MAGAZINE, Summer 2014, Texas Water Resources Institute (noting that the intermediate court opinion in *Bragg* is “essentially a logical extension of the *Day* opinion”).

233. See, e.g., Forrest Wilder, *Come and Take It: Court Ruling Dares Regulators To Limit Pumping*, TEX. OBSERVER, Sept. 3, 2013, available at <http://www.texasobserver.org/texas-court-upholds-takings-claim-landmark-water-case/> (quoting critics and defenders of *Bragg* and *Day* within Texas and across the country).

234. See, e.g., Jennifer F. Thompson, *Texas Court Finds Agency Can't Deny Pecan Farmers' Water Rights Without Compensation*, LIBERTY BLOG (Pacific Legal Foundation Aug. 29, 2013) available at <http://blog.pacificlegal.org/2013/texas-court-finds-agency-cant-deny-pecan-farmers-water-rights-without-compensation/> (defending *Bragg* and its recognition of property rights based on potentially unlimited supply and the rule of capture while noting that “[t]he Braggs knew that they would need to use more and more water from the Aquifer as their pecan trees matured”). For *Bragg*'s many critics, the fact that the plaintiffs' water needs were not static, but rather increasing in the face of diminishing supply and historically frequent drought suggests that finding a taking based on potentially unlimited supply is far too generous to such a takings plaintiff.

change, and population growth.²³⁵ Moreover, and again despite the disagreement about *Bragg's* overall merits, critics and defenders of the result and its reasoning tend to agree about the close relationship *Bragg* bears to *Day*—though defenders of *Bragg* tend to claim that, like *Day*, *Bragg* is a correct return to traditional common-law doctrines governing subterranean resources.²³⁶

Bragg has been roundly criticized, often by academics within and beyond Texas,²³⁷ and this criticism will be discussed below. But it is important first to look at the role that the crossover from oil and gas law plays in *Bragg's* extension of *Day's* tragic reasoning. The central issue in *Bragg*, and the key to its extension of *Day*, lies in its approach to the main issue left unresolved by *Day*: namely, how to value the property interest in uncaptured groundwater in place.²³⁸ As discussed above, defining the property rights in a subterranean resource that has allegedly been taken by government regulation, and then figuring out how to measure the value of those rights, are tricky issues,²³⁹ but their difficulty is compounded by *Day's* reliance on the tragic crossover from oil and gas law. It is difficult, to say the least, to figure out how to value individual ownership rights in groundwater in place against the government when those rights have no value against other individuals under the rule of capture: not least because such ownership rights lack

235. See, e.g., Wilder, *supra* note 233 (quoting Russell Johnson, author of several texts on Texas groundwater cited here for the first time at note 9, *supra*, who argues that after *Bragg*, GCDs are “just going to have to adjust to the fact that they can’t say no, they can’t just say this resource is already stressed”).

236. See, e.g., Thompson, *supra* note 234 (defending *Bragg* as “an excellent result” for the continuing protection of “common [law] water rights in Texas”).

237. See Wilder, *supra* note 233 (quoting Professor Amy Hardberger, who suggested that *Bragg* is both “so important and potentially scary” because of its potential as a benchmark for future takings suits over groundwater in Texas); Robin Kundis Craig, *Attempting To Deal Rationally with Limited Water Supplies Is a Regulatory “Taking” of Private Water Rights*, ENVTL. L. PROF BLOG (Aug. 30, 2013), available at http://lawprofessors.typepad.com/environmental_law/2013/08/; Dave Owen, *Bragg, Takings, and the Economics of Limited Resources*, ENVTL. L. PROF BLOG (Aug. 29, 2013), available at http://lawprofessors.typepad.com/environmental_law/2013/08/bragg-takings-and-the-economics-of-limited-resources.html.

238. See, e.g., Neena Satija, *Lawyers, Policy Experts Weigh In on Groundwater Case*, TEX. TRIB. (Sept. 26, 2013), available at <http://www.texastribunc.org/2013/09/26/water-lawyers-and-experts-weigh-groundwater-case/> (quoting experts on both sides of the *Day-Bragg* debate who agree that the valuation question is the main issue left open by *Day* and addressed, for good, ill, or a mix of both, by *Bragg*).

239. As discussed above in notes 49–54, 71–74, 154–57 and accompanying text, it took oil and gas institutions in Texas and other jurisdictions decades in the early twentieth century to resolve this issue, while doing so in a much more straightforward way, making greater use of improvements in scientific knowledge and greater focus on the unique characteristics of oil and gas.

any market. But of course this is exactly the mess that *Day* has created by using antique precedent and out-of-context principles drawn from Texas oil and gas law to juxtapose ownership in place rights and the rule of capture. In other words, identifying and analyzing the tragic crossover helps to show the nature and the significance of the mistakes made in *Day* and *Bragg* and sheds new light on how those mistakes were made.

Faced with a difficult situation, the *Bragg* court compounded many of the problems presented to it by *Day* and the legislature. To resolve the issues presented by the litigants and left open by *Day*, the *Bragg* opinion doubles down on the crossover examined in this Article, expanding *Day*'s reliance on oil and gas principles and exacerbating that opinion's tragic tendencies. More specifically, to resolve the central issue posed by the litigants and left open after *Day*, *Bragg* begins by expressly adopting oil and gas law principles, advanced by the plaintiffs,²⁴⁰ in order to focus on the value of the subsurface estate that consists of “‘property’ or a ‘commodity’ that comprise[s] the business of the plaintiffs.”²⁴¹ Having begun by emphasizing the doctrinal similarities between hydrocarbons and groundwater under Texas law, the opinion then pivots to emphasize an apparent difference between the two: unlike a landowner who seeks to extract subterranean oil or gas for its value as a commodity, the groundwater at issue is not the source of the plaintiffs' business itself, but rather a means of only instrumental value to the plaintiffs' business.²⁴² Thus, the *Bragg* court held that groundwater in such a takings case should be valued in terms of its benefit to a separate business—specifically, commercially viable pecan orchards, which the court treated as the highest and best use of the properties, unfettered by any natural limits on groundwater supply or legal limits under the rule of capture.²⁴³

At the initial level of analysis, one must see that the reasoning explored above provides takings plaintiffs with an incredible bonanza, which greatly, if almost inevitably, extends the tragic crossover reiterated

240. See 421 S.W.3d 118, 150 (Tex. Ct. App. 2013) (“The Braggs . . . rely on oil and gas cases in which the courts have held that the proper measure of damages should be based on the property actually taken . . . and we agree . . .”).

241. *Id.* at 151.

242. *Id.*

243. See *id.* at 150–51 (concluding that “just compensation should be determined by reference to the highest and best use of the properties, which here are as commercial pecan orchards” supplied by “the unlimited use of water” before the EAA's restrictions).

in *Day*. *Bragg* gives such plaintiffs every benefit that can be squeezed from treating groundwater like oil and gas, exacerbating the biases surrounding the tragic crossover discussed in this Article. *Bragg*'s reasoning begins from the premise that groundwater ought to be valued in such a case in fundamentally the same way that oil and gas is valued: for its instrumental value to the individual whose land it is found underneath. Despite the many differences between the valuation of hydrocarbons and water,²⁴⁴ *Bragg* suggests that both ought to be valued in the same way.

Bragg then writes away the problems inherent in valuing groundwater—problems already compounded by *Day*'s juxtaposition of ownership in place and the rule of capture—by suggesting that such groundwater ought to be valued the same way that oil and gas is valued, for its value to the takings plaintiffs' business. Here, however, the opinion pivots to note that it is not the value of the water itself that should be considered, but rather its instrumental value to the plaintiffs' business, unconstrained by any natural limitations or any legal limits given the rule of capture, because the instant value of the water itself, as valued only by such a takings plaintiff, might be too slight for full constitutional compensation. In short, it is hard to imagine a more generous potential regime for takings plaintiffs, nor one more challenging for regulators seeking to regulate a common pool resource subject to tragic tendencies: it focuses only on the most optimistic, short-sighted, and loss-framing valuation of the water to the takings plaintiffs, and only the takings plaintiffs, without any regard for the potential value that regulation of such a common-pool resource might provide, either to the plaintiffs or the community at large.²⁴⁵

Even *Bragg*'s defenders have noted that the portions of the opinion's analysis explored above are somewhat confusing and possibly confused, in part because they fail to take into account valuation changes in takings plaintiffs' economic activities that are not caused by changes in legal

244. See *supra* notes 125–27 and accompanying text.

245. More specifically, the reasoning derived from the tragic crossover in *Bragg* exacerbates optimism biases by essentially assuming the success of the plaintiffs' business, based on a relatively constrained temporal window, in order to determine the appropriate compensation owed the plaintiffs, thereby ignoring the possibility that resource constraints (such as, for example, a drought and/or aquifer depletion) might reduce or erase the value of plaintiffs' enterprise. Similarly, it exacerbates framing problems by construing the impact of the regulation on the plaintiff landowners as purely loss-forcing, in terms of the negative value of the authority's decision on the plaintiffs' business, thereby ignoring the potential value-enhancing effects on plaintiffs' land of preserving or at least extending the supply of accessible groundwater.

access to groundwater.²⁴⁶ *Bragg*'s critics around the country are almost as numerous as and perhaps even more pointed than *Day*'s critics, despite its very recent vintage and pending appeal before the Texas Supreme Court. More specifically, some of *Bragg*'s critics have called the property rights it seeks to secure “illusory” and “unsustainable” because the opinion ignores a number of key facts, including the natural limits on groundwater, the limits imposed by the rule of capture, and the water needs of neighboring cities and ecosystems.²⁴⁷

Furthermore, other critics have pointed out the incredible guarantee given to the plaintiff landowners by the opinion—a guarantee of rights against the government and value far greater than they could have achieved under the “unfettered competition” created by the rule of capture alone.²⁴⁸ Still other critics have suggested that by encouraging aquifer depletion and restricting local and regional groundwater regulation that might ameliorate groundwater mining, *Bragg* will lead to widespread groundwater mining that will ultimately destroy the value of land and private enterprise that depend on the water in the first place.²⁴⁹ Moreover, some critics have suggested that *Bragg*'s systematic errors demonstrate the inability of Texas courts to manage or resolve groundwater issues,²⁵⁰ although given the record of the past century, it is not clear that the Texas legislature should be much preferred to the courts in groundwater matters.

Finally, and perhaps most importantly, the most frequent criticism leveled against *Bragg* by its critics is that the potential windfalls it provides to takings plaintiffs look like potentially crippling losses to local and regional water regulators.²⁵¹ In other words, *Bragg* is likely to

246. See, e.g., Satija, *supra* note 238 (quoting Mark McPherson and Russell Johnson, who both support *Day* and *Bragg* but suggest that the portions of *Bragg* analyzed above may cause confusion and uncertainty, including but not limited to cases where the value of the property changes substantially for reasons unrelated to access to groundwater).

247. Arnold, *supra* note 10, at 1046.

248. Owen, *supra* note 237.

249. See Craig, *supra* note 237 (arguing that *Bragg*, in its “attempt[] to elevate historical water rights over new ecological realities” will lead to over pumping that may “eventually destroy the value of all private property claims to water (and maybe the value of all private property, period) in many parts of Texas”).

250. Amy Hardberger, *Texas Courts Start To Fill in the Blanks on Groundwater Law*, TEX. LIVING WATERS PROJECT, Sept. 5, 2013, available at <http://texaslivingwaters.org/texas-courts-start-fill-blanks-groundwater-law/>.

251. See, e.g., Ross Crow, *Municipal Regulation of Groundwater and Takings*, 44 TEX. ENVTL. L.J. 1, 31 (2014) (“[T]he *Bragg* holding could have a chilling effect on any governmental entity in Texas . . . including municipalities, contemplating new groundwater regulations or maintaining

prolong and deepen the tragic stability of Texas groundwater law by chilling the ability of GCDs and other regulatory bodies to control overexploitation of diminishing groundwater supplies.²⁵² To illustrate this problem, and to show how the cognitive biases associated above with the tragic crossover are likely to exacerbate this chilling effect, it may be useful to consider potential takings plaintiffs slightly different from the farmers and ranchers in *Day* and *Bragg*.²⁵³

In recent years, a technique for extracting oil and gas known as hydraulic fracturing (often referred to as “fracking” or “fracing”) has become increasingly prominent across the U.S. generally and Texas particularly, where it has taken on particular importance in high-profile formations like the Eagle Ford Shale in South Texas and the Barnett Shale around Dallas and Fort Worth.²⁵⁴ During the fracking process, which can use millions of gallons of water,²⁵⁵ fluids are injected into

existing ones.”); *see also* Hardberger, *supra* note 250 (arguing that after *Day* and *Bragg*, both the EAA and many Texas GCDs, the latter of which have a wide range of funding, “have cause for concern” as they “attempt to do their job under the shadow of possible expensive litigation,” and that as a result “[g]roundwater and Texans will suffer”); Neena Satija, *Texas Groundwater Districts Face Bevy of Challenges*, TEX. TRIB. (Aug. 29, 2013), available at <http://www.texastribunc.org/2013/08/29/groundwater-districts-beset-increasing-water-/> (noting that *Bragg* “has stirred concerns that businesses . . . will use it to threaten legal action if a GCD tries to limit the amount of water they can pump,” and quoting practitioners who suggest that after *Bragg* GCDs “are facing an impossible task”).

252. *See* Crow, *supra* note 251, at 31–34. GCDs are afforded some measure of protection against such suits by provisions of the Texas Water Code that date back to the period in the late 1990s and early 2000s in which the tide seemed to be running out on the rule of capture and in favor of increased GCD regulation. In particular, Texas Water Code § 36.066(g) provides that a GCD may recover its attorney’s fees if it prevails in a suit so long as it did not voluntarily intervene. For this reason, *Day* and *Bragg* are unlikely to create a flood of takings litigants, but nevertheless the prospect of even a few takings plaintiffs with claims inflated, for all the reasons discussed in *Parts* III and IV, *supra*, is potentially quite chilling.

253. Moving beyond the *Day* and *Bragg* plaintiffs is in no way intended to slight the importance, economic or otherwise, of their farming and ranching activities, or the potential impact that their takings claims may have on GCDs. Nevertheless, an additional example may be useful to illustrate both the stakes involved in other situations, and the potentially dramatic chilling effect that *Day* and *Bragg* may cause, even beyond the high-six-figure and low-seven-figure dollar values contemplated in *Bragg*.

254. McCarthy, *supra* note 121, at 929–33; *see generally* Hannah J. Wiseman, *Risk and Responses in Fracturing Policy*, 84 U. COLO. L. REV. 729 (2012).

255. Compared to other uses of water, the amount of groundwater used in hydraulic fracturing is relatively modest, but in parts of the state with high dependence on groundwater and substantial fracking activity, the amount of water used may be very substantial and even unsustainable. *See, e.g.*, Kate Galbraith, *As Fracking Increases, So Do Fears About Water Supply*, N.Y. TIMES (Mar. 7, 2013), http://www.nytimes.com/2013/03/08/us/as-fracking-in-texas-increases-so-do-water-supply-fears.html?_r=0 (noting that “fracking consumes less than 1 percent of the total water used

geologic formations under high pressure, in order in order to fracture the formation and enhance oil and gas production.²⁵⁶ The rapid recent growth of the process has fueled incredible state, regional, national, and international economic activity, as well as intense state, regional, national, and international political controversy about its environmental and social side effects.²⁵⁷

At present, whether Texas GCDs can regulate groundwater withdrawals related to hydraulic fracturing is the subject of some debate.²⁵⁸ The Texas Water Code provides that GCDs must provide exemptions for drilling and production permits for water wells that are “used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas” so long as the oil and gas permit holder is responsible for drilling and operating the water well.²⁵⁹ Opinions divide as to whether ongoing operations associated with hydraulic fracturing qualify under the relevant statutory language,²⁶⁰ and the

statewide,” but in “drilling hotbeds,” the proportion of groundwater may be far greater and approach unsustainable levels).

256. *E.g.*, *Hydraulic Fracturing*, R.R. COMM’N OF TEX., available at <http://www.rrc.state.tx.us/about-us/resource-center/faqs/oil-gas-faqs/faq-hydraulic-fracturing/>. Water makes up most of the hydraulic fracturing fluid. *Id.* A number of additional additives may be included in the fracturing fluid or injected into the well, including friction-reducing fluids, materials used to “prop” open the fractures known as “proppant,” biocides to prevent micro-organism growth and reduce biological contamination in the formation, as well as compounds introduced to prevent corrosion or reduce drilling mud buildup. *Id.*

257. *E.g.*, Wiseman, *supra* note 254, at 732–36, 738–41. In recent months, state, national, and international attention regarding hydraulic fracturing controversies have been focused on Denton, Texas, its recently enacted municipal ban on fracking, and the litigation that has already ensued and almost certainly will continue to be filed regarding this ban. *See, e.g.*, Suzanne Goldberg, *Texas Oil Town Makes History as Residents Say No to Fracking*, THE GUARDIAN, Nov. 5, 2014, <http://www.theguardian.com/environment/2014/nov/05/birthplace-fracking-boom-votes-ban-denton-texas>. Denton’s ban is far from the first such ban to be filed in the U.S., nor is it the only one recently enacted, but the town’s location in Texas has given it particular prominence in the broader debate about hydraulic fracturing and local controls.

258. *See, e.g.*, Galbraith, *supra* note 255, (noting the ambiguity in Texas law as to whether GCDs may regulate groundwater wells for hydraulic fracturing through permitting).

259. TEX. WATER CODE ANN. § 36.117(b)(2) (West 2014). To qualify for this exemption, the water well must also be located on the same lease or field associated with the oil and gas-drilling rig. *Id.*

260. Essentially, the ambiguity and the debate centers on whether: 1) ongoing hydraulic fracturing counts as “drilling or exploration operations” under the statutory language, which was drafted before the recent fracking boom; or 2) the exemption ceases upon departure of the rigs from the relevant lease. Carl R. Galant, *In Drought, a Storm Brews: DFCs and the Oil and Gas Exemption*, 44 TEX. TECH L. REV. 817, 829 (2012). The relevant statutory language of the exemption provides that the rig to which water is being supplied must be “actively engaged in drilling or exploration operations” and that it must be “located on the same lease or field” as the water well. TEX. WATER

matter has not been definitively resolved by either Texas courts or the Texas legislature,²⁶¹ which considered legislation on the issue during the last legislative session.²⁶² Despite this statutory ambiguity, several Texas GCDs have imposed or are considering imposing permitting controls on groundwater wells used in hydraulic fracturing operations,²⁶³ and their interpretation of the relevant provision of the Texas Water Code may eventually be sanctioned by the state legislature.²⁶⁴

But even if the Texas legislature were to sanction the possibility of modest GCD regulation of water withdrawals and injections associated with fracking, such regulatory activity might well be chilled by the effects of *Day* and *Bragg*. Consider what the bonanza of *Day* and *Bragg* would do to the compensation claim of a potential takings plaintiff suing a groundwater regulator for controls that affect the exploitation and recovery of oil and gas rather than a cattle, peanuts, oats, or pecan operation. Such a damages claim, fueled by the optimism, loss-forcing, and temporal biases associated with the tragic crossover reiterated in *Day* and *Bragg*, could easily be propelled into the stratosphere, chilling

CODE ANN. § 36.117(b)(2) (West 2014). Put another way, then, this exemption is bounded by both a temporal (“actively engaged”) and geographic (“same lease or field”) restrictions. Galant, *supra*, at 829. For a good general summary of the debates in the Texas legislature about the exemption and the merits of extending it to fracking, see, for example, Kate Galbraith, *Texas Senators Discuss Fracking Groundwater Rules*, TEX. TRIB., Apr. 2, 2013, <http://www.texastribune.org/2013/04/02/texas-senators-discuss-fracking-groundwater-rules/>.

261. McCarthy, *supra* note 121, at 929. Some have suggested that Texas courts, if and when they do rule on the matter, are likely to construe the exemption of § 36.117(b)(2) expansively, and in favor of hydraulic fracturing operations. *See id.* (noting that the conflicting interpretations have not been tested in court, but suggesting that a pro-exemption and anti-regulation outcome would be likely if tested in court, “[g]iven Texas’s demands for energy in a state where oil and gas is king,” as well as the tendency of Texas courts to “broadly interpret[] Texas law, including the law related to the use of groundwater, favorably toward the oil and gas industry”).

262. For a brief discussion of Senate Bill 873, one of the unsuccessful bills in the last legislative session, which would have confirmed GCDs’ ability to require permits for groundwater wells used in hydraulic fracturing, see Galbraith, *supra* note 255, and Galbraith, *supra* note 260.

263. According to a recent survey by the Texas Alliance of Groundwater Districts, over a third of its 83 members require permits for groundwater wells used in hydraulic fracturing, and just under half either require or are considering requiring such permits. Among those GCDs that reported significant fracking activity, almost two-thirds either require such permits or are considering requiring such permits. E-mail from Carolyn Cadena, Program Director, Texas Alliance of Groundwater Districts, to Zachary Bray (Sept. 8, 2014) (e-mail and survey results on file with author).

264. *See* Stacey A. Steinbach, *Legislative Wrap-Up, 83rd Legislative Session*, TEX. ALLIANCE OF GROUNDWATER DISTRICTS, available at <http://www.texasgroundwater.org/pdfs/130730TAGDLegSumWeb.pdf> (last visited Aug. 24, 2015) (arguing in favor of GCDs’ ability to regulate groundwater wells under the existing language of § 36.117(b)(2), summarizing S.B. 873, and recommending that S.B. 873 be used as a starting point for future debates).

the ability of modestly funded local and regional groundwater regulators to impose even minor controls.²⁶⁵ In other words, while state, national, and international attention focuses on the debate over whether local and regional controls related to hydraulic fracturing will be permitted, Texas groundwater law may remain tragically stable due to the chilling effects of the crossover enshrined in *Day* and *Bragg*, whatever the state legislature and local and regional regulators may decide to do.

Obviously, this Article's analysis of *Bragg*'s merits is broadly in accord with the criticism of *Bragg* outlined above. But here as elsewhere this Article seeks to do more than pile on to the growing mountain of comprehensive and trenchant criticism already directed at decisions like *Day* and *Bragg*. Such criticism may be thoughtful and well-deserved, but it is important also to offer a new explanation for why such decisions seem to recur in Texas groundwater law. Like *Day*, which it extends and further problematizes, *Bragg* does not simply reiterate the tragic crossover from oil and gas law: it is bound by the crossover as well. As in *Day*, the portions of *Bragg*'s analysis that tend to exhibit many of the features of tragic stability in commons institutions identified by previous scholarship are the same portions of the opinion that are most clearly tied to the tragic crossover from oil and gas law.²⁶⁶ And thus, like *Day*, *Bragg* demonstrates the importance of breaking the tragic crossover from oil and gas to groundwater law if the latter is to emerge from its longstanding tragic stasis.

V. CONCLUSION

Extended analyses of commons problems often seem relatively pessimistic—after all, tragedy is built into some of the core terms and theories often used to describe such problems.²⁶⁷ Analyses of groundwater are no exception to this tendency: the resource is so essential to so much human activity that potential shortages and

265. Such post-*Bragg* takings claims might be most eye-watering for potential hydraulic fracturing plaintiffs, but this is only an example: there are any number of potential plaintiffs beyond the energy industry who might be able to frustrate and chill even modest groundwater controls by using the formula fueled by the tragic crossover and analyzed here. This hydraulic fracturing example was selected in part for its resonance with the widespread popular attention presently being paid to fracking in Texas, but a similar story might be told about many other types of potential takings plaintiffs, with businesses that stretch beyond the agricultural activity at issue in *Day* and *Bragg*.

266. See *supra* notes 211–28, 244 and accompanying text.

267. The classic example of this tendency is, of course, Garrett Hardin, *The Tragedy of the Commons*, 168 *SCIENCE* 1243 (1968).

problems with water institutions often appear to be dire indeed.²⁶⁸ Much of the foregoing analysis in this Article may seem to fit this pessimistic tendency: I have described a set of problems many decades in the making, as well as the stasis of the relevant institutions that might turn this long-running tragedy into comedy, and in so doing I have provided a novel account of how commons institutions can come to grief—or, more accurately, remain in a grievous situation, even when happy changes appear to be just over the horizon.

Accordingly, some measure of pessimism is appropriate. It would be a mistake at the end to minimize the problems that the tragic crossover analyzed in this Article has helped to perpetuate. If the tragic crossover continues, it will continue to impair the development of effective and transparent market-based solutions to water shortages in Texas; moreover, the stasis of Texas's relevant institutions will continue to exacerbate the impact of regular and predictable water shortages, as well as the state's vulnerability to catastrophic economic collapse in times of severe drought. Indeed, as the state water plan itself notes, Texas does not have enough water, and at least in the foreseeable future, the problem is likely to get worse rather than better.²⁶⁹

But this Article does, at least, provide the outline of a script that might lead to a happy ending. If the tragic crossover can be broken, and if a century's worth of knowledge about groundwater and the water cycle are incorporated into groundwater disputes that reach Texas courts, and if local and regional regulatory bodies are empowered to provide modest and sensible solutions to well-documented problems free from over-valued takings litigation, then the story of Texas groundwater law in the twenty-first century may be very different than what has come before. If not, then the rest of the series will look much like the episodes that we have already seen, and the finale will not be pleasant to watch.

268. See, e.g., REISNER, *supra* note 63, at 438–39 (describing the “Dust Bowl-sized exodus,” the “rash of bankruptcies,” and the general “social calamity” that could accompany a collapse in supply from the Ogallala). For a more recent example of such pessimism regarding the same resource, see, for example, Nicole C. Brambila, *Drying Times: Could the Rapidly Depleting Ogallala Aquifer Run Dry?*, LUBBOCK AVALANCHE J., Aug. 9, 2014, <http://lubbockonline.com/local-news/2014-08-09/drying-times-could-rapidly-depleting-ogallala-aquifer-run-dry> (last updated Aug. 10, 2014) (quoting Lucia Barbato, associate director at the Center for Geospatial Technology at Texas Tech, for the following, “When anybody tells me [the aquifer’s supply is] going to last for 50 years, I just laugh”).

269. See *supra* note 1 and accompanying text.