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Drought and Public Necessity: Can A Common-Law "Stick" Increase Flexibility In Western Water Law?

Robin Kundis Craig

S.J. Quinney College of Law, University of Utah, robin.craig@law.utah.edu

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ARTICLE

DROUGHT AND PUBLIC NECESSITY: CAN A COMMON-LAW “STICK” INCREASE FLEXIBILITY IN WESTERN WATER LAW?

by: Robin Kundis Craig*

ABSTRACT

Drought is a recurring—and likely increasing—challenge to water rights administration in western states under the prior appropriation doctrine, where “first in time” senior rights are often allocated to non-survival uses such as commercial agriculture, rather than to drinking water supply for cities. While states and localities facing severe drought have used a variety of voluntary programs to reallocate water, these programs by their very nature cannot guarantee that water will in fact be redistributed to the uses that best promote public health and community survival. In addition, pure market solutions run the risk that “survival water” will become too expensive to buy because prices naturally rise—sometimes dramatically—during shortages.

Using the example of the Brazos River drought of 2010 to 2013, this Article explores the potential role of the common law doctrine of public necessity in reallocating water during extreme drought. Building on my earlier work examining the potential use of public necessity in climate change adaptation for water law and coasts, this Article nevertheless focuses more narrowly on the specific issue of water crisis—the moment during an extreme drought when cities and power plants face a real inability to supply the general public with drinking water and electricity. At that moment, and assuming that cities have otherwise reasonably prepared for drought, the doctrine of public necessity should allow state water agencies in western states to reallocate water away from senior water rights holders whose water rights are for non-survival uses.

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* James I. Farr Presidential Endowed Professor of Law, University of Utah S.J. Quinney College of Law, Salt Lake City, UT. My thanks to Professors Richard Epstein and Vanessa Casado Pérez for inviting me to participate in The Classical Liberal Institute’s and Texas A&M School of Law’s joint conference on carrots and sticks for environmental protection. This research was also made possible, in part, through generous support from the Albert and Elaine Borchard Fund for Faculty Excellence. I may be reached at robin.craig@law.utah.edu.

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I. INTRODUCTION

In early 2018, the long-time spectral threat of cities running out of water became a reality. Cape Town, South Africa, faced its impending “Day Zero”—the day when all public water supplies are shut off.¹ The exact date of Day Zero has fluctuated in response to limited rain and citizen water conservation efforts; in February 2018, at the height of the drought, the date was projected to fall between May 11² and July 9, 2018,³ but rains soon after put off the crisis point to sometime in 2019.⁴ Nevertheless, the plans for Day Zero rationing had become fairly detailed: While “[h]ospitals and other vital institutions in the city center will still get water, . . . the majority of residents will have to line up at communal water points to collect their daily allotment of 6.6 gallons . . . under the gaze of armed guards.”⁵ Humans can survive on about one gallon of water (3.7 liters) per day,⁶ but Cape Town’s projected daily allotment fell far short of the United Nations’ and World Health Organization’s calculation that each person needs 13.2 to 26.4

1. Aryn Baker, *When the Taps Run Dry*, TIME, Feb. 19, 2018, at 30, 33.

2. *Id.*

3. Zeeshan Aleem, *Cape Town Is Bracing for “Day Zero”—the Day It Cuts off Running Water for 4 Million People*, VOX, <https://www.vox.com/world/2018/2/9/16964416/cape-town-water-crisis-day-zero-south-africa> (last updated Feb. 21, 2018, 12:24 PM) [<https://perma.cc/4B6Q-U9WL>].

4. Ed Stoddard, *Cape Town ‘Day Zero’ Pushed Back to 2019 as Dams Fill up in South Africa*, REUTERS, (April 3, 2018, 7:57 AM), <https://www.reuters.com/article/us-safrica-drought/cape-town-day-zero-pushed-back-to-2019-as-dams-fill-up-in-south-africa-idUSKCN1HA1LN> [<https://perma.cc/8UYS-KNCY>].

5. Baker, *supra* note 1.

6. *Water: How Much Should You Drink Every Day?*, MAYO CLINIC, <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/water/art-20044256> (last visited Feb. 25, 2018), [<https://perma.cc/F59S-VEHV>].

gallons (50 to 100 liters) of water every day to meet basic drinking, cooking, and sanitation needs.⁷

Cape Town is unlikely to remain the only city facing such water supply crises in the near future. As *National Geographic* reported in February 2018, several major cities around the world have come close to Cape Town's experience as a result of climate change and drought:

Already, many of the 21 million residents of Mexico City only have running water part of the day, while one in five get just a few hours from their taps a week. Several major cities in India don't have enough. Water managers in Melbourne, Australia, reported last summer that they could run out of water in little more than a decade. Jakarta is running so dry that the city is sinking faster than seas are rising, as residents suck up groundwater from below the surface.

Much like Cape Town's fiasco, reservoirs in Sao Paulo, Brazil, dropped so low in 2015 that pipes drew in mud, emergency water trucks were looted, and the flow of water to taps in many homes was cut to just a few hours twice a week. Only last-minute rains prevented Brazilian authorities from having to close taps completely.⁸

Nor is the United States immune from the threat of severe drought. For example, in 2014, the third year of severe drought in California prevented the State Water Project—"the backbone of California's water system"—from delivering water from the Sacramento Bay Delta to farms and cities farther south for the first time in the project's 54-year history.⁹ While communities ordinarily dependent on the project could temporarily turn to other sources, like groundwater,¹⁰ the 2012–2016 California drought is the latest example of why water lawyers and policymakers in the United States should be thinking about legal doctrines that can allow governments to reallocate water in emergency drought situations to facilitate human survival and well-being. Such consideration is especially worthwhile for the American West, where: (1) drought is more common than in the East; (2) climate change is generally making western states hotter and drier, in-

7. *The Human Right to Water and Sanitation: Media Brief*, U.N. 1, 2 (July 2010), http://www.un.org/waterforlifedecade/pdf/human_right_to_water_and_sanitation_media_brief.pdf [<https://perma.cc/L47N-RJPU>].

8. Craig Welch, *Why Cape Town Is Running out of Water, and Who's Next*, NAT'L GEOGRAPHIC (Feb. 2, 2018), <https://news.nationalgeographic.com/2018/02/cape-town-running-out-of-water-drought-taps-shutoff-other-cities/> [<https://perma.cc/A7CG-D5LJ>].

9. Paul Rogers, *California Drought: State Water Project Will Deliver No Water This Summer*, MERCURY NEWS (Jan. 31, 2014), <https://www.mercurynews.com/2014/01/31/california-drought-state-water-project-will-deliver-no-water-this-summer/> [<https://perma.cc/J83N-KA6V>].

10. *Id.* ("The announcement does not mean that communities will have no water this summer. But it does mean that every region is largely on its own now and will have to rely on water stored in local reservoirs, pumped from underground wells, recycled water and conservation to satisfy demand.").

creasing the likelihood of more frequent and longer-term drought (or a “new normal” of less water);¹¹ (3) much of the water—often 80% or more—is allocated through prior appropriation’s “first in time, first in right” priority system to uses (most notably agriculture) other than drinking water and power generation;¹² and (4) most rivers and lakes

11. The effect is particularly pronounced in the Southwest. In its 2014 *National Climate Assessment*, the U.S. Global Change Research Program concluded for the Southwest that:

Climate changes pose challenges for an already parched region that is expected to get hotter and, in its southern half, significantly drier. Increased heat and changes to rain and snowpack will send ripple effects throughout the region’s critical agriculture sector, affecting the lives and economies of 56 million people—a population that is expected to increase 68% by 2050, to 94 million. Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing competition among farmers, energy producers, urban dwellers, and plant and animal life for the region’s most precious resource.

U.S. Global Change Research Program, *Regions: Southwest: Introduction*, NAT’L CLIMATE ASSESSMENT (2014), <https://nca2014.globalchange.gov/report/regions/southwest> [<https://perma.cc/XSR7-HJDE>]. The message is more mixed for the Northwest, but summer water shortages are projected:

Observed regional warming has been linked to changes in the timing and amount of water availability in basins with significant snowmelt contributions to streamflow. Since around 1950, area-averaged snowpack on April 1 in the Cascade Mountains decreased about 20%, spring snowmelt occurred 0 to 30 days earlier depending on location, late winter/early spring streamflow increases ranged from 0% to greater than 20% as a fraction of annual flow, and summer flow decreased 0% to 15% as a fraction of annual flow, with exceptions in smaller areas and shorter time periods.

Hydrologic response to climate change will depend upon the dominant form of precipitation in a particular watershed, as well as other local characteristics including elevation, aspect, geology, vegetation, and changing land use. The largest responses are expected to occur in basins with significant snow accumulation, where warming increases winter flows and advances the timing of spring melt. By 2050, snowmelt is projected to shift three to four weeks earlier than the 20th century average, and summer flows are projected to be substantially lower, even for an emissions scenario that assumes substantial emissions reductions (B1). In some North Cascade rivers, a significant fraction (10% to 30%) of late summer flow originates as glacier melt; the consequences of eventual glacial disappearance are not well quantified. Basins with a significant groundwater component may be less responsive to climate change than indicated here.

U.S. Global Change Research Program, *Regions: Northwest: Water-related Challenges*, NAT’L CLIMATE ASSESSMENT (2014), <https://nca2014.globalchange.gov/report/regions/northwest#statement-16996> [<https://perma.cc/PD6X-GWU6>] (citations omitted).

12. In Utah, for example, 82% of the water in the state is allocated to agriculture. John Hollenhorst, *82 Percent of Utah Water Goes to Farmers—Here’s Why*, KSL (June 12, 2015, 8:44 PM), <https://www.ksl.com/?nid=148&sid=35054495> [<https://perma.cc/ZT2Q-4JM9>]. In Colorado, agriculture uses 85%. Bruce Finley, *Colorado Farmers Grow More Food on Less Water Amid Rising Competition*, DENVER POST (Aug. 1, 2015), <https://www.denverpost.com/2015/08/01/colorado-farmers-grow-more-food-on-less-water-amid-rising-competition/> [<https://perma.cc/RRH7-KU96>]. In California, agriculture uses 80%. Jeff Guo, *Agriculture Is 80 Percent of Water Use in California. Why Aren’t Farmers Being Asked to Cut Back?*, WASH. POST (Apr. 3, 2015), <https://>

are fully or over-appropriated,¹³ meaning that there is little to no elasticity left in these systems to cope with severe drought.

Prior appropriation is well-known for creating tensions between city dwellers and other water users even before droughts become critical. In 2003, for example, along the Musselshell River in eastern Montana, the town of Harlowtown had to “ration[] water for gardening and car washing, [while] a rancher high above the river bottom maintain[ed] a lush crop of alfalfa with endless pipes and sprinklers.”¹⁴ Drought, however, heightens these tensions and, more importantly, can eventually threaten public health and human lives.

The end of the first decade of the 21st century was a dry time for the Brazos River, which runs southeast from central Texas near Dallas to the Gulf of Mexico, emptying into the ocean just south of Freeport. In 2011, the region experienced the worst one-year drought in its history.¹⁵ “Statewide agricultural losses added up to \$7.62 billion. Farmers saw their crops wither in the field and ranchers, faced with limited food for their cattle, were forced to cull their herds or travel out of state to secure hay at a higher expense.”¹⁶ The Brazos River ran dry in the summer,¹⁷ and the Texas Commission on Environmental Quality (“TCEQ”), the state agency that manages surface water appropriative rights for the state, began to curtail junior water rights holders in May 2011.¹⁸

www.washingtonpost.com/blogs/govbeat/wp/2015/04/03/agriculture-is-80-percent-of-water-use-in-california-why-arent-farmers-being-forced-to-cut-back/?utm_term=.2b20fb095158 [<https://perma.cc/6EMC-RALM>].

13. U.S. ARMY CORPS OF ENG’RS & CONSENSUS BLDG. INST., *WATER IN THE AMERICAN WEST: 150 YEARS OF ADAPTIVE STRATEGIES* 21–23 (2012), <http://naturalresourcespolicy.org/docs/water-in-the-west.pdf> [<https://perma.cc/6F68-3BZL>]; Edella Schlager, *Challenges of Governing Groundwater in U.S. Western States*, 14 *HYDROGEOLOGY J.* 350, 350–51 (Mar. 2006).

14. Elizabeth Arnold, *The Battle Over Water Rights: In the West, the Oldest Claims Take Precedence*, NPR (Aug. 28, 2003), <https://www.npr.org/programs/atc/features/2003/aug/water/part3.html> [<https://perma.cc/ST4F-6KSB>].

15. *Record Drought Appears to Be Sputtering to an End*, BRAZOS RIVER AUTH. (2012), <http://www.brazos.org/Newsletter/Spring-2012/Record-Drought> [<https://perma.cc/T7XN-46K7>]. See also *Officials: Texas Has Not Surpassed Drought of Record—Yet*, BRAZOS RIVER AUTH. (2012), <http://www.brazos.org/Newsletter/Summer-2012/Drought-of-Record> [<https://perma.cc/6GRU-J55K>] (“From October 2010 to September 2011, Texas also broke the record set in 1956 during the drought of record for driest 12-month period . . .”) [hereinafter *Texas Has Not Surpassed Drought*].

16. *Texas Has Not Surpassed Drought*, *supra* note 15.

17. Caitlyn Kennedy, *Brazos River Runs Dry During Texas Drought*, NAT’L OCEANIC & ATMOSPHERIC ADMIN. (Sept. 2, 2011), <https://www.climate.gov/news-features/featured-images/brazos-river-runs-dry-during-texas-drought> [<https://perma.cc/AF9K-HDUS>].

18. *TCEQ Restricts Junior Water Rights in Brazos River Basin*, BEVERIDGE & D’AMOND, P.C. (May 2011), <http://www.bdlaw.com/news-1141.html> [<https://perma.cc/2LAZ-S99L>].

Although the region experienced a brief respite in Spring 2012 during La Niña conditions,¹⁹ drought conditions continued to affect water rights into 2013.²⁰ Most notably, in November 2012, Dow Chemical Company (“Dow”), “the senior water rights holder on the Brazos[,] made a priority call, asserting it could not obtain all of the water it was entitled to due to diversions by upstream users.”²¹ Dow “is by far the largest water user on the Brazos, which also supplies farmers and ranchers, cities and other industries along its 900-mile stretch”²² Its plant, set up in 1940, extracts magnesium from seawater, using 100,000 gallons per minute of Brazos River water in the process.²³ Importantly, the plant is located in Freeport, at the very end of the river,²⁴ meaning that when Dow calls its senior water rights, it can effectively limit water withdrawals by everyone else along the river.

On November 19, 2012, in response to Dow’s call, TCEQ suspended a long list of water rights junior to Dow’s.²⁵ However, it did not suspend water rights for non-exempt domestic use, and it refused to suspend upstream junior water rights for municipal use and power generation “due to concerns about public health, safety, and welfare.”²⁶ The Texas Farm Bureau, representing the suspended junior water rights holders, filed suit.²⁷ TCEQ lifted the suspension in January 2013, but the lawsuit continued.²⁸ In June 2013, the Travis County District Court granted summary judgment to the Texas Farm Bureau in a bench ruling.²⁹ In April 2015, the Texas Court of Appeals in Corpus Christi affirmed, and in early 2016, the Texas Supreme Court

19. *Record Drought Appears to Be Sputtering to an End*, BRAZOS RIVER AUTH. (2012), <http://www.brazos.org/Newsletter/Spring-2012/Record-Drought> [<https://perma.cc/T7XN-46K7>].

20. *Brazos River Priority-Call Area*, TEX. COMM’N ON ENVTL. QUALITY, <https://www.tceq.texas.gov/response/drought/priority.html> (last visited Feb. 24, 2018) [<https://perma.cc/E39V-4LXA>].

21. Karen M. Hansen, *Latest Development on Brazos River Senior Water Rights Call*, ENVTL. L. PORTAL (Aug. 29, 2013), <http://www.environmentallawportal.com/texas-brazos-river-water-rights-seniority-and-priority-of-uses> [<https://perma.cc/J7YE-CKGK>]; *Tex. Comm’n on Env’tl. Quality v. Tex. Farm Bureau*, 460 S.W.3d 264, 267 (Tex. App.—Corpus Christi 2015, pet. denied).

22. Jim Malewitz, *In Major Water Case, Win for Ranchers Is Loss for Cities*, TEX. TRIB. (Feb. 19, 2016), <https://www.texastribune.org/2016/02/19/major-water-case-win-farmers-loss-cities/> [<https://perma.cc/7XD9-88MN>].

23. *Id.*

24. *Id.*

25. TEX. COMM’N ON ENVTL. QUALITY, ORDER SUSPENDING WATER RIGHTS ON THE BRAZOS RIVER 2 ¶ 7, 3 ¶ 5, appx. A (2012), <https://www.tceq.texas.gov/assets/public/response/drought/water-right-letters/11-19-12brazos-suspension-order.pdf> [<https://perma.cc/7E3Z-46S9>] [hereinafter TCEQ NOV. 2012 BRAZOS RIVER ORDER].

26. *Id.* at 2 ¶¶ 9–10, 3 ¶¶ 6–7.

27. *Tex. Comm’n on Env’tl. Quality v. Tex. Farm Bureau*, 460 S.W.3d 264, 267 (Tex. App.—Corpus Christi 2015, pet. denied).

28. Hansen, *supra* note 21.

29. *Id.*

refused to review the case,³⁰ ending the TCEQ's ability to argue for more drought flexibility.

However, Dow called the river again in June 2013. As part of the original suspension, the TCEQ had surveyed the upstream municipalities and power plants to see which ones needed Brazos River water—and how much. As a result, it issued a much more nuanced suspension order in July 2013 that, nevertheless, again refused to suspend some junior water rights for domestic use, municipal use, and power generation, again citing concerns for public health, safety, and welfare.³¹

The Brazos River case thus squarely raises the question of what authority water agencies in the West should have to reallocate appropriative water rights in response to drought. Building on some of my earlier work,³² this Article suggests that the common law doctrine of public necessity should provide a necessary legal “stick” to limit non-survival-related senior water rights holders (i.e., those who hold water rights for industrial, business, and commercial agriculture) in order to encourage flexibility and to promote community survival priorities—drinking water and power supply—during drought. Specifically, this Article argues that the TCEQ's second suspension order in July 2013 was justified under the common law doctrine of public necessity.

This Article begins in Section II with an overview of prior appropriation law and its relationship to drought, noting several doctrinal aspects that limit state water agencies' flexibility. Section III then provides a review of California's and Texas's voluntary water banks, emphasizing that the success of these voluntary systems for reallocating water rights is not guaranteed and can turn on factors outside of the water agency's control. Section IV systematically examines the common law doctrine of public necessity, including its past application to drought situations. In Section V, this Article argues that western states should more openly embrace the public necessity doctrine in drought situations to ensure that drought does not create public health emergencies, effectively prioritizing human life over other water uses during truly severe droughts.

30. Tex. Farm Bureau, 460 S.W.3d at 273.

31. TEX. COMM'N ON ENVTL. QUALITY, ORDER SUSPENDING AND ADJUSTING WATER RIGHTS IN THE BRAZOS RIVER BASIN FOR A SENIOR CALL 1–14 (2013), <https://www.tceq.texas.gov/assets/public/response/drought/water-right-letters/07-02-13Brazos-order.pdf> [<https://perma.cc/E64C-TRDS>] [hereinafter TCEQ JULY 2013 BRAZOS RIVER ORDER].

32. See generally Symposium, Robin Kundis Craig, *Adapting Water Law to Public Necessity: Reframing Climate Change Adaptation as Emergency Preparedness and Response*, 11 VT. J. ENVTL. L. 709 (2010) (arguing that the doctrine of public necessity can aid climate change adaptation efforts in connection with water); Robin Kundis Craig, *Public Trust and Public Necessity Defenses to Taking Liability for Sea-Level Rise Responses on the Gulf Coast*, 26 J. LAND USE & ENVTL. L. 395 (2011) (applying the public necessity doctrine to coastal retreat).

II. PRIOR APPROPRIATION AND DROUGHT IN THE WEST

The term “water right” generally refers to a right to remove fresh water from its natural watercourse and to use that water for some consumptive purpose, such as irrigation, drinking water, or industrial manufacturing. Because water law is largely state law, the exact principles and requirements governing the withdrawal and use of water can vary considerably depending on location. In the United States, the perpetually drought-threatened western states rejected the common law tradition of riparianism, where water rights are based on riparian land ownership,³³ in favor of the prior appropriation doctrine.³⁴ Prior appropriation operates on a principle of “first in time, first in right”—i.e., the first user to apply water to a beneficial use, without waste or abandonment, acquires a continuing right to keep using water superior to that of later users drawing water from the same source.³⁵ In times of limited water supplies, the junior users—the users who acquired their water rights later in time—must entirely cease to use water before senior users have to curtail their water use at all.³⁶ At the height of the 2012–2016 California drought, for example, the California Water Resources Control Board sent water shortage notices to water rights holders with priority dates as old as 1858,³⁷ curtailing senior water rights that had never before been cut off.³⁸

While low-rain and drought years have long limited water use in the West, the new, drier normal of climate change is making drought both a more regular and a worse reality for prior appropriation states.³⁹ As one example, by 2014 the California drought of 2012–2016 had al-

33. George A. Gould, *Water Rights Systems*, in *WATER RIGHTS OF THE EASTERN UNITED STATES* 7, 8–9 (Kenneth R. Wright ed., 1998).

34. Reed D. Benson, *Deflating the Deference Myth: National Interests vs. State Authority Under Federal Laws Affecting Water Use*, 2006 UTAH L. REV. 241, 250–51; Richard F. Ricci, Franklin W. Boenning & Kristina D. Pasko, *Battles Over Eastern Water*, 21 NAT. RES. & ENV'T 38, 38 (2006).

35. *E.g.*, *State ex rel. Office of State Eng'r v. Lewis*, 150 P.3d 375, 383 (N.M. Ct. App. 2006); *Archuleta v. Gomez*, 140 P.3d 281, 284 (Colo. App. 2006); *W. Maricopa Combine, Inc. v. Ariz. Dep't of Water Res.*, 26 P.3d 1171, 1180 (Ariz. Ct. App. 2001); *Hawley v. Kan. Dep't of Agric.*, 132 P.3d 870, 873 (Kan. 2006).

36. ROBERT W. ADLER ET AL., *MODERN WATER LAW: PRIVATE PROPERTY, PUBLIC RIGHTS, AND ENVIRONMENTAL PROTECTIONS* 176 (2d ed. 2018).

37. Cal. Water Resources Control Bd., *2015 Summary of Water Shortage Notices* (2015), https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/curtail_summary_2015.pdf [<https://perma.cc/4X9U-572P>].

38. Dale Kasler & Ryan Sabalow, *California Curtails Senior Water Rights*, SACRAMENTO BEE (June 12, 2015), <http://www.sacbee.com/news/state/california/water-and-drought/article23849281.html> [<https://perma.cc/X2S2-S4CX>].

39. U.S. GLOB. CHANGE RESEARCH PROGRAM, *CLIMATE CHANGE IMPACTS IN THE UNITED STATES* (2014), <https://nca2014.globalchange.gov/report> [<https://perma.cc/9F3D-WJRA>].

ready registered as the driest three-year period in California's reconstructed precipitation history.⁴⁰ The drought set other records, as well:

The drought occurred at a time of record warmth in California, with new climate records set in 2014 for statewide average temperatures. Records for minimum annual precipitation were set in many communities in calendar year 2013. Calendar year 2014 saw record-low water allocations for State Water Project and federal Central Valley Project contractors. Reduced surface water availability triggered increased groundwater pumping, with groundwater levels in many parts of the state dropping 50 to 100 feet below their previous historical lows.⁴¹

Thus, new drought conditions are creating issues of how best to reallocate increasingly scarce water supplies previously allocated as property rights through the prior appropriation system.

Law needs flexibility to deal with these changing hydrological realities.⁴² However, prior appropriation doctrine and other aspects of western water law often get in the way. For example, state water agencies' flexibility in dealing with drought is reduced because most water in the West is tied up in private and governmental property and contractual rights; thus, reallocation of water use and water priorities is both economically expensive and legally and politically challenging.⁴³ Indeed, in 2009, the United States Global Change Research Program ("USGCRP") identified several "institutional and legal barriers" that hinder necessary changes in water allocation and use—many of which derive from the complex property rights matrices surrounding water.⁴⁴ As the Program explained:

40. CAL. STATE WATER RESOURCES DEP'T, CALIFORNIA'S MOST SIGNIFICANT DROUGHTS: COMPARING HISTORICAL AND RECENT CONDITIONS (2015), https://www.water.ca.gov/LegacyFiles/waterconditions/docs/California_Significant_Droughts_2015_small.pdf [<https://perma.cc/9CEE-T4RP>].

41. *Id.*

42. Robin Kundis Craig et al., *Balancing Stability and Flexibility in Adaptive Governance: The New Challenges and a Review of Tools Available*, 22 *ECOLOGY & SOCIETY* 1 (April 2017), <http://www.ecologyandsociety.org/vol22/iss2/art3/> [<https://perma.cc/BF4E-96SH>].

43. Abrahm Lustgarten & ProPublica, *A Free-Market Plan to Save the American West From Drought*, ATLANTIC, (Mar. 2016) <https://www.theatlantic.com/magazine/archive/2016/03/a-plan-to-save-the-american-west-from-drought/426846/> [<https://perma.cc/BE5G-NDMG>] ("In theory, states could step in and reallocate water according to modern economic priorities. After all, the West's millions of acres of farmland account for less than 2 percent of the region's economic output, and moving just 10 percent of the water off farms would likely resolve current shortfalls. Few things are more controversial in the West, though, than even minor meddling with water laws. Canceling or redistributing rights that are more than a century old would be political suicide in a part of the country where personal property is sacrosanct and farmers wield a lot of influence. As water shortages have slowly worsened over the past two decades, politicians have done little to avert the crisis.")

44. U.S. GLOB. CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 49 (2009), <http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf> [<https://perma.cc/9PUJ-3B3R>].

- The allocation of water in many interstate rivers is governed by compacts, international treaties, federal laws, court decrees, and other agreements that are difficult to modify.
- Reservoir operations are governed by “rule curves” that require a certain amount of space to be saved in a reservoir at certain times of year to capture a potential flood. Developed by the U.S. Army Corps of Engineers based on historical flood data, many of these rule curves have never been modified, and modifications might require Environmental Impact Statements.
- In most parts of the West, water is allocated based on a “first in time means first in right” system, and because agriculture was developed before cities were established, large volumes of water typically are allocated to agriculture. Transferring agricultural rights to municipalities, even for short periods during drought, can involve substantial expense and time and can be socially divisive.
- Conserving water does not necessarily lead to a right to that saved water, thus creating a disincentive for conservation.⁴⁵

Moreover, as if to drive home the critical connection between water scarcity governance flexibility and the law defining property rights in water, the USGCRP emphasized that “[t]he ability to modify operational rules and water allocations is likely to be critical for the protection of infrastructure, for public safety, to ensure reliability of water delivery, and to protect the environment.”⁴⁶

Of course, one aspect of drought flexibility should be water planning, and water agencies’ ability to invoke the doctrine of public necessity should not excuse cities who fail to plan for drought. However, planning for drought can take cities only so far. First, under prior appropriation’s anti-speculation doctrine, cities (like all appropriators) can claim water rights for both future growth and future drought only to a point—i.e., only to the extent of their reasonably projected future water needs.⁴⁷ As a result, an extended and unprecedented drought—especially in a climate change era—could legitimately catch even the most diligently prepared city off guard. For example, the California drought of 2012–2016 turned out to be the worst drought California had experienced in 1,200 years⁴⁸—a historical measure far outside the planning ken of municipalities.

45. *Id.* at 49–50.

46. *Id.* at 49.

47. Sandra Zellmer, *The Anti-Speculation Doctrine and Its Implications for Collaborative Water Management*, 8 NEV. L.J. 994, 997–98 (2008); Scott A. Clark & Alix L. Joseph, *Changes of Water Rights and the Anti-Speculation Doctrine: The Continued Importance of Actual Beneficial Use*, 9 U. DENV. WATER L. REV. 553, 555–62 (2006).

48. Zachary P. Sugg, *An Equity Autopsy: Exploring the Role of Water Rights in Water Allocations and Impacts for the Central Valley Project During the 2012–2016 California Drought*, 7 RES. 12, at 1 (2018).

Second, groundwater pumping—one of the most common “solutions” to diminished surface water supplies during drought—is unlikely to remain a viable drought mitigation measure for cities in many parts of the country because groundwater resources are increasingly being mined (pumped beyond their recharge rate⁴⁹) or even destroyed.⁵⁰ Thus, again, even diligent cities are increasingly likely to find themselves without alternative sources of emergency public supply during a record drought.

Third, traditional appropriation law provides few readily available options for quickly reallocating water in the face of a drought emergency.⁵¹ Although western water rights are property rights, they are not freely alienable when the owner wants to change the beneficial use of the water (e.g., agriculture to municipal supply) or the place of use (e.g., farm to city). Especially in fully or over-appropriated rivers, downstream water users are dependent on the exact pattern of upstream withdrawals and return flows. Changing the point of diversion, the beneficial use for a water right, the amount of return flow, or the point where the return flow enters the river can alter the overall river flow pattern and harm other water users in the same system. Legally, these changes in how or where a water right is exercised are generally known as water right transfers, and “[a] transfer is subject to the condition that a change in use must not injure any other water rights holder. This ‘no injury’ rule is the only universal restriction on water transfers,”⁵² but many western states also impose other limitations on water right transfers beyond the “no injury” requirement.⁵³ As a result, water right transfers are neither easy nor quick, and prior appropriation law effectively limits the availability of real-time market mechanisms for reallocating water on an emergency basis during drought.

Thus, prior appropriation law and the changing realities of water resources pose several obstacles both to cities trying to plan for a true drought of record and to quick and easy market exchanges during such a drought. The next Section explores attempted voluntary solu-

49. Dennis Dimick, *If You Think the Water Crisis Can't Get Worse, Wait Until the Aquifers Are Drained*, NAT'L GEOGRAPHIC (Aug. 21, 2014), <https://news.nationalgeographic.com/news/2014/08/140819-groundwater-california-drought-aquifers-hidden-crisis/> [<https://perma.cc/4ZVP-K6GD>].

50. Chris Draper, *California's Excessive Pumping During Drought Could Permanently Destroy Aquifers*, GLITCH.NEWS (Sept. 15, 2015), <http://www.glitch.news/2015-09-15-californias-excessive-pumping-during-drought-could-permanently-destroy-aquifers.html> [<https://perma.cc/4T2F-M7UT>]; *Vast Areas of California Are Sinking As Groundwater Is Pumped in Drought*, GUARDIAN (Aug. 19, 2015), <https://www.theguardian.com/us-news/2015/aug/19/california-sinking-groundwater-pumped-drought> [<https://perma.cc/4N73-NYLL>].

51. See Zellmer, *supra* note 47, at 1011–12.

52. NAT'L RESEARCH COUNCIL, WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY, AND THE ENVIRONMENT 71 (1992).

53. *Id.*

tions to these quandaries in California and Texas, demonstrating that these purported “fixes” also do not guarantee the protection of public health and human life during a drought emergency.

III. VOLUNTARY MEASURES TO REALLOCATE WATER IN RECENT WESTERN DROUGHTS: THE EXAMPLES OF CALIFORNIA’S AND TEXAS’S WATER BANKS

Cities, counties, and states in the West can rely upon numerous voluntary and involuntary measures during a drought to reduce water use, from restrictions on lawn-watering to incentives to buy low-flow toilets and showerheads.⁵⁴ However, these demand-reducing measures, while necessary and an important first step, do not actually reallocate water rights. This Section examines voluntary measures that *do* reallocate water—specifically, the use of water banks in California and Texas. Water banks are state-operated mechanisms that allow water rights holders to voluntarily transfer water rights, temporarily or permanently, to other uses. California has repeatedly used water banks as a drought-specific reallocation mechanism, while Texas continually operates a more general water bank.

A. Drought Water Banks in California

California has faced repeated droughts in the late 20th century and first decades of the 21st century and has tried to generate voluntary programs to cope. For example, it repeatedly used voluntary Drought Water Banks to facilitate water transfers⁵⁵ and to reallocate water during various drought events.

1. Drought Water Bank, 1991–1993

In response to California’s drought from 1991–1993, the California Department of Water Resources (“CDWR”) instituted a Drought Water Bank.⁵⁶ “Buy-and-sell agreements were developed by Department staff, and the [Drought Water Bank] began to purchase water. In using the [Drought Water Bank], buyers and sellers sought to take advantage of economies of scale and avoid the high transaction costs and third-party effects of individually negotiated transactions.”⁵⁷

54. See, e.g., Holly Heinrich, *How 10 Western Cities Are Dealing With Water Scarcity and Drought*, NPR STATEIMPACT TEX. (Aug. 2, 2013), <https://stateimpact.npr.org/texas/2013/08/02/how-10-western-cities-are-dealing-with-water-scarcity-and-drought/> [https://perma.cc/5ERM-EJP3] (detailing a variety of methods).

55. Ronald A. Kaiser, *Texas Water Marketing in the Next Millennium: A Conceptual and Legal Analysis*, 27 TEX. TECH L. REV. 181, 187–88 (1996).

56. *Id.* (citing DAVID MITCHELL, BAY AREA ECON. FORUM & METRO. WATER DIST. OF S. CAL., *WATER MARKETING IN CALIFORNIA* (1992); RICHARD HOWITT ET AL., CAL. DEP’T OF WATER RES., *A RETROSPECTIVE ON CALIFORNIA’S 1991 EMERGENCY DROUGHT WATER BANK* (1992); SHARING SCARCITY: GAINERS AND LOSERS IN WATER MARKETING (Harold O. Carter et al. eds. 1994)).

57. *Id.* at 188.

The 1991–1993 Drought Water Bank is generally considered a success in terms of achieving California’s water reallocation goals.⁵⁸ The Bank “purchased 820,655 acre-feet of water in 1991 and 193,193 acre-feet in 1992. More favorable weather conditions, spring rains, a mild summer, and urban water conservation measures contributed to the lower amount of water purchased in 1992.”⁵⁹ Sellers were generally located in the northern part of the system, while purchasers were generally located south of the Sacramento Bay Delta.⁶⁰ Notably, California organized this bank very quickly, and it “provided more than one million acre-feet of water in the two-year period. [The State] spent some \$100 million on purchases in 1991 and received \$68 million in revenues from purchasers (the difference being accounted for by the unsold water held in storage in the State Water Project).”⁶¹

2. Drought Water Bank, 2009

Anticipating another drought in 2009, the CDWR again instituted a Drought Water Bank to facilitate water transfers between water-strapped buyers and willing sellers.⁶² CDWR sought to purchase water from willing sellers from water suppliers upstream of the Sacramento-San Joaquin Delta. This water would be transferred using the State Water Project and would then become “available for purchase by public and private water suppliers in California based on certain needs criteria as applicable.”⁶³

The Water Bank, however, depended on willing sellers. The CDWR emphasized this point:

Water will be purchased for the 2009 Drought Water Bank from willing sellers. Willing sellers may make water available in four main ways:

- Reservoir releases above normal operations
- Groundwater substitution - using groundwater instead of surface water supplies that are normally used
- Cropland idling - not growing a crop (above normal fallowing practices) that would have been grown except for the water transfer
- Crop substitution - growing a less water-intensive crop than would have been planted except for the water transfer[.]⁶⁴

58. *Id.* at 188–89 (citing J. LUND ET AL., UNIV. OF CAL. AT DAVIS, RECENT CALIFORNIA WATER TRANSFERS: EMERGING OPTIONS IN WATER MANAGEMENT 57 (1992) (Report of the Center for Environmental and Water Resource Engineering)).

59. *Id.* at 188.

60. *Id.*

61. *Id.* at 189.

62. CAL. DEP’T OF WATER RESOURCES, CALIFORNIA’S DROUGHT: 2009 DROUGHT WATER BANK OVERVIEW 2 (2008) (on file with *Texas A&M Law Review*).

63. *Id.*

64. *Id.* at 5.

Other policies limited who could become a “willing seller.” For example, “[n]o more than 20 percent of the cropland idled in any county may be considered as a source of transfer water without a detailed economic analysis of the effects on the overall economy on the county from which the water is transferred.”⁶⁵

Most observers consider the 2009 Drought Water Bank a failure, given California’s goal of using the bank to reallocate water. The causes are many, but the economics of water rights played a significant role. For example, according to the *Sacramento Bee*, “[m]any farmers were leery of entering into a complex water deal with the state, fearing they might be liable for unexpected environmental damages, become ineligible for federal subsidy programs or simply lose money if the sale fell through.”⁶⁶ Perhaps more importantly, the state simply was not paying enough, at \$275 per acre-foot of water, to compete with the profits to be made from rice, a thirsty crop. Indeed, in part because of a prolonged drought in Australia, rice prices were at their highest levels in 30 years.⁶⁷

As a result, the 2009 Drought Water Bank was able to transfer only 82,000 acre-feet of water, far less than the 600,000 acre-feet that the state government had hoped for.⁶⁸ Given the Bank’s inability to reallocate enough water to deal with the drought, in February 2009 California Governor Schwarzenegger declared a state of emergency because of the water shortage⁶⁹ and asked for a federal disaster area declaration about four months later.⁷⁰

California’s 2009 Drought Water Bank thus illustrates one of the potential weaknesses of voluntary programs to reallocate water during western droughts—market forces that tempt senior water rights holders away from drought mitigation and into business as usual. Few governments can afford to compete with a world rice shortage that drives food prices to high levels. Nevertheless, in California in 2009, the

65. *Id.*

66. David Zetland, *The Drought Water Bank Fails*, AGUANOMICS (May 20, 2009), <http://www.aguanomics.com/2009/05/drought-water-bank-fails.html> [<https://perma.cc/FQ6Z-7MSQ>] (quoting Jim Downing, *Badly Needed California Water Transfers Blocked by Economic, Environmental Hurdles*, SACRAMENTO BEE).

67. *Id.*

68. *Id.*

69. Press Release, Arnold Schwarzenegger, Office of the Governor of Cal., Governor Schwarzenegger Takes Action to Address California’s Water Shortage (Feb. 27, 2009). To read the Order, see COASTSIDE CTY. WATER DIST., MEETING OF THE BOARD OF DIRECTORS 5055 (Mar. 10, 2009), <http://www.coastsidewater.org/agendas/031009agenda/031009AgendaWithAttachments.pdf> [<https://perma.cc/N94V-NMZR>].

70. Press Release, Arnold Schwarzenegger, Office of the Governor of Cal., Governor Schwarzenegger Requests Federal Disaster Declaration, Issues Executive Order to Provide Assistance (June 19, 2009). To read the Order, see *Gov. Schwarzenegger Requests Federal Disaster Declaration, Issues Executive Order to Provide Assistance*, WATER EDUC. FOUND. (June 20, 2009), <https://www.watereducation.org/aquafornia-news/gov-schwarzenegger-requests-federal-disaster-declaration-is-sues-executive-order> [<https://perma.cc/K7UA-HM4V>].

larger public good arguably lost out to private property rights (real or perceived) in water.

B. *The Texas Water Bank and Trust*

The Texas Water Development Board (“TWDB”) manages the Texas Water Bank (“Bank”) and Texas Water Trust (“Trust”), which the Texas Legislature created in 1993.⁷¹ The Bank’s purpose is “to allow for and assist in the voluntary transfer of water rights between willing buyers and sellers,” while the Trust allows the TWDB to hold water rights to maintain environmental flows.⁷²

Transfers through the Bank can be either temporary or permanent,⁷³ and “depositors” are protected from having their water rights cancelled for up to twenty years (specifically, an initial ten-year period can be extended up to another ten years).⁷⁴ “Water rights or contractual rights to use water, which may include surface water, groundwater, or water from any source . . . may be deposited in the bank,”⁷⁵ and the TWDB may charge up to 1% of the right’s value to cover its administrative expenses.⁷⁶

Importantly, the Bank is designed particularly to facilitate transfers of water rights from agriculture to urban water supply and other uses. Thus, “[t]he TWDB may implement water conservation measures in irrigation districts and deposit the resulting water saved into the Texas Water Bank. The water savings deposited may be transferred to municipalities, industries, and other agricultural users,” with the costs of conservation efforts paid for through these sales.⁷⁷

Writing shortly after the Bank’s creation, Ronald Kaiser emphasized that “[t]he Texas Water Bank . . . has the widest legal latitude in the design and operation of all the western water banks.”⁷⁸ He projected, based on California’s experience to that point, that “one viable future for the Texas Water Bank is to function as an emergency bank during times of drought. As did the California banks, the Texas Bank could bring together potential buyers and sellers and facilitate the state approval process for transfers.”⁷⁹

71. *Texas Water Bank & Trust*, TEX. WATER DEV. BD., <http://www.twdb.texas.gov/waterplanning/waterbank/index.asp> (last visited Feb. 25, 2018) [<https://perma.cc/9KNG-MUHA>].

72. *Id.*

73. *Id.*

74. *Texas Water Bank*, TEX. WATER DEV. BD., <http://www.twdb.texas.gov/waterplanning/waterbank/bank/index.asp> (last visited Feb. 25, 2018) [<https://perma.cc/L7JB-SMHJ>].

75. *Id.*

76. *Id.*

77. *Id.*

78. Kasler & Sabalow, *supra* note 38, at 202 (citation omitted).

79. *Id.* at 202–03 (citations omitted).

Despite this prediction, however, the Texas Water Bank has not matured into a functional mechanism capable of dealing with extreme drought. As of February 2018, the Bank had only eight deposits, amounting to a total of slightly more than 500 acre-feet of water, most of which was available only for lease.⁸⁰ Thus, “[t]he State of Texas attempted to establish a forum for making connections through a registry system that, to date, does not appear to have been well utilized.”⁸¹ Indeed, no water rights at all transferred through the Bank in its first six years.⁸² Like California’s 2009 Drought Water Bank, therefore, the Texas Water Bank demonstrates that voluntary methods of water rights reallocation do not always do what legislatures and observers hope that they will, limiting their usefulness as emergency drought relief mechanisms.

IV. THE DOCTRINE OF PUBLIC NECESSITY

Water banks function primarily as “carrots,” offering water rights holders an opportunity to make money from water rights that they might not otherwise be profitably using—either as an ordinary business evaluation, as in Texas, or because a drought makes the permitted use impossible or unprofitable, as in California. However, as was true in both states, these voluntary programs cannot guarantee that more senior water rights holders will make water available for drinking water supply during extreme drought.

This Section explores another possibility, which functions as the “stick”—the doctrine of public necessity. Public necessity is a common law doctrine, generally considered inherent in all property rights, that allows governments facing emergencies to rearrange and destroy those property rights. As such, public necessity arguably provides western states and their water agencies with the legal power to force

80. *Current Water Bank Deposits*, TEX. WATER DEV. BD., <http://www.twdb.texas.gov/waterplanning/waterbank/bank/deposits.asp> (last visited Feb. 23, 2018) [<https://perma.cc/8VAB-5PBZ>]. See also Aileen M. Hocks, *Water Sourcing and Pricing*, 2 ROCKY MTN. MIN. L. INST. No. 6A, at 6A-10 (2016) (“At present, there are only eight deposits in the water banks, with the most recent listing having a 2009 date.”).

81. Hocks, *supra* note 80.

82. Joseph W. Dellapenna, *The Importance of Getting Names Right: The Myth of Markets for Water*, 25 WM. & MARY ENVTL. L. & POL’Y REV. 317, 361 (2000). Lack of proper incentive may be the reason for the Bank’s failure:

This result is due in large part to three main factors. First, the Texas Water Bank primarily operates as an information clearinghouse, including a list of sellers and buyers, which makes transactions outside the bank easier, and makes data on the true influence of the bank incomplete. Second, cancellation is not well enforced in Texas, and without enforcement, protection from cancellation does not offer much incentive. Third, the protection is not absolute. The statute only requires that depositing the water right in the bank be considered, not that it is determinative.

Adam Schempp, *Western Water in the 21st Century: Policies and Programs That Stretch Supplies in a Prior Appropriation World*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10,394, 10,407 (Apr. 2010).

involuntary re-prioritization of appropriative water rights during a severe drought.

A. *Public Necessity in General*

At the state level, the basis for most regulation is the police power, which supports regulation to promote public health, safety, and welfare.⁸³ Ordinary exercises of the police power, however, are subject to the workings of the Fifth Amendment's Takings Clause, which the U.S. Supreme Court made applicable to the states and their subdivisions through the Fourteenth Amendment.⁸⁴ Since the early twentieth century, takings jurisprudence has included regulatory takings, with the result that state and local governments might have to pay property owners if regulation that limits property use goes "too far."⁸⁵ Potential liability for regulatory takings is one reason that California looks for willing sellers to supply its drought banks.

The public necessity doctrine, in contrast, recognizes that in times of true emergency, private rights yield to public needs, with no need for the acting government to pay.⁸⁶ Importantly, public necessity is a background principle of common law inherent in all private property rights. As the U.S. Supreme Court has noted, "the common law had long recognized that in times of imminent peril—such as when fire threatened a whole community—the sovereign could, with immunity, destroy the property of a few that the property of many and the lives of many more could be saved."⁸⁷ Even Justice Antonin Scalia, writing for the majority of the Court, recognized public necessity as a background principle of property law that constitutes a defense to constitutional takings claims.⁸⁸

As a legal doctrine, public necessity has two meanings. In its broad meaning, the public necessity doctrine acts as the umbrella classification for three common law defenses to takings or damages liability.

83. *Baer v. City of Bend*, 292 P.2d 134, 137 (Or. 1956) ("It cannot be successfully contended that the exercise of the police power for the protection of the public health . . . is restricted to situations of overriding public necessity or emergency or infectious or contagious diseases . . .").

84. *Kelo v. City of New London*, 545 U.S. 469, 472 n.1 (2005) (citing *Chi., Burlington & Quincy R.R. v. Chicago*, 166 U.S. 226 (1897)).

85. *Penn. Coal Co. v. Mahon*, 260 U.S. 393, 415–16 (1922).

86. *Surocco v. Geary*, 3 Cal. 69, 73 (1853) ("At such times, the individual rights of property give way to the higher laws of impending necessity.").

87. *United States v. Caltex, Inc.*, 344 U.S. 149, 154 (1952). Prosser explained further:

Where the danger affects the entire community, or so many people that the public interest is involved, that interest serves as a complete justification to the defendant who acts to avert the peril to all. . . . This notion does not require the "champion of the public" to pay for the general salvation out of his own pocket. The number of persons who must be endangered in order to create a public necessity has not been determined by the courts.

PROSSER & KEETON, *THE LAW OF TORTS* § 24 (5th ed. 1984).

88. *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1029 n.16 (1992).

For example, in 1978 the South Dakota Supreme Court laid out this sense of the doctrine:

There are three important exceptions to the requirement of compensation where, without the owner's consent, private property is intentionally, purposefully or deliberately taken or damaged for the public use, benefit or convenience. They are the taking or destruction of property (1) during actual warfare; (2) to prevent an imminent public catastrophe; and (3) to abate a public nuisance. In each instance, the power to "take or damage" without compensation is based upon the public necessity of preventing an impending hazard which threatens the lives, safety, or health of the general public.⁸⁹

More recently, the U.S. District Court for the Middle District of Alabama relied on this broader conception of public necessity to insulate a nuisance abatement action from takings liability, emphasizing that "it is settled that in the exercise of the police power a State 'may take, damage, or destroy private property without compensation, when the public necessity, the public health, or the public safety require it to be done.'"⁹⁰

More narrowly, but more commonly, the doctrine refers to the second of these three defenses—property rights destruction "to prevent an imminent public catastrophe."⁹¹ Moreover, two facets of this narrower conception of the public necessity doctrine limit its application: (1) the requirement of a public necessity or emergency; and (2) the requirement that the destruction or limitation of private property be reasonably necessary to address that threat. The next two subsections address each of these requirements in turn.

89. *City of Rapid City v. Boland*, 271 N.W.2d 60, 65 (S.D. 1978). Other courts and some scholars have also viewed public necessity as a broader umbrella doctrine. See, e.g., *Patel v. City of Everman*, 179 S.W.3d 1, 11 (Tex. App.—Tyler 2004, pet. denied) ("Where a plaintiff establishes that a governmental entity intentionally destroyed his property because of a real or supposed public emergency, the government entity may then defend its actions by proof of a great public necessity. In other words, the governmental entity has to show that the property destroyed was a nuisance on the day it was destroyed.") (citations omitted); *City of Chicago v. Birnbaum*, 274 N.E.2d 22, 24 (Ill. 1971) (upholding the destruction of vacant buildings against a takings claim because "[t]he record indicates that the public welfare, health and safety of the surrounding area was imperiled by these circumstances, and the city properly and of public necessity exercised its police power and abated this nuisance by ordering the buildings demolished."); John Alan Cohan, *Private and Public Necessity and the Violation of Property Rights*, 83 N.D. L. REV. 651, 690–732 (2007).

90. *Ashe v. City of Montgomery*, 654 F.Supp.2d 1311, 1315 (M.D. Ala. 2010) (quoting *Hulen v. City of Corsicana*, 65 F.2d 969, 970 (5th Cir. 1933)).

91. *City of Rapid City*, 271 N.W.2d at 65; see also *Scott v. City of Del Mar*, 68 Cal. Rptr. 2d 317, 322 (1997) (distinguishing "public necessity and to avert impending peril" from non-emergency nuisances).

B. *The Requirement that a Public Necessity or Emergency Exists*

In the classic application of the public necessity doctrine, an imminent disaster, such as a fire⁹² or flood,⁹³ threatens the community, and destruction of private property is necessary to protect the community as a whole.⁹⁴ Nevertheless, the concepts of “emergency” and “imminence” can vary among jurisdictions. Some commentators, for example, put more emphasis on the “necessity” than on the “emergency,” explaining that:

The right to destroy under such circumstances is a natural right which springs from the *necessity* of the case. Where, therefore, it is sought by statute to *add* to the right or to *create* the right to destroy in case of *emergency* rather than *necessity*, such attempt constitutes an exercise of the power of eminent domain and compensation must be made.⁹⁵

In contrast, both the Restatement (Second) of Torts and most courts emphasize the “imminence” and “emergency” aspects of the public necessity doctrine. The Restatement, for example, states that “[o]ne is privileged to enter land in the possession of another if it is, or if the actor reasonably believes it to be, necessary for the purpose of averting an imminent public disaster.”⁹⁶ Similarly, the South Dakota Supreme Court noted that “[o]nce the impending disaster has passed, the government may not rely upon the doctrine of necessity to justify the subsequent destruction of property.”⁹⁷

Some courts have also been skeptical about applying the doctrine to longer-term, preemptive protection efforts. For example, the U.S. District Court for the District of Oregon determined that the potential for

92. *See, e.g.*, *Bowditch v. City of Boston*, 101 U.S. 16, 18 (1879) (discussing the common-law right to destroy property to prevent a fire from spreading); *Field v. City of Des Moines*, 39 Iowa 575, 577 (1874) (noting that the right to the destruction of property to prevent the spread of fire is established in the common law); *Surocco v. Geary*, 3 Cal. 69, 73 (1853) (discussing the need to destroy a building to check the progress of a fire); *Am. Print Works v. Lawrence*, 23 N.J.L. 590, 602 (N.J. 1851) (stating that there is a right to destroy property in order to arrest the spread of fire); *Hale v. Lawrence*, 21 N.J.L. 714, 734 (N.J. 1848) (holding that there is a private right to destroy a building in order to prevent mass destruction by a fire).

93. *See generally* *Dudley v. Orange County*, 137 So. 2d 859, 861–63 (Fla. 1962) (denying injunctive relief against county’s action to dam waters that were causing flooding on the plaintiff’s land); *McKell v. Spanish Fork City*, 305 P.2d 1097, 1100 (Utah 1957) (holding that city is not liable for damages incurred by measures taken to control an extraordinary flood); *Short v. Pierce County*, 78 P.2d 610, 616 (Wash. 1938) (holding that “appellants may not recover for damage caused by acts of agents of the county in an attempt to control immediate danger from the flood”); *Atken v. Village of Wells River*, 40 A. 829, 830 (Vt. 1898) (finding that a taking had not occurred when the plaintiff’s property was destroyed to avert imminent injury from flooding).

94. *Cohan*, *supra* note 89, at 653.

95. *City of Rapid City v. Boland*, 271 N.W.2d 60, 66 (S.D. 1978) (quoting 1 NICHOLS, EMINENT DOMAIN § 1.43[1] and [2]); *see also* *Hale*, 21 N.J.L. at 729 (noting that the right is “founded upon necessity and not expediency”).

96. RESTATEMENT (SECOND) OF TORTS § 196 (1995).

97. *City of Rapid City*, 271 N.W.2d at 66.

a dockside grain elevator to explode as a result of a nearby ship fire was not sufficiently imminent to justify setting the ship adrift because it was “highly improbable that a spark could have been carried from the ship to the grain gallery since a steady drizzle was falling and the wind was blowing away from the dock. The fire was small and confined to the engine room.”⁹⁸

C. *The Requirement that the Destruction or Limitation
Is Reasonably Necessary*

Regardless of the emergency’s seriousness, public necessity is not an open license for governments to destroy private property. Instead, courts require that destructive actions be reasonably necessary given the particular emergency being addressed. In the words of the U.S. District Court for the District of Oregon, “[t]he defense applies only when the emergency justifies the action and when the defendant acts reasonably under the circumstances.”⁹⁹

As one example, the real need for flood control did not excuse the Los Angeles County Flood Control District from paying for damage to a resident’s property when the immediate cause of the damage was the District’s poor drainage design and construction.¹⁰⁰ The California Second District Court of Appeals upheld the lower court’s award of damages to the plaintiff for a physical taking of the plaintiff’s property, emphasizing that “the courts will be slow to invoke the doctrine of police power to protect public agencies in those cases where damage to private parties can be averted by proper construction and proper precautions in the first instance.”¹⁰¹ As a policy matter, “[u]nnecessary damage to his property is of no benefit to the public; rather it only entails unwarranted sacrifice and loss on the individual’s part, which should be compensable damage.”¹⁰² Similarly, public necessity was no defense to casting loose a burning ship when a dockside

98. *Protectus Alpha Navigation Co. v. N. Pac. Grain Growers, Inc.*, 585 F. Supp. 1062, 1067 (D. Or. 1984). However, the facts that emergency workers ordered the defendant *not* to release the ship, that the fire could have probably been contained, and that both firefighters’ lives and the ship were lost as a result of the defendant’s overly hasty action probably influenced the court’s seemingly stringent view of imminence. *See id.* at 1064–65. As the court remarked, the defendant’s “perversity turned a small shipboard fire into a marine disaster.” *Id.* at 1068.

99. *Protectus*, 585 F. Supp. at 1067. Applying the public necessity doctrine can involve a form of risk-benefit analysis. *See Cohan, supra* note 89, at 654 (“Under the necessity doctrine, there is a weighing of interests: the act of invasion of another’s property is justified under the necessity doctrine only if done to protect or advance some private or public interest of a value greater than, or at least equal to, that of the interest invaded.”).

100. *Ward Concrete Prods. Co. v. L.A. Cty. Flood Control Dist.*, 309 P.2d 546, 548 (Cal. Ct. App. 1957).

101. *Id.* at 551.

102. *Id.* (quoting *House v. L.A. Cty. Flood Control Dist.*, 153 P.2d 950, 953 (Cal. 1944)) (emphasis in original).

“grain facility could have been protected by much less drastic methods.”¹⁰³

Nevertheless, actors often enjoy more leeway as to what constitutes “reasonable” and “necessary” destruction in the actual throes of an emergency. In the early 20th century, for example, the King’s Bench in England excused a gamekeeper’s decision to start a backfire in order to stop a larger fire, even though it turned out that the backfire was not actually necessary, because there was “a real and imminent danger” and the backfire was a reasonable response under those emergency circumstances.¹⁰⁴ Almost ninety years later, the California Court of Appeals similarly explained the relevance of an existing emergency as follows:

In situations in which the state must take steps necessary to quell an emergency, it must be able to act with speed and confidence, unhampered by fear of tort liability. A state of emergency imposes severe time constraints, forcing decisions to be made quickly and often without sufficient time to carefully analyze all potential repercussions.¹⁰⁵

As a result, given the exigent circumstances involved, a California Reclamation District owed no compensation for damages resulting when it cut a levee in order to prevent “potentially massive flooding” as a result of a severe storm.¹⁰⁶

D. *The Doctrine of Public Necessity and Drought*

Remarkably, although governments and courts often invoke the doctrine of public necessity in the context of floods, it has rarely been applied in the context of drought. In an exception to this rule, in 1871, the Supreme Court of Pennsylvania had to decide whether the City of Philadelphia, facing a severe drought, was liable to boatmen for taking so much water from the Schuylkill River that the City impeded navigation.¹⁰⁷ Notably, the court emphasized that “[i]f it could have been shown that it was this supply for domestic purposes only, which occasioned the insufficiency for navigation, then the law of a paramount necessity would have existed, and have brought into play the doctrine of riparian rights, and justified the taking.”¹⁰⁸ Instead, the City took the water to drive water wheels, not for public water supply.¹⁰⁹ Be-

103. *Protectus*, 585 F. Supp. at 1068; *see also* *Barton-Barnes, Inc. v. State of New York*, 583 N.Y.S.2d 547, 548 (N.Y. App. Div. 1992) (upholding an award of damages when state officials destroyed a PCB-contaminated vehicle rather than undertaking reasonable efforts to eradicate the toxic contamination).

104. *Cope v. Sharpe*, (No. 2) [1912] 1 KB 496, 504.

105. *Thousand Trails, Inc. v. Cal. Reclamation Dist. No. 17*, 124 Cal. App. 4th 450, 458 (2004).

106. *Id.* at 464.

107. *City of Philadelphia v. Collins*, 68 Pa. 106, 121–22 (1871).

108. *Id.* at 123.

109. *Id.* at 124.

cause “[w]ater-power was forbidden when navigation required” the water, the City was liable.¹¹⁰

More recently, the California Second District Court of Appeals had to contemplate whether the City of San Luis Obispo could rely on the doctrine of public necessity—or, as California terms it, the emergency police power—to avoid inverse condemnation liability for subsidence it caused through groundwater pumping.¹¹¹ Although the City was facing drought conditions at the time, it had known since at least 1985 that its water supply was running out and would become critical by 1989.¹¹² In 1989, it instituted emergency groundwater pumping and contemplated building a desalination plant.¹¹³ The pumping caused the plaintiff’s land to subside, leading to litigation in 1991.¹¹⁴ The City claimed, among other things, that it was insulated from liability under its emergency police powers.

The court did not agree. As it noted, “The emergency exception is limited. It operates to avert impending peril.”¹¹⁵ Emphasizing that California law required a true emergency for the doctrine to apply,¹¹⁶ the court concluded:

The City was well aware of the need to conserve water for years. It chose a combination of mild conservation measures and the damaging groundwater pumping. This choice of action over the years does not constitute an emergency. It constituted a choice among many that the City made over a considerable period of time. As such, the City may not rely on its police powers to avoid compensation for the physical destruction of LOVA’s buildings due to its groundwater pumping operations.¹¹⁷

This California decision articulates well what the relationship between municipal water planning and the availability of the public necessity doctrine should be in order to incentivize responsible government action. Cities and counties *must* actively engage in water supply planning—including drought planning—and impose water conservation measures before the public necessity defense becomes available during drought. Of course, rearranging appropriative water rights occurs at the state level, not the municipal level. Nevertheless, state water agencies in western states should still evaluate city planning and conservation efforts before allowing municipal water use to continue out of priority. Specifically, municipalities that were unwilling to plan, enforce conservation measures, or secure any alternative water sup-

110. *Id.* at 125–26.

111. *Los Osos Valley Assocs. v. City of San Luis Obispo*, 30 Cal. App. 4th 1670, 1680 (2d Dist. 1995).

112. *Id.* at 1674–76.

113. *Id.* at 1676.

114. *Id.*

115. *Id.* at 1680.

116. *Id.* at 1680–81 (citations omitted).

117. *Id.* at 1681.

plies *ought* to bear the costs of securing water in drought emergencies as the price of the municipalities' failure or refusal to prepare—albeit still with some limited exception in state law for situations in which people face actual threats to life.

Conversely, if a city has both done all the planning and supply management allowed under state water law and imposed serious water conservation requirements on its residents as the drought progresses, public necessity should be a tool in the state water agency's repertoire for dealing with extreme drought. When water supplies are exhausted and there is insufficient water to support all competing uses, a drought can qualify as a state of emergency. Moreover, just like hurricanes and tornadoes, drought has the ability to put human lives immediately at risk. At such times, western states need a legal doctrine that allows them to reallocate water rights to protect human survival, rather than tolerate a public health crisis while crops flourish and businesses profit. Logically, public necessity is that doctrine because it empowers state water agencies to allow a municipality to continue receiving the amount of water minimally necessary to keep residents alive and healthy, despite actual legal priorities among water rights.

With that conclusion as a prelude, this Article returns to the Brazos River drought and the TCEQ's decision to continue junior water rights for municipal water supply and power generation. As the next Section discusses, the Texas courts have hamstrung the TCEQ in dealing with future life-threatening drought emergencies on a real-time basis.

V. ALLOWING PUBLIC NECESSITY REALLOCATIONS OF WATER DURING DROUGHT: THE BRAZOS RIVER DECISIONS

A. *The Contextual Nature of Water Rights*

Traditionally, water rights have not been considered the same kind of "property" as either land or personal property.¹¹⁸ Scholars often

118. Stephen Draper has also emphasized that such limitations inhere in the nature of water itself:

Because they are irreplaceable source waters, the earth's surface water (rivers, streams, lakes, and wetlands) and groundwater (aquifers) are unique natural resources. Unlike oil or minerals, life-sustaining flowing water is a shared, mobile, common-pool resource that is used and reused for different purposes as it moves through the hydrological cycle. Prior to capture by withdrawal or diversion, a claim of exclusive ownership of water is difficult to sustain.

Stephen E. Draper, *The Unintended Consequences of Tradable Property Rights to Water*, 20 NAT. RES. & ENV'T 49, 49 (2005). See also Joseph L. Sax, *The Limits of Private Rights in Public Waters*, 19 ENVTL. L. 473, 482 (1989) ("Water is not like a pocket watch or piece of furniture, which an owner may destroy with impunity. The rights of use in water, however long standing, should never be confused with more personal, more fully owned, property.").

describe property rights in water as both nebulous and complex.¹¹⁹ As Carol Rose has observed:

If water were our chief symbol for property, we might think of property rights—and perhaps other rights—in quite a different way. We might think of rights literally and figuratively as 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, attentiveness to others, and cooperative solutions to common problems.¹²⁰

Notably, prior appropriation rights are generally considered fairly limited usufructuary rights—the right to take and use part of a flow, rather than guaranteed ownership of particular molecules of water. As the Idaho Supreme Court explained:

A water right does not make the appropriator the owner of the source of the water, nor does it give the appropriator control over that source. . . . It does not even make the appropriator the owner of the water. . . . A water right simply gives the appropriator the right to the use of the water from that source, which right is superior to that of later appropriators when there is a shortage of water.¹²¹

In addition, prior appropriation anticipates at its core that the ability to exercise a water right from year to year and season to season depends on the actual hydrological circumstances that exist at the moment of the attempted diversion, and those who are “last in right” may in fact receive no water if actual stream flows cannot satisfy all claims.¹²² As such, appropriative water rights have always been contextual and contingent, and no water right holder has an absolute entitlement to a specific amount of water regardless of the status of the supply.

Other aspects of water and property law have also always inherently limited appropriative water rights. For example, water rights holders must put the water to a beneficial use¹²³ and cannot waste water.¹²⁴ Prior appropriation is a “use it or lose it” system,¹²⁵ and

119. See, e.g., David B. Anderson, *Water Rights as Property in Tulare v. United States*, 38 MCGEORGE L. REV. 461, 463 (2007) (“As a species of property, California water rights are indeed both unconventional and obscure.”); Megan Hennessy, *Colorado River Water Rights: Property Rights in Transition*, 71 U. CHI. L. REV. 1661, 1665 (2004) (noting that in the Colorado River “[p]rivate parties hold property rights, albeit imperfect ones, in water.”); Henry E. Smith, *Governing Water: The Semicommons of Fluid Property Rights*, 50 ARIZ. L. REV. 445, 450 (2008) (arguing “that water law tends to be a semicommons”).

120. Carol M. Rose, *Property as the Keystone Right?*, 71 NOTRE DAME L. REV. 329, 351 (1996).

121. *Joyce Livestock Co. v. United States*, 156 P.3d 502, 516 (Idaho 2007) (citation omitted).

122. *Cent. Platte Nat. Res. Dist. v. Wyoming*, 512 N.W.2d 392, 401 (Neb. Ct. App. 1993), *aff’d in part, rev’d in part on other grounds*, 513 N.W.2d 847 (Neb. 1994).

123. ADLER ET AL., *supra* note 36, at 155–56.

124. *Id.* at 156, 161–62.

water rights holders can lose water rights through common law abandonment or statutory forfeiture.¹²⁶ In some states, water rights are limited by the state's public trust doctrine.¹²⁷ Water rights holders cannot use water to create a nuisance or to cause land subsidence. Senior water rights—especially downstream water rights like Dow Chemical Company's on the Brazos River—can essentially be ignored if the call for more water is futile,¹²⁸ which means that cutting off junior water rights would not result in any more water reaching the senior.

Moreover, like all other private property, water rights are limited by the doctrine of public necessity. Indeed, applying the doctrine of public necessity to water rights is far less damaging than the doctrine's normal operation. As the discussion in Section III shows, courts have upheld governments' decisions under the doctrine of public necessity for the permanent destruction of houses, boats, crops, trees, and other valuable property. In contrast, a state water agency need only *suspend* water rights for the duration of the drought, allowing those rights to spring immediately back into legal force when the drought is over. It is thus difficult to argue that a state water agency could not justify temporarily suspending senior water rights during a drought when lives and public health are actually at risk. The loss of the property right would be only temporary, and the water right would become exercisable again without any expense to the holder—although, admittedly, that holder may have suffered other losses as a result of not being able to use the water.

B. *The Texas Court of Appeals on the Brazos River: Necessity Has No Place*

In its 2015 decision affirming the district court's ruling against the TCEQ, a Texas Court of Appeals read the doctrine of public necessity out of the Texas Water Code. The operative language of section 11.053 states:

During a period of drought or other emergency shortage of water, as defined by commission rule, the executive director by order may, in accordance with the priority of water rights established by Section 11.027:

- (1) temporarily suspend the right of any person who holds a water right to use the water; and
- (2) temporarily adjust the diversions of water by water rights holders.¹²⁹

125. *Id.* at 186.

126. *Id.* at 186–87.

127. Robin Kundis Craig, *A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 *ECOLOGY L.Q.* 53, 80–91 (2010).

128. ADLER ET AL., *supra* note 36, at 185.

129. TEX. WATER CODE § 11.053(a) (West 2011).

In turn, the referenced section 11.027 provides that “[a]s between appropriators, the first in time is first in right.”¹³⁰ Thus, as in all other prior appropriation states, the general rule in Texas is that, in times of shortage, the state curtails water rights in reverse order of priority.

Nevertheless, another Texas Water Code provision referenced in section 11.053, section 11.024, states that:

Preference shall be given to . . . domestic and municipal uses, including water for sustaining human life and the life of domestic animals, it being the public policy of the state and for the benefit of the greatest number of people that in the appropriation of water as herein defined, the appropriation of water for domestic and municipal uses shall be and remain superior to the rights of the state to appropriate the same for all other purposes¹³¹

As the TCEQ argued, this preference for preserving life, read in concert with the basic priority principle, would seem to give the TCEQ sufficient discretion to favor domestic and municipal drinking water uses during a drought.¹³² Indeed, it is no stretch to read section 11.024 as preserving a form of the public necessity doctrine, especially considering the public necessity doctrine’s status as a common law background principle of property law and the Texas Water Code’s lack of an explicit derogation of that principle.

However, the Texas Court of Appeals in Corpus Christi disagreed, concluding that enforcing water right priorities is an absolute mandate:

The entire section of 11.053 must be accomplished in accordance with the priority of water rights established by section 11.027. . . . No specific language was included that would allow TCEQ to depart from the time priority of 11.027; rather, the statute expressly states the opposite. . . . The agency’s interpretation would allow senior water rights holders to be suspended before their junior counterparts, which is inconsistent with the plain meaning of the statute. As such, we decline to defer to TCEQ’s interpretation.¹³³

Nor could the TCEQ draw on the state’s general police power authority to invoke something like the doctrine of public necessity:

While we recognize TCEQ’s authority to manage and regulate the state’s scarce water resources, such authority must not exceed its express legislative mandate. We conclude that TCEQ’s police power and general authority does not allow TCEQ to exempt junior preferred water rights from suspension based on public health, safety,

130. TEX. WATER CODE § 11.027 (West 2008).

131. TEX. WATER CODE § 11.024(1) (West 2008).

132. *Tex. Comm’n on Env’tl. Quality v. Tex. Farm Bureau*, 460 S.W.3d 264, 270–71 (Tex. App.—Corpus Christi 2015, no pet.).

133. *Id.* at 270.

and welfare concerns. Rather, section 11.053 specifically sets forth the limits of the agency's powers in times of drought.¹³⁴

Thus, the court effectively read all flexibility to deal with life-threatening drought emergencies out of the Texas Water Code.

Ironically, Dow's call on the river was probably futile. Back in 2009, Dow also called the river, and "[j]unior water rights were suspended that summer, cutting off mostly farmers and ranchers from using about 46 billion gallons of water, but no additional water flowed down to Dow's pumps."¹³⁵ Arguably, therefore, neither the TCEQ nor the court needed to reach the issue of public necessity—but that is, as they say, now water under the bridge.

C. *Revisiting the Brazos River: Public Necessity and the TCEQ's Second Suspension Order*

The Texas Court of Appeals' decision was hailed as a victory for property rights advocates.¹³⁶ However, "[p]roperty rights serve human values. They are recognized to that end, and are limited by it."¹³⁷ Moreover, as noted, Texas's own Water Code recognizes that domestic and municipal water use—water use for the preservation of lives—takes highest priority.¹³⁸

Nevertheless, the November 2012 TCEQ order that the appellate court reviewed was broad and sweeping—not the tailored, “reasonable measures” approach to emergencies that the doctrine of public necessity requires, as discussed in Section III. In contrast, in November and December of 2012, the TCEQ sent out questionnaires to all non-suspended junior water rights holders “requesting water use data and information related to the entity's alternative water sources” and “requesting each non-suspended water right holder to identify the minimum amount of water necessary for addressing public health and safety concerns.”¹³⁹ In response, fourteen holders, including several cities, indicated that they did not need their Brazos River water at all,¹⁴⁰ while several others responded that they could get by with less than their full Brazos River allocation.¹⁴¹ Other water rights holders indicated that the TCEQ could suspend their rights without risking public health, safety, and welfare.¹⁴²

134. *Id.* at 273 (citation omitted).

135. Jim Malewitz, *supra* note 22.

136. *Id.*

137. *State v. Shack*, 277 A.2d 369, 372 (N.J. 1971).

138. TEX. WATER CODE § 11.024 (West 2008).

139. TEX. COMM'N ON ENVTL. QUALITY, ORDER MODIFYING AN ORDER SUSPENDING WATER RIGHTS ON THE BRAZOS RIVER 2 ¶¶ 5, 6 (Jan. 15, 2013), <https://www.tceq.texas.gov/assets/public/response/drought/water-right-letters/01-15-13Brazos-muni.pdf> [<https://perma.cc/4BW6-AM3D>].

140. *Id.* at 2 ¶ 7.

141. *Id.* at 3–4, ¶¶ 8–16.

142. *Id.* at 4 ¶ 17.

As a result, in its January 2013 modification order, the TCEQ tailored its suspensions of junior water rights to the municipalities' actual water needs, curtailing several junior municipal and power generation water rights to reflect the agency's more nuanced assessment of the drought's true impact on public health.¹⁴³ To maintain flexibility in the face of an uncertain drought future, however, the TCEQ also allowed that a suspended municipality could revisit the curtailment if evolving needs for drinking water or fire suppression water so required.¹⁴⁴ Further, it identified water levels at various gauge stations that indicated that temporarily increased flows could allow for exercise of suspended water rights without interfering with Dow's senior water rights.¹⁴⁵ The TCEQ incorporated these same tailored suspensions into its July 2013 suspension order.¹⁴⁶

The TCEQ thus learned to deal with drought by identifying true public exigencies and taking tailored and reasonable measures to address them while still preserving water rights priorities to the extent possible without endangering public health and drinking water supplies. Nevertheless, given that the Texas courts categorically prohibited the TCEQ from implementing such a nuanced and flexible response, Texas communities are likely to suffer in future droughts even as less life-sustaining water uses continue.

VI. CONCLUSION

Agriculture and water-dependent businesses are *not* the bad actors in western water law, nor does this Article intend to suggest that they are. Indeed, in a complex world with a changing climate, far more attention needs to be paid to national and global food security. This attention should include, perhaps, a reassessment of what we grow and where; the impacts of drought on agriculture can, ultimately, also become a threat to human survival. For example, a recent article summarized the impacts of the 2012–2016 California drought on California agriculture as follows:

From 2012–2016 California experienced the most severe drought—including the driest single year, 2014—in the last 1200 years. State-wide costs to California's agricultural sector in 2015 were estimated at \$2.7 billion, along with some 21,000 workers impacted by either direct or indirect job losses. Agriculture largely rode out the drought by continuing to deplete the already vastly overdrafted groundwater, but at a cost of \$590 million in that year alone. State-wide figures mask the uneven socioeconomic impacts of the drought, which fell disproportionately on agricultural areas south of

143. *Id.* at 7–9 ¶¶ 4–13, 9–10 ¶¶ 1–10.

144. *Id.* at 11 ¶ 11.

145. *Id.* at 11–12, ¶ 14.

146. *See generally* TCEQ JULY 2013 BRAZOS RIVER ORDER, *supra* note 31.

the Sacramento/San Joaquin Bay Delta in the San Joaquin Valley.¹⁴⁷

Nevertheless, the need for an improved, drought-sensitive agricultural policy in the United States does not eliminate the recurring exigencies of droughts on human health and survival, especially during the truly severe droughts that can pose an immediate threat to “survival water”—the water that humans need to avoid public health crises.

Experts have long recognized the inequities of strict prior appropriation law.¹⁴⁸ Application of that doctrine to allow the growing of low-value crops like alfalfa—or, as on the Brazos River, the extraction of magnesium from seawater—while water-starved residents pay exorbitant prices to truck in water from elsewhere, elevates black-letter water law over the human values that all property law is intended to serve. The common law employed the doctrine of public necessity as a rebalancing stick available in true emergencies, and western states would be wise to incorporate that doctrine as a part of their prior appropriation law.

147. Sugg, *supra* note 48, at 1.

148. *Id.* at 3, 16.

