

TRUSTING THE PUBLIC TRUST: APPLICATION OF THE PUBLIC TRUST DOCTRINE TO GROUNDWATER RESOURCES

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TABLE OF CONTENTS

| | |
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| Introduction..... | 190 |
| I. An Overview of Groundwater Problems in the United States | 193 |
| A. Running Low in the High Plains..... | 193 |
| B. A Garden in the Wilderness | 195 |
| C. Land Subsidence | 197 |
| D. Natural Resource Extraction | 198 |
| E. Bottled Water: Groundwater as a Consumer Commodity..... | 200 |
| F. Saltwater Intrusion: The Sea Cometh | 201 |
| G. Reduced Surface Flows..... | 202 |
| H. Groundwater Depletion: A Pervasive Nationwide Problem | 203 |
| II. A Brief Overview of Groundwater Law | 204 |
| A. Common Law Applied to Groundwater..... | 205 |
| B. Statutory Overlays..... | 211 |
| III. The Public Trust and Groundwater | 214 |
| A. Brief Historical Overview of the Public Trust Doctrine | 214 |
| B. New Applications of the Public Trust Doctrine | 216 |
| IV. Groundwater and the Public Trust Doctrine | 221 |
| A. Application of the Doctrine Beyond Property-Based Navigability Distinctions Regarding Bed, Banks, and Tidelands..... | 221 |
| B. Applying the Public Trust to Groundwater..... | 226 |
| C. Likely Criticism of Applying the Public Trust Doctrine to Groundwater | 231 |
| Conclusion..... | 235 |

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INTRODUCTION

A recent *New York Times* story proclaimed *Beneath Booming Cities, China's Future is Drying Up*, detailing a profound example of groundwater depletion that threatens to tear the fabric of Chinese society.¹ China's roiling economic expansion over the past two decades has created water shortages of enormous magnitude. China is trying to alleviate the problem with a sixty-two billion dollar trans-basin water transfer scheme to its booming North Plain—an arid, rapidly developing part of the country that has depleted its groundwater at unprecedented rates to support economic growth.² Scientists predict that in the North China Plain, 200 million people will simply run out of groundwater in thirty years.³

The situation in China, while extreme, is not unlike groundwater extraction problems in the American Southwest. Like the North China Plain, the Southwest is arid, yet burgeons with recent population growth, and lives beyond its local water availability. The groundwater problem in the Southwest is also attacked with technological fixes. Rather than limit growth, the Southern Nevada Water Authority proposes massive groundwater pumping from hundreds of miles away to fuel its continued boom.⁴

Our groundwater problems are not limited to desert lands in the United States. Florida, one of the wettest states in the nation, has severe local subsidence problems due to groundwater pumping.⁵ Groundwater supplies for some metropolitan areas along the East Coast are threatened by saltwater invasion due to both rising seas and sinking water tables. Water bottling companies seek exclusive rights for springs, to the chagrin of local residents.⁶ The Ogallala Aquifer in the Great Plains, which supplies 30% of all irrigation water for the nation's agriculture, has in some areas dropped

1. Jim Yardley, *Under China's Booming North, the Future Is Drying Up*, N.Y. TIMES, Sept. 28, 2007, at A1, available at 2007 WLNR 18998401.

2. *Id.* The rate of growth is difficult to comprehend. The city of Shijiazhuang grew from a few farming villages in 1900, to a city of 335,000 people in 1950, to a metropolitan area today with over nine million residents. *Id.*

3. *Id.*

4. Yardley, *supra* note 1. The Central Arizona Project is another example of fixing groundwater by massive interbasin transfer instead of limiting growth or enacting sustainability legislation. This taxpayer-subsidized project brings Colorado River water some 300 miles to central Arizona. See Central Arizona Project, <http://www.cap-az.com> (addressing frequently asked questions about the Central Arizona Project).

5. U.S. GEOLOGICAL SURVEY, FS-165-00, GROUNDWATER RESOURCES FOR THE FUTURE: LAND SUBSIDENCE IN THE UNITED STATES, 1 fig.1, 3 (2000), available at <http://water.usgs.gov/ogw/pubs/fs00165/SubsidenceFS.v7.pdf>.

6. See *infra* notes 81–93 and accompanying text.

more than 150 feet due to groundwater pumping for irrigation.⁷ In Montana, coal seam aquifers that have supplied domestic and stock water for generations may be pumped dry for coal bed methane development. Chicago area aquifers have dropped 900 feet. Serious looming groundwater shortages are predicted in some parts of the Great Lakes.⁸ California overdraws its water by one to two million acre-feet per year.⁹ Las Vegas refuses to cap population growth and looks to pump groundwater from rural areas; local ranchers vow to fight the water grab.¹⁰ While not as immediately severe as China's groundwater problems, the United States faces groundwater challenges on many fronts.

We are a nation dependent upon groundwater for both agriculture and domestic water supplies. Groundwater use increased from thirty-eight million acre-feet to ninety-three million acre-feet in just thirty years, from 1950 to 1980.¹¹ Groundwater accounts for 40% of all water for irrigated agriculture, and provides about 40% of our domestic water needs.¹² While the United States has locally abundant groundwater resources,¹³ the most rapidly growing areas, where extraction is greatest, are often the most arid parts of the country, where recharge is slow. For example, the Ogallala Aquifer, our nation's richest groundwater source, is being depleted at a rate conservatively estimated to exceed ten times the rate of natural recharge.¹⁴ Groundwater mining is a problem that must be confronted sooner rather than later.

Changes in snowfall, snow melt, temperature, and precipitation related to global climate change exacerbate groundwater recharge problems. In just two decades, dramatic changes in hydrological patterns have been documented in the Northeast and Rocky Mountain West. Mountain snow packs are diminished, spring runoff is earlier and quicker, and reservoirs

7. WILLIAM M. ALLEY ET AL., U.S. GEOLOGICAL SURVEY, CIRCULAR 1186, SUSTAINABILITY OF GROUND-WATER RESOURCES 27 fig.10 (1999), available at <http://pubs.usgs.gov/circ/circ1186/pdf/circ1186.pdf>.

8. See *infra* p. 204.

9. CAL. DEP'T OF WATER RES., DEP'T OF NATURAL RES., BULLETIN 118, CALIFORNIA'S GROUNDWATER 2 (2003), available at http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/Bulletin118_Entire.pdf.

10. See *infra* note 45-51 and accompanying text.

11. JOSEPH SAX ET AL., LEGAL CONTROL OF GROUNDWATER RESOURCES 395 (4th ed. 2006).

12. *Id.*

13. U.S. Geological Survey (USGS) estimates that the total amount of freshwater-groundwater withdrawals in the United States in 2000 was approximately eighty-three billion gallons per day, not including independent routing. U.S. Geological Survey, Estimated Use of Water in the United States in 2000, tbl. 1, <http://pubs.usgs.gov/circ/2004/circ1268/htdocs/text-total.htm> (last visited Dec. 11, 2007).

14. MANJULA V. GURU & JAMES E. HORNE, KERR CENTER FOR SUSTAINABLE AGRICULTURE, THE OGALLALA AQUIFER 7-8 (2000), available at http://www.kerrcenter.com/publications/ogallala_aquifer.pdf.

designed to capture snow melt do not fill. All of these factors increase pressure for more groundwater extraction.¹⁵ In addition, the rise in sea levels attributed to climate change has already caused saltwater to invade some East Coast aquifers.¹⁶

Confounding groundwater management are myriad disparate, often outdated laws, relics of nineteenth-century common law doctrines ill-suited for today's problems. Yet, despite our dependence on groundwater for agriculture and municipal water, we sanction over-drafting of aquifers in many places even while climate change may substantially alter the long-term water balance. Common law groundwater doctrines and state statutory schemes for groundwater often do little to prevent groundwater mining. If we are to maintain our nation's preeminence in agriculture and ensure quality domestic water supplies where people need them, then a fresh look at how to best approach groundwater conservation is needed.¹⁷

Part I of this Article begins with an overview of problems stemming from overuse and poor management of groundwater in the United States. These problems are likely to increase over time as our population expands, economic growth continues, and global warming alters the hydrologic cycle. Part II touches upon past and current legal groundwater management regimes. Common law doctrines are rooted in arcane concepts, vary widely across the states, and provide little incentive for sustainable use of groundwater. Statutory overlays have improved groundwater management in recent years, but have not alleviated the pervasive problems.

A new paradigm is needed to avoid the devastating effects of squandering such a precious resource. Part III of this Article suggests that the public trust doctrine offers an appropriate path to long-term protection of groundwater. The public trust doctrine is a widely cited, but often misunderstood mechanism for protecting public resources like water. Though the doctrine has been traditionally applied to the bed and banks of streams, tidelands, and navigable waters, in the last two decades courts have used state constitutions to more broadly apply it to water.

15. SAX, *supra* note 11, at 11–12.

16. U.S. GEOLOGICAL SURVEY, STRATEGIC DIRECTIONS FOR THE U.S. GEOLOGICAL SURVEY GROUND-WATER RESOURCES PROGRAM 10 (1998), available at <http://water.usgs.gov/ogw/gwrp/stratdir/stratdir.pdf> [hereinafter USGS REPORT].

17. The United States has led the world in many measures of agricultural productivity. Some contend that maintaining or increasing that productivity is now a matter of national security. See, e.g., R. James Woosley, *U.S. Agriculture and National Security*, in TRENDS IN NEW CROPS AND NEW USES, (J. Janick & A. Whipkey eds., 2002) (advocating an increase of American cellulosic biomass production for use in transportation fuel and chemical production), reprint available at <http://www.hort.purdue.edu/newcrop/ncnu02/pdf/woolsey.pdf>.

The public trust doctrine is not a panacea, but it is well suited to groundwater and need not be constrained by out-dated tests of state ownership of land or navigability of surface water. State implementation of trusteeship principles will inform groundwater management decisions so that preservation of the resource for future generations can be accomplished to counter long-term aquifer depletion. Whether accomplished by common law, statute, or state constitution, the application of public trust principles to groundwater is an idea whose time has come.

I. AN OVERVIEW OF GROUNDWATER PROBLEMS IN THE UNITED STATES¹⁸

Groundwater is a major source of water for domestic, municipal, and agricultural uses. Twenty-two percent of all freshwater used in the United States comes from groundwater.¹⁹ One half of the country relies upon groundwater for drinking water. Irrigated agriculture in some of the country's most productive areas—California's Central Valley, the Great Plains, and the Upper Midwest—rely extensively on groundwater.²⁰

Groundwater mining, also known as overdrafting, occurs when groundwater is removed from an aquifer at rates that exceed natural recharge. Nationwide groundwater problems from overdrafting are well documented. An overview of some of our nation's groundwater hotspots illuminates the failures of the present regulatory system. Over-pumping of groundwater, coupled with increasing demands on the resource, is not a rare or geographically isolated phenomenon. Groundwater depletion is a pervasive, nation-wide problem.²¹

A. Running Low in the High Plains

The Ogallala Aquifer is illustrative of the problem. Stretching from Texas through the entire Great Plains to just below the Canadian border, the Ogallala contains approximately three billion acre-feet of relatively pure groundwater—the nation's richest source.²² Extensive pumping, mostly for

18. Groundwater extraction problems have been studied in great detail. For one of the best and most comprehensive discussions of the problem, see generally ROBERT GLENNON, *WATER FOLLIES: GROUNDWATER PUMPING AND THE FATE OF AMERICA'S FRESH WATERS* 31 (2002). Parts of this Article draw from Professor Glennon's work.

19. *Id.* at 31.

20. *Id.*

21. Groundwater contamination from pollution is another significant threat to groundwater, but is beyond the scope of this article.

22. High Plains Underground Water Conservation District No. 1, *The Ogallala Aquifer*, http://www.hpwd.com/the_ogallala.asp (last visited Nov. 29, 2007).

agriculture, has already lowered Ogallala's water table substantially—in some places by over 150 feet.²³

Northwest Texas sits atop the southern end of the Ogallala Aquifer. This rich agricultural area is now threatened by groundwater depletion. According to a study done by the U.S. Department of Agriculture (USDA) and regional state universities, the Ogallala continues to decline despite conservation efforts.²⁴ The study projects that in little more than sixty years the saturated thickness of the aquifer will decline by 41%, and annual net returns will decrease by sixty dollars per acre in this agriculturally dependent region.²⁵ Irrigated acreage is already declining while policy analysts struggle to save the economy without drying up the aquifer completely.²⁶ One study labels the dewatering of the Ogallala as a “one-time experiment, unrepeatabe and irreversible.”²⁷

But agriculture is not the only use threatening to dewater the Ogallala. T. Boone Pickens, best known for his successful oil production in Texas, plans to sell up to 200,000 acre-feet of the aquifer each year to one of the state's major cities for high prices.²⁸ How can he do that? Texas is one of the only states that still recognize the rule of capture,²⁹ a centuries-old doctrine that allows unrestrained pumping by a surface owner.³⁰ The basic idea is “first come, first served”—the person with the deepest well or biggest pump can capture all the groundwater. The State has delegated some responsibility for water allocation to about eighty Underground Water Conservation Districts (UWCDs), many in West Texas, but most have not changed the rule of capture or enforced their own restrictions.³¹ Texas's groundwater problems, however, extend far beyond the Ogallala.³²

23. ALLEY ET AL., *supra* note 7.

24. Kay Ledbetter, *Communities, Not Just Crops, Depend on Irrigation*, SW. FARM PRESS, June 14, 2006, available at <http://southwestfarmpress.com/news/061406-irrigation-communities/>.

25. Jeffrey W. Johnson, USDA Agricultural Research Serv., Economic Analysis of Water Policy Alternatives for the Ogallala Aquifer, at slide 15, <http://www.aaec.ttu.edu/cei/activities/J.Johnson.ppt> (last visited Mar. 3, 2008) (Microsoft PowerPoint presentation).

26. Ledbetter, *supra* note 24.

27. GURU & HORNE, *supra* note 14, at 6.

28. Public Citizen, *T. Boone Pickens in Texas*, CITIZEN.ORG, <http://www.citizen.org/cmep/Water/us/bulksales/texas/index.cfm> (last visited Dec. 8, 2007).

29. Ronald Kaiser, *Who Owns the Water?: A Primer on Texas Groundwater Law and Spring Flow*, TEX. PARKS & WILDLIFE, July 2005, available at http://www.tpwmagazine.com/archive/2005/jul/ed_2.

32. The fight in Texas over the southern segment of Edwards Aquifer that serves San Antonio and surrounding areas is another example of unsustainable pumping, in this case primarily by municipal water districts. The trials and tribulations of those seeking to protect this unique aquifer and its resources are recounted in GLENNON, *supra* note 18, at 87.

The Ogallala is decreasing in the west of Kansas as well. In 1948 you could tap the water at 105 feet, but today the water table is down to 175 feet in some places.³³ Water levels may continue to drop two to three feet a year.³⁴ The lowered water table is forcing some farmers to leave. In Wichita County, the number of irrigated acres dropped from 100,000 to 40,000 in the past twenty years.³⁵

Feedlots further compound groundwater depletion. West Kansas is a hot spot for the agricultural industry, including feedstock and meatpacking, which is highly dependent on irrigation.³⁶ Agribusiness brought jobs and economic development, which the state relies on for most of its income; but the industry is also the largest stress on the water supply.³⁷ Parts of the aquifer will be consumed within an estimated twenty-five years.³⁸ If not dealt with soon, the impending shortage will burden agribusiness and limit the potential to maintain economic stability in the region.

B. A Garden in the Wilderness

Clark County, Nevada, home to Las Vegas, is one of the nation's fastest growing counties.³⁹ Las Vegas is located in one of the most arid parts of the country. Last year, Nevada issued permits that allocated 102% of the region's freshwater yield.⁴⁰ Just in Las Vegas Valley, permits exist for 376% of available water.⁴¹

Las Vegas's primary water source, the fully-allocated Colorado River, cannot serve its expanding population.⁴² As a supplement, Nevada has to purchase 1.25 million acre-feet of the Colorado River from Arizona.⁴³ To

33. *Dwindling Water Supplies Shape Future of Farming in Western Kansas*, USWATERNEWS.COM, Oct. 2001, <http://www.uswaternews.com/archives/arcsupply/1dwiwat10.html>.

34. *See id.* (reporting such drops despite adoption of dryland crops and no-till farming techniques).

35. *Id.*

36. *Id.*

37. *Id.*

38. *See KANSAS GEOLOGICAL SURVEY, REPORT 2000-29B, WATER LEVEL DECLINE IN THE OGALLALA AQUIFER (2000)*, <http://www.kgs.ku.edu/HighPlains/2000-29B/Decdir.htm>.

39. Les Christie, *10 Fastest-Growing U.S. Counties*, CNNMONEY.COM, http://money.cnn.com/galleries/2007/real_estate/0703/gallery.fastest_growing_counties/4.html (last visited Dec. 8, 2007).

40. James E. Deacon et al., *Fueling Population Growth in Las Vegas: How Large-Scale Groundwater Withdrawal Could Burn Regional Biodiversity*, 57 *BIOSCIENCE* 691, 692 (2007), available at http://aquadoc.typepad.com/waterwired/files/deacon_et_al.%20%20GW.pdf.

41. *Id.*

42. Adam Tanner, *Las Vegas Growth Depends on Dwindling Water Supply*, REUTERS, Aug. 21, 2007, <http://www.reuters.com/article/domesticNews/idUSN1335882320070821>.

43. Deacon et al., *supra* note 40, at 688.

meet its long-term water demands, the Southern Nevada Water Authority proposes to pump 200,000 acre-feet per year of groundwater from distant rural counties and pipe it to Las Vegas by withdrawing water from a carbonate aquifer that stretches to Utah and California.⁴⁴ Some fear the pumping will drain springs and wetlands, rare commodities in the desert.⁴⁵ Impacts may extend across state lines.⁴⁶ Ranching communities and others dependent on increasingly scarce water supplies fear the big city water grab as reminiscent of Los Angeles's depletion of Owens Valley water nearly a century ago.⁴⁷ Las Vegas predicts that the pumping will not affect surface waters or cause subsidence, but some fear the city is relying on poor science. Land subsidence, higher pumping costs, lowered water table, and decreased interbasin transfer are all assumed costs of the project.⁴⁸

But problems stemming from municipal depletion of groundwater are not limited to arid regions. Though Florida has more groundwater available for its residents than most states, demand from skyrocketing growth has already stressed aquifers. To supply its burgeoning population, the West Coast Regional Water Supply Authority, serving the Tampa-St. Petersburg area, has increased its groundwater pumping by 400% since 1960, to more than 255 million gallons per day.⁴⁹ Ninety-five percent of the area's lakes have been degraded by groundwater pumping, which is expected to double by 2020 in order to meet the region's ever-growing population.⁵⁰

44. *Id.* at 688–89.

45. *Id.*

46. An investigation by the state of Utah concluded that one small part of the pumping project in the Snake Valley, where 25,000 acre-feet are slated to be shipped to Las Vegas, will extend into Utah with disastrous effects. STEFAN KIRBY & HUGH HURLOW, REPORT OF INVESTIGATION 254 UTAH GEOLOGICAL SURVEY, HYDROGEOLOGIC SETTING OF THE SNAKE VALLEY HYDROLOGIC BASIN, MILLARD COUNTY, UTAH, AND WHITE PINE AND LINCOLN COUNTIES, NEVADA: IMPLICATIONS FOR POSSIBLE EFFECTS OF PROPOSED WATER WELLS 1, 32 (2005), *available at* <http://ugs.utah.gov/online/ri/ri-254.pdf>. The investigation concluded that “[t]his magnitude of the drawdown would adversely affect both existing and future spring, surface, and groundwater uses in Utah” and further concluded that “[t]he decline in groundwater levels could produce lasting and irreversible effects on both the agriculture and native vegetation of the Snake Valley.” *Id.*

47. See Carrie Khan, *L.A. Returns Water to the Owens Valley*, NPR.COM, Dec. 7, 2006, <http://www.npr.org/templates/story/story.php?storyId=6590362> (“At the dawn of the 20th century, Owens Valley was a prime piece of California nature But then, Los Angeles got its hands on the water and everything changed.”).

48. Deacon et al., *supra* note 40, at 693.

49. GLENNON, *supra* note 18, at 74.

50. *Id.* at 77.

C. Land Subsidence

Land subsidence is another serious consequence of groundwater mining. The U.S. Geological Survey documents land subsidence problems attributable to groundwater pumping in California, Texas, Florida, Delaware, New Mexico, Arizona, New Jersey, Colorado, Idaho, Georgia, and Virginia.⁵¹

In Florida, subsidence from groundwater pumping is well documented. Below Florida's surface is a hidden world of underwater rivers and caves carved over millions of years from the state's fragile limestone.⁵² The unstable limestone sometimes gives way, causing the surrounding land to cave in and creating sinkholes.⁵³ Intense groundwater pumping can trigger such sinkholes and land subsidence by removing water that once supported limestone near the surface.⁵⁴ The development of one well in central Florida triggered over 100 sinkholes within twenty acres of each other.⁵⁵ Most instances are less drastic, but even the creation of just one sinkhole can destroy land, homes, and roads with little or no warning.⁵⁶

In some cases, sinks are only the beginning of the problem.⁵⁷ Over-pumping groundwater for agriculture, mining, industry, and public projects caused the formation of Dover Sink and over twenty other sinkholes next to the Peace River in southwest Florida.⁵⁸ Dover Sink alone steals 6.5 million gallons of water a day from the Peace River, leaving the upper riverbed completely dry during the increasingly frequent drought seasons.⁵⁹ Instead of placing restrictions on local groundwater pumping, regional water managers want to place berms around the sinks to keep the river flowing.⁶⁰ This strategy has never been successfully implemented anywhere else and,

51. U.S. GEOLOGICAL SURVEY, GROUNDWATER RESOURCES FOR THE FUTURE, at fig.3 (2000), <http://water.usgs.gov/ogw/pubs/fs00165>.

52. *Florida Faces Vanishing Water Supply*, NPR.COM, Nov. 26, 2007, <http://www.npr.org/templates/story/story.php?storyId=11097869>.

53. *Id.*

54. *Id.*

55. ALLEY ET AL., *supra* note 7, at 58

56. *See, e.g., Giant Sinkhole Swallows Florida Barn*, FIREHOUSE, Jun. 14, 2007, [http://cms.firehouse.com/web/online/News/Giant-Sinkhole-Swallows-Florida-Barn-/46\\$388](http://cms.firehouse.com/web/online/News/Giant-Sinkhole-Swallows-Florida-Barn-/46$388) (describing the unexpected collapse of a fifty-foot-wide, thirty-foot-deep sinkhole).

57. Kate Spinner, *Proposal to Quench Peace River Has Risks*, HERALD-TRIBUNE, May 1, 2007, available at <http://www.heraldtribune.com/apps/pbcs.dll/article?AID=/20070501/news/705010532>.

58. *Id.*

59. *Id.*

60. *Id.*

if approved, is likely to trigger even more sinkholes in the area by making the land less stable.⁶¹

Some say Florida's population growth is inevitable, and the state agency that controls the region's water supply must meet the demand no matter how high.⁶² Others contend the agency has authority to limit growth to reflect the availability of water but simply chooses not to.⁶³

Florida residents who experience lowered water tables or subsiding land often find themselves without recourse, despite attempts to communicate with authorities.⁶⁴ This has led to increased litigation, often with frustrating results.⁶⁵ Some residents who try to speak out against the harmful impacts of groundwater pumping find themselves defendants in Strategic Litigation Against Public Participation (SLAPP) suits brought by cities and utilities aimed at keeping groundwater issues out of the courts.⁶⁶ Others are forced to accept defeat and move to another place.⁶⁷

D. Natural Resource Extraction

Natural resource extraction can also create serious ramifications for groundwater. The Powder River Basin, home to the nation's largest coal reserves, is experiencing a new boom: coal bed methane natural gas production.⁶⁸ To reach natural gas trapped in coal seams, producers must first dewater a coal seam aquifer by drilling a conventional water well and pumping.⁶⁹ The amount of pumped groundwater from coal seam aquifers is staggering. One government projection for the 51,000 new wells in the Wyoming Powder River Basin estimates groundwater extraction, as a waste by-product of coal bed methane production, at one billion gallons of water per day.⁷⁰

The pumped groundwater is a waste by-product of the process, and is discharged to surface waters or left to evaporate in holding pits.⁷¹ Not only

61. *Id.*

62. Victor Hull, *From Drier to Dire*, HERALD-TRIBUNE, May 2, 2007, available at <http://www.heraldtribune.com/article/20070502/news/705020676/0/columnist99>.

63. *Id.*

64. GLENNON, *supra* note 18, at 74–75.

65. *Id.* at 71–86.

66. *Id.* at 78.

67. *Id.* at 86.

68. Thomas F. Darin & Amy W. Beatie, *Debunking the Natural Gas "Clean Energy" Myth: Coalbed Methane in Wyoming's Powder River Basin*, 31 ENVTL. L. REP. 10,566, 10,567 (2001).

69. *Id.* at 10,574.

70. *Id.* at 10,575.

71. *See generally* N. Plains Res. Council v. Fidelity Exploration and Dev. Co., 325 F.3d 1155, 1157 (9th Cir.), *cert. denied*, 540 U.S. 967 (2003) (ranchers successfully sued under the Clean Water Act

are such practices decried as wasteful, long-term pumping can lower water tables by hundreds of feet. The Bureau of Land Management estimates that water tables will be affected as far as twenty miles from the gas fields, impacting domestic wells and surface springs.⁷² Ranchers have sued producers, labeling the extraction and dumping of groundwater as wasteful and unlawful.⁷³ The Montana Department of Natural Resources and Conservation, the agency responsible for ground and surface water permitting in that state, claims it has no control over the pumping, does not require a water right for the pumping, and does not consider the practice to be a waste of water.⁷⁴

Hard rock mining also causes groundwater problems, particularly in the West. Conventional open-pit gold mining in Nevada requires significant groundwater depletion, sometimes lowering the water table by as much as 1500 feet.⁷⁵ The pits must be dewatered, and the water is mostly wasted. At the Cortez gold mine in the Crescent Valley, high quality groundwater pumped from the mine is returned to shallow infiltration trenches. As it percolates down to the water table, it picks up salts from the soil; when it reaches the water table it no longer meets drinking water standards.⁷⁶ When mining ceases, the pits can fill with induced groundwater that would otherwise recharge surface water.

to force the producer to obtain a National Pollution Discharge Elimination System Permit for particularly saline discharges into surface water used for irrigation).

72. U.S. DEP'T OF THE INTERIOR & STATE OF MONT., FINAL STATEWIDE OIL AND GAS ENVIRONMENTAL IMPACT STATEMENT AND PROPOSED AMENDMENT OF THE POWDER RIVER AND BILLINGS RESOURCE MANAGEMENT PLANS 4–12 (2003). As part of the process, Montana Bureau of Mines and Geology (BOMG) completed a three dimensional groundwater model to examine the magnitude and geographic extent of the drawdown impacts within the boundaries of producing fields and beyond the edge of producing fields. *Id.* The BOMG's 3-D Model predicts between 240 to 600 feet of drawdown in the coal seam aquifers within the boundaries of producing fields. The final environmental impact statement (FEIS) predicts drawdowns of up to thirty feet extending an estimated seven miles from the edges of producing fields and drawdowns extending as far as twenty miles from the edges of producing fields. If full development proceeds as completed, there will be numerous producing fields in southeastern Montana. *Id.*

73. Mont. Dep't of Natural Res., Brief in Opposition to Plaintiff's Motion for Summary Judgment and in Support of DNRC's Motion for Summary Judgment at 4, *Diamond Cross Properties, LLC. v. Montana*, DV-2-2005-70 (22d Dist. Mont. filed May 24, 2006). The case is currently pending in the Twenty-second District, Big Horn County, Montana, on cross-motions for summary judgment.

74. *Id.* at 6–19.

75. Great Basin Mine Watch, Water Mining, http://www.greatbasinminewatch.org/mambo/index.php?option=com_content&task=view&id=56&Itemid=86 (last visited Dec. 8, 2007).

76. Christopher Sewall, A Brief Background on Mt. Tenabo, Great Basin Mine Watch, <http://www.greatbasinminewatch.org/mambo/index.php> (follow "Crescent Valley" hyperlink at right) (last visited Feb. 21, 2008).

E. Bottled Water: Groundwater as a Consumer Commodity

Another source of increased demand on groundwater is the bottled water industry. The popularity and profitability of bottled water has created a new growth industry. As states look for new ways to boost their economies, many welcome water bottling industries, like the international giant, Nestlé.⁷⁷ The company operates under a number of labels in many states, including Maine, Michigan, Tennessee, California, Florida, and Wisconsin.⁷⁸ Bottled spring water fetches premium prices, so Nestlé and other bottlers purchase properties with natural springs.

Wisconsin is one state where bottled water and groundwater clash. The state has codified the reasonable use doctrine,⁷⁹ which prohibits withdrawals of groundwater that cause unreasonable harm to others. But the burden is on the adjoining landowners to demonstrate harm,⁸⁰ and because “harm” under the state law does not include reductions in adjacent creeks and rivers, it is hard to limit groundwater withdrawals.⁸¹ The law, therefore, allows bottled water companies and other industries to withdraw groundwater regardless of its impact on other water bodies or the public’s interest in preserving groundwater as an integral part of the water system as a whole. Despite the lack of legal protection, public interest groups were able to fight off an attempt by Perrier, one of Nestlé’s bottling companies, to begin extracting groundwater in the state.⁸² The company, however, is giving Wisconsin another try,⁸³ and history would suggest that Nestlé is likely to win in the end.

Michigan residents have been battling another Nestlé subsidiary, Ice Mountain Spring Water, for a number of years.⁸⁴ Ice Mountain bottled approximately 226 million gallons of water in 2006 from its plant in Stanwood, Michigan,⁸⁵ but the company’s website blames agricultural,

77. GLENNON, *supra* note 18, at 5–6.

78. *Id.* at 10–11.

79. WIS. STAT. ANN. § 281.35(5)(d) (2005).

80. GLENNON, *supra* note 18, at 8.

81. *Id.*

82. *Id.*

83. *Id.* at 10.

84. *See, e.g., Michigan Citizens for Water Conservation v. Nestlé Waters N. Am.*, 709 N.W.2d 174 (Mich. Ct. App. 2005) (holding, in part, that company’s proposed withdrawal of groundwater was unreasonable), *rev’d in part on other grounds*, 737 N.W.2d 447 (Mich. 2007); Sally Barber, *Ice Mountain Remains Central to Water Debate*, CADILLAC NEWS, <http://www.cadillacnews.com/articles/2006/11/07/news/news03.txt> (last visited Feb. 4, 2008) (“When Michigan Citizens for Water Conservation filed suit against Nestlé Waters North America in 2001, it fueled debate over Michigan water management laws.”).

85. *Landmark Decision Made in Nestlé vs. Citizen Group*, CADILLAC NEWS, <http://www.cadillacnews.com/articles/2007/07/26/news/news04.txt> (last visited Jan. 12, 2008).

municipal, and other uses for decreasing water levels.⁸⁶ Nestlé isn't the only bottler in the state, either. The high profits earned in the bottled water industry attract new bottling companies, like the one starting up in Evert. Company owner Duane DeWitt plans to call it the Great Lakes Bottled Water Company, and hopes to pump 24,000 gallons of water each day from a source sought after by Ice Mountain.⁸⁷ The City Council has welcomed the forty jobs the company would create and may extend a variance so that DeWitt can avoid regulations that would make pumping the water more costly.⁸⁸

F. Saltwater Intrusion: The Sea Cometh

Some coastal areas face yet another serious groundwater issue—saltwater intrusion into groundwater used for domestic purposes in seaside communities. Saltwater intrusion is the movement of saline water into freshwater aquifers, and can be caused by over-pumping groundwater to meet the demand of a growing population. Many communities along the Atlantic, including Chesapeake Bay, Virginia, Long Island, New York, and Beaufort-Hilton Head, South Carolina, have already experienced saltwater intrusion in their aquifers.⁸⁹ Groundwater pumping on Nantucket Island is already causing saltwater intrusion that threatens domestic water supplies.⁹⁰ Saltwater intrusion is not limited to coastal areas; Alabama reports a lawsuit where saltwater intrusion from groundwater pumping ruined domestic supplies over 100 miles from the coast.⁹¹

Virginia's eastern shore illustrates the problem. Its fresh water aquifer floats between the salty Chesapeake Bay, the Atlantic Ocean, and above saltwater located in deeper aquifers.⁹² Some say the answer is to simply limit development.⁹³ In the southern half of Virginia Beach, for example, development is limited to allow aquifers to sufficiently recharge on a

86. Nestlé Waters, Environmental Stewardship, Water Use, <http://www.nestle-watersna.com/Menu/Environmental/Water+Use.htm> (last visited Jan. 14, 2008).

87. Sally Barber, *Bottling Company Coming to Evert*, CADILLAC NEWS, available at <http://www.cadillacnews.com/articles/2007/10/03/news/news02.txt> (last visited Jan. 22, 2007).

88. *Id.*

89. USGS REPORT, *supra* note 16.

90. U.S. Geological Survey, Monitoring Saltwater Intrusion with Robowell at Provincetown Massachusetts, <http://ma.water.usgs.gov/automon/Ptown.htm> (last visited Nov. 18, 2007).

91. *Martin v. City of Linden*, 667 So. 2d 732, 734 (Al. 1995).

92. Karen Jolly Davis, *Tests Show Eastern Shore Water Supply is Threatened by Saltwater Intrusion*, THE VIRGINIA-PILOT, July 22, 1996, available at <http://scholar.lib.vt.edu/VA-news/VA-Pilot/issues/1996/vp960722/07220050.htm>.

93. *Id.*

regular basis.⁹⁴ Other options such as desalination or treating reclaimed wastewater are very costly. The city recently decided to fund an interbasin water transfer to meet current demand, but the solution is only short-term.⁹⁵

Hydrologists have known for decades that groundwater is often directly connected to surface water. Pumping can dramatically lower water tables, altering the natural flow of groundwater to surface water (pre-stream capture) and causing some surface flow back into groundwater (induced infiltration).⁹⁶ Groundwater pumping can seriously affect the amount and quality of water that would otherwise remain in rivers, lakes, springs, and wetlands.⁹⁷

G. Reduced Surface Flows

Groundwater depletion impacts are not just limited to subsurface aquifers. The results of groundwater pumping on surface flows can be catastrophic. The Ipswich River in eastern Massachusetts, a region wetter than Seattle, has been sucked dry due largely to municipal groundwater pumping.⁹⁸ Municipalities obtained groundwater well permits without regard to the destructive impacts on surface flows in the river. As communities expanded their water use, the river, fed by groundwater, lost significant surface flow.⁹⁹ Now the river completely dries up some summers, while locals water lawns with pumped groundwater. Impacts to the river's ecology have been devastating.¹⁰⁰

Atlantic salmon once inhabited nearly all coastal rivers between New York and Canada. Today, their numbers have declined dramatically to the point of near extinction.¹⁰¹ Despite intense political opposition, Atlantic salmon were listed as an endangered species.¹⁰² Affected states, such as Maine, along with the U.S. Fish and Wildlife Service, must develop

94. Megan Sever, *Coastal Playground's Water Woes*, GEOTIMES, May 2006, http://www.Geotimes.org/may06/feature_CoastalWater.html.

95. *Id.*

96. ALLEY ET AL., *supra* note 7, at 62; Sewall, *supra* note 76.

97. *Id.*

98. GLENNON, *supra* note 18, at 103.

99. *Id.* at 104.

100. *Id.* at 102-03.

101. See Atlantic Salmon Fed'n, Status of North American Wild Atlantic Salmon, http://www.worldwildlife.org/salmon/pubs/salmon_status.pdf (last visited Dec. 8, 2007) (noting the decline in returns from 1.5 million Atlantic salmon in 1974 to less than 500,000 salmon returning today).

102. U.S. Fish and Wildlife Service, Threatened and Endangered Species System, http://ecos.fws.gov/tess_public/SpeciesReport.do (last visited Jan. 28, 2008).

recovery plans.¹⁰³ But Maine farmers are diverting river water to grow the state's famous blueberries.¹⁰⁴ This fruit, because it is high in antioxidants, has become increasingly popular in recent years.¹⁰⁵ Maine must find a way to leave enough water in its rivers for the salmon to thrive, but hopes to do so without sacrificing its blueberry industry.¹⁰⁶ Naturally, the state is turning to groundwater. The problem is that much of the groundwater in Maine is hydrologically connected to the same rivers on which salmon rely on.¹⁰⁷

Although Maine does recognize the relationship between groundwater and surface water, its groundwater laws are still antiquated.¹⁰⁸ In order for groundwater to provide a workable solution and to avoid draining the rivers and other critical areas such as the coastal wetlands, wells would have to be carefully located and monitored, and users would have to follow a strict pumping schedule.¹⁰⁹

H. Groundwater Depletion: A Pervasive Nationwide Problem

The problems discussed in the preceding sections are not the only examples of groundwater over-allocation in the United States.¹¹⁰ In Idaho, groundwater pumping for agriculture has lowered water levels and spring discharge rates from the Snake River Aquifer since 1950.¹¹¹ Groundwater

103. GLENNON, *supra* note 18, at 134–35.

104. *Id.* at 129–32.

105. *Id.* at 132.

106. *Id.* at 135.

107. *Id.* at 138.

108. *See, e.g.*, ME. REV. STAT. ANN. 38, § 470-A(2) (2001). As recently as 1999, however, Maine's Supreme Court "declined to abandon" the rule of absolute dominion. *Maddocks v. Giles*, 728 A.2d 150, 153 (Me. 1999).

109. GLENNON, *supra* note 18, at 138–39.

110. The USGS has catalogued a number of other parts of the country with groundwater problems. *See* U.S. GEOLOGICAL SURVEY, FS-103-03, GROUND-WATER DEPLETION ACROSS THE NATION (2003), [http://pubs.usgs.gov/fs/fs-103-03/JBartolinoFS\(2.13.04\).pdf](http://pubs.usgs.gov/fs/fs-103-03/JBartolinoFS(2.13.04).pdf) [hereinafter USGS DEPLETION] (discussing the negative effects of groundwater pumping in both arid and non-arid regions). The article cites groundwater declines of approximately 200 feet and saltwater intrusion in Baton Rouge, Louisiana; groundwater declines of 400 feet and land subsidence of up to ten feet resulting in increased susceptibility to flooding in Houston, Texas; water level declines of up to seventy feet in Memphis and Arkansas; declines of over 100 feet in Washington and Oregon from irrigation, industrial use, and public supply; decreased water levels in Idaho's Snake River Plain Aquifer from production for agriculture; groundwater declines of 300 to 500 feet, up to 12.5 feet of land subsidence, and decreased streamside vegetation in Arizona near Tucson and Phoenix; groundwater declines of 300 feet, dried up springs, and up to six feet of subsidence around Las Vegas, Nevada; over 300 feet of groundwater decline and six feet of land subsidence causing damage to roads and buildings in southern California.

Id.

111. *Id.*

springs feed much of Snake River, and are relied on heavily by irrigators.¹¹² The decline of groundwater storage between 1975 and 1995 averages about 350,000 acre-feet per year.¹¹³ Groundwater from the Sandstone Aquifer is the main source of drinking water for the Chicago-Milwaukee region. Groundwater pumping since 1864 has lowered the water table in that region by as much as 900 feet.¹¹⁴ Recent restrictions on groundwater pumping have helped some areas recover, but not others.¹¹⁵ Furthermore, contamination by agricultural chemicals has degraded the quality of some of the shallower aquifers.¹¹⁶

The groundwater problems depicted above have arisen despite the fact that all states have some regulatory framework for groundwater and despite our increased understanding of groundwater hydrogeology. Demands on our nation's groundwater will continue to grow as population grows and shifts to arid regions. Aquifer recharge can take decades, centuries, or millennium, as in some parts of the Ogallala. Global warming will alter precipitation and runoff patterns, which affect groundwater recharge and availability of surface water. It is time for a fresh approach to groundwater management.

II. A BRIEF OVERVIEW OF GROUNDWATER LAW

The authors of a popular water resources textbook opine that the common law of groundwater is designed “seemingly to confuse law students.”¹¹⁷ The confusion extends beyond law students to embrace courts, legislatures, and attorneys who grapple with the subject. Though groundwater aquifers know no political bounds and are often interconnected to surface waters, groundwater law traditionally was adopted on a state-by-state basis separate from laws governing surface water.¹¹⁸ States recognize five common law groundwater doctrines, further

112. *Id.*

113. Idaho Water Res. Research Inst., Univ. of Idaho, Eastern Snake River Plain Surface and Ground Water Interaction, <http://www.if.uidaho.edu/%7EJohnson/ifwri/sr3/home.html> (follow hyperlink at left) (last visited Dec. 20, 2007).

114. USGS DEPLETION, *supra* note 110.

115. *Id.*

116. Ground Water Prot. Council, State Fact Sheet: Illinois Ground Water Conditions, http://www.gwpc.org/e-library/e-library_documents/e-library_documents_state_fact_sheets/illinois.pdf (last visited Dec. 8, 2007).

117. SAX, *supra* note 11, at 411.

118. *Id.* The Ogallala Aquifer, discussed in Part I.A, extends under eight states. U.S. Geological Survey, High Plains Regional Ground Water (HPRG) Study—High Plains Aquifer Study, http://co.water.usgs.gov/nawqa/hpgw/HPGW_home.html (last visited Jan. 12, 2008).

complicating groundwater law. Even within these doctrines, distinctions are made between “percolating” groundwater and underground streams.¹¹⁹ Modern groundwater law in most states contains a statutory overlay that alters or abolishes some or all of the state’s common law principles. Many states also apply different rules to different geographic areas, leaving some aquifers highly regulated and others devoid of regulation.¹²⁰

A. Common Law Applied to Groundwater

1. Absolute Dominion

The original common law doctrine—absolute dominion rule or rule of capture—stemmed from a worldview where groundwater was a mysterious resource, hidden from view, subject to unknown forces beyond human control.¹²¹ The absolute dominion rule permits the overlying landowner to take as much groundwater as the landowner desires, without limitation or liability to adjoining landowners. While the doctrine may have made sense in the nineteenth century—when wells were dug by hand, electric pumps were non-existent, and concepts like aquifer recharge and surface-groundwater interconnectivity were poorly understood—it is hard to justify in the twenty-first century. Amazingly, the absolute dominion rule persists.

119. See, e.g., *Maddocks v. Giles*, 728 A.2d 150, 152 (Me. 1999) (“Most underground water gradually percolates through the various strata and is not flowing in a watercourse.”).

120. For example, because the State allows discretion in regional regulation, the California Central Valley has little regulation but the South Coast is heavily managed. See CAL. WATER CODE § 10750.4 (2007) (stating that local agencies are not required to adopt or implement groundwater management plans). See generally Barbara T. Andrews & Sally K. Fairfax, *Groundwater and Intergovernmental Relations in the Southern San Joaquin Valley of California: What Are All These Cooks Doing to the Broth?*, 55 U. COLO. L. REV. 145 (1984) (discussing the development of local groundwater programs outside the southern San Joaquin Valley). States with controlled groundwater areas (CGAs) may also experience different forms and degrees of regulation throughout the state. See TEX. SPEC. DIST. CODE ANN. § 8801 (Vernon 2005) (establishing a CGA for “the Harris-Galveston Subsidence District” in order “to provide for the regulation of groundwater withdrawal in the district to end subsidence, which contributes to or precipitates flooding or overflow of the district, including rising water resulting from a storm or hurricane”); MONT. CODE ANN. § 85-2-506 (2007) (allowing Montana to establish controlled groundwater areas where withdrawals exceed recharge); NEB. REV. STAT. § 46-725 (2007) (listing factors for the Director to consider when “determining whether to designate or modify the boundaries of a management area or to require a district which has established a management area, a purpose of which is protection of water quality, to adopt an action plan for the affected area”).

121. The oft-cited case of *Acton v. Blundell* explained that groundwater flowed in “hidden veins of the earth beneath its surface: no man can tell what changes these underground sources have undergone in the progress of time.” *Acton v. Blundell*, 152 Eng. Re. 1223, 1233 (Ex. Ch. 1843).

Five states recognize the absolute dominion rule in some form.¹²² Both Maine and Texas reaffirmed it in 1999. Maine refused to find any liability against a gravel pit owner who drained an underground spring in the course of his operations, to the detriment of the adjoining landowners.¹²³ The Maine court focused on the arcane distinction between an underground water course (a stream with bed and banks that flows beneath the ground) and percolating ground water (all other water beneath the ground) and upheld its decades-old legal tradition of absolute dominion.¹²⁴ While noting that the doctrine is founded upon discredited myths about groundwater, and that “several courts have given modern science as a basis for abandoning the old rule,” the Maine court declined to abandon it.¹²⁵ Ignoring the fact that plaintiffs lost a long-flowing underground water source, the court faulted them for failing to show that “the absolute dominion rule has not functioned well in Maine.”¹²⁶ In clinging to settled law, and ignoring the fact that the rule did not work in this case, the court imposed an unreasonably high burden by requiring the plaintiffs to prove the rule did not work across the entire state.¹²⁷ Settled expectations, for this court, required the legislature to change the law.¹²⁸

In the landmark decision *Sipriano v. Great Spring Waters of America, Inc.*, Texas affirmed the absolute dominion rule on nearly identical grounds, discussing both the mysterious nature of groundwater that gave rise to the doctrine and its citizens’ expectation that the doctrine would not be changed.¹²⁹ The Texas court, perhaps buttressed by the phalanx of industry-related amicus briefs urging affirmance of the rule of capture, paid homage to what it viewed as the economic necessity of maintaining the rule.¹³⁰

122. Joseph W. Dellapenna, *Quantitative Groundwater Law*, in 3 WATERS & WATER RIGHTS § 20.07, at 20–36 (Robert E. Beck ed., 1991 ed., 2003 repl. vol.).

123. *Maddocks*, 728 A.2d at 152.

124. *Id.* at 153–54.

125. *Id.* at 153.

126. *Id.* at 154.

127. *See id.* (“The Maddocks did not present evidence or point to any studies that the absolute dominion rule has not functioned well in Maine.”).

128. *Id.*

129. *Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75, 76–77 (Tex. 1999).

130. *Id.* at 80 n.41. *Amici* urging affirmance of the rule of capture included the City of Houston, Texas Council of Forest Products Manufacturers, Texas Water Conservation Association, Texas Groundwater Association, Texas Alliance of Groundwater Districts, Edwards Aquifer Authority, High Plains Underground Water Conservation District, North Plains Groundwater Conservation District, Panhandle Groundwater Conservation District, Sandy Land Underground Water Conservation District, Mesa Underground Water Conservation District, South Plains Underground Water Conservation District, North Plains Ground Water Conservation District No. 2, American Land Foundation, Riverside and Landowners Protection Coalition, Texas Justice Foundation, Texas and Southwestern Cattle Raisers Association, Texas Cattle Feeders Association, Texas Association of Nurserymen, Inc., and Texas Farm

Texas, like Maine, reiterated the century-old description of groundwater as “so secret, occult, and concealed that an attempt to administer any set of legal rules in respect to [it] would be involved in hopeless uncertainty, and would, therefore, be practically impossible.”¹³¹ In deference to more modern views of groundwater, the Texas court did note that groundwater could be protected by new provisions in the Texas Water Code.¹³² Texas’s unyielding adherence to the absolute dominion rule was reaffirmed in subsequent decisions, even after the “protective” provisions discussed in *Sipriano* were implemented.¹³³ Texas’s refusal to abandon the absolute dominion rule caused one commentator to opine that “[i]nstead of dealing rationally with the concerns posed the state’s attempt to effectively deal with the growing groundwater crisis, the absolute dominion rule seemed to trump any meaningful regulation, and the buyers appeared positioned to drain the aquifer dry.”¹³⁴

2. Reasonable Use

While the absolute dominion rule is decidedly in the minority, the more widely used reasonable use rule also does little to foster groundwater conservation. The reasonable use rule, often confused or intermingled with the correlative rights doctrine discussed below, initially represented advancement from the absolute dominion rule. Reasonable use for groundwater, similar to reasonable riparian use, requires balancing competing uses from the same aquifer. Unlimited withdrawals, even to the detriment of another groundwater user, may still be reasonable. However, courts may restrict uses for causing unreasonable harm to other users within an aquifer, something never permitted under the absolute dominion rule.¹³⁵

New Hampshire was the first state to abandon absolute dominion by adopting the reasonable use rule in 1842.¹³⁶ The reasonable use rule for groundwater, similar to its riparian counterpart, required competing uses from the same aquifer to refrain from causing other users unreasonable

Bureau. *Id.* An equally compelling argument can be made that the rule of capture is a poor model for business’ settled expectations, because a new and more powerful pump can destroy senior uses of groundwater with impunity. SAX, *supra* note 11, at 417–21.

131. *Sipriano*, 1 S.W.3d at 76.

132. *Id.* at 79–80.

133. *S. Plains Lamesa R.R. Ltd. v. High Plains Underground Water Conservation Dist.*, 52 S.W.3d 770, 779 (Tex. Ct. App. 2001).

134. Dellapenna, *supra* note 122, § 20.07(a)(2)(b), at 20–69. This treatise devotes considerable attention to Texas’ approach to groundwater management.

135. *Martin v. City of Linden*, 667 So. 2d 732, 736 (Al. 1995).

136. *Bassett v. Salisbury Manufacturing*, 28 N.H. 438, 441 (Sup. Ct. 1854).

harm, with no party having an absolute right to consume the aquifer.¹³⁷ Adjudication under reasonable use is fact-specific; courts make the determination of reasonableness on a case-by-case basis. Though New Hampshire stood alone for decades, the doctrine eventually gained wide acceptance in the United States, becoming known as the “American Rule.”¹³⁸

Because it theoretically limits wasteful pumping and requires reasonable use of the resource, the reasonable use rule is an improvement from the free-wheeling rule of absolute dominion.¹³⁹ Yet it still fosters groundwater extraction with little restraint, particularly for surface owners using the water on the property where pumping occurs.¹⁴⁰ Moreover, the reasonable use rule creates a high degree of uncertainty. Case-by-case adjudication provides little protection to senior users, and fails to provide guidance for future users.

Professor Dellapenna explains that abandonment of common law reasonable use for riparian rights has often been followed by abandonment of reasonable use in groundwater.¹⁴¹ Most riparian states adopted a regulated riparian water rights approach in the last half of the twentieth century. These regulated systems formed the basis for the Regulated Riparian Model Water Code.¹⁴² Many states abandoning a common law reasonable use doctrine and adopting a regulated riparian approach for surface waters have also altered the reasonable use doctrine for groundwater.¹⁴³ The application of a regulated riparian approach to groundwater varies widely among riparian states.¹⁴⁴

137. *Id.*

138. Dellapenna, *supra* note 122, § 22.03, at 22-12. Professor Dellapenna, who authored the groundwater provision in this treatise, notes that by 1934, the reasonable use rule “was in fact the normal law of choice regarding groundwater—a rather remarkable transformation of the understanding of the law in less than 20 years.” *Id.*

139. *Id.* § 21.03, at 21-9. Professor Dellapenna provides a detailed review of the contorted means by which California moved from absolute dominion to a reasonable use rule, then adopted correlative rights because the theories underlying reasonable use were not amenable to California’s arid climate. *Id.* § 21.03(a).

140. *See* *Bristor v. Cheatham*, 255 P.2d 173, 180 (Ariz. 1953) (“This rule does not prevent the extraction of ground water subjacent to the soil so long as it is taken in connection with a beneficial enjoyment of the land from which it is taken.”).

141. Dellapenna, *supra* note 122, § 23.01, at 23-1.

142. *Id.* § 23.02, at 23-6 to 23-7.

143. *Id.* at 23-7. According to Professor Dellapenna, “[m]ost of the regulated riparian states apply the same legal regime to groundwater that they have to surface water.” *Id.*

144. *Id.*

3. Correlative Rights

California added its own common law rule, repudiating absolute dominion as unsuited for its arid climate and adopting the correlative rights doctrine for groundwater.¹⁴⁵ When an aquifer could not accommodate all groundwater users, courts could apportion such uses in proportion to their ownership interests in the overlying surface estates.¹⁴⁶ Correlative rights avoid the harsh results under absolute dominion or reasonable use by allowing more equitable apportionment from an aquifer. All users overlying an aquifer are entitled to groundwater based upon their surface ownership interests regardless of priority of use, with preference given to on-tract uses.¹⁴⁷ While correlative rights protect all users of an aquifer by empowering courts to halt uses that are detrimental to the common use of the water, it is hardly a conservation-based doctrine. Surface owners are free to use all of an aquifer, as long as they do not damage another in the process.

4. Prior Appropriation

The fourth common law doctrine that applies to groundwater is prior appropriation. The mantra of “first in time, first in right” was easily applied to western groundwater law in the twentieth century, as it had been to surface waters in the nineteenth century.¹⁴⁸ Under the doctrine of prior appropriation, groundwater rights are obtained by putting the water to beneficial use. New users cannot interfere with existing senior rights. Surface and groundwater rights were largely the same for states adopting prior appropriation for groundwater, even though the systems are administered separately.¹⁴⁹

Application of pure prior appropriation doctrine to groundwater presents problems distinct from application to surface water. “First in time, first in right” is relatively easy to administer for surface flows; unappropriated water is visible and available for others to take. Unlike surface water, groundwater may be non-renewable, making senior rights meaningless over time. In a seminal New Mexico Supreme Court decision, the court allowed the state engineer to issue a new groundwater permit to an

145. *Katz v. Walkinshaw*, 74 P. 766, 772–73 (Cal. 1903).

146. *Id.*

147. *Id.*

148. *See, e.g., Hinton v. Little*, 296 P. 582, 584 (Idaho 1931) (affirming injunction restraining defendants from interference with prior appropriation).

149. *City of Albuquerque v. Reynolds*, 379 P.2d 73, 79 (N.M. 1962) (“[T]he substantive rights [for ground and surface waters] when obtained, are identical.”).

industrial use that would contribute to aquifer depletion.¹⁵⁰ The state engineer decided that it was acceptable under the prior appropriation doctrine to permit new beneficial uses even if the aquifer would be mined out in forty years.¹⁵¹

More importantly, surface-groundwater interaction can lead to groundwater withdrawals that affect surface water rights, creating problems for appropriators of both sources.¹⁵² Some states have been exceptionally slow to recognize surface-groundwater relationships. As recently as 2005, Montana, for example, was willing to permit groundwater extraction in basins that were legislatively closed to new surface appropriations because of over-appropriated streams awaiting adjudication.¹⁵³ The Department of Natural Resources and Conservation (DNRC) was willing to permit groundwater pumping, even though a party could show that the pumping could diminish surface flows.¹⁵⁴ The Montana Supreme Court found this practice at odds with the basin-closure law.¹⁵⁵ The willingness of Montana's DNRC to permit groundwater extraction that harmed surface flows shows that some agencies still cling to outmoded views of groundwater-surface water interactions.¹⁵⁶

5. Reliance on Tort Law

Finally, a few states have looked to the Restatement (Second) of Torts as a framework for regulation of groundwater.¹⁵⁷ The Restatement is not a water law doctrine, but rather defines the bounds of liability for withdrawing groundwater to the detriment of others.¹⁵⁸ The Restatement has been interpreted to provide a property right in groundwater underneath

150. *Mathers v. Texaco Inc.*, 421 P.2d 771, 773 (N.M. 1966).

151. *Id.* at 777.

152. *Id.*

153. *Trout Unlimited v. Montana Dep't of Natural Res. & Conservation*, 133 P.3d 224, 226-27 (Mont. 2006).

154. *Id.* at 227.

155. *Id.* at 232.

156. *Id.* In *Trout Unlimited*, DNRC ignored the analysis of its own hydrogeologist, who explained that groundwater withdrawal affects surface streams by both pre-stream capture and induced infiltration. *Id.* DNRC refused to concede that pre-stream capture, which can lessen stream flows long after pumping ceases by capturing groundwater that otherwise would contribute to a stream's baseflow, should be considered in addressing new groundwater pumping applications in basins that are closed to new surface appropriations. *Id.*

157. Dellapenna, *supra* note 122, § 19.05(b)(2), at 19-47. Since its approval in 1977, Ohio, Michigan, and Wisconsin have "expressly followed" the Restatement. *Id.* Recently, Nebraska adopted the Restatement as the "proper rule for deciding disputes involving the use of groundwater, including claims of interference with the use of surface waters." *Id.* at 19-37.

158. RESTATEMENT (SECOND) OF TORTS § 858 (1977).

one's property and to limit off-tract municipal uses that harm domestic wells.¹⁵⁹

None of these common law doctrines provide for long-term protection of groundwater resources. By design they accommodate as much use as the supply can provide. Groundwater overdraft issues in places where extraction is regulated by common law doctrines have been prevalent for decades. Common law doctrines governing groundwater use, as with surface water, provide poor means for resolving disputes or promoting efficient economic growth. And they do nothing to conserve an increasingly scarce and contentious resource.

B. Statutory Overlays

As with surface water, states have enacted myriad statutory schemes governing groundwater. Today every state has some type of regulatory overlay applicable to groundwater.¹⁶⁰ While a comprehensive review of these statutory schemes is beyond the scope of this Article, these statutes fail to protect excessive groundwater use in many parts of the country. Some common problems emerge.

Many states permit adoption of groundwater control or management areas, where special protective rules to conserve groundwater are applied over a limited geographic area.¹⁶¹ Establishing local protective groundwater regulations can prevent groundwater overdrafts.¹⁶² Groundwater protection areas do not necessarily prevent groundwater mining. Creation of such areas may be at the discretion of state water management agency. States with serious groundwater problems have not always embraced such designations.¹⁶³ Some states allow citizen-created groundwater protection

159. See, e.g., *McNamara v. City of Rittman*, 838 N.E.2d 640, 645 (Ohio 2005).

160. Dellapenna, *supra* note 122, § 23.02(a), at 23-8.

161. See, e.g., MONT. CODE ANN. § 85-2-506 (2007) (allowing Montana to establish controlled groundwater areas where withdrawals exceed recharge); OR. REV. STAT. § 537.730(1)(e) (1991) (allowing Oregon to establish critical groundwater areas if available supply is "being, or about to be overdrawn").

162. See, e.g., *Bamford v. Upper Republican Natural Res. Dist.*, 512 N.W.2d 642, 651-52 (Neb. 1994) (holding constitutional the state statute allowing cease and desist orders with respect to groundwater usage).

163. Bruce E. Toppin, III, Comment, *The Path of Least Resistance: The Effects of Groundwater Law's Failure to Evolve with Changing Times*, 38 ST. MARY'S L.J. 503, 506-07 (2007). This comment addresses the *Sipriano* decision discussed above and criticizes the Texas Supreme Court's affirmation of the absolute dominion rule for groundwater. One of the court's bases for upholding absolute dominion was the Texas statute that allows the creation of local groundwater areas to protect aquifers. The author concludes that these areas are underutilized and do not justify allowing the problems posed by unfettered groundwater extraction in an arid climate. "Undoubtedly decentralized regulation addresses local concerns over groundwater supplies, but this method leaves many critical statewide issues

areas through a petitioning process, but the process can be expensive and the petition may be denied.¹⁶⁴ At best, local groundwater control districts address problems on a local scale.

Some state regulatory schemes are directed primarily at regulating well drilling.¹⁶⁵ Regulation of well drilling does not necessarily equate with imposition of limits on groundwater withdrawals. Some state regulatory schemes provide exemptions from regulations for withdrawals that are considered *de minimis*. Montana, for example, exempts all groundwater wells that produce less than thirty-five gallons per minute and ten acre-feet per year.¹⁶⁶ Such wells are exempt from permitting requirements and notice to prior appropriators. While the intent may be to exempt rural homeowners from permitting requirements for domestic wells, the exemption is easily abused by real estate developers seeking to avoid the permitting requirements of a centralized water system.¹⁶⁷ Other states also exempt smaller wells from regulatory requirements.¹⁶⁸

Groundwater regulation has not universally embraced the scientific realities of groundwater and surface water interconnectivity. Many states do not have integrated permitting requirements, or use limited definitions of groundwater and surface water interactions to avoid addressing problems caused by groundwater pumpers on surface flows. The Regulated Riparian Model Water Code, where adopted, provides for integrated consideration of ground and surface water impacts.¹⁶⁹ It has been embraced by only thirteen states, and even those states generally fail to coordinate ground and surface water uses.¹⁷⁰ The failure of states to regulate ground and surface water as a unified resource magnifies shortcomings in both surface and groundwater

unaddressed.” *Id.* at 507. Moreover, the groundwater designations are subject to existing water rights. TEX. WATER CODE ANN. § 36.002 (Vernon 1995).

164. See MONT. DEPT. OF NATURAL RES. AND CONSERVATION, WATER RES. DIV., MONTANA’S BASIN CLOSURES AND CONTROLLED GROUNDWATER AREAS 5–7 (2003), available at http://www.dnrc.mt.gov/wrd/water_rts/appro_info/basinclose-cgw_areas.pdf (describing the process for creating controlled groundwater areas in Montana).

165. Dellapenna, *supra* note 122, § 23.02(a), at 23-8.

166. MONT. CODE ANN. § 85-2-306(3) (2007).

167. A 2002 decision of the Washington Supreme Court invalidated real estate developers’ attempt to circumvent groundwater permitting requirements by having each lot in a new subdivision receive an exempt well permit. State Dep’t of Ecology v. Campbell & Gwinn, LLC, 43 P.3d 4, 4 (Wash. 2002). Washington exempts wells from the prior appropriations permitting system for beneficial uses under 5000 gallons per day. *Id.* The Washington Court refused to allow the exemption to be used for individual lots for the whole subdivision, because such a result was contrary to legislative intent and was poor policy in a water-scarce region. *Id.* at 9–16.

168. IND. CODE § 14-25-4-12 (2003).

169. Dellapenna, *supra* note 122, § 23.02, at 23-6 to 23-7.

170. *Id.* § 23.02(b), at 23-12.

law. Groundwater is, after all, the source of almost 40% of the stream flow in the United States.¹⁷¹

Statutory regulation can still lead to the same case-by-case approach used under common law remedies. The Florida Supreme Court interpreted its groundwater statute as not allowing the State to evaluate more than one permit at a time.¹⁷² Accordingly, the Water Board considers only whether a permit applicant's beneficial use interferes with a previously existing use, without regard to the benefit of the prior use or broader implications for the public interest in the future of the resource.¹⁷³ The Florida court also refused to balance these interests, and remained highly deferential to the Water Board's decisions.¹⁷⁴

Professor Dellapenna summarizes the status of groundwater regulation by state governments: "a highly fragmentary, piecemeal manner, ignoring the interconnections between groundwater and other water moving through the hydrologic cycle."¹⁷⁵ Another well-known water resources textbook notes that "[m]any state laws do not even discern whether groundwater sources are essentially renewable or non-renewable, let alone determine a safe yield that has both scientific validity and economic rationality."¹⁷⁶ With the synergistic impacts of continued population growth, economic expansion, and climate change overlying the fragmented, ad hoc, and outdated legal framework described above, it is not surprising that many regions of the country face groundwater crises. The fact that vast areas of our country face serious groundwater depletion demonstrates that even the best-intended legislative reforms of antiquated common law doctrines are inadequate to address long-term groundwater concerns.

171. U.S. GEOLOGICAL SURVEY, DEP'T OF INTERIOR, REPORT NO. 2325 NATIONAL WATER SUMMARY 1986—HYDROLOGIC EVENTS AND GROUND-WATER QUALITY 3 (1988), available at <http://pubs.er.usgs.gov/usgspubs/wsp/wsp2325>.

172. *Harloff v. Sarasota*, 575 So. 2d 1324, 1328 (Fla. 2d Dist. Ct. App. 1991).

173. *Id.*

174. *Id.* at 1327–28.

175. Dellapenna, *supra* note 122, § 19.05, at 19-28.

176. A. DAN TARLOCK ET AL., WATER RESOURCE MANAGEMENT 533 (5th ed. 2002).

III. THE PUBLIC TRUST AND GROUNDWATER

A. Brief Historical Overview of the Public Trust Doctrine

The public trust doctrine is often traced back to sixth-century Roman civil law in the declaration of the Justinian Institute:

By the law of nature these things are common to all mankind—the air, running water, the sea, and consequently the shores of the sea. No one, therefore, is forbidden to approach the seashore, provided that he respects *habitationes*, monuments, and buildings, which are not, like the sea, subject only to the law of nations. . . . All rivers and ports are public; hence the right of fishing in a port, or in rivers, is common to all men. . . . The public use of the seashore, too, is part of the law of nations, as is that of the sea itself.¹⁷⁷

American courts have recognized this iteration of the doctrine as an origin of the U.S. doctrine;¹⁷⁸ Early American jurisprudence adopted England's version, which holds navigable waters in trust for the public in order to protect navigability and promote commerce.¹⁷⁹ Though state courts argued a number of public trust doctrine cases in the early 1800s, the most important nineteenth-century acknowledgment of the public trust doctrine occurred in the landmark U.S. Supreme Court case *Illinois Central Railroad Co. v. Illinois* in 1892.¹⁸⁰ The Court recognized the public trust doctrine as a well-known common law rule, and *Illinois Central* remains good law today.¹⁸¹

177. J. INST. 2.1.1.

178. See, e.g., *In re Water Use Permit Applications (Wai' Hole Ditch)*, 9 P.3d 409, 440 n.25 (2000); *Nat'l Audubon Soc'y v. Superior Court of Alpine City (Mono Lake)*, 658 P.2d 709, 718 (1983); *Glass v. Goeckel*, 703 N.W.2d 58, 63–64 (2005).

179. *Arnold v. Mundy*, 6 N.J.L. 1, 53 (1821). *Arnold v. Mundy* was the first public trust case in the United States, decided by a New Jersey court in 1821. The court ruled that the public has a right to collect oysters up to the high water mark of the shorelines. Therefore, a property owner could exclude the public from privately owned shorelines influenced by the ebb and flow of the tide, but only above the high water mark. *Id.* at 8. The court distinguished waters influenced by the tide from freshwater rivers or streams that were not. *Id.* A Massachusetts court made a similar ruling shortly thereafter in *Commonwealth v. Alger*, 61 Mass. 53 (1851). Like the New Jersey case, this court restricted its decision to saltwater bodies, and those affected by the ebb and flow of the tide. *Id.* at 65.

180. *Illinois Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 436 (1892).

181. *Id.* at 436.

Illinois Central established two important principles. First, the public trust doctrine extends beyond tidal waters to include navigable freshwater bodies such as lakes, streams, and ponds that are not affected by the ebb and flow of the tide.¹⁸² The Court effectively abandoned the traditional English version of the doctrine, which only recognized a public trust in tidal waters.¹⁸³ Second, although a State may convey the shores and beds of navigable waters to private parties, such conveyances are limited by the public trust in common resources.¹⁸⁴ The private use must benefit the public's interest in navigation, swimming, fishing, or other use of the waterway.¹⁸⁵ This second principle—that governments as trustees must act in a fiduciary capacity to protect trust resources—has enduring value in applying the doctrine to other resources.

As public trust cases continued to appear in state and federal courts into the twentieth century, courts tied the doctrine to State ownership of the beds and banks of navigable waters, seashores, and tidelands. Though states traditionally have this ownership interest, they also have a sovereign duty to protect such property for the benefit of citizens. The courts' focus on the

182. *Id.* at 436–37. Before this case, there was some confusion among states as to whether the term “navigable” in English cases referred to waters that are navigable-in-fact, or only waters affected by the ebb and flow of the tide. See Jan S. Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right*, 14 U.C. DAVIS L. REV. 195, 201 (1980).

Th[e] neat conjunction of navigability and the public trust at common law drew early courts into an oft-repeated and now discarded shibboleth that navigable waters were only those waters ‘in which the tide ebb[ed] and flow[ed].’ It was widely assumed, based on statements by Lord Hale and several English decisions, that only *tidal* waters were subject to the King's ownership. This assumption, although it was initially adopted in a number of states, merits little consideration now

Id. (internal citations omitted).

183. *Id.* at 452; see *Mono Lake*, 658 P.2d at 719 (citing *Illinois Central*, 146 U.S. 387, for the conclusion that the public trust doctrine is “not limited by the reach of the tides”).

184. *Illinois Central*, 146 U.S. at 452–54 (ruling that the private interests in the title were limited and that such titles may be revoked at any time because the state's ownership of the property is always subject to the public's interest in the use and enjoyment of navigable waterways). Therefore, the state may convey land to private interests, but only if such a conveyance furthers the public interest. The United States upheld England's method of assigning ownership to the public trust lands. Like in the English common law, each state owns the public trust lands in fee simple absolute. To serve the private and public interests of trust lands, the law recognizes a legal fiction that there are two separate titles vested in the public trust: *jus publicum* and *jus privatum*. The first title, *jus publicum*, is the full right of the public to use and enjoy the trust land. The second, *jus privatum*, is the private property interest to use and possess the trust land. The state owns both titles, and consequently has a right to convey the *jus privatum* title to a private interest. However, the *jus privatum* title is subject to the public rights vested in the *jus publicum* title, and the conveyance must therefore serve the public's interest in the trust. *Id.* at 466.

185. *Id.*

ownership interest constrained the evolution of the doctrine because states differently define their ownership of trust lands or waters.¹⁸⁶

The Supreme Court recognizes that each state has a unique version of the public trust doctrine, shaped by a combination of common law and statutory law.¹⁸⁷ In *Phillips Petroleum Co. v. Mississippi*, the Court reaffirmed an earlier ruling that states may hold in trust waters affected by the ebb and flow of the tide even where they are not navigable in fact,¹⁸⁸ and rejected claims that the protection of commerce was a fundamental purpose of the doctrine.¹⁸⁹ However, the Court refrained from balancing what it called “great” public and private interests—it referred to the case as a mere “title suit.”¹⁹⁰

B. New Applications of the Public Trust Doctrine

Though some states limit the scope of the public trust doctrine to navigable or tidal waters and traditional uses recognized in *Illinois Central*, a more modern view extends the doctrine to other natural resources.¹⁹¹ Water, the ecosystems that depend upon it, and ultimately other common resources like air and wildlife are resources common to the well-being of all citizens. They deserve the same protection under the public trust doctrine today that tidelands and surface water did in the past. Courts have focused less on the state’s property rights in the lands underlying the water, and more on the state’s duty as trustee to balance private property rights in common natural resources against the public’s interest in water as a common natural resource.

The move to expand the public trust doctrine began in the 1970s. Joseph Sax influenced many of these changes with his famous article, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial*

186. For example, in *Douglaston Manor Inc. v. Bahrakis*, 678 N.E.2d 201, 203 (N.Y. 1997), the Court of Appeals of New York affirmed that New York still applied the public trust in its entirety to waters affected by the ebb and flow of the tides, a throwback to the English public trust doctrine. While the public had rights of navigation in “navigable in fact” waters, the public had no rights to fish an otherwise navigable river that was not affected by the ebb and flow of tides. *Id.* Other states extend the public trust to all “navigable in fact” waters, allowing recreational use of such waters. *See, e.g., Bott v. Mich. Dep’t of Natural Res.*, 327 N.W.2d 838, 859–60 (Mich. 1982) (affirming that the public trust extends beyond tidal waters to the great lakes and other navigable waterways).

187. *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 483 (1988) (citing *Shively v. Bowlby*, 152 U.S. 1, 26 (1894)).

188. *Id.* at 479–80.

189. *Id.* at 476 n.5.

190. *Id.* at 472.

191. *See, e.g., Wood, Nature’s Trust: Reclaiming an Environmental Discourse*, 25 VA. ENVTL. L.J. 243 (2007).

Intervention.¹⁹² Sax portrays the doctrine as a tool to fix what many lawmakers see as a gap in environmental decision making.¹⁹³ He describes the lack of administrative and legislative response to citizens' concerns about the quality of their land, air, and water, and argues that the public trust doctrine can mitigate these concerns because it gives the public a legal right in their resources, is enforceable against the government, and is "consistent with contemporary concerns for environmental quality."¹⁹⁴ For these reasons, Sax encourages states and judiciaries to view the public trust doctrine as flexible and adaptable to current ideologies and concerns.

In 1983, California's high court addressed the inevitable collision in western water law between prior appropriations and the public trust in the seminal case, *National Audubon Society v. Superior Court of Alpine City (Mono Lake)*.¹⁹⁵ Los Angeles diverted water from Mono Lake, a navigable water body, by way of its non-navigable tributaries.¹⁹⁶ The diversions shrank Mono Lake, and if unchecked would have eventually destroyed the lake's ecosystem.

In requiring the State to exercise its trustee duties to limit prior appropriations, the California Supreme Court expanded traditional concepts of the public trust doctrine. First, the court found that the scope of the trust in California is not limited to navigable waters.¹⁹⁷ Recognizing the relationship between navigable and non-navigable waterways, the court ruled that the doctrine applies to non-navigable waters where they affect navigable waters like Mono Lake.¹⁹⁸ The public trust doctrine, in this case, prohibited the State from allowing diversions from Mono Lake's tributaries because diverting the water would lower the lake to levels that were not in the public's interest.¹⁹⁹

In addition, the court described the evolving purpose of the trust within the state.²⁰⁰ Though it was initially limited to protecting traditional uses

192. Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

193. *Id.* at 474.

194. *Id.* at 474-76.

195. *Nat'l Audubon Soc'y v. Superior Court of Alpine City (Mono Lake)*, 658 P.2d 709, 712 (Cal. 1983). Describing the conflict between prior appropriations and the public trust as an "inevitable collision" sounds strong. But the situation at Mono Lake—where divisions dry up streams—replays itself across the Western landscape. This author need look no farther than his own backyard, to the Bitterroot Valley where a dozen or more tributary streams, which should be teeming with trout, are dewatered to a trickle every summer.

196. *Id.* at 720.

197. *Id.*

198. *Id.* at 721.

199. *Id.* at 716.

200. *Id.* at 719.

like navigation, commerce, and fishing, the purpose expanded to include protection of “environmental and recreational values.”²⁰¹ Citing language in a 1971 case that marked the first recognition of broader public trust purposes, the court explained that the public trust uses that the state may protect “are sufficiently flexible to encompass changing public need,” and “the state is not burdened with an outmoded classification favoring one mode of utilization over another.”²⁰² The state may determine that one use is more beneficial than another, even if a court found it less important in a prior case.²⁰³ Applying these principles in *Mono Lake*, the court extended the doctrine to preservation for scientific study of ecological units, food and habitat for wildlife, scenery, and climate.²⁰⁴ Finally, the court explained that the State’s power as administrator can also adapt to changing times: “the continuing power of the state as administrator of the public trust . . . extends to the revocation of previously granted rights or to the enforcement of the trust against lands long thought free of the trust.”²⁰⁵

The court’s decision in *Mono Lake* did not mark the end of the battle over Mono Lake’s water. The court left it up to the parties to discover a better solution, and hoped that it had “clear[ed] away the legal barriers” that had previously prevented them from reaching a solution.²⁰⁶ It wasn’t until December 1993, ten years later, that the parties came to an agreement. Environmental groups brought suits under California’s Fish and Game Code against the Water Board for issuing licenses to the Department of Water and Power of Los Angeles (DWP) that violated the Code’s minimum flow requirements.²⁰⁷ After multiple appeals and remands, the California Court of Appeals eventually directed the trial court to set interim flow releases for four of the tributaries, and imposed certain conditions on DWP’s licenses.²⁰⁸

Other jurisdictions have comfortably extended the doctrine beyond historical norms. For example, in *Matthews v. Bay Head Improvement Ass’n*, the Supreme Court of New Jersey interpreted its public trust doctrine to protect access to both municipal and privately owned dry sandy areas

201. *Id.* at 712 (citing *Marks v. Whitney*, 491 P.2d 374 (Cal. 1971)).

202. *Id.* at 719 (citing *Marks*, 491 P.2d at 380).

203. *Id.* at 728.

204. *Id.* at 719.

205. *Id.* at 723.

206. *Id.* at 732.

207. Craig Anthony Arnold & Leigh A. Jewel, *Litigation’s Bounded Effectiveness and the Real Public Trust Doctrine: The Aftermath of the Mono Lake Case*, 8 HASTINGS W.-NW. J. ENVTL. L. & POL’Y 1, 15 (2001).

208. *Id.*

near tidal waters.²⁰⁹ The court had not explicitly extended the doctrine so far in other cases, and based its reasoning on “growing concern about the reduced ‘availability to the public of its priceless beach areas,’” and policy statements made by the courts and legislature.²¹⁰

To justify its decision, the court cited the earlier extension of its public trust from traditional uses to “bathing, swimming, and other shore activities.”²¹¹ It then explained that the doctrine is flexible: “[T]he public trust doctrine [is] not to be ‘fixed or static,’ but [] to ‘be molded and extended to meet changing conditions and needs of the public it was created to benefit.’”²¹² “Archaic judicial responses are not an answer to a modern social problem.”²¹³

Perhaps the most significant recent expansion of the public trust is found in the Hawaii Supreme Court’s decision of *In re Water Use Permit Applications (Wai’ Hole Ditch)*.²¹⁴ The Hawaii court found that its public trust extends to all of the water in its state, including groundwater.²¹⁵ Drawing heavily from *Mono Lake*, the Hawaii court also relied upon its common law and two recent amendments to Hawaii’s Constitution. In 1978, Hawaii citizens amended their constitution in two separate provisions to recognize and adopt an expansive version of the public trust doctrine.²¹⁶ The first provision is reminiscent of the Roman doctrine:

For the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawaii’s natural beauty and all natural resources, including land, water, air, minerals, and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State. . . . All public natural resources are held in trust by the State for the benefit of the people.²¹⁷

In the other provision, Hawaii restates the public trust extension to water resources: “The State has an obligation to protect, control and

209. *Matthews v. Bay Head Improvement Ass’n*, 471 A.2d 355, 365–66 (N.J. 1984).

210. *Id.* at 364 (quoting *Van Ness v. Borough of Deal* 393 A.2d 571, 574 (N.J. 1978)).

211. *Id.* at 360, 363 (citing *Arnold v. Mundy*, 6 N.J.L. 1, 47 (1821)).

212. *Id.* at 365 (quoting *Borough of Neptune City v. Borough of Avon-by-the-Sea*, 294 A.2d 47, 54 (N.J. 1972)).

213. *Id.*

214. *In re Water Use Permit Applications (Wai’ Hole Ditch)*, 9 P.3d 409 (Haw. 2000).

215. *Id.* at 490.

216. HAW. CONST. art. XI, §§ 1, 7.

217. HAW. CONST. art. XI, § 1.

regulate the use of Hawaii's water resources for the benefit of its people."²¹⁸ The *Wai'hole Ditch* court explained that under these constitutional provisions, the state's doctrine "applies to all water resources without exception or distinction" and that the legislature's use of the term "water resources" has always included groundwater.²¹⁹

While several key recent public trust cases ground their rulings in state constitutions, it is important to note that some states have specifically extended the public trust doctrine to other resources by statute. New Hampshire declared groundwater a public trust resource in 2004.²²⁰ The law explicitly extends the public trust doctrine to the state's groundwater in two different chapters.²²¹ The first announces that the public trust applies to all water in New Hampshire, including groundwater.²²² In reference to the State as trustee, the statute further explains that "[t]he maximum public benefit shall be sought, including the assurance of health and safety, the enhancement of ecological and aesthetic values, and the overall economic, recreational and social well-being of the people of the state."²²³ The second provision indicates that the State is responsible for "groundwater management in the public trust and interest."²²⁴

Connecticut also explicitly extended the public trust to all waters, rather than just surface waters, in the Connecticut Environmental Protection Act (CEPA).²²⁵ The statute is comprehensive, providing relief from the State, or by the State, for any violations.²²⁶ The relevant provision reads as follows: "[The state holds a] public trust in the air, water and other natural resources of the state from unreasonable pollution, impairment or destruction provided no such action shall be maintained against the state for pollution of real property acquired by the state"²²⁷ Statutory enactment of public

218. HAW. CONST. art. XI, § 7.

219. *Wai'hole Ditch*, 94 P.3d at 445, 484–85 (finding that lack of evidence that the groundwater in question was hydrologically connected to surface water did not pose any limitation to the merits of the claim).

220. N.H. REV. STAT. ANN. § 481:1 (2004).

221. *Id.* §§ 481:1, 485-C:1.

222. *Id.* § 481:1.

223. *Id.*

224. *Id.* § 485-C:1.

225. Connecticut Environmental Protection Act, CONN. GEN. STAT. § 22a-16 (1988).

226. *Id.*

227. *Id.* A Connecticut court considered this provision of CEPA in the 2003 case *Oppenheimer v. Redding Conservation Comm'n*, No. CV010343722S, 2003 WL 23149914 (Conn. Super. Ct. Dec. 16, 2003). The Court held that there was not sufficient evidence to link the defendant's actions to contamination of the groundwater in question. *Id.* at *5. Speculation of contamination of the groundwater was not sufficient to hold that the defendant's actions were "reasonably likely" to have unreasonably polluted, impaired, or destroyed the public trust in the air, water, or other natural resources

trust principles for groundwater provides a clear message to courts that public trust principles must be applied to resolve disputes. Legislative support, where it can be gained, is critical. However as discussed below, enacting public trust legislation can be contentious.

IV. GROUNDWATER AND THE PUBLIC TRUST DOCTRINE

A. Application of the Doctrine Beyond Property-Based Navigability Distinctions Regarding Bed, Banks, and Tidelands

Groundwater problems are serious, escalating, and not well-managed by the present legal framework. A new approach is needed. Legislative solutions are slow, subject to manipulation, and ultimately subject to the water management agencies that implement them. The public trust doctrine is not a panacea. However, it enunciates a valuable principle that has already been applied in a variety of water-related contexts. The basic public trust doctrine principle—that some resources are to be shared by all and managed in a protective capacity for future generations by the sovereign—is particularly well-suited to groundwater.

Nearly thirty years ago Professor Joseph Sax urged that the doctrine be freed from its historical shackles.²²⁸ Professor Sax explained:

[The] function of the public trust as a legal doctrine is to protect [] public expectations against destabilizing changes. . . . So conceived, the doctrine would serve not only to embrace a wider range of things than private ownership, but would also make clear that the legal system is pursuing a substantive goal identical to that for the management of natural resources.²²⁹

Dewatering coal bed aquifers that ranchers in Montana have depended upon for generations, collapsing sink holes that destroy private property in Florida, the significant diminution of the Ogallala Aquifer, and saltwater invasion of drinking water on the East Coast are a few examples of

of the state. *Id.* The court did, however, recognize groundwater as a public trust resource as provided by the legislature under CEPA. *Id.* at n.3.

228. Joseph L. Sax, *Liberating the Public Trust Doctrine from Its Historical Shackles*, 14 U.C. DAVIS L. REV. 185 (1980).

229. *Id.* at 188–89.

“destabilizing changes” caused by the disparate, outdated legal framework for managing groundwater.

Application of the public trust to groundwater requires freeing the doctrine from its earlier English and American jurisprudential basis in property law. The public trust doctrine as originally developed in this country was tied to the state’s ownership of property—tidelands, lake shores, the bed and banks of navigable streams. Thus, groundwater does not fit within the public trust foundation of *Illinois Central* and its progeny. Groundwater cannot overlay the bed of state-owned property, nor can it support navigation or recreation. However, rigid application of traditional property-based concepts of the public trust should not thwart its application to groundwater. In fact, inclusion of groundwater within the public trust fits easily within the approach taken recently by several state supreme courts. Application of the public trust doctrine should focus on the protection of common resources, not arcane distinctions of navigability.

The public trust was not originally wedded to the state’s ownership of property. Justinian’s statement of the public trust embraced a wider view of the commons.²³⁰ The two seminal California public trust doctrine cases that define the public’s interest in broader ecological values as part of the doctrine draw from this legacy.²³¹ Cases like *Mono Lake* still address the public trust to state ownership of the bed and banks of navigable waters.²³² But the words of these decisions speak to a broader application of the doctrine.

Public trust doctrine cases—traditional and modern—are often tied to water. Water itself is the common good, more important than beds and banks of streams or tidelands owned by the state. There is no principled

230. See FORDHAM CTR. FOR MEDIEVAL STUDIES, INTERNET MEDIEVAL SOURCE BOOK: THE INSTITUTES 535 CE, BOOK II, (Paul Halsall ed., 1998), available at <http://www.fordham.edu/halsall/basis/535institutes.html#Book%20II> (articulating the Justinian view of the commons).

231. See Nat’l Audubon Soc’y v. Superior Court of Alpine City (*Mono Lake*), 658 P.2d 709, 719 (Cal. 1983) (quoting Marks v. Whitney, 491 P.2d 374, 380 (Cal. 1971)).

The public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs. In administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another. There is a growing public recognition that one of the most important public uses of the tidelands—a use encompassed within the tidelands trust—is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area.

Id.

232. *Mono Lake*, 658 P.2d at 720. “Mono Lake is, as we have said, a navigable waterway. The beds, shores and waters of the lake are without question protected by the public trust.” *Id.*

reason to tie the public's right to wise management of water resources to arcane concepts of navigability and state ownership of land. It is time to recognize that the public trust doctrine embraces the water itself. Groundwater, as science told us more than a century ago, and as courts finally recognized more recently, is inexorably tied to surface water.²³³ It's all just water.

In a case decided the same year as *Illinois Central*, the Minnesota Supreme Court recognized public rights in water as flexible, changing with society's needs.²³⁴ After discussing traditional tests of navigability for ownership of underlying waters, the court explained:

Many, if not [] most, of the meandered lakes of this state, are not adapted to, and probably will never be used to any great extent for commercial navigation; but they are used—and as population increases, and towns and cities are built up in their vicinity, will be still more used—by the people for sailing, rowing, fishing, fowling, bathing, skating, taking water for domestic, agricultural, and even city purposes, cutting ice, and other public purposes which cannot now be enumerated or even anticipated. To hand over all these lakes to private ownership, under any old or narrow test of navigability, would be a great wrong upon the public for all time, the extent of which cannot, perhaps, be now even anticipated.²³⁵

The Minnesota Supreme Court recognized a century ago what some courts are now grappling with: whether protecting public uses of water beyond traditional notions of commercial navigability is a proper object of the public trust. Three state courts—Wyoming, Montana, and Hawaii—have abandoned any notions of navigability and state-ownership of the property underlying water, and instead focused on water itself.

Wyoming and Montana have also focused on public uses of surface water, rather than property interests of riparians, in applying the public trust doctrine and furthering public rights in all water. In Wyoming, the North Platte River was held non-navigable under traditional tests as applied in

233. In words of the Hawaii Supreme Court, “[M]odern science and technology have discredited the surface-ground dichotomy.” *In re Water Use Permit Applications (Wai’ Hole Ditch)*, 9 P.3d 409, 447 (Haw. 2000) (citing A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 4:5 (2000)).

234. *Lamprey v. Metcalf*, 53 N.W. 1139, 1143 (Minn. 1893).

235. *Id.* at 1143. The case turned on the fact that the lake in question had become dry, and under riparian rules of accretion, the riparians became owners of the new shoreline, negating any public use of the dry bed of the former lake. *Id.*

Day v. Armstrong.²³⁶ The Wyoming Supreme Court found that while various navigability tests were useful for determining public versus private ownership of stream beds, tests for navigability were of little import in determining public rights on the waters above.²³⁷ Moreover, though the dispute was between two private parties, the court had no trouble treating the case “as a class action, affecting the rights of the public generally.”²³⁸ The public was given the absolute right to float and recreate on surface waters, irrespective of title to the underlying bed and banks.²³⁹

Montana adopted the reasoning of both *Lamprey* and *Day* in *Coalition for Stream Access v. Curran*.²⁴⁰ Mr. Curran purchased large tracts of land abutting the Dearborn River, a popular floating stream, and harassed and obstructed the public in an effort to curtail public use.²⁴¹ Curran asserted title to the river bed and a corresponding right to prevent public use.²⁴² Though the Dearborn River was determined to be navigable in fact, the Montana court found the distinction unnecessary when determining the public’s interest in the water.²⁴³ Instead the court held that “the Constitution and public trust doctrine do not permit a private party to interfere with the public’s right to recreational use of the surface of the state’s waters.”²⁴⁴

As a result of the *Curran* decision, the Montana Legislature adopted a stream access law that gives the public the absolute right to use all surface waters of the state irrespective of ownership.²⁴⁵ The public has unfettered use of the water, as well as the bed and banks of streams to the high water mark, even on private property.²⁴⁶ In a companion case involving the

236. *Day v. Armstrong*, 362 P.2d 137, 143–44 (Wyo. 1961).

237. *Id.*

238. *Id.* at 151.

239. In the court’s words:

Irrespective of the ownership of the bed or channel of waters, and irrespective of their navigability, the public has the right to use public waters of this State for floating usable craft and that use may not be interfered with or curtailed by any landowner. It is also the right of the public while so lawfully floating in the State’s waters to lawfully hunt or fish or do any and all other things which are not otherwise made unlawful.

Id. at 147.

240. *Montana Coal. for Stream Access, Inc. v. Curran*, 682 P.2d 163, 169–70 (Mont. 1984).

241. *Id.* at 165.

242. *Id.* at 170.

243. *Id.*

244. *Id.*

245. MONT. CODE ANN. § 23-2-302 (2007).

246. *Id.* Montana divides surface waters into two classes. Class I streams are those where the bed and banks are owned by the state, where title passed at statehood under the Equal Footing Doctrine. *Id.* The public’s rights are broader in Class I streams, including the right to camp and hunt. Class II streams are other natural water bodies where the bed and banks are privately owned. The public may not camp on Class II streams. Irrigation ditches are excluded from the Stream Access Law. *Id.*

Beaverhead River, another prime Montana trout stream, the court reaffirmed its abandonment of navigability as a test for public rights in water.²⁴⁷ While a subsequent decision limited some of the public uses of private property such as hunting and camping, the application of the public trust to all water irrespective of navigability remains unchanged in Montana.²⁴⁸

An even broader application of the public trust doctrine, without any reference to property ownership, is the Hawaii Supreme Court's decision in *Wai' Hole Ditch*.²⁴⁹ The court began with a classic public trust analysis based on *Illinois Central* and its progeny.²⁵⁰ However, the court was not constrained by common law public trust notions of navigability and title to bed and banks, but rather focused on the water itself.²⁵¹ The court found that "rules developed in order to protect public water bodies and submerged lands for public access and use . . . do not readily apply in the context of water resources valued for consumptive purposes, where competing uses are more often mutually exclusive."²⁵² The court then applied the public trust to groundwater, where traditional notions of navigability and state ownership simply cannot be applied.²⁵³ The court left open the question of even broader application of the public trust doctrine to natural resources beyond ground and surface waters.²⁵⁴

The facts in *Wai' Hole Ditch* provide a compelling case. Large corporate farms had diverted streams from the windward to the leeward side of the island, leaving windward streams dewatered and severely impacting several local windward communities.²⁵⁵ The leeward water users had valid water rights, but the Hawaii court found public trust principles overrode legislatively and administratively granted water rights. In the tradition of *Illinois Central* and *Mono Lake*, the Hawaii court found that the public trust doctrine cannot be rendered superfluous by legislative enactments.²⁵⁶

247. *Montana Coal. for Stream Access v. Hildreth*, 684 P.2d 1088, 1094 (Mont. 1984).

248. *Galt v. Montana Dept. of Fish, Wildlife & Parks*, 731 P.2d 912, 915 (Mont. 1987).

249. *In re Water Use Permit Applications (Wai' Hole Ditch)*, 9 P.3d 409, 447 (Haw. 2000).

250. *Id.* at 440.

251. *Id.* at 444–47.

252. *Id.* at 448.

253. *Id.* at 447.

254. *Id.* at 445 ("We need not define the full extent of article XI, section one's reference to all public resources at this juncture.")

255. D. Kapua 'ala Sproat & Isaac H. Moriwake, *Ke Kalo Pa'a O Waiahole: Use of the Public Trust as a Tool for Environmental Advocacy*, in CREATIVE COMMON LAW STRATEGIES FOR PROTECTING THE ENVIRONMENT 247, 253 (Clifford Rechtschaffen & Denise Antolini eds., 2007).

256. *Wai' Hole Ditch*, 9 P.3d at 444–45.

The Wyoming, Montana, and Hawaii courts all looked to their state constitutions to analyze and apply the public trust beyond traditional interpretations. Hawaii also had the benefit of pre-statehood culture and traditional laws governing water, a rich source of authority unique to Hawaiian culture, to find the sovereign's innate responsibility to protect water regardless of ownership of underlying lands.²⁵⁷ However, no state blindly extended the public trust doctrine without grounding its reasoning in state constitutional, or statutory, or common law. As discussed below, the rich heritage of state constitutions provides a firm basis for public trust doctrine extension to groundwater.

B. Applying the Public Trust to Groundwater

To date, the Hawaii court provides the clearest endorsement of the public trust doctrine to groundwater:

In sum, given the vital importance of all waters to the public welfare, we decline to carve out a ground water exception to the water resources trust. Based on the plain language of our constitution and a reasoned modern view of the sovereign reservation, we confirm that the public trust doctrine applies to all water resources, unlimited by any surface-ground distinction.²⁵⁸

Where Hawaii has led, other states can follow. State constitutions provide a solid foundation for adoption of the public trust doctrine. California, Wyoming, and Montana used their state constitutions to extend the trust beyond navigability issues to focus on the real trust resource—the people's water. Other states can do the same.

The vast majority of state constitutions contain some reference to the protection of natural resources.²⁵⁹ The substantive effects of these provisions vary widely. Some state courts hold constitutional environmental or natural resource provisions merely laudatory, or to be non-self-executing, requiring legislative action to implement their

257. *Id.* at 440–41.

258. *Id.* at 447.

259. Robert J. Klee, *What's Good for School Finance Should Be Good for Environmental Justice: Addressing Disparate Environmental Impacts Using State Courts and Constitutions*, 30 COLUM. J. ENVTL. L. 135, 167–71 (2005). Examining the role of state constitutions in environmental law, Klee tallied forty-two state constitutions that have at least some reference to the protection of natural resources. *Id.* at 167.

commands.²⁶⁰ But many state constitutions embrace the protection of natural resources as a state responsibility.²⁶¹ Some constitutions specifically protect water resources.²⁶² These constitutions can be a firm legal basis for applying the public trust to groundwater. The states that have extended the public trust to water regardless of navigability or ownership of the underlying bed have grounded their decisions in their state constitutions.

Basic trust law principles are readily adapted to groundwater. The trustee, of course, is the State. Several constitutions explicitly recognize that role.²⁶³ Present and future generations of citizens are obvious beneficiaries. The corpus of the trust—groundwater aquifers that are capable of human use—is identifiable. The duties of a trustee are “the highest known to the law.”²⁶⁴ The trustee has an obligation to ensure that the corpus is made available to the beneficiaries and are wisely used. Groundwater mining and overdrafting are inconsistent with basic trust duties; trusts must be managed to preserve trust assets and to fulfill trust

260. *See, e.g.*, *Commonwealth v. Nat’l Gettysburg Battlefield Tower*, 311 A.2d 588, 593–95 (Pa. 1973) (dismissing the argument that natural resource protection amendment is self-executing).

261. *See, e.g.*, FLA. CONST. art. II, § 7 (“It shall be the policy of the state to conserve and protect its natural resources and scenic beauty.”); MONT. CONST. art. IX, § 1 (“The state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations.”); R.I. CONST. art. I, § 17 (“[The people] shall be secure in their rights to the use and enjoyment of the natural resources of the state with due regard for the preservation of their values”); S.C. CONST. art. XII, § 1 (“The health, welfare, and safety of the lives and property of the people of this State and the conservation of its natural resources are matters of public concern.”); TEX. CONST. art. XVI, § 59 (“[T]he preservation and conservation of all . . . natural resources of the State are each and all hereby declared public rights and duties”).

262. *E.g.*, HAW. CONST. art. XI, § 1 (“[T]he State and its political subdivisions shall conserve and protect Hawaii’s natural beauty and all natural resources, including land, water, air, minerals and energy sources”); MASS. CONST. amend. art. XCVII (“The people shall have the right to clean air and water”); PA. CONST. art. I, § 27 (“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment.”); MICH. CONST. art. IV, § 52 (“The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.”); N.Y. CONST. art. XIV, § 4 (The legislature . . . shall include adequate provision for the abatement of air and water pollution and of excessive and unnecessary noise, the protection of agricultural lands, wetlands and shorelines, and the development and regulation of water resources.”); N.C. CONST. art. XIV, § 5 (“[I]t shall be a proper function . . . to control and limit the pollution of our air and water”); VA. CONST. art. XI, § 1 (“To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources”).

263. *See, e.g.*, MONT. CONST. art. IX, § 3 (“All surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided by law.”).

264. 76 AM. JUR. 2D *Trusts* § 331 (2005). The words of Justice Benjamin Cardozo, “the punctilio of an honor the most sensitive,” perhaps best describe the duties of a trustee towards the beneficiaries. *Meinhard v. Salmon*, 164 N.E. 545, 546 (N.Y. 1928).

purposes.²⁶⁵ The corpus of the trust—here, the state’s groundwater resources—should be managed in perpetuity for the current and future beneficiaries rather than be depleted by a small subset of private interests for private gain.²⁶⁶ State courts understand trust principles; they apply them frequently. Those principles can be easily applied to the management of groundwater as a public trust resource.²⁶⁷

States can thus create their own parameters and adopt the doctrine to their own needs. While the U.S. Supreme Court has addressed the public trust doctrine on several occasions, application of the public trust has generally been a matter of state law.²⁶⁸ The Supreme Court has not federalized the public trust doctrine. Nor has groundwater management been preempted by federal law.²⁶⁹ Extension of the public trust to groundwater can therefore proceed on a state-by-state basis. States have always developed their own common and statutory law to govern

265. 76 AM. JUR. 2D *Trusts* § 331 (2005).

266. *Id.*

267. Professor Huffman is critical of those that apply the trust principles to the public trust doctrine. James L. Huffman, *A Fish Out of Water: The Public Trust Doctrine in a Constitutional Democracy*, 19 ENVTL. L. 527, 535–46 (1989). He argues that the analogy to basic trust law fails because the public trust doctrine’s trust lacks a creator or settler as that term of art have evolved in trust law. *Id.* That argument misses the mark. The public trust doctrine is not the same as a private trust. But important principles of private trust law carry over to the public trust doctrine and can be useful in helping courts and the public understand the doctrine’s guiding principles. The state’s role of trustee and all citizens’ role as beneficiaries mean that the state can’t dispose of trust assets to the detriment of the greater public. Because the public trust should be perpetual, the state has a duty to both use the trust for current needs but conserve the corpus for future generations. The law of trusts need not apply in all aspects for it to provide a useful paradigm.

268. See *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 475 (1988) (“[I]t has been long established that the individual States have the authority to define the limits of the lands held in public trust and to recognize private rights in such lands as they see fit.”).

269. Most courts have found that the Clean Water Act’s predominant program, section 402 NPDES permit requirements, does not apply to groundwater. *Exxon Corp. v. Train*, 554 F.2d 1310, 1324 (5th Cir. 1977) (the failure to include explicit sections addressing groundwater in the NPDES permitting system “strongly suggests that Congress meant to stop short of establishing federal controls over groundwater pollution”); see also *United States v. GAF Corp.*, 389 F. Supp. 1379, 1383 (S.D. Tex. 1975) (stating that isolated groundwater is not subject to the Clean Water Act); *Village of Oconomowoc Lake v. Dayton Hudson Corp.*, 24 F.3d 962, 965 (7th Cir. 1994) (“Neither the Clean Water Act nor the EPA’s definition [of “Waters of the United States”] asserts authority over ground waters, just because these may be hydrologically connected with surface waters.”). *But cf.* *Friends of Santa Fe County v. LAC Minerals, Inc.*, 892 F. Supp. 1333, 1358 (D.N.M. 1995) (explaining that the Clean Water Act protects groundwater with some connection to surface water). The Clean Water Act does mention groundwater in two distinct sections. Section 104(a)(5) provides that the EPA shall establish and coordinate water quality monitoring programs for navigable waters, groundwater, and the contiguous zone and the oceans. 33 U.S.C. § 1254(a)(5) (2000). Similarly, section 304(f)(2)(D) provides that the EPA shall issue guidelines for identifying and evaluating the nature and extent of nonpoint pollutants resulting from “disposal of pollutants in wells or subsurface excavations.” 33 U.S.C. § 1314(f)(2)(D) (2000).

groundwater, and imposition of a public trust to groundwater will not interfere with states' ability to apply the doctrine in a manner suited to that state's resource.

States that apply the public trust to groundwater can draw from the experiences of states like Montana and Hawaii that have freed the public trust doctrine from property-based notions. Those experiences have shown that the doctrine can protect public resources, even when balanced against private property interests. The doctrine's critics are unable to demonstrate that the public trust doctrine has prohibited resource development or led to economic stagnation.

For example, the Montana Supreme Court's determination that the public trust and the Montana Constitution protect all waters of the state for public use²⁷⁰ did not lead to interference with private property or irrigation rights. In fact, Montana's Stream Access Law, stemming from the public trust, respects private property rights.²⁷¹ Public use of all of the state's waters, irrespective of ownership of bed and banks, is integral to Montana's cherished fishing traditions and the foundation of the state's essential and booming recreation industry.²⁷² Speaking to a group of water attorneys at a recent seminar, Governor Brian Schweitzer embraced public recreational use of state waters.²⁷³ The Montana Department of Fish, Wildlife and Parks is a pro-public trust and public access party in a significant case now pending at the Montana Supreme Court.²⁷⁴ Judicial application of the public trust to surface waters has been widely embraced in Montana.

In California, *Mono Lake* was a highly controversial application of the public trust doctrine. The decision itself did not undo the prior

270. *Montana Coal. for Stream Access, Inc. v. Curran*, 682 P.2d 163, 170 (Mont. 1984).

271. MONT. CODE ANN. § 23-2-302(4) (2007).

272. See Sarah K. Stauffer, Comment, *The Row on the Ruby: State Management of Public Trust Resources, the Right to Exclude, and the Future of Recreational Stream Access in Montana*, 36 ENVTL. L. 1421, 1426-27 (2006). This comment supports this author's contention that adoption of the public trust doctrine provides substantial benefits, and that those who oppose it are often wealthy landowners. In Montana, those opposing the public trust have often been large landowners seeking to exclude the public. *Id.*; see also *Montana Coal. for Stream Access, Inc. v. Curran*, 682 P.2d 163, 165 (Mont. 1984) (explaining that the protagonist in *Curran*, the case that led to the adoption of the public trust, was a Texas oilman).

273. Governor Brian Schweitzer, Address at Montana State Bar Association Continuing Legal Education Program, Fairmont Hot Springs, Montana (Feb. 16, 2007).

274. Reply Brief of Petitioner-Appellant at 12-16, *Bitterroot River Protective Ass'n v. Bitterroot Conservation Dist. et al.*, No. DA 06-0520 (Mont. filed Mar. 12, 2007), available at http://fnweb.isd.doa.state.mt.us/idmws/custom/sll/sll_fn_dl.asp?case=da%2006-0520. The case involves a challenge by conservationists to actions taken by several newly-arrived private landowners (including rock star Huey Lewis and stock broker Charles Schwab) to assert that a water body used locally by fishermen for seventy years, was actually a private irrigation ditch. *Id.* The case is pending before the Montana Supreme Court.

appropriations system nor did it solve the problems pertaining to the dewatering of Mono Lake. Rather, the decision led to subsequent negotiations between the affected parties that helped shape a decision by the California Water Board. That decision helped preserve the Mono Lake ecosystem and still allowed Los Angeles to divert significant amounts of water.²⁷⁵ The decision was a major victory for protection of public resources; it spurned new conservation efforts and increased public awareness of water problems.²⁷⁶ Authors Tony Arnold and Leigh Jewell label it a “clever catalyst for compromise,”²⁷⁷ and offer that the decision’s greatest value was forcing recognition of public values in resources previously considered private, and creating a post-litigation climate to resolve the dispute.²⁷⁸ Los Angeles has not gone dry due to the California Supreme Court’s broader application of the public trust to non-navigable tributaries of Mono Lake, the prior appropriations system is not defunct, and the Lake has regained significant area as a result of increased flows.²⁷⁹ California, of course, continues to experience robust economic growth.²⁸⁰

Judicial adoption of the public trust, founded on state constitutional law, is a viable avenue to extend protection to all water and the resources that depend on it. The courts that have done so have not been plagued by supposed doctrinal inconsistencies rooted in early applications of the doctrine. Courts embrace the doctrine as a flexible means to protect common resources. Extension of the public trust to groundwater by judicial decision, especially if founded upon a state constitution, or earlier application of public trust, is not an exceptionally broad leap of legal logic.

Another avenue for adoption of the public trust is through legislation. In response to potential groundwater claims by water bottlers, New Hampshire enacted legislation that declared, as a matter of State policy, that

275. LEIGH A. JEWELL & CRAIG ANTHONY ARNOLD, *The Real Public Trust Doctrine: The Aftermath of the Mono Lake Case*, in BEYOND LITIGATION: CASE STUDIES IN WATER RIGHTS DISPUTES 155, 178–85 (Arnold & Jewell eds., 2002) [hereinafter BEYOND LITIGATION]. Arnold and Jewell provide an excellent discussion of post-decision events leading to resolution of the case.

276. *Id.* at 163–90.

277. *Id.* at 173.

278. *Id.* at 190. In the authors’ words, “The ‘real’ public trust doctrine exists as much in the post-litigation interactions of the parties that resolve conflicts and give effect to public trust values as it does in judicial decisions describing and announcing the doctrine’s applicability.” *Id.*

279. *Id.* at 189.

280. *Id.*; see also CTR. FOR CONTINUING STUDY OF THE CALIFORNIA ECONOMY, CALIFORNIA ECONOMIC GROWTH—2006 EDITION 2-2 (2006), available at http://www.ccsce.com/pdf/CEG_2006_Ch2.pdf (expanded chapter 2) (listing statistics of California’s economic growth). California will create approximately three million more jobs between 2005 and 2015, is paramount in the nation’s growing trade opportunities with China, contains 20% of the high-tech job production in the United States, and houses the nation’s largest entertainment and tourism sector. CTR. FOR CONTINUING STUDY OF THE CALIFORNIA ECONOMY, *supra*.

groundwater would be managed as a public trust resource.²⁸¹ The legislation directs the State to implement groundwater protection plans consistent with its trustee obligation if local governments fail to act.²⁸² The legislation is too recent to gauge its effect. Other states have also applied the doctrine legislatively with some success.²⁸³ Attempts to mimic New Hampshire's legislation in Vermont, however, have stalled.²⁸⁴

C. Likely Criticism of Applying the Public Trust Doctrine to Groundwater

Some argue that expansion of the public trust doctrine is unnecessary because modern environmental statutes are better suited to address environmental problems, and that the doctrine is outmoded, judicially imposed, and not suited to modern concerns.²⁸⁵ Others criticize it as an

281. N.H. REV. STAT. ANN. § 481:1 (2004).

The general court declares and determines that the water of New Hampshire whether located above or below ground constitutes a limited and, therefore, precious and invaluable public resource which should be protected, conserved and managed in the interest of present and future generations. The state as trustee of this resource for the public benefit declares that it has the authority and responsibility to provide careful stewardship over all the waters lying within its boundaries.

Id.

282. N.H. REV. STAT. ANN. § 485-C:1(II) (2001). "The state, which has general responsibility for groundwater management in the public trust and interest, should develop groundwater protection programs within the scope of this chapter when such programs are not developed by a local entity." *Id.*

283. Some state legislatures have explicitly extended public trust protections to groundwater. *See, e.g.,* CONN. GEN. STAT. § 22a-15 (2006).

It is hereby found and declared that there is a public trust in the air, water and other natural resources of the state of Connecticut and that each person is entitled to the protection, preservation and enhancement of the same. It is further found and declared that it is in the public interest to provide all persons with an adequate remedy to protect the air, water and other natural resources from unreasonable pollution, impairment or destruction.

Id. Other states have legislation that could be interpreted as applying the public trust doctrine to groundwater resources. *See, e.g.,* MASS. GEN. LAWS ch. 21(L), § 1 (2006) (stating that "natural resources" include "land, fish, wildlife, biota, air, water, groundwater and drinking water supplies belonging to, managed by, held in trust by, appertaining to or otherwise controlled by the commonwealth or any local government.").

284. In 2005, bills were introduced in the Vermont House and Senate that, if enacted, would have declared groundwater resources of the state a public trust. H. 294, 2005-2006 Legislative Session (Vt. 2005); S. 151, 2005-2006 Legislative Session (Vt. 2005). Rather than declaring groundwater a public trust resource, the legislature passed the question to an investigative committee. 2006 Vt. Acts & Resolves 128.

285. Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 710 (1986). Professor Lazarus offers three reasons supporting a "strategic retreat" from the public trust doctrine. He argues that the doctrine will "never adequately reflect modern environmental concerns, unjustifiably relies on the judiciary" and finally, that the Supreme Court's interest in granting "special legal status" to the doctrine

affront to private property ownership.²⁸⁶ These criticisms have spawned a rather extensive debate by respected legal scholars over the last twenty years. This Article will not parse the nuances of that debate. But as discussed herein, groundwater is particularly well suited to application of the public trust doctrine.²⁸⁷ Criticisms that may well apply to expansion of the doctrine to other resources do not resonate against application of the public trust doctrine to groundwater.

It is true that the explosion of federal and state environmental laws in the 1970s and 1980s fundamentally altered the legal landscape for environmental protection. In a relatively short time frame, Congress, as well as many state legislatures, changed the backdrop against which environmental values are measured and protected. But Congress has not passed comprehensive federal groundwater legislation that would preempt initiatives to manage groundwater locally.²⁸⁸ Nevertheless, few states have adopted comprehensive groundwater systems that prevent long-term depletion of groundwater resources.²⁸⁹

As indicated in Part I, the country is beset with groundwater problems. Even presuming environmental legislation has been successful in other areas, legislation has not solved our groundwater problems. To claim that the “modern police power” rendered the public trust doctrine of “little importance in promoting governmental authority to protect and maintain a healthy and bountiful natural environment” may have been promising twenty years ago.²⁹⁰ But the convenience of hindsight shows that promise to be unfulfilled in many areas of resource protection, including groundwater.

Moreover, legislative solutions to environmental problems can be altered. A prime example in the context of groundwater is Idaho. In a 1973 case, *Baker v. Ore-Ida Foods*, the Idaho Supreme Court held that “Idaho’s Ground Water Act forbids mining of an aquifer.”²⁹¹ The court enjoined

is “waning.” *Id.* These criticisms are important to frame the arguments advanced herein, and are addressed in this section.

286. See, e.g., Huffman, *supra* note 266, at 528 (“[M]uch of modern public trust law infringes upon vested private property rights and is therefore violative of the federal constitution.”).

287. In addition to the articles by Professor Joseph Sax, others have urged wider adoption of the public trust. E.g., Charles F. Wilkinson, *The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine*, 19 ENVTL. L. 425, 482 (1989) (advocating for a shift in the law that extends public trust protection to water resources).

288. See discussion *supra* note 268.

289. *But see* ARIZ. REV. STAT. ANN. § 45-576 (2007) (prohibiting construction of new subdivisions unless the developer offers proof that the division has an assured supply of water for 100 years).

290. Lazarus, *supra* note 284, at 674.

291. *Baker v. Ore-Ida Foods, Inc.*, 513 P.2d 627, 635 (Idaho 1973).

pumping beyond the “reasonably anticipated average rate of future natural recharge.”²⁹² However, the Idaho Legislature subsequently modified the statute involved in *Baker* to allow groundwater mining at the Director of Water Resource’s informed discretion.²⁹³ Rather than show fealty to 130 years of prior appropriations, the Idaho legislature simply changed the law to allow junior groundwater pumpers, often large corporate farms, to affect surface flows in the Snake River, even if the pumping infringed upon senior rights.²⁹⁴ Likewise, in Hawaii, commentators have noted that “no sooner did the ink was dry on the *Wai’ Hole* decision than the former plantation and corporate agricultural interests began seeking a legislative end-run around it.”²⁹⁵

Since Professor Sax’s call for application of the public trust doctrine as a broader means of environmental protection in 1970, a plethora of environmental protection statutes have been enacted.²⁹⁶ But statutes are subject to alteration. Administrative agencies can be victims of political manipulation; the Orwellian doublespeak inherent in “Clear Skies” and “Healthy Forests” initiatives underscores the risks inherent in entrusting environmental protection to legislative and administrative processes.²⁹⁷ For groundwater, the legacy of failure exemplified by legislative and administrative bodies is hard to deny. Adoption of a public trust doctrine,

292. *Id.*

293. IDAHO CODE ANN. § 42-237a(g) (2007).

294. For further discussion of the Idaho legislation, see Michael C. Blumm et al., *Renouncing the Public Trust Doctrine: An Assessment of the Validity of Idaho House Bill 794*, 24 *ECOLOGY L.Q.* 461 (1997); Reed D. Benson, *Maintaining the Status Quo: Protecting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 *ENVTL. L.* 881, 895–99 (1998).

295. Sproat & Moriwake, *supra* note 254, at 279.

296. For examples of some of these statutes see National Environmental Protection Act of 1969, 42 U.S.C. §§ 4321–4370(e) (2000); Clean Air Act of 1970, 42 U.S.C. §§ 7401–7671 (2000); Clean Water Act of 1972, 33 U.S.C. §§ 1251–1387 (2000); Federal Insecticide, Fungicide, and Rodenticide Act of 1972, 7 U.S.C. §§ 136–136y (2000 & Supp. 2005); Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901–6992(k) (2000); Toxic Substances Control Act of 1976, 15 U.S.C. §§ 2601–2692 (2000); Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601–9657 (2000).

297. Many environmental and public health groups described the Clear Skies Act, S. 485, 108th Cong. (2003), as less protective than the Clean Air Act, benefiting large polluters, and threatening public health. See, e.g., Natural Res. Defense Council, *The Bush Administration’s Air Pollution Plan: Hurts Public Health, Helps Big Polluters, Worsens Global Warming* (2003), <http://www.nrdc.org/air/pollution/fclearsk.asp> (“The Bush Administration’s plan . . . would threaten public health and help big polluters by delaying and diluting cuts . . . roll back current law’s public health safeguards protecting air quality . . . do nothing to curb power plants’ growing emissions of carbon dioxide.”). The Healthy Forests Initiative, H.R. 1904, 108th Cong. (2003), was criticized as having been drafted “to benefit [the Bush Administration’s friends] in the resource extractive industries.” Matthew Koehler, *Bush’s Forest Plan Signals Return to “Logging Without Laws,”* http://www.nativeforest.org/press_room/release_bfp_8_22_02.htm (last visited Mar. 8, 2008).

as grounded in state constitutional law, helps insulate groundwater protection from the political forces and special interests that can dominate legislatures and bureaucracies. The specter of a judicially-created taking will haunt those who advocate for adoption of the public trust doctrine. Some scholars argue that application of the public trust doctrine is antithetical to private property rights and creates a taking of private property.²⁹⁸ But water law is full of examples of failed lawsuits that claimed that loss of water “rights” constituted a taking in violation of the Fifth Amendment.

For example, states that have abolished riparian rights in favor of a regulated system of water use have, with limited exceptions, successfully defended their restrictions on riparian property ownership against takings claims.²⁹⁹ Even when irrigators faced significant reduction in contract water from federal projects because of court-ordered Endangered Species Act protection, no taking occurred.³⁰⁰ Also, in prior appropriation jurisdictions courts have accepted limitations on water use without finding a taking.³⁰¹ Groundwater regulations that limit groundwater pumping in Nebraska, which previously recognized a correlative rights doctrine at common law, did not cause a taking.³⁰² A leading treatise notes that takings

298. Huffman, *supra* note 266, at 528.

299. See, e.g., *In re Hood River*, 227 P. 1065, 1096 (Or. 1924) (“This is not taking the property of one and giving it to another. It is making the use of public property, water, the measure of the property of the individual therein. The right to water is a usufruct. That right becomes vested when it is applied to a beneficial use, and not before.”); *Baumann v. Smrha*, 145 F. Supp. 617, 624–25 (D. Kan. 1956) (“[W]e do not regard a landowner as having a vested right in underground waters underlying his land which he has not appropriated and applied to beneficial use.”). *But cf. Franco-America Charolaise, Ltd. v. Okla. Water Res. Bd.*, 855 P.2d 568, 571 (Okla. 1990) (“Oklahoma riparian owners enjoy a vested common-law right to the reasonable use of the stream. This right is a valuable part of the property owner’s ‘bundle of sticks’ and may not be taken for public use without compensation.”).

300. *Klamath Irrigation Dist. v. United States*, 67 Fed. Cl. 504, 540 (2005). *But cf. Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 313, 319 (2001) (“Like it or not, water rights, though undeniably precious, are subject to the same rules that govern all forms of property—they enjoy no elevated or more protected status. In the case *sub judice*, those rights, such as they exist, take the form of contract claims and will be resolved as such.”). See generally John D. Leshy, *A Conversation About Takings and Water Rights*, 83 TEX. L. REV. 1985 (2005) for an entertaining discourse about the long-recognized legal limitations in western water, especially water delivered by federal water projects.

301. See, e.g., *MacDonald v. State*, 722 P.2d 598 (Mont. 1986) (upholding re-quantification of water rights from flow-rate based to quantity based, even if the re-quantification resulted in lower total appropriation, and emphasizing that irrigators do not own the water, but only possess a right to use it).

302. *Bamford v. Upper Republican Natural Res. Dist.*, 512 N.W.2d 642, 652 (Neb. 1994). Florida, too, denied a takings claim based on groundwater regulation. See *Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 663, 667 (Fla. 1979) (“The right of the owner to ground water underlying his land is to the usufruct of the water and not to the water itself. The ownership of the land does not carry with it any ownership of vested rights to underlying ground water not actually diverted and applied to beneficial use.”). *But cf. McNamara v. City of Rittman*, 838 N.E.2d 640, 644–45 (Ohio 2005) (holding that a landowner does have a right in groundwater that, if destroyed by a government entity, is an

claims stemming from regulatory restrictions on groundwater use are more easily rejected than those for surface water claims.³⁰³

Indeed, traditional common law doctrines of absolute dominion and reasonable use are doctrinally inapposite to arguments asserting that ownership in groundwater is a stick in the bundle of rights granted by deed. These common law remedies often leave a landowner defenseless against a neighbor who sunk a deeper well or uses a larger pump to deplete an aquifer, even when the property owner loses access to water underneath his property.³⁰⁴ It is hard to assert that the government is unconstitutionally taking a valuable property right when one's neighbor can lawfully take the same property with impunity. The weight of modern authority counsels against a court finding a taking of groundwater "rights" based upon adoption of the public trust doctrine, even if adoption limits present and future groundwater use.

Still, the allure of takings claims weighs heavy in the minds of the public and some judges. Property rights advocates carry significant public sway.³⁰⁵ Recent attempts in Vermont to apply the public trust doctrine to groundwater through legislation were opposed by property rights advocates, the ski industry, and water bottlers.³⁰⁶ Anti-takings sentiment was prominent in the debate that ultimately resulted in defeat for the legislation.³⁰⁷

CONCLUSION

Protection of clean and adequate groundwater supplies is vital for the enduring health of the nation. Common law groundwater doctrines,

unconstitutional taking). The facts in *McNamara* were sympathetic to the homeowner, whose well was threatened by municipal pumping. *Id.* at 642. The case does not stand for the proposition that conservation measures constitute a taking. Rather, in *McNamara* a government entity was engaged in pumping that allegedly caused damages, giving rise to a takings claim. *Id.*

303. A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES* § 4.29 (2005).

304. *Id.*

305. See Pac. Legal Found., Property Owner Rights, www.pacificlegal.org/?mvcTask=topic&id=1 (last visited Nov. 26, 2007) (describing an extensive anti-takings litigation program). The 2004 Republican Party Platform contained a strong affirmation of property rights and against takings. Republican Nat'l Comm., Platform Committee, 2004 Republican Party Platform: A Safer World and a More Hopeful America (2004), <http://www.gop.com/media/2004platform.pdf>.

306. See, e.g., Evan Mulholland, *Groundwater Quantity Regulation in Vermont: A Path Forward*, 8 VT. J. ENVTL. L. 1, 34 (2006) (discussing opposition to a public trust bill by the President of Vermont Pure, a subsidiary of Nestlé that bottles water in Randolph, Vermont, because of potential harm to his business).

307. Interview with Patrick Parenteau, Professor, Vermont Law School (Nov. 2007). Professor Parenteau attended hearings on the Vermont legislation.

however, provide virtually no long-term protection, and statutory regulation of groundwater is highly variable. The plethora of groundwater problems across the country requires a new paradigm for using groundwater wisely.

The public trust doctrine can provide that paradigm. Commentators addressing both *Mono Lake* and *Wai' Hole Ditch* both underscore the real value of the public trust as something beyond winning a court battle. Adoption of the public trust to protect water resources provides an important statement that can shift public views in favor of protecting public resources.³⁰⁸ The public trust "crosses over from the law to a pure statement of societal vision."³⁰⁹ For groundwater, a new societal vision is needed. The principle that water itself is a common resource, freed from property law constraints in the traditional public trust, has already been recognized by several state supreme courts. If surface waters can be protected by the public trust, independent of state property or navigability requirements, then so can groundwater. State constitutions can provide the legal framework for public trust principles. Distinctions between ground and surface water are becoming increasingly arcane. The idea that groundwater is a resource of the commons is not particularly novel.³¹⁰

Arguments against applying the public trust to groundwater must confront the widespread failures of current regulatory systems, and offer a better way to avert the problems that beset our use and misuse of groundwater. Takings claims may be asserted, but will not likely have much success given the widespread rejection of takings claims in water resource disputes. Water should not be classified as private property. The better view is that water is a common resource, held in trust by the State for the wise and perpetual use by its citizens.

Applying the public trust to groundwater will not erase groundwater problems overnight. The *Mono Lake* experience demonstrates that the real force of the doctrine is to infuse decision makers with the knowledge and power to act for the long term, notwithstanding countervailing traditional interests. The "real" public trust lies in the ability of the public to give effect to the values enunciated in the courtroom.³¹¹ But the process of

308. In the words of Sproat and Moriwake, "[m]ore than a set of rules, the public trust embodies an entire way of thinking." Sproat & Moriwake, *supra* note 254, at 276.

309. *Id.*

310. "Water, as a thing in its natural habitat, was variously conceived by the Romans to be *res nullus*, the property of no one, along with the air, the sea, and wild animals, or as *res communes*, common things owned by everyone." Frank J. Trelease, *Government Ownership and Trusteeship of Water*, 45 CAL. L. REV. 638, 640 (1957).

311. See BEYOND LITIGATION, *supra* note 274, at 190 ("The 'real' public trust doctrine exists as much in the post-litigation interactions of parties that resolve conflicts and give effect to public trust values as it does in judicial decisions describing and announcing the doctrine's applicability.").

infusing public trust values into groundwater decision making can only begin when state courts apply the doctrine. Judge Richard Posner, a leading conservative jurist, has suggested that in the context of common-pooled resources, pragmatic jurists are preferable over legal positivists. Legislative solutions can be terribly inefficient. “American legislatures, in contrast to European parliaments, are so sluggish when it comes to correcting judicial mistakes that a heavy burden of legal creativity falls inescapably on the shoulders of judges [who cannot] bear the burden unless they are pragmatists.”³¹² While judicial imposition of the public trust to groundwater may bring cries of judicial activism,³¹³ such a decision can draw from a state’s constitution or the rich legacy of numerous other state court decisions to correct the scientific fallacies and legal fictions that still govern groundwater. The protection of our nation’s groundwater cannot depend on the common law, nor can it wait for plodding legislatures or backward-thinking water administrators to ensure that groundwater is available for future generations—for uses that we may not now fathom. The protection of groundwater is just too precious to trust to anything less than the public trust.

312. SAX, *supra* note 11, at 423. Sax develops this argument from an examination of how the law has treated the common pooled resource of oil and gas. Judge Posner, writing on how courts have treated that resource, acknowledges that judges are called upon to lead the law in pragmatic directions. *Id.* at 421–23.

313. The term “activist judge,” based on this author’s twenty-three years of litigation experience, is mostly a politically-laden term applied by those who dislike a particular result in court and grasp for a label to explain it.

