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Interstate Groundwater Law Revisited: Mississippi v. Tennessee

Noah D. Hall
Wayne State University

Joseph Regalia

INTERSTATE GROUNDWATER LAW REVISITED: *MISSISSIPPI V. TENNESSEE*

*Noah D. Hall**

*Joseph Regalia***

In June 2015, the United States Supreme Court granted the State of Mississippi leave to file a bill of complaint against the State of Tennessee, the City of Memphis, and Memphis Light, Gas & Water Division for wrongfully converting groundwater from the interstate Sparta-Memphis Aquifer. The dispute arises from Memphis and its municipal utility pumping groundwater within Tennessee, which Mississippi alleges has lowered the water tables within its territory. The Supreme Court's grant of leave raises for the first time the question of what legal doctrine applies to transboundary interstate groundwater resources. Tennessee and lower courts would subject interstate groundwater to the Court's equitable apportionment doctrine, which divides and allocates interstate surface waters by determining the best overall utility for the water supply with a heavy emphasis on protecting existing consumptive uses. Mississippi's bill of complaint seeks damages and declaratory relief based on property theories of absolute right, title, and exclusive possessory ownership of groundwater located within its territorial borders. This article offers a third alternative, the Supreme Court's doctrine of interstate nuisance, which recognizes and balances competing sovereign interests in utilization and preservation of shared interstate natural resources.

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* Associate Professor of Law, Wayne State University Law School and Director of Scholarship, Great Lakes Environmental Law Center; J.D., University of Michigan Law School, 1998; B.S., University of Michigan School of Natural Resources & Environment, 1995. Thanks to Professors Dan Tarlock, Gabriel Eckstein, and J.B. Ruhl for their expertise and comments. This article was first presented at a symposium at the University of Virginia Law School and benefited from the feedback of Professor Jonathan Cannon and the other participants. A subsequent draft was presented at a workshop at Texas A&M University Law School and benefited from the feedback of Professors Tim Mulvaney and Gina Warren and numerous students. Great Lakes Environmental Law Center Student Fellows Maureen O'Sullivan, Wayne Law '16 and Sabra Bushey, Wayne Law '17 provided valuable research assistance.

** Adjunct Professor of Law, University of Nevada, Las Vegas, William S. Boyd School of Law and Research Fellow, Great Lakes Environmental Law Center; J.D., summa cum laude, University of Michigan Law School, 2013; B.A., summa cum laude, University of Nevada, Reno, 2010.

I. INTRODUCTION

The Sparta-Memphis Aquifer straddles the Mississippi-Tennessee border and is the primary water supply for the City of Memphis.[1] As Memphis and its municipal utility, Memphis Light, Gas & Water Division, have increased pumping from this shared aquifer, the State of Mississippi has objected and complained about declining water tables within its territory.[2] The dispute worked its way up and down the federal court system until June 2015, when the United States Supreme Court granted the State of Mississippi leave to file a bill of complaint against the State of Tennessee, the City of Memphis, and Memphis Light, Gas & Water Division for wrongfully converting groundwater from the interstate Sparta-Memphis Aquifer.[3] Prior to the Supreme Court's grant of leave, lower courts and scholars (including the co-author of this article) assumed that interstate groundwater resources are subject to the Supreme Court's equitable apportionment doctrine, which settles state interests in shared waters by determining the best overall utility for the water supply.[4] Mississippi's bill of complaint, however, frames a state's interest in water differently: it seeks damages and declaratory relief based on property theories of absolute right, title, and exclusive

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[1] *See* Brian Waldron and Daniel Larsen, *Pre-Development Groundwater Conditions Surrounding Memphis, Tennessee: Controversy and Unexpected Outcomes*, 1 J. AM. WATER RESOURCES ASS'N 133-35 (2014); Brief for the United States as Amicus Curiae, Mississippi v. Tennessee, No. 220143 (U.S. May 12, 2015).

[2] *See* Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 627–28 (5th Cir. 2009).

[3] *See Docket of Case No. 220143*, SUPREME COURT OF THE UNITED STATES, http://www.supremecourt.gov/Search.aspx?FileName=/docketfiles/22o143.htm (last visited Mar. 6, 2016).

[4] *Hood*, 570 F.3d at 629–31; Noah D. Hall & Benjamin L. Cavataro, *Interstate Groundwater Law in the Snake Valley: Equitable Apportionment and a New Model for Transboundary Aquifer Management*, 6 UTAH L. REV. 1553 (2013).

possessory ownership of groundwater within its territorial borders.[5] Thus, the Supreme Court must decide, as a matter of first impression, the law of interstate groundwater use—and prior holdings and scholarship must be revisited.

This is not the first time Mississippi has brought this issue to the Court seeking damages based on a theory of property ownership for waters within its borders. In 2010 the Court refused to hear Mississippi's claims,[6] letting stand a lower court ruling that the Sparta-Memphis Aquifer must be equitably apportioned before any action for damages could proceed.[7] By declining leave in 2010, the Court left Mississippi to pursue a claim under the equitable apportionment doctrine to establish its share of the interstate groundwater, just as it would for interstate surface waters.[8] The Court's grant of leave in 2015 seems to signals a reversal of its 2010 position, opening the door to Mississippi's arguments of absolute ownership of the groundwater located within its state borders. This article respects the Court's grant of leave but suggests another compelling and well-established alternative to Mississippi's absolutist property ownership theories—the Supreme Court's doctrine of interstate nuisance. Interstate nuisance addresses harms to natural resources that cross state boundaries, recognizing the need to balance competing sovereign interests in utilization and preservation of such resources.[9] The Supreme Court has used interstate nuisance to address transboundary pollution and other physical harms.[10] Even more applicably, it has relied on the doctrine of interstate nuisance to resolve complaints of harm to neighboring states' interests from municipal water use of the Great Lakes,[11] a water resource that in nature and importance has many analogies to the Sparta-Memphis Aquifer.

This article proceeds as follows: Part II provides a background on the Sparta-Memphis Aquifer dispute and the prior *Mississippi v. City of Memphis* litigation. Part III examines the character of state title to

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[5] The State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action, Complaint, and Brief in Support of Motion at 23–24, Mississippi v. Tennessee, No. 220143, (U.S. June 10, 2014), 2014 WL 5319728, at *23–*24 [hereinafter Complaint] (prayer for relief).

[6] Mississippi v. City of Memphis, 130 S. Ct. 1319 (2010).

[7] *Hood*, 570 F.3d at 629–30, 633.

[8] *See generally* Hall & Cavataro, *supra* note 4, at 1608–11.

[9] *See* Noah D. Hall, *Transboundary Pollution: Harmonizing International and Domestic Law*, 40 U. MICH. J.L. REFORM 681, 690–91 (2007).

[10] *See, e.g.*, Georgia v. Tenn. Copper Co., 237 U.S. 474 (1915); Georgia v. Tenn. Copper Co., 206 U.S. 230 (1907); Missouri v. Illinois, 200 U.S. 496 (1906); Missouri v. Illinois, 180 U.S. 208 (1901).

[11] Wisconsin v. Illinois, 449 U.S. 48 (1980); Wisconsin v. Illinois, 388 U.S. 426 (1967); Wisconsin v. Illinois, 289 U.S. 395 (1933); Wisconsin v. Illinois, 281 U.S. 696 (1930); Wisconsin v. Illinois, 281 U.S. 179 (1930); Wisconsin v. Illinois, 278 U.S. 367 (1929).

waters, which are better understood through the public trust doctrine rather than the fiction of state ownership of water. Part IV considers how Mississippi's theory of groundwater ownership is equally defective under state water law concepts, which have overwhelmingly rejected absolute ownership in favor of doctrines such as correlative rights that balance the harms and benefits of groundwater use. Finally, Parts V and VI consider possible doctrines which the Court may use to settle interstate groundwater disputes: equitable apportionment and interstate nuisance, respectively.

II. THE SPARTA-MEMPHIS AQUIFER DISPUTE AND PRIOR LITIGATION

Given the growing demand for and utilization of groundwater, interstate disputes over this resource are inevitable. While overall water consumption in the United States has stayed flat for several decades,[12] the competing demands for surface water—including maintaining in-stream flows and other environmental protections—have increased pressure on groundwater resources.[13] Since 1950, groundwater withdrawals have more than doubled from 34 billion gallons (128,704,000 m^3) per day to 76 billion gallons (287,691,296 m^3) per day in 2010.[14] Groundwater now provides over one-fifth of the freshwater used in the United States.[15] Groundwater offers water users several advantages over surface water. It is widely available, less vulnerable to environmental pollution, and often suitable for drinking with minimal treatment.[16] Further, groundwater is not subject to competing demands for navigation, recreational use, and fishery habitats.[17]

Historically, groundwater use was almost exclusively a matter of state law.[18] But with increased utilization of groundwater, interstate

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[12] JOAN F. KENNY ET AL., U.S. DEP'T OF INTERIOR, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2005, at 1–2 (2009).

[13] *See generally* Robert H. Abrams & Noah D. Hall, *Framing Water Policy in a Carbon Affected and Carbon Constrained Environment*, 50 NAT. RESOURCES J. 3 (2010).

[14] MOLLY A. MAUPIN ET AL., ESTIMATED USE OF WATER IN THE UNITED STATES IN 2010, at 45 (2014).

[15] *Id.* (noting that approximately 355 billion gallons of freshwater were withdrawn each day in 2010, of which 76 billion gallons were groundwater).

[16] *See* ROBERT W. ADLER ET AL., MODERN WATER LAW: PRIVATE PROPERTY, PUBLIC RIGHTS, AND ENVIRONMENTAL PROTECTIONS 173–75 (2013).

[17] *See* Abrams & Hall, *supra* note 13, at 10–11.

[18] CONG. BUDGET OFFICE, HOW FEDERAL POLICIES AFFECT THE ALLOCATION OF WATER 4 (2006) ("For interstate groundwater, the laws of each state govern access to and use of an aquifer's resources withdrawn in its jurisdiction . . . . even for the largest aquifer crossing state boundaries—the High Plains aquifer, which extends over 174,000 square miles and involves eight states . . . ."); Dean Baxtresser, Note, *Antiques Roadshow: The Common Law and the Coming Age of Groundwater Marketing*, 108 MICH. L. REV. 773, 788 n.69 (2010) ("As a whole, federal law rarely interferes with groundwater allocation at the state level . . . .").

conflicts over the use of transboundary groundwater resources are emerging around the country. The ongoing dispute over the Snake Valley Aquifer, pitting the water needs of Las Vegas against environmental and agricultural interests in Utah, is a telling example.[19] But while interstate water disputes are part of life in the arid West, the East has now taken the lead with the first interstate groundwater case before the U.S. Supreme Court.

The dispute between Mississippi and Tennessee centers on the use of the Sparta-Memphis Aquifer by the city of Memphis for its municipal public water supply. The Sparta-Memphis Aquifer sits in northwest Mississippi and southwest Tennessee and is part of the Mississippi embayment aquifer system, a sedimentary basin that reaches across nine states in the south-central United States.[20] The City of Memphis and Memphis Light, Gas and Water ("MLGW") are located in Shelby County, Tennessee, along the border of Mississippi and Arkansas. Memphis began withdrawing groundwater from the Aquifer for municipal use in 1886, and the Aquifer has thus supplied drinking water throughout the region for over a century.[21] Recently, water from the Aquifer has been increasingly used for irrigation and industrial purposes.[22]

MLGW is the utility responsible for providing water, gas and electricity to residents of Memphis and Shelby County in Tennessee.[23] It is the largest three-service utility provider in the country and serves nearly 421,000 customers overall.[24] MLGW's current water operations include over 175 wells in ten separate well fields and provides drinking water to over 257,000 customers.[25] MLGW relies solely on groundwater, specifically the Sparta-Memphis Aquifer, as its source of drinking water.[26] Memphis's heavy reliance on groundwater is second only to San Antonio, Texas, among the nation's cities that depend solely on groundwater for municipal water supply.[27]

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[19] *See generally* Hall & Cavataro, *supra* note 4.

[20] Waldron & Larsen, *supra* note 1, at 133–35.

[21] Brief for the United States as Amicus Curiae, *supra* note 1; BRIAN R. CLARK ET AL., USGS PROFESSIONAL PAPER 1785, GROUNDWATER AVAILABILITY OF THE MISSISSIPPI EMBAYMENT 1–2, 8, 11 (2011).

[22] CLARK ET AL., *supra* note 21, at 8.

[23] *About*, MEMPHIS LIGHT, GAS, AND WATER, http://www.mlgw.com/about/ (last visited Mar. 6, 2016).

[24] *Id.*

[25] *Id.*

[26] *Id.*; CLARK ET AL., *supra* note 21 at 8.

[27] J.V. BRAHANA & R.E. BROSHEARS, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 89-4131, HYDROGEOLOGY AND GROUND-WATER FLOW IN THE MEMPHIS AND FORT PILLOW AQUIFERS IN THE MEMPHIS AREA, TENNESSEE, 2 (2001).

Groundwater withdrawals from the Sparta-Memphis Aquifer in Shelby County have grown dramatically over time. Between 1886 and 1975, groundwater withdrawals increased from less than about 10 million gallons (38,000 m^3) to over 179 million gallons (681,000 m^3) per day.[28] Over the next twenty years, from 1975 to 1995, withdrawals plateaued averaging almost 166 million gallons (628,000 m^3) per day.[29] By 2005, however, withdrawals increased again to over 187 million gallons (710,000 m^3) per day.[30] This high volume water consumption is not surprising, given that Shelby County is the largest county in Tennessee in terms of both geographic size and population.[31] Further, the county is home to Memphis, the most populous city in the state. Over the last forty-five years the population of the county has increased by over 200,000 citizens,[32] which has contributed to the increased demand for groundwater from the Sparta-Memphis Aquifer.

After decades of allegedly pumping water at rates much higher than that of the Aquifer's "natural seepage rate," Mississippi has claimed that MLGW made permanent, harmful changes to a vital source of groundwater to the state.[33] Mississippi maintains that the extensive pumping to supply water to Memphis has allegedly diverted water from Mississippi's portion of the Sparta-Memphis Aquifer.[34]

The alleged change in gradient from Mississippi to the Memphis area spurred Mississippi's attorney general to file a lawsuit against Memphis in 2007 in the U.S. District Court for the Northern District of Mississippi.[35] Mississippi claimed that the water held in its portion of the Aquifer is the state's sovereign property[36] and that this water has

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[28] JAMES H. CRINER AND WILLIAM SCOTT PARKS, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 76-67, HISTORIC WATER-LEVEL CHANGES AND PUMPAGE FROM THE PRINCIPAL AQUIFERS OF THE MEMPHIS AREA, TENNESSEE: 1886-1975, at 1–2, 36–38 (1976).

[29] SUSAN S. HUTSON & A. JANNINE MORRIS, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 91-4195, PUBLIC WATER-SUPPLY SYSTEMS AND WATER USE IN TENNESSEE: 1988, at 1, 9 (1992); SUSAN S. HUTSON, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 99-4052, PUBLIC WATER-SUPPLY SYSTEMS AND ASSOCIATED WATER USE IN TENNESSEE: 1995, at 1, 10–11 (1999).

[30] JOAN F. KENNY ET AL., U.S. GEOLOGICAL SURVEY, CIRCULAR 1344, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2005 (2009) (ground-water withdrawals for Shelby County can be found under the county's FIPS code, which is 157).

[31] *QuickFacts: Shelby County, Tennessee*, U.S. CENSUS BUREAU, http://quickfacts.census.gov/qfd/states/47/47157.html (last visited Mar. 28, 2016).

[32] *Id.*

[33] Complaint, *supra* note 5, at 23–24.

[34] Complaint, *supra* note 5, at 24.

[35] Hood *ex rel.* Mississippi v. City of Memphis, 533 F. Supp. 2d 646, 648 (N.D. Miss. 2008).

[36] Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 627 (5th Cir. 2009) ("Mississippi alleges that part of the groundwater that Memphis pumps from the Aquifer is Mississippi's sovereign property and that the state must therefore be compensated.").

been taken by Memphis drawing more water than was naturally replenished.[37] Mississippi sought compensation in the form of past and future damages, and equitable relief.[38]

An initial procedural issue before the district court was the City of Memphis's attempt to join the State of Tennessee as a defendant party.[39] Mississippi opposed and disputed the joinder.[40] The district court ruled that Tennessee was a necessary and indispensable party, but that it did not have the jurisdiction to join the state.[41] The court reasoned that joining Tennessee was necessary "because in its absence complete relief cannot be accorded among those already parties to the action."[42]

The district court ultimately rejected Mississippi's claim that only Mississippi water was involved in the lawsuit,[43] stating relief could not be granted until it was determined "which portion of the Aquifer's water is the property of which State."[44] The court cited the Supreme Court's precedent of applying equitable apportionment for resolving interstate water disputes, concluding that the Supreme Court would have to apportion the Sparta-Memphis Aquifer between the two states.[45]

Because the Supreme Court has original and exclusive jurisdiction for controversies between two or more states,[46] the district court reasoned that Mississippi would have an adequate remedy if the action were dismissed because the state would be able "to petition the Supreme Court for apportionment of the waters of the Memphis Sands Aquifer in a suit that properly joins . . . the State of Tennessee."[47] Since not joining Tennessee would result in extreme prejudice, and there were still options available to the plaintiffs, the district court dismissed the case without prejudice.[48] As only the Supreme Court has exclusive jurisdiction for disputes between states,[49] the opinion intimated that Mississippi should pursue the action through this channel.[50]

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[37] *Id.*
[38] *Id.*
[39] *Id.* at 627–628.
[40] *Id.* at 628.
[41] Hood *ex rel.* Mississippi v. City of Memphis, 533 F. Supp. 2d 646, 649, 651 (N.D. Miss. 2008).
[42] *Id.* at 649.
[43] *Id.*
[44] *Id.* at 648 (citations omitted).
[45] *Id.*
[46] 28 U.S.C. § 1251(a) (2012).
[47] *Hood*, 533 F. Supp. 2d at 650.
[48] *Id.*at 651.
[49] 28 U.S.C. § 1251(a).
[50] *Hood*, 533 F. Supp. 2d at 650.

Instead, Mississippi appealed to the Fifth Circuit the district court's ruling to dismiss the case.[51] Mississippi again argued that Tennessee was not an indispensable party because the suit did not involve Tennessee's sovereign interests.[52] Mississippi further argued against equitable apportionment of the Sparta-Memphis Aquifer, claiming that it owned the groundwater resources within its sovereign territory.[53]

The Fifth Circuit affirmed the district court and held that the Sparta-Memphis Aquifer was an interstate water source and that allocation of the resource must happen "before one state may sue an entity for invading its share."[54] The court rejected the argument that Mississippi owned a "fixed resource" interest in the Aquifer water, stating that water "is not a fixed resource like a mineral seam, but instead migrates across state boundaries."[55] The Fifth Circuit pointed to Supreme Court precedent that ruled that state boundaries do not determine the amount of water a state is entitled to in regards to an interstate source.[56] Thus, the court concluded that the aquifer had to be allocated like other interstate water sources that were subject to multistate disputes:

> The fact that this particular water source is located underground, as opposed to resting above ground . . . is of no analytical significance. The Aquifer flows, if slowly, under several states, and it is indistinguishable from a lake bordered by multiple states or from a river bordering several states depending upon it for water.[57]

The Fifth Circuit concluded that "a judgment rendered in Tennessee's absence would be enormously prejudicial to Tennessee's sovereign interest in its water rights"[58] and that Mississippi would still have an adequate remedy, by petitioning the Supreme Court, if the suit were dismissed.[59] Following this decision, Mississippi filed a petition for writ of certiorari to the Supreme Court.[60] Again Mississippi argued that the groundwater was not a shared natural resource and that equitable apportionment was not required, nor appropriate for the pursued action: since Mississippi was not challenging Tennessee's "sovereignty over

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51 Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 625 (5th Cir. 2009).

52 *Id.* at 629.

53 *Id.*

54 *Id.* at 629–30 (citing Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92 (1938)).

55 *Id.* at 630.

56 *Id.* at 630–31.

57 *Id.* at 630.

58 *Id.* at 633.

59 *Id.*

60 Petition for Writ of Certiorari, Mississippi v. City of Memphis, 130 S.Ct. 1319 (2010) (No. 09-289).

groundwater within" the state, and Tennessee had not moved to intervene, then there was no controversy between the states.[61] Mississippi also contended that their own statutory and legal authority gave them authority over both ground and surface waters within Mississippi state boundaries.[62] The Supreme Court denied certiorari in 2010,[63] which seemed to finally put to rest the notion of the state's absolute ownership of groundwater.

Following the Supreme Court's denial of certiorari in 2010, Mississippi and Tennessee (along with Arkansas, which also has an interest in the shared Aquifer) engaged in studies and discussions with the hope of reaching an interstate agreement. Frustrated by the lack of progress on an agreement, Mississippi again turned to litigation.

In June of 2014, Mississippi returned to the Supreme Court, this time seeking leave to file a complaint before the Court directly.[64] Mississippi was undeterred by the Supreme Court's prior rejections of its sovereignty theory, because this time the state did not even seek equitable apportionment in the alternative.[65] Instead, Mississippi argued that it has sovereign ownership of the water being drawn from the Sparta-Memphis Aquifer. Based on this claim of sovereign ownership, Mississippi argued that the pumping of groundwater by (and allowed by) the State of Tennessee, the City of Memphis, and MLGW is tantamount to conversion.[66] In Mississippi's view, when it was admitted to the Union in 1817, it "became vested with ownership, control, and dominion over the land and waters within its territorial boundaries."[67] Mississippi thus contends that Tennessee's pumping of groundwater that in its natural state would remain in Mississippi violates Mississippi's "retained sovereign rights under the United States Constitution" and "constitute[s] . . . trespass upon, and conversion, taking and misappropriation of, [Mississippi's] property."[68]

Crucial to Mississippi's arguments is the contention that "[t]his case does not fall within the Court's equitable apportionment jurisprudence" because, although "[t]he geologic formation in which the groundwater is stored straddles two states," the water "is not a shared natural resource."[69] As relief, Mississippi requests "a declaratory judgment

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[61] *Id.* at 14.
[62] *Id.* at 17.
[63] Mississippi v. City of Memphis, 130 S. Ct. 1319 (2010).
[64] *Docket of Case No. 220143*, *supra* note 3.
[65] Complaint, *supra* note 5, at 23–24.
[66] *Id.*
[67] *Id.* at ¶ 8.
[68] *Id.* at ¶ 52.
[69] *Id.* at ¶¶ 38, 41, 48-49.

establishing Mississippi's sovereign right, title and exclusive interest in the groundwater stored naturally in the Sparta Sand formation underlying Mississippi."[70]

The U.S. Solicitor General and defendants both initially urged the court to reject Mississippi's request for leave to file a complaint for a simple reason: an equitable apportionment is all Mississippi could possibly be entitled to, and because it hasn't asked for one, it has no right to be before the court.[71] They contended that Mississippi was recycling the same "territorial property rights" theory that already failed before the Court in 2010.[72] Defendants argued that the Court's "equitable apportionment decisions have consistently rejected Mississippi's theory that a State has sovereign ownership and control over interstate waters flowing within its boundaries."[73] Instead, defendants' position is that "'whenever . . . the action of one [S]tate reaches[] through the agency of natural laws[] into the territory of another [S]tate'", equitable apportionment applies, period.[74] Tennessee argues that the cone of depression caused by MLGW's pumping is just such an example of one state's activities reaching into another.[75] Defendants further contend that the doctrine of equitable apportionment encompasses Mississippi's claims because Mississippi "admits that the Aquifer is an interconnected hydrological formation and that, in its natural state, the water in the Aquifer flows, even if slowly, across state boundaries."[76] Thus, because Mississippi "has abandoned its equitable

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[70] *Id.* at ¶¶ 40, 46. Mississippi also requests damages "in an amount equal to the value of the Mississippi groundwater" taken by defendants plus prejudgment interest, which Mississippi estimates would total $615 million. *Id.* at ¶ 55. In the alternative, Mississippi requests an accounting and disgorgement of "all profits, proceeds, consequential gains, saved expenditures, and other benefits realized by" defendants. *Id.* at ¶ 56. Finally, Mississippi requests that defendants "be required to prospectively take all actions necessary to eliminate the cone of depression vis-à-vis Mississippi," including "the funding, construction and modification or restructuring of Memphis-MLGW's groundwater pumping systems." *Id.* at ¶ 57.

[71] Brief for the United States as Amicus Curiae, *supra* note 1, at 13 ("[T]he court should deny Mississippi leave to file its complaint without prejudice to refiling a properly framed complaint for an equitable apportionment of the Aquifer premised on concrete allegations of real and substantial injury.").

[72] Brief of Defendant State of Tennessee in Opposition to State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action at 10, Mississippi v. Tennessee, No. 220143 (U.S. Sept. 5, 2014), 2014 WL 5449619, at *10 [hereinafter Tenn. Br.].

[73] Brief for the United States as Amicus Curiae, *supra* note 1, at 10.

[74] Tenn. Br., *supra* note 72, at 18 (quoting Kansas v. Colorado, 206 U.S. 46, 97-98 (1906) (alterations to quoted source omitted)); *see also* Brief of Defendant City of Memphis, Tennessee and Memphis Light, Gas and Water Division in Opposition to the State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action at 12–14, Mississippi v. Tennessee, No. 220143 (U.S. Sept. 5, 2014) , 2014 WL 5463360, at *12–*14 [hereinafter Memphis Br.].

[75] Tenn. Br., *supra* note 72, at 18–19.

[76] Tenn. Br., *supra* note 72, at 18; *see also* Memphis Br., *supra* note 74, at 11–12.

apportionment claim," Tennessee argued that Mississippi "has no legally cognizable claim for damages arising out of Memphis's and MLGW's use of the Aquifer."[77]

Despite the Court's own prior rejection of the matter and the urging of the Solicitor General to reject the case, the Supreme Court granted Mississippi leave to file its bill of complaint on June 29, 2015.[78] The Supreme Court's grant of leave suggests the Court will consider Mississippi's arguments of absolute ownership of the groundwater within its borders, or it presumably would have rejected this case like it did in 2010.[79]

The Court appears to have three options. First, it could accept Mississippi's position that it has a sovereign ownership right over water in the aquifer and that Tennessee is converting this water regardless of whether the water has been apportioned.[80] Second, it could finally make clear that groundwater is subject to the equitable apportionment doctrine.[81] Finally, it could establish a rule for addressing harms from groundwater use between states out of its interstate nuisance doctrine. Parts III through VI of this article explain why Mississippi's arguments of sovereignty are based on a flawed view of the nature of state title to water, are inconsistent with state groundwater law, and are better addressed using the other two options before the Court. But before turning to this extensive legal discussion, more background on the Sparta-Memphis Aquifer and the science of groundwater pumping will be useful.

Groundwater is water found beneath the Earth's surface within the saturated zone of a porous geologic formation.[82] The saturated zone is the area underground where all interconnected openings are full of water.[83] Directly above the saturated zone is the unsaturated zone—the area beneath the ground where the pores and fractures in the

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[77] Tenn. Br., *supra* note 72, at 21. Defendants also have raised the doctrine of res judicata based on *Hood*, an issue not within the auspices of this article. *See id.* at 22–33; Memphis Br., *supra* note 74, at 22–35.

[78] *See Docket of Case No. 220143*, *supra* note 3.

[79] Shortly before this article went to print, Tennessee moved for judgment on the pleadings. *See* Motion of Defendant Tennessee for Judgment on the Pleadings, Mississippi v. Tennessee, No. 220143 (U.S. Feb. 25, 2016). Tennessee raises the same arguments that it raised in opposing the Bill of Complaint, namely that Mississippi has no property interest in the water located within the Sands Aquifer, and that equitable apportionment is the only legal doctrine that would afford Mississippi any enforceable water rights against Tennessee. *Id.* at 1–3.

[80] *See* Complaint, *supra* note 5, at 12–21.

[81] *See* Tenn. Br., *supra* note 72, at 18–19.

[82] RALPH C. HEATH, U.S. GEOLOGICAL SURVEY, WATER-SUPPLY PAPER 2220, BASIC GROUND-WATER HYDROLOGY 1, 4 (1987); 31 TEX. ADMIN. CODE § 601.3(6) (2006).

[83] HEATH, *supra* note 82, at 4.

underground materials contain both water and air.[84] The unsaturated zone is important to groundwater use because water percolating from the surface of the land through this zone recharges and replenishes all of the water in the deeper, saturated zone.[85]

An aquifer is a source of groundwater that contains sufficiently saturated, permeable material to yield significant quantities of water to wells.[86] Aquifers are either confined or unconfined.[87] A confined aquifer is completely filled with water and covered by a confining bed—a layer of less permeable material (e.g. shale or clay), which prevents the water in the aquifer from moving upward.[88] Conversely, an unconfined aquifer lacks an impermeable surface and is partially filled with water.[89] Unconfined aquifers contain a boundary between the unsaturated and saturated zones known as the water table.[90] The water table typically rises with increased recharge from precipitation and lowers in response to seasonally dry weather, drought, or excessive pumping of groundwater.[91] "Principal aquifers" are highly productive and nationally significant, many of which are interstate aquifers.[92] According to the U.S. Geological Survey, there are approximately 66 principal aquifers in the United States.[93]

Cities and other water users generally obtain groundwater by digging or drilling a well into an aquifer and then using a pump to bring the water to the surface.[94] When wells actively pump groundwater to the surface, the pumping action lowers the water level around the well base, forming a cone of depression centered on the well.[95] Active pumping can create an expanding cone of depression, which in turn can lower the water level for surrounding properties, interfering with neighboring wells and sometimes causing those other wells to go dry.[96] Competing wells and the resulting well interference is a common source of intrastate litigation over groundwater use. When the aquifer extends beyond state lines and the competing neighbors are in different states,

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84 *Id.*

85 *Id.*

86 *Id.* at 6.

87 *Id.*

88 *Id.*

89 *Id.*

90 *Id.*

91 *Id.* at 32.

92 *Id.*

93 *Aquifer Basics: Principal Aquifers by Name,* U.S. GEOLOGICAL SURVEY, http://water.usgs.gov/ogw/aquiferbasics/alphabetical.html (last visited Mar. 6, 2016).

94 HEATH, *supra* note 82, at 10.

95 *Id.* at 30.

96 *Id.*

the intrastate dispute becomes interstate, and something like the Mississippi-Tennessee litigation could arise.[97]

The Sparta-Memphis Aquifer is a distinct geologic formation that lies within the Middle Claiborne Aquifer, a hydrogeological unit within the Mississippi embayment aquifer system.[98] The groundwater in the Sparta-Memphis Aquifer, however, does not exist in isolation, but rather forms part of a hydrologically-interconnected regional watershed.[99] Several surface rivers and their corresponding watersheds, including the Wolf River, play key roles in recharging the Aquifer.[100]

Mississippi's argument that groundwater pumping in Tennessee has impacted groundwater levels within its borders is factually premised upon a study completed in 1976 which analyzed the pre-development hydrology of the Memphis Aquifer[101] beneath Shelby County.[102] The study concluded that historically the water in the aquifer flowed westward parallel to the Tennessee-Mississippi border, and thus there was no interstate groundwater flow prior to development.[103] According to this study, pumping groundwater in Shelby County caused groundwater movement to shift and flow across the Tennessee-Mississippi border from the southeast toward the northwest.[104] This is

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[97] *Id.* at 30–31.

[98] Waldron & Larsen, *supra* note 1, at 135.

[99] TONY P. SCHRADER, U.S. GEOLOGICAL SURVEY, SCIENTIFIC INVESTIGATIONS REPORT 2009-5207, WATER LEVELS AND SELECTED WATER-QUALITY CONDITIONS IN THE SPARTA-MEMPHIS AQUIFER (MIDDLE CLAIBORNE AQUIFER) IN ARKANSAS, SPRING-SUMMER 2007, at 2 (2009).

[100] *See* ORVILLE B. LLOYD, JR. & WILLIAM L. LYKE, U.S. GEOLOGICAL SURVEY, GROUND WATER ATLAS OF THE UNITED STATES, HYDROLOGIC INVESTIGATIONS ATLAS 730-K, SEGMENT 10, ILLINOIS, INDIANA, KENTUCKY, OHIO, TENNESSEE, at K27 (1995); ROBERT A. RENKEN, U.S. GEOLOGICAL SURVEY, GROUND WATER ATLAS OF THE UNITED STATES, HYDROLOGIC INVESTIGATIONS ATLAS 730- F, SEGMENT 5, ARKANSAS, LOUISIANA, MISSISSIPPI, at F16 (1998).

[101] The Memphis Aquifer is an "equivalent" aquifer to the Sparta Aquifer. "Equivalent" is a classification which describes the similarity between aquifers in terms of time of formation and deposition. Due to this similarity and their hydrologic connection to each other in the Middle Claiborne Aquifer, water levels in the Sparta aquifer typically correlate to water levels in the Memphis Aquifer, and the U.S. Geological Survey considers both one hydrologic unit. *See* TONY P. SCHRADER, POTENTIOMETRIC SURFACE IN THE SPARTA-MEMPHIS AQUIFER OF THE MISSISSIPPI EMBAYMENT, SPRING 2007, SCIENTIFIC INVESTIGATIONS MAP 3014, at 1 (2008). This connection is why the aquifer is referred to collectively as the "Sparta-Memphis Aquifer." The 1976 study considered the Memphis Aquifer. However, because the Memphis Aquifer is both equivalent to the Sparta Aquifer and essentially one hydrologic unit, the conclusions are indicative of the pre-development conditions of the Sparta-Memphis Aquifer as a whole. *See* Waldron & Larsen, *supra* note 1, at 133, 135.

[102] Waldron & Larsen, *supra* note 1, at 135, 151; *see also* CRINER & PARKS *supra* note 28, at 5–7.

[103] CRINER & PARKS, *supra* note 28, at 22.

[104] *Id.*

the factual basis for Mississippi's argument that Tennessee has taken (i.e. converted) Mississippi's groundwater.

However, a more recent study concluded that this previous study's conclusions may not be based upon reliable data.[105] To determine the pre-development hydrologic conditions of the Memphis Aquifer, the 1976 study was based upon five locations in Shelby County, Tennessee.[106] The study's authors alleged these locations represented pre-development conditions of the Memphis Aquifer.[107] When the study was conducted, however, the time span between pre and post development ranged from forty-one to seventy-four years.[108]

The more recent study conducted a new analysis on the pre-development conditions in the Memphis Aquifer by analyzing historical well data, in addition to data from Mississippi.[109] The study relied upon early records of groundwater wells that included information about well depth, depth to groundwater, pump rate, and water quality.[110] R.C. Graves famously drilled the first well in the Memphis Aquifer in downtown Memphis in 1886, which marks the beginning of the aquifer's development.[111] This study was based upon historical records starting only eight years after development began.[112] These historical records produce a more accurate picture of pre-development groundwater conditions because of the smaller gap of time between pre- and post-development. In addition, including wells in Mississippi (ignored in the 1976 study) provides a more complete picture of the interstate flow in the Memphis Aquifer.

This recent study used these historical records to analyze and extrapolate data sets to understand pre-development groundwater conditions by using complex, hydrologic computer models. The authors concluded that unlike the authors of the 1976 study originally thought, groundwater gradients along the Tennessee-Mississippi border did not flow westward.[113] Instead, the authors of the recent study discovered in pre-development conditions the groundwater would flow northwest across the Tennessee-Mississippi border at a rate of over 58 million gallons (220,000 m^3) per day, invalidating the claim that development

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105 Waldron & Larsen, *supra* note 1, at 133, 151.
106 *Id.*; CRINER & PARKS, *supra* note 28, at 1–5.
107 Waldron & Larsen, *supra* note 1, at 135, 151.
108 *Id.* at 138.
109 *Id.* at 133, 151.
110 *Id.* at 138.
111 *Id.* at 134.
112 *Id.* at 151.
113 *Id.*

has caused this flow gradient.[114] In the scientific opinions of the study authors, these results, "raise concern in the State of Mississippi's claim that MLGW altered a zero-gradient flow condition along the Shelby County to now unrightfully pull groundwater across the county line due to excessive pumping in Shelby County."[115] Instead, the study actually indicates that flow into Memphis, rather than Mississippi, has been reduced due to development.[116] The study concluded that the flow into Memphis has been reduced by about 10.5 million gallons (40,000 m^3) per day.[117]

These findings demonstrate the factual and technical misconceptions that Mississippi's arguments are premised upon, before even considering the fundamental problems with the State's legal arguments. The Memphis Aquifer is not, despite its descriptive name, isolated or geographically bound by state and political borders. Rather, the regional aquifer, by any name, is a continuous interstate resource containing groundwater that flows across state lines, both pre- and post-development. There is no hydrologic separation along state lines. Further, the assertion that the groundwater pumped in Shelby County, Tennessee has been unnaturally diverted from its natural place in Mississippi is not supported by technical studies. Groundwater has always flowed across state borders, and increased pumping in Tennessee has resulted primarily in less groundwater flowing to Memphis, not more. Water is simply not divisible and static like other forms of property. The law has always recognized this reality, as the following sections explain in greater detail.

III. THE CHARACTER OF STATE TITLE TO WATERS

In Mississippi's view it is "vested with *ownership* . . . over the land and waters within its territorial boundaries."[118] It contends that if another state begins pumping groundwater—and this pumping drains some water in Mississippi—this other state has unlawfully taken its property.[119] The argument is that the other state has converted Mississippi's property, violating Mississippi's *ownership* rights. To support this unprecedented conversion theory, Mississippi cites to cases

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114 *Id.*

115 *Id.*

116 Michael Campana, *Déjà Vu All Over Again: Mississippi v. Memphis Over Groundwater Pumping*, AM. WATER RES. ASS'N WATER RESOURCES BLOG (Oct. 14, 2014), http://awramedia.org/mainblog/2014/10/14/deja-vu-all-over-again-mississippi-v-memphis-over-groundwater-pumping/.

117 *Id.*

118 Complaint, *supra* note 5, at ¶¶ 8–10, 42–45.

119 *Id.* at ¶ 14 (accusing defendant of committing "conversion" and "trespass").

such as *Kansas v. Colorado* for the proposition that a state holds actual title to the waters within its borders.[120]

It is true that states *own* things. They own plots of land, for example, and they own the structures they build on these lands. But whether states, as sovereigns, can own water and other wild resources is a different question. Do states own the rabbits that burrow in a state forest for a time? Birds that fly over while migrating south? More important for our purposes, do they own the fish that swim up their streams, or the waters that flow under or over land within the state on a given day? These types of wild resources, also referred to as *ferae* resources,[121] don't fit neatly under the "property" rubric:[122]

> Water rights do not, as a species of property, fall within our normal sense and everyday understanding about property in land and chattels. The reason is obvious, and it inheres in the very nature of water as it exists in nature. Unlike land and structures, water in natural watercourses is neither static nor well-defined. It moves and it changes. 'One cannot step into the same stream twice' is the famous maxim from antiquity, and it succinctly conveys the central problem for recognizing property in running water. 'Running water at one instance is at one place in the river, then it is gone and some other water has succeeded it, without anyone having been able to tag it as his own; a thing in continual motion and ceaseless change, incapable of possession or ownership in that condition.[123]

Civilizations have been wrestling with the question of sovereign ownership of *ferae* resources since at least the Roman Code of Justinian.[124] Justinian's Code put sovereign property relationships into

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[120] *See* Kansas v. Colorado, 206 U.S. 46 (1907). As explained further *infra*, nothing in *Kansas* militates toward the conclusion that states have a bona fide property interest in water within their borders.

[121] Westmoreland & Cambria Nat. Gas. Co. v. DeWitt, 18 A. 724, 725 (Pa. 1889).

[122] *See, e.g., id.*

[123] David B. Anderson, *Water Rights As Property in Tulare v. United States,* 38 MCGEORGE L. REV. 461, 473–74 (2007) (citations omitted). As we will explore further in later sections, the concept that water cannot be "owned" as property, and does not properly fit into the property rubric, has been espoused for centuries. *See, e.g.*, SAMUEL C. WIEL, WATER RIGHTS IN THE WESTERN STATES 10-13 (3d ed. 1911). This section, however, focuses on sovereign ownership of water, distinct from the question whether water can be owned by *anyone*.

[124] *See, e.g.*, Gail Osherenko, *New Discourses on Ocean Governance: Understanding Property Rights and the Public Trust*, 21 J. ENVTL. L. & LITIG. 317, 350 (2006). The Justinian Code is worth considering given that legal authorities have often cited it as the basis of U.S. water allocation jurisprudence. *See* Caminiti v. Boyle, 732 P.2d 989, 994 (Wash. 1987) ("The principle that the public has an overriding interest in navigable waterways and lands under them is at least as old as the Code of Justinian . . . ."(citations omitted)); State v. Central Vermont Ry., Inc., 571 A.2d 1128, 1130 (Vt. 1989) ("The public trust doctrine is an ancient one, having its roots in the Justinian Institutes of Roman law."(citations omitted)); National Audubon Society v. Superior

two categories: sovereign *dominium* and sovereign *imperium*.[125] Imperium is an exercise of sovereign *authority* over something—it may sometimes look like property, but in reality, it is just the government's ability to regulate something.[126] Dominium is a tangible *property* right.[127] Courts and scholars have often pointed to Justinian's Code for the proposition that water cannot be "owned"—or in other words, that sovereigns can only have a relationship of *imperium* with water—by citing the phrase "all of these things are by natural law *common to all*: air, flowing water, the sea and, consequently, the shores of the sea."[128]

Court of Alpine Cnty. (*Mono Lake*), 658 P.2d 709, 718 (Cal. 1983); Montana Coal. for Stream Access v. Curran, 682 P.2d 163, 167 (Mont. 1984) ("The theory underlying this doctrine can be traced from Roman Law through Magna Carta to present day decisions."); Cynthia L. Koehler, *Water Rights and the Public Trust Doctrine: Resolution of the Mono Lake Controversy*, 1995 ECOLOGY L.Q. 541, 544–45 (1995); Michael Blumm & Thea Schwartz, *Mono Lake and the Evolving Trust in Western Water,* 37 ARIZ. L. REV. 701, 713 (1995) ("The trust doctrine's common law origins can, in fact, be traced back to medieval England and ultimately to Roman law. Consequently, there are sound historical and conceptual reasons for grounding the public trust in common law."(footnote omitted)).

[125] Patrick Deveney, *Title, Jus Publicum, and the Public Trust: An Historical Analysis*, 1 SEA GRANT L. J. 13 (1976); Darcy Alan Frownfelter, *The International Component of Texas Water Law*, 18 ST. MARY'S L.J. 481, 492 n.65 (1986) ("Imperium is governmental power to regulate.").

[126] *See* sources cited *supra* note 124; *see also* Toomer v. Witsell, 334 U.S. 385, 402 n.37 (1948).

[127] Deveney, *supra* note 125, at 13 ("While on land, governments have both imperium and dominium, the law is quite different with regard to the seas. Both scholarly and lay literatures frequently fail to distinguish between imperium and dominium, thus eroding the distinction between the exercise of authority and the entitlements of ownership.").

[128] Anderson, *supra* note 123, at 475 ("Roman law did not distinguish among the many forms of fresh water in nature: clouds, rain, diffused surface water, stream flow, river underflow, percolating groundwater, vapor, lakes, flood water, seepage, etc. Because of the fugitive and fluctuating character of water in its natural state, Roman law denied the existence of property in water altogether— including running water—and held the use of rivers and lakes to be the common right of everyone, like the sea and the air."). Roman law also distinguished between things which are "res nullius, 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 of Water*, 45 CAL. L. REV. 638, 640 (1957). More modern scholars often refer to this concept of not recognizing property interests in water and other natural resources as a "negative community of interest." *See* ROBERT JOSEPH POTHIER, TRAITÉ DU DROIT DE PROPRIETÉ, Nos. 27–28 (Chez Debure ed. 1772) ("The first of mankind had in common all those things which God had given to the human race. This community was not a positive community of interest, like that which exists between several persons who have ownership of a thing in which each have their particular portion. It was a . . . 'negative community,' which resulted from the fact that those things which were common to all belonged no more to one that to the others . . . That which fell to each one among them commenced to belong to him in private ownership, and this process is the origin of the right of property. Some things, however, did not enter into this division, and remain, therefore, to this day, in the condition of the ancient and negative community . . . . These things are those which the juris consults called 'res communes' - the air, the water which runs in the rivers, the sea, and its shores."); Geer v. Connecticut., 161 U.S. 519, 525 (1896), *overruled by* Hughes v. Oklahoma, 441 U.S. 322 (1979) (discussing water ownership in terms of a "negative community of interest").

But it appears that this was merely an aspirational goal, and that Roman law (like, English law, as discussed below) allowed a sovereign to hold title to water as a practical matter.[129] In other words, despite how both Roman and English law were outwardly skeptical of allowing sovereigns to own water, they nevertheless appear to have allowed it. Several commentators have posited that the statements from the Justinian Code suggesting water belonged to the public, and not to the sovereign, were "more aspiration than description,"[130] and that the Roman government frequently treated water as private, titled property—even granting it to individuals.[131]

Roman law may have been clear on this point, but the question here is whether U.S. states own water. For answers, it is helpful to review some historic legal concepts closer to the contemporary American system than Roman law—namely, English common law. It is helpful to review the course, up to the present day, by which the United States adopted English common law principles of sovereign water ownership jurisprudence. What emerges is a muddled jurisprudential *path*, but one that ends in a clear *conclusion*: states don't own water, and they probably never did.

Early England, as a practical matter, tended to view virtually all resources, including water, as the crown's property—and only the crown's property.[132] Lord Hale, a notable authority on early English common law, explained that the king was the only entity capable of owning water:

> [A] subject hath not nor indeed cannot have that property in the sea, through a whole tract of it, *as the king hath*; because without a regular power he cannot possibly possess it . . . [t]he right of property in the tide waters of England is, moreover,

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[129] Deveney, *supra* note 125, at 29, 32–33 ("In actuality, the sea and the seashore were common to all only insofar as they were not yet appropriated to the use of anyone or allocated by the state . . . there were no restraints whatever imposed by law on the power of the sovereign to convey public lands, including the sea and seashore . . . [but] Roman law did contain a presumption that grants made by the state which operated to the detriment of the general public in their use of public ways . . . were to be strictly construed by the courts to avoid such detriment as far as possible."); STUART A. MOORE, A HISTORY OF THE FORESHORE 31–33 (3d ed. 1888).

[130] *See* James R. Rasband, *The Disregarded Common Parentage of the Equal Footing and Public Trust Doctrines,* 32 LAND & WATER L. REV. 1, 8–9 (1997) ("More detailed historical work on Roman law, however, has suggested that this statement from The Institutes was more aspiration than description."); ROSCOE POUND, AN INTRODUCTION TO THE PHILOSOPHY OF LAW 197–202 (1922)); Erin Ryan, *Public Trust and Distrust: The Theoretical Implications of the Public Trust Doctrine for Natural Resource Management*, 31 ENVTL. L. 477, 481 (2001) (noting that it "remains unclear whether [the Code's reference to water being free to all] represented true Roman practice or mere Justinian aspiration").

[131] *See* Trelease, *supra* note 128, at 640.

[132] *See* LORD HALE, DE JURE MARIS, chs. 4, 6 (emphasis in original).

> *vested in the king*, not merely on the principle, that he is the universal occupant, but on the principle of his being the fountain from whence, in contemplation of law, all authority and privilege proceed . . . . [T]he sea is not only under the dominion of the king . . . but *it is also his proper inheritance*.[133]

In other words, the Crown inherited dominion over all resources—the Crown then decided whether to dole out anything to the public.[134] This shows that many English authorities still embraced the theory that the Crown owned English water at least into the late 1800s.[135] Moore explained that the Crown had titled away many water beds and the water above them.[136]

But the early English theory that anyone could "own" water, Crown or not, was not without critics.[137] For example, Lord Hailsham's famous summary of English law explained that "[a]lthough certain rights as regards flowing water are incident to the ownership of riparian property, the water itself, whether flowing in a known and defined channel or percolating through the soil, is not, at common law, the subject of property or capable of being granted to anybody."[138] As early as the start of the nineteenth century, an increasing number of English authorities began shifting to the tenets scholars had heralded for centuries: water can't be owned. In 1823, in *Wright v. Howard*, the High Court of Chancery explicitly stated that "there is no property in the water."[139] The next year, in *Williams v. Moreland*, it held that "[f]lowing water is originally publici juris," and "running water is not in its nature . . . property."[140] A few years later, in *Liggins v. Inge*, it reiterated that "[w]ater flowing in a stream . . . is publici juris," or in other words, free to all.[141]

In *Mason v. Hill* in 1833, Lord Denman noted that "[n]o one ha[s] any property in the water itself," and explained that England had adopted into the common law this principle that the corpus of water was

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133 *See id.*

134 *See* HENRICUS DE BRACTONA, DE LEGIBUS ET CONSUETUDINIBUS ANGLIAE, 2 ON THE LAW AND CUSTOMS OF ENGLAND 42 (1968) [hereinafter Bracton].

135 MOORE, *supra* note 129, at 809.

136 *Id.* at 121–140.

137 *See, e.g.*, Bracton, *supra* note 134, at 39; POTHIER, *supra* note 128, at nos. 27–28.

138 LORD HAILSHAM OF ST. MARYLEBONE, 49(2) HALSBURY'S LAWS OF ENGLAND 62 (4th ed. 2004) (emphasis added).

139 SIR JOHN LEACH, REPORTS OF CASES DECIDED IN THE HIGH COURT OF CHANCERY 203 (1843).

140 WIEL, *supra* note 123, at § 3-7.

141 *Id.*

not the subject of ownership.[142] Following this, many English cases continued to conceive of water as incapable of being owned.[143]

But despite this criticism of the water ownership theory, English law seems to have applied title theories to water, at least from the perspective of the Crown.[144] The Crown was presumed to own English waters.[145] And that ownership could even be divested to private parties in certain circumstances.[146] Early English common law embraced the ideal that water could not be owned—scholars touted it, and cases cited aspirational language disavowing ownership of water.[147] But from a practical matter, the English Crown continued to view its relationship with water as one of title, or at least presumptive title.

After the American Revolution and throughout the early and mid-nineteenth century, the United States adopted the English model of sovereign control of water, but with a democratic twist.[148] Early U.S. jurisprudence reasoned that the federal government inherited waterbeds and water, and then transferred title to each state as it entered the union.[149] The twist was that, because the "people" are sovereign in America, the states held title to water and other wild resources on *behalf*

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142 *Id.*

143 McCarter v. Hudson Cnty.Water Co., 70 N.J. Eq. 525 (1905); Embrey v. Owen, (1851) 155 Eng. Rep. 579, 579; 6 Exch. 353, 353 ("Flowing water is publici juris, not in the sense that it is bonum vacans, to which the first occupant may acquire an exclusive right, but that it is public and common in this sense only: that all may reasonably use it who have a right of access to it; that none can have any property in the water itself, except in the particular portion which he may choose to abstract from the stream and take into his possession, and that during the time of possession only."); Race v. Ward, (1855) 119 Eng. Rep. 259, 259, 4 E. & B. 702, 702; Manning v. Wasdale, (1836) 111 Eng. Rep. 1353, 1353, 5 Ad. & E. 758, 758; *see also* Challenor v. Thomas, (1608) 80 Eng. Rep. 96, 96.

144 WILLIAM BLACKSTONE, COMMENTARIES, LAWS OF ENGLAND ch. 8, 298-9; HARG. LAW TRACTS, DE JURE MARIS, ch. 4, 10, 11, 12; 6 Com. Dig. tit. Prerogative, 60, B. 63; Tenure 337; 5 Com. Dig. tit. Navigation, 107; 3 Co. 5, 109. 2.

145 J. KENT, COMMENTARIES ON AMERICAN LAW 344 (1828); *see also* Rasband, *supra* note 130, at 8–9.

146 Rasband, *supra* note 130, at 8–9.

147 *See supra* notes 136–43.

148 Stockton v. Balt. & N.Y. R.R. Co., 32 F. 9, 19–21 (C.C.D.N.J. 1887).

149 Martin v. Lessee of Waddell, 41 U.S. 367 (1842). The tide-based navigation distinction was the initial rule in the colonies, but later courts shifted to conclude that states holds presumptive title to navigable waters even if they are not subject to the tide. *See, e.g.*, Elder v. Burrus, 25 Tenn. (1 Hum.) 358, 365–67 (1845); Bullock v. Wilson, 2 Port. 436, 444–45 (Ala. 1835); Wilson v. Forbes, 13 N.C. (2 Dev.) 30, 30 (1828); Cates' Ex'rs v. Wadlington, 12 S.C.L. (1 McCord) 580, 580 (1822); Carson v. Blazer, 2 Binn. 475, 475 (Pa. 1810). By the late nineteenth century, "the now prevailing doctrine" was that states controlled "title in the soil of rivers really navigable." Shively v. Bowlby 152 U.S. 1, 31 (1894). *See generally* Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 801-02 (2010).

of their collective citizens (not on behalf of the Crown as a sovereign entity).[150]

The U.S. Supreme Court began to delve deeply into the state-water relationship in 1842.[151] In *Martin v. Lessee of Waddell*, the Court held that the 13 original States, on behalf of the citizens of each, "hold the absolute right to all their navigable waters and the soils under them."[152] Throughout the nineteenth century, the Court held that this same principle applied to every state as it entered the union, vesting each with absolute "rights" to navigable water within their borders, as co-equal sovereigns.[153] This concept is referred to now as the "equal footing doctrine."[154] The equal footing doctrine stands for the simple proposition that as each state entered the union, it took control of waterbeds and water within its borders as a matter of constitutional law (not Congressional vestment).[155] The states thus have power to allocate and govern these waterbeds, and the water above, subject only to "the paramount power of the United States to control such waters for purposes of navigation in interstate and foreign commerce."[156]

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[150] *See* Proprietors of Charles River Bridge v. Proprietors of Warren Bridge, 36 U.S. 420 (1837) 36 U.S. 420 (Pet.) 36 U.S. (1 Wall.) 420, **169 (1837) (opinion of Baldwin, J.) (explaining that "[b]y the common law, it is clear, that all arms of the sea, coves, creeks, etc. where the tide ebbs and flows, are the property of the sovereign . . . 'the principles of the common law were well understood by the colonial legislature," but that this title is held on behalf of U.S. citizens); 9. *Stockton*, 32 F. at 19. ("The information rightly states that prior to the Revolution the shore and lands under water of the navigable streams and waters of the province of New Jersey belonged to the king of Great Britain, as part of the jura regalia of the crown, and devolved to the state by right of conquest. The information does not state, however, what is equally true, that after the conquest the said lands were held by the state, as they were by the king, in trust for the public uses of navigation and fishery, and the erection thereon of wharves, piers, light-houses, beacons, and other facilities of navigation and commerce.").

[151] This is not to say that prior cases had not addressed sovereign water ownership, they had. *See, e.g.*, Arnold v. Mundy, 6 N.J.L. 1, 71 (1821). But this was the first time the U.S. Supreme Court weighed in on state ownership in a meaningful way.

[152] *Martin*, 41 U.S. at 410.

[153] *See, e.g.*, Oregon v. Corvallis Sand & Gravel Co., 429 U.S. 363, 374 (1977); United States v. Texas, 339 U.S. 707, 716 (1950); Knight v. U.S. Land Ass'n, 142 U.S. 161, 183, (1891); Pollard v. Hagan, 44 U.S. (3 How.) 212, 216 (1845); *see also* PPL Montana, LLC v. Montana, 132 S. Ct. 1215, 1219 (2012).

[154] *See PPL Montana, LLC*, 132 S. Ct. at 1219.

[155] Phillips Petroleum Co. v. Mississippi,484 U.S. 469, 486 (1988); *see also* Shively v. Bowlby, 152 U.S. 1, 49 (1894) ("And the territories acquired by congress, whether by deed of cession from the original states, or by treaty with a foreign country, are held with the object, as soon as their population and condition justify it, of being admitted into the Union as states, upon an equal footing with the original states in all respects; and the title and dominion of the tide waters . . . are held by the United States . . . in trust for the future states."); *Pollard* 44 U.S. at 216.

[156] *See* United States v. Oregon, 295 U.S. 1, 14 (1935); *see also* Montana v. United States, 450 U.S. 544, 551, 101 S.Ct. 1245, 67 L.Ed.2d 493 (1981); United States v. Holt State Bank, 270 U.S. 49, 54 (1926); Idaho v. Coeur d'Alene Tribe of Idaho, 521 U.S. 261, 285 (1997).

But what does saying states have the "right" to water, and "control" over water, mean? Many cases before and near the turn of the nineteenth century used language indicating that states had actual *title* in water, not just power to regulate them. For example, in *Donnelly v. United States*, the Court said "that the *title* of the navigable waters, and the soil beneath them, was in the state, and subject to its sovereignty and jurisdiction."[157] But then came the high-water mark for state ownership of wild resources like water.[158] Although not technically about water ownership *per se*, towards the end of the nineteenth century a trio of cases addressed ownership of water creatures and water beds (resources generally lumped together with disposition of the water itself).[159] These cases have been the primary ammunition for proponents of state water title theories.[160] Before these cases, there had been little reason for the Court to decide whether states "owned" water, or what state ownership of water would mean in practice.[161] But here, states raised their ownership over *ferae* resources as a shield against federal doctrines, namely the dormant commerce clause and the privileges and immunity clause.[162] So the Court was forced to tangle deeply with the state ownership question.[163]

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[157] 228 U.S. 243, 260 (1913) (emphasis added). Notably, state cases around the nation had already weighed in and often found sovereign ownership of water suspect. *See, e.g.*, Arnold v. Mundy, 6 N.J.L. 1, 78 (1821) ("The sovereign power itself, therefore, cannot, consistently with the principles of the law of nature and the constitution of a well-ordered society, make a direct and absolute grant of the waters of the state, divesting all the citizens of their common right. It would be a grievance which never could be long borne by a free people.").

[158] *Corfield v. Coryell*, 6 F. Cas. 546 (C.C.E.D. Pa. 1825) (No. 3,230) , is considered the foundation of these cases.

[159] *See* Geer v. Connecticut, 161 U.S. 519, 525 (1896) (discussing the nature of "the air, the water which runs in the rivers, the sea, and its shores . . . [and] wild animals" all having been relegated to the "negative community"); *see also* Utah Div. of State Lands v. United States, 482 U.S. 193, 195 (1987) (discussing "ownership of submerged lands—which carries with it the power to control navigation, fishing, and other public uses of water"); Gypsum Res., LLC v. Masto, 672 F. Supp. 2d 1127, 1139 (D. Nev. 2009) (discussing the disposition of feraue resources such as "nature of the air, water, and wildlife resources"); Washington Kelpers Ass'n v. State, 502 P.2d 1170, 1172 (Wash. 1972); Dale D. Goble, *Three Cases / Four Tales: Commons, Capture, the Public Trust, and Property in Land*, 35 ENVTL. L. 807, 828 (2005) ("The king's prerogative ownership of royal fishes, in other words, was part of his ownership of navigable waters because the greater includes the lesser."); James L. Huffman, *Speaking of Inconvenient Truths-A History of the Public Trust Doctrine*, 18 DUKE ENVTL. L. & POL'Y F. 1, 82 (2007).

[160] *See* Goble, *supra* note 159, at 833–34.

[161] *Id.*

[162] *See, e.g.*, *Corfield*, 6 F. Cas. at 552 (analyzing privileges and immunity clause conflict with state ownership of wildlife).

[163] Prior cases sometimes referred to state ownership of water, but there was little reason for the Court to figure out what sovereign ownership would mean on the ground. *See, e.g.*, Martin v. Lessee of Waddell, 41 U.S. 367 (1842) (not addressing whether states actually owned or could convert each other's water).

The facts of these cases are similar: a state wanted to allow its own citizens to have certain privileges over natural resources within their borders, while at the same time withholding these same privileges from citizens of other states.[164] The outsiders responded by citing the privileges and immunity or dormant commerce clause, arguing that a state could not discriminate or burden interstate commerce in this way.[165] The states arguing for control of the water riposted: we own these wild resources, and we can allocate our property to our citizens as we see fit.[166]

In 1825, in *Corfield v. Coryell*, Justice Washington explained that New Jersey could prevent citizens of other states from harvesting oyster beds within New Jersey.[167] The Court reasoned that New Jersey *owned* these beds, and that "in regulating the use of the *common property of the citizens of [a] state*, the legislature is [not] bound to extend to the citizens of all the other states the same advantages as are secured to their own citizens."[168]

This set the stage for *McCready v. Virginia*, roughly thirty years later.[169] *McCready* took place during the infamous "oyster wars."[170] State oyster-bed protection laws were passed beginning in the 1700s, but rampant abuse of these beds, coinciding with the boom of commerce in certain regions, led Virginia to pass a statute that prohibited citizens of other states, but not Virginia citizens, from planting oysters in the waters of Virginia's Ware River.[171] The Court held that Virginia, on behalf of its citizens, held "a property right, and not a mere privilege or immunity of citizenship" in the beds.[172] The Court explained that "we think we may safely hold that the citizens of one State are not invested by this clause of the Constitution with any interest *in the common property of the citizens of another State*."[173] In other words, because it "owned" the water beds, Virginia could dole out its natural resources as it saw fit.[174]

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164 For example, in *Corfield*, the state wanted to restrict oyster beds to state citizens. 6 F. Cas. at 552.

165 *See id.*

166 *See id.*

167 *Id.* at 551–52.

168 *Id.* at 552 (emphasis added).

169 94 U.S. 391 (1877).

170 *See generally* Osherenko, *supra* note 124, at 344; BONNIE J. MCCAY, OYSTER WARS AND THE PUBLIC TRUST (1998); Huffman, *supra* note 159, at 103.

171 *See* sources cited *supra* note 170.

172 *McCready*, 94 U.S. at 394.

173 *Id.* at 395 (emphasis added).

174 *Id.* Obviously this case addressed oysters, not water itself. But as explained *supra*, courts have typically treated ownership over the bounties of water along with the water itself. There is

About twenty years later, in *Geer*, Connecticut tried to control who could take game birds living within its boundaries, and a challenge was brought under the commerce clause.[175] The Court expressly rejected the contention "that a State cannot allow its own people the enjoyment of the benefits of *the property belonging to them in common*, without at the same time permitting the citizens of other States to participate in that which they do not own."[176] The Court left little doubt that it believed the state (on behalf of its citizens) owned the wild game within its borders, and that this ownership was powerful enough to defeat commerce clause concerns: "The sole consequence of the provision forbidding the transportation of game killed within the state, beyond the state, is to confine the use of such game to those who *own* it—the people of that state."[177]

Finally, a decade after *Geer*, the Court addressed similar issues, this time directly in the context of water, in *Hudson County Water Co. v. McCarter*.[178] There, the Court upheld a New Jersey statute prohibiting the transfer of waters out of state.[179] The Court reasoned that "the constitutional power of the state to insist that its natural advantages shall remain unimpaired by its citizens is not dependent upon any nice estimate of the extent of present use or speculation as to future needs."[180]

Some language in *Hudson* explicitly couched state water interest as "property."[181] And the Court relied heavily on *Geer*, which the Court would explain many years later (when it overturned this case) "was premised on the theory that the state owned its wild animals and therefore was free to qualify any ownership interest it might recognize in the persons who capture them."[182] Indeed, the court's description of state interest in water seems to be nearly absolute:

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little reason to think the court, at least at this time, would have treated water any differently than it treated the use of that water and the beds to harvest oysters.

[175] Geer v. Connecticut, 161 U.S. 519, 520–21 (1896) (emphasis added). Again, this case concerned wild game, not water. But again, courts have largely treated ferae resources the same, under theories of public interest and negative community.

[176] *Id.* at 530 (emphasis added).

[177] *Id.* at 529 (emphasis added). Notably, Justice Harlan dissented, arguing that the ownership theory could not allow the state to interfere with interstate commerce. *Id.* at 542–44 (Harlan, J., dissenting).

[178] 209 U.S. 349 (1908).

[179] *Id.* at 356.

[180] *Id.* at 356–57.

[181] *Id.* at 356 (discussing state interest in water, and stating "[w]hat it may protect by suit in this court from interference in the name of property outside of the state's jurisdiction, one would think that it could protect by statute from interference in the same name within").

[182] Sporhase v. Nebraska *ex rel.* Douglas, 458 U.S. 941, 950 (1982).

> We are of opinion, further, that the constitutional power of the state to insist that its natural advantages shall remain unimpaired by its citizens is not dependent upon any nice estimate of the extent of present use or speculation as to future needs. The legal conception of the necessary is apt to be confined to somewhat rudimentary wants, and there are benefits from a great river that might escape a lawyer's view. But the state is not required to submit even to an aesthetic analysis. Any analysis may be inadequate. It finds itself in possession of what all admit to be a great public good, and what it has it may keep and give no one a reason for its will.[183]

But, it is worth looking closely at the language the Court used here. Although deferential to the state, the Court spoke about water in *Hudson* very differently than it had spoken of other wild resources in *McCready*, *Geer*, and *Corfield*. The Court's hesitance to attach the "property" label to water, even in this time of extreme deference to state ownership interests, is palpable. The Court does not say that states "have title" to water—as it had when talking about oysters in *Corfield* and *McCready*.[184] Nor did the Court say that states "owned" water, as it had when talking about wild birds in *Geer*. Instead, the Court was careful to base its decision in *Hudson* on a "principle of public interest and the police power, and *not merely as the inheritor of a royal prerogative*."[185] The Court repeatedly described state interest as one of "protecting natural resources," not protecting state title: "the state, as quasi-sovereign and representative of the interests of the public, has a standing in court *to protect* the atmosphere, the water, and the forests within its territory."[186]

Crucially, little thought was paid in these early cases as to whether states, or the federal government, could truly own water as property *qua* property. The equal footing doctrine simply passed control of water, to the extent the federal government had any, to the states.[187] These early cases seemed to tread around the issue of explaining the precise nature of the sovereign-water relationship in America.[188] Were we going to follow the aspirational principles dating back to the Justinian Code, and repeated many times since, that water and other wild resources are

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[183] *Hudson*, 209 U.S. at 356–57.

[184] *See* Corfield v. Coryell, 6 F. Cas. 546, 552 (C.C.E.D. Pa.1825) (No. 3,230); McCready v. Virginia, 94 U.S. 391, 394–95 (1877).

[185] *Hudson*, 209 U.S. at 356 (emphasis added).

[186] *Id.* at 355 (emphasis added).

[187] *See supra* notes 152–54.

[188] *See, e.g.*, *Hudson*, 209 U.S. at 349.

something special and not reducible to the property rubric?[189] Or would it adopt the English system, which seemed to treat water as any other piece of chattel?[190]

Which path the Court chose—at this point at least—is not clear. Although the Court often used "property" and "ownership" labels during the 1800s, these early cases do not offer finite answers. For example, in the foundational equal footing doctrine case, the Supreme Court explained that the federal government held all water "for the benefit of the whole people," while also stating that it held water "in trust for the future states." [191] Neither a trust theory, nor a theory where the U.S. holds water for the benefit of *all* people, militate towards a view of sovereign ownership over water.

In another case even before the turn of the nineteenth century, the Court heavily cabined any theory of state "ownership" of water.[192] In *Illinois Cent. R.R. Co. v. Illinois,* the Court explained that ownership of water beds is vested in the states, but then clarified that the state's "consequent right to use or dispose of any portion thereof" was restricted in critical ways.[193] The state's right to dispose of *water* was restricted if there was "substantial impairment of the interest of the public in the waters."[194] Justice Field explained this distinction at length:

> That the state holds the title to the lands under the navigable waters of Lake Michigan, within its limits, in the same manner that the state holds title to soils under tide water, by the common law, we have already shown; and that title necessarily carries with it control over the waters above them, whenever the lands are subjected to use. *But it is a title different in character from that which the state holds in lands intended for sale.* It is different from the title which the United States hold in the public lands which are open to pre-emption and sale. It is a title held in trust for the people of the state, that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein, freed from the obstruction or interference of private parties.[195]

This key language clarifies that, at a minimum, states didn't own water like they owned other things; this case would later come to

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189 *See supra* notes 123–31.

190 *See supra* notes 132–50.

191 Shively v. Bowlby, 152 U.S. 1, 30, 49 (1894).

192 Illinois Cent. R.R. Co. v. Illinois, 146 U.S. 387, 435 (1892).

193 *Id.* This case provides the foundation for the modern doctrine of public trust.

194 *Id.* (emphasis added).

195 *Id.* at 452 (emphasis added).

establish the public trust doctrine.[196] The fact is that cases in the nineteenth century such as *McCready* and *Geer* had no problem saying that a state held title to wild game or oysters. Yet, during this same period, the Court crafted large exceptions to any theory that a state owns water. The Court is distinguishing between sovereign "title" in the waterbed, and then severely cabining any "ownership" right in the water.[197] At the least, this indicates that even as early as the 1800s, the Court saw ownership of "land" and "water" as fundamentally distinct, and to the extent the Court entertained ownership theories in cases like *McCready*, they are distinguishable on this basis.[198]

Even the four cases above, in which the Court seemed to give shrift to state "ownership" of wild resources, were far from the end of the state ownership question. One important point is that during this same time period, the Supreme Court never used property concepts in deciding water disputes between states.[199] Where states have fought over the corpus of water, as opposed to fights over title to fish or water beds, the Court has used the apportionment doctrine.[200] For example, in *United States v. Rio Grande Dam & Irrigation Co.*, the Court applied federalism principles to trounce state interests in water in a river, and there was no consideration of the state's ownership interest.[201] The only case where *water* was at issue and some property-like language was used, *Hudson*, carefully framed its language in terms of police powers and public interest, not property concepts.[202]

Interestingly, during the twentieth century, states themselves weighed in internally on the water ownership issue: they passed water related statutes and inserted water related language in their constitutions.[203] The states were vague and contradictory in describing their relationship to water. Some declared that water in their borders were the state's property.[204] Some said that their water was owned by their citizens.[205]

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196 *Id.*

197 *Id.*

198 *Id; see also* Manchester v. Massachusetts, 139 U.S. 240, 265 (1891) (declining to recognize state ownership theory).

199 *See e.g.*, *supra* note 163.

200 *See, e.g.*, Nebraska v. Wyoming, 325 U.S. 589 (1945); Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92 (1938); Wyoming v. Colorado, 259 U.S. 419 (1922); Kansas v. Colorado, 206 U.S. 46 (1907).

201 United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 693 (1899).

202 *See* Hudson Cnty. Water Co. v. McCarter, 209 U.S. 349 (1908).

203 This movement was part of the cultural push at the time to shift control of the public domain to states. *See infra* notes 207–9 and accompanying text.

204 WYO. CONST. art. VIII, § 1; IDAHO CODE ANNO. § 42-101 (1948); N.D. CONST. art. XI, § 3; TEX. REV. CIV. STAT. art. 7467 (1948); CAL. WATER CODE § 102 (1943).

205 ARIZ. REV. STAT. § 45-101 (1956); COLO. CONST. art. XVI, § 5 ("The water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be

Some, such as Kansas, said that the water in their borders were not owned, but instead "dedicated" to the use of everyone.[206]

Complicating the water ownership issue during this time is that it came as part of a bigger cultural movement which urged the U.S. government to cede ownership of the entire public domain to the states.[207] As explained by Abbott Goldberg:

> John C. Calhoun advocated such cession [of the federal government's rights over the public domain] long before the Civil War; Wyoming and Colorado advocated it at the beginning of the conservation movement early in [the twentieth century] century; and President Hoover and Secretary of the Interior Wilbur advocated it as late as 1929 in what has been described as "a striking defense of the doctrine of states' rights."[208]

Thus, it may be that the Court during this period sometimes couched its language in terms of state "ownership" as part of a national discourse on this issue, while at the same time practically recognizing that giving states actual ownership over water would be problematic.[209]

Although the Court in some early cases used language about state "ownership," practically, it was not treating state interest in wild resources as a property right.[210] As Trelease explains eloquently in his treatise, nothing the Court did during this early period *required* it to recognize a true ownership interest over water in any state; everything the Court did could better be characterized, as a practical matter, in terms of police power principles and principles of state interest in local affairs, similar to what was happening in the commerce clause jurisprudence at the time.[211] Considering the movement for state

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the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided."); Neb. Rev. Stat. 46-202 (1952); NEV. COMP. LAWS § 7890 (1929); N.M. CONST. art. XVI, § 2; S.D. CODE § 61.0101 (1939); ORE. REV. STAT. § 537.110 (1953); UTAH CODE § 73-1-1 (1953); WASH. REV. CODE §90.04.020 (1951).

206 19 KAN. GEN. STAT. ANN. § 82a-702 (1949); 2 NEB. CONST. art. XV, § 6; NEB. REV. STAT. § 46-202 (1952); *see also* Wrathall v. Johnson, 40 P.2d 755, 777 (Utah 1935) ("The statutory declaration that 'the water of all streams and other sources in this State . . . is hereby declared to be the property of the public' does not vest in the state title to ownership of the water as a proprietor.").

207 *See* B. Abbott Goldberg, *Interposition-Wild West Water Style*, 17 STAN. L. REV. 1 (1964).

208 *Id.* at 10.

209 Notably, this time in history is also marked by many famous commerce clause cases in favor of state power over local interests.

210 Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92 (1938); Wyoming v. Colorado, 259 U.S. 419 (1922); Kansas v. Colorado, 206 U.S. 46 (1907).

211 Trelease, *supra* note 128, at 644 ("As for interstate rights, the United States Supreme Court has on numerous occasions apportioned the waters of interstate rivers among states without reference to state stream ownership, using instead concepts of sovereignty or parens patriae.").

ownership of the public domain, and the push for commerce clause restrictions on local interests, there is no practical reason to view the contemporary water cases as turning on property principles.[212]

Ultimately, from the 1800s up until the early 1900s, American jurisprudence was at the least conflicted.[213] As one scholar wrote at the time, there "are some who, assum[e] that the United States had a property in the waters."[214] This was in accord with the Court's tendency to stay firmly grounded in core English common law theories.[215] It was also in accord with the Court's commerce clause jurisprudence and the national debate about state ownership of the public domain.[216] But this concept conflicts with "Roman law, civil law, [and] common law" which recognized that water should not be subject to "ownership."[217] This conflict can be seen in cases like *Hudson*, where the court treaded carefully around calling state interest in water a "property" right.[218] The flux of the ownership theory was summarized near the turn of the century by notable scholar and former head of the Bureau of Reclamation, Elwood Mead:

> If possible, the limits of State and Federal jurisdiction should be more clearly defined. It has heretofore been assumed that the authority of each State in the disposal of the water-supply within its borders was unquestioned and supreme, and two of the States have constitutional provisions asserting absolute ownership of all water-supplies within their bounds. A recent decision of the United States circuit court holds this view to be erroneous, and in other litigation, the decisions have been of such a character as to give rise to grave uncertainty as to what is to be the ultimate settlement of this issue.[219]

After the turn of the century the Supreme Court began to expressly settle the state ownership issue, revealing that states never "owned" water or wild resources at all.[220] It was a mere fiction, or stand-in, for

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Trelease also points out that states during this early period relied on their plenary police powers to apportion water between their own citizens, not a state title tracing theory. *Id.*

212 *See supra* notes 206–08 and accompanying text.

213 Ward Bannister, *The Question of Federal Disposition of State Waters in Priority States*, 28 HARV. L. REV. 270, 280 (1915) (noting that the question of sovereign ownership of water, at least before the Supreme Court, was an "open" question).

214 *Id.* at 283.

215 *See supra* note 149 and accompanying text.

216 *See supra* notes 206–08 and accompanying text.

217 *See* Bannister, *supra* note 213, at 286.

218 *See* Hudson Cnty. Water Co. v. McCarter, 209 U.S. 349, 354–57 (1908).

219 ELWOOD MEAD, IRRIGATION INSTITUTIONS 372 (1903).

220 *See, e.g.,* Missouri v. Holland, 252 U.S. 416, 431 (1920); *see also* Cal.-Or. Power Co. v. Beaver Portland Cement Co., 295 U.S. 142, 158, 163–64 (1935) (stating the act "effected a severance of all waters upon the public domain . . . from the land itself," and that therefore "all

the police power states hold to regulate common resources. *McCreedy* ended up being the high water mark for state ownership of wild resources—and perhaps high above the water mark.[221] Every time the states have tried to raise some sort of ownership theory over water and other wild resources since *McCreedy*, they have sorely lost.[222] Indeed, the state wild resources ownership theory has been trounced in a number of different contexts.[223]

In fact, as early as 1920, state ownership theories were drowning.[224] In *Missouri v. Holland*, Missouri sought to escape the reach of the Migratory Bird Act by claiming an ownership interest in the birds within its state borders.[225] The Court rejected Missouri's position, noting first that the states have "regulatory" power over the birds vis-à-vis citizens of their state.[226] But then going on to explain that it "does not follow that its authority is exclusive of paramount powers."[227] The Court then expressed its skepticism that a wild resource can be owned by a state:

> To put the claim of the State upon title is to lean upon a slender reed. Wild birds are not in the possession of anyone; and possession is the beginning of ownership. The whole foundation

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non-navigable waters then a part of the public domain became publici juris, subject to the plenary control of the designated states").

[221] It turns out the U.S. Supreme Court's modern cases were perhaps more intuitive than even the court realized. The decision that states can't own water under the early court's conceptualization of derivative ownership on behalf of a state's citizens now makes sense in light of state law cases because, as discussed below: individuals can't "own" water either.

[222] Reed D. Benson, *Deflating the Deference Myth: National Interests vs. State Authority Under Federal Laws Affecting Water Use*, 2006 UTAH L. REV. 241, 254 (2006) (explaining that "[o]ver the years, the states have advanced a variety of arguments to the effect that the Constitution somehow prevents the federal government from intruding on their sovereignty over water" but that these arguments have largely failed).

[223] Julia R. Wilder, *The Great Lakes As A Water Resource: Questions of Ownership and Control*, 59 IND. L.J. 463, 473 (1984) (discussing that, under the Supreme Court's jurisprudence after the turn of the century, it became clear that "[g]overnment ownership of water is actually a legal fiction which supports the state's regulatory powers, a fiction expressive in legal shorthand of the importance to its people that a State have power to preserve and regulate the exploitation of an important resource" (citations omitted)); Goldberg, *supra* note 208, at 38 (discussing how the "ownership of water" is a "bit of legal mysticism" and that the "confusion between the attributes of ownership and authority has persisted to this day").

[224] As early as fifteen years after *McCready,* the U.S. Supreme Court had called into question the theory that states could own wild resources such as swimming fish. *See* Manchester v. Massachusetts, 139 U.S. 240, 265 (1881).

[225] 252 U.S. 416, 431 (1920). Notably, the Court had previously upheld a state's right to control the disposition of gamebirds on an ownership theory. *See* Patsone v. Pennsylvania, 232 U.S. 138 (1914). This was before the Migratory Bird Treaty had been passed, however, which indicates that perhaps the Court was willing to recognize some sort of state ownership in the birds absent the federal government having a direct interest.

[226] *Holland*, 252 U.S. at 434.

[227] *Id.*

> of the State's rights is the presence within their jurisdiction of birds that yesterday had not arrived, tomorrow may be in another State and in a week a thousand miles away.[228]

The Court thus focused on the wild nature of the birds in suggesting that, perhaps, the state could not own migratory birds in the first place. It is difficult to see how water, flowing constantly across a watercourse or between underground aquifers, could be treated under a different standard.

By the 1940s the Court had rejected the state ownership theory altogether.[229] *Toomer* addressed a challenge to South Carolina's shrimping statute which clearly discriminated against citizens of other states.[230] The defendants, unsurprisingly, touted *McCready*, contending that South Carolina's ownership of the shrimp, on behalf of its citizens, was a privileges and immunities shield.[231]

The Court first distinguished *McCready* because the Court there addressed stationary oysters planted in beds, whereas *Toomer* addressed migratory shrimp.[232] Like they did in *Missouri*, the Court found important the fact that the shrimp at issue here were "migratory."[233] But the Court then went farther, calling into question the entire concept of states owning wild resources: "The whole ownership theory, in fact, is now generally regarded as but a fiction expressive in legal shorthand of the importance to its people that a State have power to preserve and regulate the exploitation of an important resource."[234] The Court thus explained that when courts say states "own" wild resources, they really mean that states have power to regulate the resource vis-à-vis their own citizens.[235]

After *Toomer*, the Court continued to reject state ownership theories over wild resources in dormant commerce clause cases.[236] The Court continued to reject state ownership theories when a state violated the

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228 *Id.*

229 Toomer v. Witsell, 334 U.S. 385 (1948).

230 *Id.* at 388.

231 *Id.* at 395.

232 *Id.* at 401.

233 *Id.*

234 *Id.* at 402.

235 Indeed, the Court seemed to call into question whether *McCready* should remain good law: "These considerations lead us to the conclusion that the *McCready* exception to the privileges and immunities clause, if such it be, should not be expanded to cover this case." *Id.*

236 *See* Foster-Fountain Packing Co. v. Haydel, 278 U.S. 1, 8 (1928) (holding that Louisiana could not use an ownership theory to require the local processing of shrimp taken from Louisiana); Takahashi v. Fish & Game Comm'n, 334 U.S. 410, 420–21 (1948) (holding that an ownership theory over fish could not save California's attempt to prevent certain residents from fishing); Pennsylvania v. West Virginia, 262 U.S. 553 (1923); West v. Kansas Natural Gas Co., 221 U.S. 229, (1911).

privileges and immunity clause.[237] The Court continued to reject state ownership theories where federal powers conflicted with state "ownership" claims.[238] Indeed, the fiction of state ownership of wild resources reached even Congress's attention:

> [W]hat we really mean by this sort of 'ownership' is sovereignty, not proprietorship . . . . One may not shoot the birds or appropriate the water without a permit from the State, *in its exercise of the police power*. Nevertheless, *title does not come from the State's permit*, but from the act of reducing the birds or the water to possession with the assent of the State as sovereign, not as proprietor.[239]

In the 1970s, the Court authored several opinions ending what debate was left over a state ownership theory.[240] In 1977, in *Douglas v. Seacoast Products, Inc.*, the Court rejected the argument that Virginia's "ownership" of fish swimming in its territorial waters allowed the State to forbid nonresidents from fishing.[241] The Court pulled no punches this time:

> A State does not stand in the same position as the owner of a private game preserve and it is pure fantasy to talk of 'owning' wild fish, birds, or animals. Neither the States nor the Federal Government, any more than a hopeful fisherman or hunter, has title to these creatures.[242]

The Court put the early twentieth century cases in perspective: "The 'ownership' language of cases [such a *Geery* and *McCready*] . . . must be understood as no more than a 19th-century legal fiction."[243] The Court concluded that a state's interest in wild resources is simply a question of "police power."[244]

Finally, in *Hughes v. Oklahoma*[245] and *Sporhase v. Nebraska*,[246] the Court "traced the demise of the public ownership theory and definitively recast it as 'but a fiction expressive in legal shorthand of the importance

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237 *Toomer*, 334 U.S. at 400–01; *Takahashi*, 334 U.S. at 419–21.

238 Douglas v. Seacoast Products, Inc., 431 U.S. 265, 284–85 (1977); Kleppe v. New Mexico, 426 U.S. 529, 542–45 (1976).

239 *Federal-State Water Rights: Hearing Before the S. Comm. on Interior and Insular Affairs*, 87th Cong. 118 (1961) (statement of Northcutt Ely, Washington, D.C.) (emphasis added).

240 *See, e.g.*, *Douglas*, 431 U.S. at 265.

241 *Id.* at 284.

242 *Id.*

243 *Id.*

244 *Id.*

245 441 U.S. 322 (1979).

246 458 U.S. 941 (1982).

to its people that a State have power to preserve and regulate the exploitation of an important resource."[247]

Sporhase is worth considering further because it addressed a state's interest in groundwater specifically.[248] The Court first recognized that *Geer* had been overturned, which "signaled the demise of the state ownership theory" over wild resources.[249] It then considered whether the nature of groundwater required a different approach.[250] The Court concluded it did not, explaining that the idea that a state can shield itself by asserting ownership over water "is still based on the legal fiction of state ownership."[251] The Court recognized the profound interest states, especially western states, have in groundwater resources.[252] But the Court clarified that these interests were just that, interests to be calculated when applying doctrines that settle water and commerce disputes,[253] not ownership interests.[254] The Court also explained that groundwater implicates a number of important interstate and national issues which further militate against viewing state groundwater as an absolute property interest.[255]

In addition to the fact that the Court has explained that states do not own wild resources such as fish and water itself,[256] every time the Supreme Court addresses an interstate dispute over water, it does not engage in a property analysis.[257] Indeed, the Supreme Court's rejection of state ownership of water is foundational to the Court's doctrine of equitable apportionment. When faced with competing claims to water

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[247] *Id.* at 951; *see also* Hughes v. Oklahoma, 441 U.S. 322, 334–35 (1979).

[248] *Sporhase,* 458 U.S. at 951.

[249] *Id.*

[250] *Id.*

[251] *Id.*

[252] *Id.* at 952.

[253] *Id.* at 953.

[254] *Id.*

[255] *Id.*; *see also* Frank J. Trelease, *State Water and State Lines: Commerce in Water Resources*, 56 U. COLO. L. REV. 347, 355 (1985) (noting that *Sporhase* listed several factors which might militate in favor of deferring to state preferences over water: "(1) the state might act to protect the health and safety of its citizens; (2) the state might have legal expectations created by equitable apportionment or compact division of interstate streams; (3) the state's claim to public ownership of ground water might be strong enough to support a limited preference for its own citizens; and (4) to the extent that conservation made water available, the state might be regarded as a producer of goods and might favor its own citizens in their distribution"); Oklahoma *ex rel.* Phillips v. Guy F. Atkinson Co., 313 U.S. 508 (1941) (not recognizing Oklahoma's sovereign right to water within its borders).

[256] *See supra* notes 148–63.

[257] *See* Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 630 (5th Cir. 2009) ("Determining Mississippi and Tennessee's relative rights to the Aquifer brings this case squarely within the original development and application of the equitable apportionment doctrine."); *see also* Nebraska v. Wyoming, 325 U.S. 589 (1945); Wyoming v. Colorado, 259 U.S. 419 (1922); Kansas v. Colorado, 206 U.S. 46 (1907).

and other shared resources,[258] the Court uses equitable apportionment to allocate respective rights, denying claims of absolute territorial control and ownership.[259] This test has nothing to do with property ownership, and everything to do with the public's interest in water.[260] Further dooming any ownership theory states may think they have, the Court has also upheld the power of the federal government to reserve water from the states (something that should be impossible if states own their water).[261]

The conclusion to be drawn from the Court's modern jurisprudence is clear and simple: states do not own water, neither by royal prerogative nor on behalf of their citizens. Instead, states can regulate how their citizens use water and other wild resources.[262] This is not to say that states do not have important interests in water, and a wide breadth of power to regulate water within their borders, because they do.[263] But this

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[258] *See* Idaho *ex rel.* Evans v. Oregon, 462 U.S. 1017, 1024 (1983) ("Although that doctrine has its roots in water rights litigation, the natural resource of anadromous fish is sufficiently similar to make equitable apportionment an appropriate mechanism for resolving allocative disputes."). The Fifth Circuit noted this in reasoning that equitable apportionment applies to groundwater. *Hood*, 570 F.3d at 630 n.6.

[259] *See, e.g.*, *Evans*, 462 U.S. at 1024.

[260] *See supra* note 175 and accompanying text.

[261] Beginning in *Winters v. United States*, 207 U.S. 564 (1908), the Court has been comfortable with allowing the federal government to reserve water from within state borders. This case was predicated in part on the fact that the state had entered the union after the supposed reservation of water for a Native American tribe. But this prior reservation theory is not always present in federal reserve cases. *See, e.g.*, Arizona v. California, 373 U.S. 546, 597–600 (1963). Another hint at the Court's true view of state ownership of water can be found in *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 427 (1940). There, challengers contended that a federal hydropower license would conflict with "exercise of the police power of the states" over water. The Court responded "[t]he Congressional authority under the commerce clause is complete unless limited by the Fifth Amendment." *Id.*

[262] 4 WATERS AND WATER RIGHTS § 36-02, 36-8–36-9 (Robert E. Beck, ed., 1991 ed.) ("[T]he Supreme Court has made it abundantly clear that it has little patience with claims of absolute 'ownership' [of groundwater] by either [state or federal] government."); A. Dan Tarlock, *Takings, Water Rights, and Climate Change*, 36 VT. L. REV. 731, 740 (2012) ("State ownership is a fiction for the assertion of the power to regulate all aspects of use and enjoyment rather than an assertion of full ownership."); *see* Idaho v. Oregon, 462 U.S. 1017, 1029 (1983) ("After Hughes v. Oklahoma, however, Idaho cannot claim legal ownership of the fish. While the origin of the fish may be a factor in the fashioning of an equitable decree, it cannot by itself establish the need for a decree." (citation omitted)); Ivanhoe Irrigation Dist. v. All Parties, 306 P.2d 824, 840–41 (1957) ("Likewise the state is not the owner of the domestic water of the state in the sense that it has absolute power and dominion over it to the exclusion of the rights of those who have the beneficial interest therein.").

[263] Indeed, Chief Justice Burger remained skeptical of how far the Court had cut back the ownership theory. In a concurring opinion in Baldwin v. Fish & Game Comm'n of Montana, 436 U.S. 371, 392 (1978) (Burger, C.J., concurring), he noted

> A State does not 'own' wild birds and animals in the same way that it may own other natural resources such as land, oil, or timber. But, as noted in the Court's opinion, and contrary to the implications of the dissent, the doctrine is not completely obsolete. It

interest is not one borne of property. States clearly have the right, and duty, to regulate waters within their boundaries. But to call this a public "trust," in the sense that the state holds title in water, does not align with civilization's earliest concepts about owning wild resources like water, and it does not align with the Court's modern jurisprudence.[264] Cases may have occasionally used the term "title" or "ownership"—but the Supreme Court has been careful to clarify what it meant. The Court even in its earliest, state-friendly era tip-toed around sovereign ownership of water. In modern cases, the Court is outright hostile to the concept.

IV. STATE GROUNDWATER LAW

Mississippi's argument that it owns groundwater like a piece of chattel is not only out of alignment with federal law, it is out of alignment with state law as well. Mississippi's ownership theory would require the Supreme Court to adopt a radically new doctrine for groundwater law that is entirely at odds with the common law of groundwater as developed and applied by the states.

State courts routinely deal with disputes over groundwater pumping that lowers the water table in surrounding areas, with alleged damage to neighboring properties.[265] In contrast to the approach urged by Mississippi, state courts generally recognize that groundwater is not divisible based on overlying property lines, but rather is a shared resource that must be utilized by all parties based on reasonable use and other equitable principles (just like surface water).[266]

> manifests the State's special interest in regulating and preserving wildlife for the benefit of its citizens.

Id.

[264] Indeed, skepticism of state ownership theories continues in full force today. *See, e.g.*, Osherenko, *supra* note 124, at 331; Robin Kundis Craig, *A Comparative Guide to the Eastern Public Trust Doctrines: Classifications of States, Property Rights, and State Summaries*, 16 PENN ST. ENVTL. L. REV. 1, 99 (2007); 78 AM. JUR. 2D WATERS § 4 ("A state does not have the right to possess and use water to the exclusion of others . . . [t]he State's interest, therefore, is not an ownership interest but rather a nonproprietary, regulatory one. The State's interest in the public groundwater and surface waters is to make a water policy that preserves and regulates it."); Nicole L. Johnson, *Property Without Possession*, 24 YALE J. REG. 205, 217 (2007).

[265] *See, e.g.*, Prohosky v. Prudential Ins. Co. of America, 584 F. Supp. 1337, 1341, 1343, *decision rev'd* 767 F.2d 387 (7th Cir. 1985); Reppun v. Board of Water Supply, 656 P.2d 57, 73 (Haw. 1985); Natural Resources Com'n v. AMAX Coal Co., 603 N.E.2d 1349, 1354–55 (Ind. App. 1994).

[266] *See* RESTATEMENT (SECOND) OF TORTS § 858 (1979); ADLER ET AL., *supra* note 16, at ch. 4.

As with surface water doctrines, the common law for groundwater varies by state, with some divisions between the East and the West.[267] State courts have centuries of experience and resulting rules that govern the allocation of groundwater and resolution of groundwater pumping disputes.[268] There are five distinct common law groundwater doctrines that states have used to resolve groundwater disputes: (1) the doctrine of capture; (2) American reasonable use; (3) correlative rights; (4) Restatement (Second) of Torts section 858; and (5) prior appropriation.[269] In some states, these doctrines have faded into the legal background in favor of modern legislative and administrative schemes that regulate groundwater use.[270] However, the particular justifications for groundwater apportionment embedded in these doctrines are still relevant today and have been incorporated into most modern groundwater management schemes.[271] Consequently, a short overview of each common law doctrine will be useful for putting Mississippi's flawed arguments into context.

The doctrine of capture is the oldest groundwater doctrine in the United States, originating from the English rule of capture established in *Acton v. Blundell*.[272] In this case, the owner of a cotton mill sued the owner of a nearby coal mine, alleging that the defendant's mining operations had wrongfully drained the water from wells on the plaintiff's land.[273] At the time of the case, very little was known about the occurrence and movement of groundwater.[274] As the court described, "[groundwater] does not flow openly in sight of the neighboring proprietor, but through hidden veins of the earth beneath its surface . . . [thus,] no proprietor knows what portion of water is taken from beneath his own soil: how much he gives originally, or how much he transmits only, or how much he receives . . . ."[275] With this understanding (or lack

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[267] *See* WILLIS H. ELLIS, WATER RIGHTS: WHAT THEY ARE AND HOW THEY ARE CREATED, 13 RMMLF-INST 18 (1967) (explaining that east-west legal divide is not as pronounced in the context of groundwater, but that there is significant variation across states).

[268] *See, e.g.*, Acton v. Blundell, (1843) 152 Eng. Rep. 1223, 12 Mees. & Wels. 324.

[269] Noah D. Hall, *Protecting Freshwater Resources in the Era of Global Water Markets: Lessons Learned from Bottled Water*, 13 U. DENV. WATER L. REV. 1, 23–24 (2009); *see also* Joseph W. Dellapenna, *A Primer on Groundwater Law*, 49 IDAHO L. REV. 265, 269 (2013). Prior appropriation is only relevant in western states and not discussed further in this analysis. *See, e.g.*, Bower v. Moorman, 147 P. 496, 499 (Id. 1915) (applying rule of prior appropriation to ground water dispute).

[270] *See* Dellapenna *supra* note 269, at 302.

[271] *See id.*

[272] *Acton,* 152 Eng. Rep. at 1235.

[273] *Id.*

[274] *See* Dellapenna, *supra* note 269, at 271 (noting "the rule initially drew support from the pervasive ignorance regarding what was happening underground").

[275] *Acton*, 152 Eng. Rep. at 1233.

thereof), the court held in favor of the mine owner, stating that the inconvenience to the owner of the cotton mill—namely, the interception and draining of groundwater from his wells—was *damnum absque injuria* (loss without legal harm) and could not form the basis for a legal claim.[276]

The doctrine of capture functions to establish title to personal property—wild animals, fish, and sometimes oil and gas—once those resources are brought within the physical control of the owner.[277] The same is true for groundwater: a pumper owns (has title to) all the groundwater that he or she pumps out of the ground, with the pumping constituting the legal act of capture.[278] Note that ownership of water once "captured" from groundwater is not at all equivalent to owning the groundwater itself, just like owning a fish caught from a stream in no way conveys ownership in the fish in the stream that flows past one's property.[279]

Further, as *Acton v. Blundell* illustrates, the doctrine of capture in groundwater law also encompasses a tort rule of liability. In essence, the doctrine of capture is a doctrine of non-liability.[280] A landowner who withdraws groundwater from beneath the surface of his land cannot be held liable to adjacent landowners for the injuries that those withdrawals cause.[281] While this doctrine has many policy flaws and is based on outdated ignorance about groundwater science, it shows that from the earliest disputes, property owners never had an absolute right or ownership interest in the groundwater below their land. [282]

Though modern understanding of groundwater hydrology has lessened this rule's popularity, the doctrine of capture still survives in a handful of states, including Maine,[283] and Texas.[284] Nearly 100 years later, the Texas Supreme Court explicitly affirmed the doctrine.[285] There

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276 *Id.* at 1235.

277 *See id.*

278 *See id.*; *see also* Dellapenna, *supra* note 269, at 271.

279 *See* Dellapenna, *supra* note 269, at 273.

280 152 Eng. Rep. at 1233.

281 *Id.*

282 See Maddocks v. Giles, 728 A.2d 150, 153–54 (1999); Hall, *supra* note 269, at 41.

283 *See, e.g.*, *Maddocks*, 728 A.2d at 153.

284 *See* Houston & Texas Center Ry. Co. v. East, 81 S.W. 279 (Tex. 1904).

285 Sipriano v. Great Spring Waters of America, Inc., 1 S.W.3d 75 (Tex. 1999). It should be noted that while the rule of capture was left in place for resolving disputes between private property owners in Texas, the Texas Supreme Court seems to have established a property rule for private groundwater rights in the context of a takings claim arising from regulatory restrictions on groundwater pumping.

> In our state the landowner is regarded as having absolute title in severalty to the [water] in place beneath his land. The only qualification of that rule of ownership is that it must be considered in connection with the law of capture and is subject to police

are a few exceptions to this rule. The first bars application of the doctrine for malicious groundwater withdrawals where it appears that a landowner is taking groundwater "for the sole purpose of injuring his neighbor, or [is] wantonly and willfully wast[ing] [the water]."[286] The second exception applies to cases where a landowner's negligence "proximate[ly] cause[s] the subsidence of [another's land]."[287]

Most states began to evolve away from the rule of capture with an early doctrine termed *American reasonable use*.[288] Essentially, the doctrine is the same as the rule of capture, but with the added requirement that the groundwater withdrawn be put to a *reasonable use* on the *overlying tract*.[289] As state water law evolved, the harsh non-liability rules of capture have given way to more equitable and balanced rules of correlative rights.[290] The correlative rights doctrine originated in California at the beginning of the 20th century, when intense agricultural use of groundwater began to spark disputes between neighboring landowners.[291] The correlative rights doctrine borrows heavily from riparianism, with a shared right of reasonable use among property owners above an aquifer.[292]

In essence, the correlative rights doctrine grants each landowner whose property is located over a common groundwater source a right to the reasonable use of a "fair and just portion" of that groundwater in connection with his or her overlying land.[293] Groundwater may be withdrawn for off-tract or non-overlying uses under this doctrine, but only in the event that "surplus" water is available—that is, in circumstances where the groundwater recharge rate exceeds the groundwater withdrawal rate, and the surplus water is not needed by

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> regulations. The [water] beneath the soil are considered a part of the realty. Each owner of land owns separately, distinctly and exclusively all the [water] under his land and is accorded the usual remedies against trespassers who appropriate the [water] or destroy [its] market value.

Edwards Aquifer Authority v. Day, 369 S.W.3d 814, 831–32 (Tex. 2012).

286 City of Corpus Christi v. City of Pleasanton, 276 S.W.2d 798, 801 (Tex. 1955).

287 Friendswood Dev. Co. v. Smith-Southwest Indus., Inc., 576 S.W.2d 21, 30 (Tex. 1978).

288 *See* Dellapenna, *supra* note 269, at 269; *see also* Wood v. Picillo, 443 A.2d 1244, 1249 (R.I. 1982); State v. Michels Pipeline Const., Inc., 217 N.W.2d 339, 345 (Wis. 1974); *see also* Spear T Ranch, Inc. v. Knaub, 691 N.W.2d 116, 131–33 (Neb. 2005).

289 *See, e.g.*, McDowell v. Rural Water Dist. No. 2, 282 N.W.2d 594, 596 (Neb. 1979); Jones v. Oz-Ark-Val Poultry Co., 306 S.W.2d 111, 114–15 (Ark. 1957); FMC Corp. v. Plaisted & Cos., 72 Cal. Rptr. 2d 467, 513 (Cal. Ct. App. 1998); City of Valparaiso v. Defler, 694 N.E.2d 1177, 1179–80 (Ind. Ct. App. 1998).

290 *See, e.g.*, Bassett v. Salisbury Mfg. Co., 43 N.H. 569 (1862) (applying reasonable use).

291 *See* Katz v. Walkinshaw, 74 P. 766 (Cal. 1903).

292 *See, e.g.*, ADLER ET AL., *supra* note 16, at 189; Dellapenna, *supra* note 269, at 274.

293 *See* Keith H. Hirokawa, *Property as Capture and Care*, 74 ALB. L. REV. 175, 216–18 (2010).

overlying owners.[294] During times of shortage, groundwater use is restricted to use on the overlying properties and, among those uses, is generally apportioned based on equitable factors.[295] As such, in most respects the correlative rights doctrine may be properly considered the groundwater equivalent of riparian rights.

Most recently, the American Law Institute in 1978 took on the issue of groundwater for the Restatement (Second) of Torts.[296] Fundamentally, the Restatement adopts the concept of correlative rights, viewing groundwater as a connected shared resource and applying riparian reasonable use principles.[297] The drafters were concentrating on liability for groundwater pumping, not on property law; the basic property rule remains that a pumper owns the water that he or she withdraws and "captures."[298] As a result, section 858 of the Second Restatement deals exclusively with liability associated with the use of groundwater.[299] Under this section, a groundwater user who puts the withdrawn water to beneficial use will not be liable for harm to others caused by her withdrawals unless:

> (a) the withdrawal of groundwater unreasonably causes harm to a proprietor of neighboring land through lowering the water table or reducing artesian pressure,
> (b) the withdrawal of groundwater exceeds the proprietor's reasonable share of the annual supply or total store of ground water, or
> (c) the withdrawal of the groundwater has a direct and substantial effect upon a watercourse or lake and unreasonably causes harm to a person entitled to the use of its water.[300]

In evaluating the comparative reasonableness of competing uses, the Restatement considers the same factors that apply to reasonable use riparianism in surface water. The elements to determine reasonable uses are set forth in section 850A of the Restatement, providing:

> The determination of the reasonableness of a use of water depends upon a consideration of the interests of the riparian proprietor making the use, of any riparian proprietor harmed by

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294 *See* Ronald Kaiser & Frank F. Skillern, *Deep Trouble: Options for Managing the Hidden Threat of Aquifer Depletion in Texas*, 32 TEX. TECH L. REV. 249, 280 (2001).

295 *See, e.g.*, Tehachapi-Cummings Cnty. Water Dist. v. Armstrong, 122 Cal. Rptr. 918, 924–25 (Ct. App. 1975).

296 *See* RESTATEMENT (SECOND) OF TORTS § 858 (1979).

297 *See id.*

298 The Restatement's comments discuss the doctrine in context of "tortious withdrawal." *Id.*

299 *Id.*

300 *Id.*

> it and of society as a whole. Factors that affect the determination include the following:
>
> (a) The purpose of the use,
> (b) the suitability of the use to the watercourse or lake,
> (c) the economic value of the use,
> (d) the social value of the use,
> (e) the extent and amount of the harm it causes,
> (f) the practicality of avoiding the harm by adjusting the use or method of use of one proprietor or the other,
> (g) the practicality of adjusting the quantity of water used by each proprietor,
> (h) the protection of existing values of water uses, land, investments and enterprises, and
> (i) the justice of requiring the user causing harm to bear the loss.[301]

Both Tennessee and Mississippi similarly settle private groundwater disputes using equitable principles, not ownership ones. Mississippi, like many states today, created an administrative system to manage water use and conflicts.[302] The agency considers who owns overlying property only as a marginal factor among a slew of equitable principles, including "how the permit applicant plans to use the water, . . . the amount of water requested, . . . whether the wells will be spaced in a manner to avoid interference with existing wells, . . . and the projected drawdown of the aquifer."[303] For example, the Court in *Riverbend Utilities v. Mississippi Environmental Quality Permit Board,* analyzed the "beneficial uses" the litigants were putting their water to.[304] Mississippi's regulations explain that: "In areas where conflicts exist between competing interests or demands for . . . groundwater supplies, or where there is a potential for such conflicts to arise in the future, . . . beneficial uses . . . will be given priority."[305] These uses include the public supply needs, industrial needs, conservation of habitats, fire protection, and any other uses relevant on a case-by-case basis.[306] Indeed, ownership of the overlying property is not even listed as among the priority factors for settling ground water disputes.[307]

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[301] *Id.* § 850A.

[302] *See* Riverbend Utilities, Inc. v. Mississippi Envtl. Quality Permit Bd., 130 So. 3d 1096, 1104 (Miss. 2014).

[303] *Id.* at 1104–05.

[304] *Id.* at 1104.

[305] 11.7-1 MISS. CODE R. § 1.4(B) (LexisNexis 2014).

[306] *Id.*

[307] *Id.*

Tennessee also uses equitable principles, not ownership ones, to settle water disputes.[308] The state is generally considered a "correlative rights" state—thus applying equitable principles to groundwater disputes.[309] An early Tennessee groundwater law explained that

> the modern rule and the better rule is that the rights of each owner being similar, and their enjoyment dependent on the action of other landowners, their right must be correlative and subject to the maxim that one must so use his own as not to injure another, so that each landowner is restricted to a reasonable exercise of his own rights and a reasonable use of his own property, in view of the similar rights of others.[310]

The Court then announced that it adopted the "American" or "reasonable use" rule, rejecting a "doctrine of unqualified and absolute right of a landowner to intercept and draw from his land the percolating waters therein."[311] Tennessee also has some agency involvement that triggers other equitable considerations for certain types of large groundwater pumping.[312]

Thus, the law of groundwater ranges from rules of capture to equitable balancing of competing uses and harms. In no state does the law of groundwater support Mississippi's arguments for absolute ownership of groundwater as a divisible resource based on ownership of overlying land. Indeed, neither Mississippi nor Tennessee have adopted such a theory to allocate water within their own borders. Instead, both states have recognized that groundwater rights are merely usufructuary and correlative with the rights of neighbors. The Supreme Court should apply the same correlative rights and equitable approach provided by the states and summarized in the Restatement. Conveniently, and not coincidentally, this is quite compatible with both equitable apportionment and the interstate nuisance doctrine, as discussed in the following two sections.

V. EQUITABLE APPORTIONMENT

As the above sections detail, states do not "own" water, and an ownership theory is an untenable means of settling Mississippi's dispute. The Supreme Court should make this clear (again) and then

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308 *See, e.g.*, Nashville, Chattanooga & St. Louis Ry. v. Rickert, 89 S.W.2d 889, 897 (Tenn. Ct. App. 1935).

309 *See Id.*; *see also* Comment, *Water Rights in Tennessee*, 27 TENN. L. REV. 557 (1960).

310 *Rickert*, 89 S.W.2d at 896.

311 *Id.* at 897.

312 TENN. COMP. R. & REGS. 0400-45-08-.05 (2015).

look to equitable apportionment, or preferably interstate nuisance, to address the present dispute of shared interstate groundwater.

Before exploring the details and applicability of equitable apportionment (and the alternative interstate nuisance doctrine discussed in the next part), it is important to put the role of the Supreme Court in resolving interstate water disputes into a federalism context. When water resources cross state lines and are subject to competing interstate legal claims and uses, federal involvement becomes necessary. There are three ways to manage and allocate interstate waters in our federal system. First, the federal government, through an act of Congress, can establish rules for use of interstate waters or even apportion specific water resources (such as an aquifer) among the states.[313] Congress has broad power over interstate waters, and while it has rarely exercised that power for managing and allocating interstate water quantities,[314] it has taken a central role in protecting interstate water quality through the Clean Water Act.[315]

Second, and most commonly, interstate waters can be managed through an interstate compact. A compact is essentially a contract between states, subject to federal approval,[316] as provided in the U.S. Constitution.[317] The Supreme Court has made clear its preference for interstate compacts as the best mechanism for addressing interstate water disputes, which are "more likely to be wisely solved by cooperative study and by conference and mutual concession on the part of representatives of the States so vitally interested in it than by proceedings in any court however constituted."[318] There are over two dozen interstate water compacts in effect in the United States, covering such important shared waters as the Great Lakes and Colorado River, and some of these compacts consider interconnected groundwater resources.[319] More specifically, Utah and Nevada have negotiated a proposed compact to manage and protect the Snake Valley Aquifer from

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313 *See* Arizona v. California, 373 U.S. 546, 564–66 (1963).

314 Congress has only twice used its power to apportion water. *See* Boulder Canyon Project Act, Pub. L. No. 70-642, 45 Stat. 1057 (codified as amended at 43 U.S.C. §§ 617-617u (2012)); Truckee-Carson-Pyramid Lake Water Rights Settlement Act, Pub. L. No. 101-618, § 204, 104 Stat. 3294, 3296–304 (1990).

315 33 U.S.C. §§ 1251–1376 (2012).

316 *See* Texas v. New Mexico, 482 U.S. 124, 128 (1987).

317 U.S. CONST. art. I, § 10, cl. 3 ("No State shall, without the Consent of Congress, . . . enter into any Agreement or Compact with another State, or with a foreign Power.").

318 New York v. New Jersey, 256 U.S. 296, 313 (1921).

319 *See* Noah D. Hall, *Interstate Water Compacts and Climate Change Adaptation*, 5 ENVTL. & ENERGY L. & POL'Y J. 237, 239–40, 248–51, 252–53, 284–86 (2010).

development for municipal water supply, which could be a model for Mississippi-Tennessee and other regions.[320]

When the first two options—Congressional apportionment and interstate compacts—are not exercised (typically for political reasons),[321] interstate water conflicts fall to the Supreme Court, which has exclusive jurisdiction for disputes between states.[322] In resolving disputes involving shared surface waters, the Supreme Court has developed and applied the doctrine of equitable apportionment[323] and interstate nuisance.[324] While there are some differences between surface water and groundwater law, the resources and policy concerns are similar enough that equitable apportionment could easily be adopted and applied rationally in an interstate groundwater dispute, as already demonstrated by the Fifth Circuit.[325]

Equitable apportionment rests on two related rationales. The first, explained by Justice Holmes, is a practical one: water is a "necessity of life that must be rationed among those who have power over it," and where two states "have real and substantial interests" in interstate water, those interests "must be reconciled as best they may be."[326] The second, derived from our constitutional scheme and international law,[327] respects the states as sovereigns: the sovereign states are juridical equals and have "equality of right" among them.[328] Because of this, whenever

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320 *See generally* Hall & Cavataro, *supra* note 4.

321 *See id.* at 1570–72, 1601–07.

322 The original jurisdiction of the Supreme Court to adjudicate interstate disputes stems from the Constitution, U.S. CONST. art. III, §§ 1, 2 ("The Judicial Power [of the United States] shall extend . . . to Controversies between two or more States . . . ."), while the exclusive jurisdiction of the Court to hear such disputes stems from statute, 28 U.S.C. § 1251(a) (2012) ("The Supreme Court shall have original and exclusive jurisdiction of all controversies between two or more States.").

323 *See generally* Colorado v. New Mexico (*Colorado II*), 467 U.S. 310 (1984); Colorado v. New Mexico (*Colorado I*), 459 U.S. 176 (1982).

324 *See generally* Wisconsin v. Illinois, 449 U.S. 48 (1980); Wisconsin v. Illinois, 388 U.S. 426 (1967); Wisconsin v. Illinois, 289 U.S. 395 (1933); Wisconsin v. Illinois, 281 U.S. 696 (1930); Wisconsin v. Illinois, 281 U.S. 179 (1930); Wisconsin v. Illinois, 278 U.S. 367 (1929).

325 *See* Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 632 (5th Cir. 2009).

326 New Jersey v. New York, 283 U.S. 336, 342–43 (1931).

327 The principle that the states of the United States are juridically equal is analogous to the international-law principle that sovereign states are juridically equal to one another. *See* Thomas H. Lee, *Making Sense of the Eleventh Amendment: International Law and State Sovereignty*, 96 NW. U. L. REV. 1027, 1027–33 (2002) (noting that "the Founders understood the States as sovereign entities bound together in an interdependent coexistence very much like the community of nations," and suggesting that the Eleventh Amendment is "consistent with the sovereign equality principle, presuming no difference between the sovereign dignity of a State and a nation-state, a powerful statement in itself about the sovereign dignity of the American states"); *see also* ROBERT A. KLEIN, SOVEREIGN EQUALITY AMONG STATES: THE HISTORY OF AN IDEA 143 (1974).

328 Kansas v. Colorado, 206 U.S. 46, 97 (1907).

> the action of one state reaches, through the agency of natural laws, into the territory of another state, the question of the extent and the limitations of the rights of the two states becomes a matter of justiciable dispute between them, and this court is called upon to settle that dispute in such a way as will recognize the equal rights of both and at the same time establish justice between them.[329]

Of course, equality of right does not mean an "equal division of the water," but instead means an "equal level or plane on which all the states stand, in point of power and right, under our constitutional system."[330]

Equitable apportionment is a doctrine of federal common law.[331] The Court defines it as "a flexible doctrine which calls for 'the exercise of an informed judgment on a consideration of many factors to secure a 'just and equitable' allocation,'" taking into account "'the delicate adjustment of interests which must be made.'"[332] The Court has said it approaches interstate water cases "[s]itting, as it were, as an international, as well as a domestic, tribunal," and applying "[f]ederal law, state law, and international law, as the exigencies of the particular case may demand. . . ."[333]

Determining what "equity" means in water law is both challenging and adaptive.[334] The adaptive nature of equity allows flexibility in a range of highly fact-dependent and often technical interstate apportionment cases, but makes articulating standards and deciding cases difficult.[335] The Court has, however, laid down a number of key

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[329] *Id.* at 97–98. This test, with its mention of "reaching through the agency of natural laws," indicates that any interstate flow resource, whether surface water, groundwater, or migratory fish, may be subject to equitable apportionment. *See supra* Part IV.

[330] Wyoming v. Colorado, 259 U.S. 419, 465 (1922).

[331] Hinderlider v. LaPlata River & Cherry Creek Ditch Co., 304 U.S. 92, 110 (1938) (opinion of Brandeis, J.) ("For whether the water of an interstate stream must be apportioned between the two States is a question of 'federal common law' upon which neither the statutes nor the decisions of either State can be conclusive."). Congress has the power to displace the federal common law of equitable apportionment under its Commerce Clause powers, as it has displaced the common law of nuisance for interstate water pollution by enacting the Clean Water Act. *See* City of Milwaukee v. Illinois, 451 U.S. 304, 317–19 (1981). But Congress has chosen not to do so.

[332] *Colorado I*, 459 U.S. 176, 183 (1982) (quoting Nebraska v. Wyoming, 325 U.S. 589, 618 (1945)).

[333] Kansas v. Colorado, 185 U.S. 125, 146–47 (1902).

[334] For a consideration of meaning of equity in the water-law context, see Jason A. Robison & Douglas S. Kenney, *Equity and the Colorado River Compact*, 42 ENVTL. L. 1157, 1174–81 (2012).

[335] *See* Joseph W. Dellapenna, *Interstate Struggles Over Rivers: The Southeastern States and the Struggle Over the 'Hooch*, 12 N.Y.U. ENVTL. L.J. 828, 883 (2005) ("Finding a fair

principles in the form of a multifactor balancing test that guides how it will equitably apportion water.[336] The Court has said that its aim is "always to secure a just and equitable apportionment 'without quibbling over formulas.'"[337] The Court will thus

> consider all relevant factors, including "physical and climatic conditions, the consumptive use of water in the several sections of the river, the character and rate of return flows, the extent of established uses, the availability of storage water, the practical effect of wasteful uses on downstream areas, [and] the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former.[338]

The Court will look to the relevant state law doctrines but has stressed that "state law is not controlling" and that "the just apportionment of interstate waters is a question of federal law that depends 'upon a consideration of the pertinent laws of the contending States and all other relevant facts.'"[339] The Court has continued to reaffirm that "equitable apportionment . . . should turn on the benefits, harms, and efficiencies of competing uses . . . ."[340] At the same time, the Court has continued to give teeth to the requirement that the state seeking a diversion prove

> by clear and convincing evidence, the existence of certain relevant factors . . . . [F]or example, the extent to which reasonable conservation measures can adequately compensate for the reduction in supply due to the diversion, and the extent to which the benefits from the diversion will outweigh the harms to existing users.[341]

Additionally, "[t]his evidentiary burden cannot be met with generalizations about unidentified conservation measures and unstudied speculation about future uses."[342] Thus, the Court has retained significant roles for both utilitarian analysis and for preservation of historic rights.

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apportionment of the water between two or more competing states is as difficult as devising a reasonable apportionment of water between two competing private riparian users.").

336 For an excellent overview of the application of the equitable apportionment doctrine, see A. Dan Tarlock, *The Law of Equitable Apportionment Revisited, Updated, and Restated*, 56 U. COLO. L. REV. 381, 392 (1985).

337 *Colorado I*, 459 U.S. 176, 183 (1982) (quoting New Jersey v. New York, 283 U.S. 336, 343 (1931) (opinion of Holmes, J.)).

338 *Id.* at 183 (quoting Nebraska v. Wyoming, 325 U.S. 589, 618 (1945)).

339 *Id.* at 184 (quoting Connecticut v. Massachusetts, 282 U.S. 660, 670–71 (1931)).

340 *Colorado II*, 467 U.S. 310, 323 (1984).

341 *Id.* at 323–24.

342 *Id.* at 324.

Although the Supreme Court has never before explicitly adjudicated an interstate dispute over groundwater,[343] it has considered groundwater issues within the equitable apportionment of groundwater-connected surface water. Over a century ago, the Supreme Court recognized that groundwater flowing alongside the Arkansas River should be treated as part of the flow of the river in an interstate equitable apportionment case.[344] Moreover, the Court has applied the equitable-apportionment doctrine in an interstate dispute outside of the water context; in *Idaho ex rel. Evans v. Oregon*,[345] the Court held that interstate runs of anadromous fish, such as salmon and steelhead trout, were a resource that could be equitably apportioned, explicitly drawing parallels to water law.[346]

In sum, there is no barrier to the Court simply adopting its existing equitable apportionment doctrine into the groundwater context. An interstate groundwater dispute raises similar issues, presents no bar to justiciability, and affords the Court with the flexibility to consider all relevant interests of both state sovereigns. The doctrine allows the Court to balance sovereign interests, especially for consumptive use of the water resource. Relying on the weight of precedent for support, the co-author in a prior article detailed the applicability of the equitable apportionment doctrine to groundwater with a case study on the Snake Valley Aquifer dispute between Utah and Nevada, involving potential harms from pumping for Las Vegas municipal water supply.[347] Yet the Supreme Court's grant of leave to Mississippi gives pause and reason to revisit the assumed applicability of equitable apportionment to groundwater, and opens the door to an alternative to both Mississippi's strained arguments of ownership and conversion and the implied questioning of equitable apportionment—the doctrine of interstate nuisance.

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[343] Justin Newell Hesser, *The Nature of Interstate Groundwater Resources and the Need for States to Effectively Manage the Resource Through Interstate Compacts*, 11 WYO. L. REV. 25, 36 (2011) ("The Supreme Court has only equitably apportioned interstate surface waters."); A. Dan Tarlock & Darcy Alan Frownfelter, *State Groundwater Sovereignty After Sporhase: The Case of the Hueco Bolson*, 43 OKLA. L. REV. 27, 27 (1990) ("[T]he United States Supreme Court had never directly equitably apportioned an aquifer.").

[344] Kansas v. Colorado, 206 U.S. 46, 114–15 (1907); *see also* Washington v. Oregon, 297 U.S. 517, 524–26 (1936) (surface waters in dispute were hydrologically connected to subterranean waters, and the reasonableness of well-pumping was part of the conflict).

[345] 462 U.S. 1017 (1983).

[346] *Id.* at 1024 ("Although that doctrine has its roots in water rights litigation, the natural resource of anadromous fish is sufficiently similar to make equitable apportionment an appropriate mechanism for resolving allocative disputes."). The Fifth Circuit noted this in reasoning that equitable apportionment applies to groundwater. Hood *ex rel.* Mississippi v. City of Memphis, 570 F.3d 625, 630 n.6 (5th Cir. 2009).

[347] *See* Hall & Cavataro, *supra* note 4.

VI. INTERSTATE NUISANCE AS AN ALTERNATIVE TO EQUITABLE APPORTIONMENT

The other option for the Court is to fashion another established doctrine to resolve interstate groundwater disputes. Mississippi attempts to limit equitable apportionment to disputes involving a flowing river from an upstream to a downstream state, but even if this distinction were accepted, it doesn't apply to interstate nuisance law. Interstate nuisance has been widely applied by the Supreme Court to standing bodies of water, airsheds, and other resources that when utilized by one state, result in harm to another state.[348] The line of *Missouri v. Illinois* and *Wisconsin v. Illinois* cases discussed below are especially applicable and instructive.

The *Missouri v. Illinois*[349] cases gave the Supreme Court its first opportunity to consider an interstate environmental harm dispute.[350] Like the present dispute, the basic facts were that one state's use of its natural resources caused alleged harm and damage to a neighboring state.[351] Prior to 1900, Chicago's considerable sewage, stockyard, and industrial wastes were discharged into Lake Michigan via the Chicago River.[352] In 1889, the State of Illinois created a Sanitary District which, acting as an agent of the state, subsequently undertook several drainage projects involving the Chicago River.[353] One of these projects involved the construction of an artificial channel, diverting the flow of the south branch of the Chicago River away from its natural drainage into Lake Michigan and toward the Des Plaines River, which in turn emptied into the Mississippi River via the Illinois River.[354]

The state of Missouri, located downriver from the point at which the Illinois River emptied into the Mississippi River, filed suit in the Supreme Court alleging harm to Missouri towns and citizens situated on the Mississippi River, and seeking an injunction against the use of the channel for waste disposal purposes.[355] The suit relied primarily on a common law theory of nuisance, buttressed with a claim that Illinois was also violating riparian principles by diverting water out of its

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348 *See, e.g.*, Missouri v. Illinois (*Missouri II*), 200 U.S. 496 (1906); Missouri v. Illinois (*Missouri I*), 180 U.S. 208 (1901).

349 *Missouri II*, 200 U.S. at 496; *Missouri I*, 180 U.S. at 208.

350 See Noah D. Hall, *Political Externalities, Federalism, and a Proposal for an Interstate Environmental Impact Assessment Policy*, 32 HARV. ENVTL L. REV. 49, 62 (2008).

351 *See Missouri I*, 180 U.S. at 212.

352 *See id.*

353 *See id.* at 210–11.

354 *See id.* at 208, 211; *Missouri II*, 200 U.S. at 517.

355 *See Missouri I*, 180 U.S. at 216; *Missouri II*, 200 U.S. at 517.

natural watershed.[356] Missouri was primarily concerned that Illinois' waste was causing typhoid fever deaths among Missouri citizens. The Court ultimately decided the case on the merits of the nuisance claim, and did not entertain the riparian diversion allegation as a sufficient basis for the suit.[357]

Illinois first responded by filing a demurrer alleging both lack of jurisdiction under the Constitution's Article III "case or controversy" requirement and lack of adequate pleading.[358] The Supreme Court first, in *Missouri I*, held that it was the proper forum for these types of interstate disputes,[359] when "[s]tates are in direct antagonism as States."[360] This holding became the first jurisdictional standard for the Supreme Court to hear an interstate environmental dispute. The *Missouri II* court subsequently confirmed the *Missouri I* jurisdictional requirements of state action and direct antagonism, and added two additional requirements. First, the case must "be of serious magnitude, clearly and fully proved."[361] Second, the case must be susceptible to judicial resolution.[362] Harm to any of a state's traditional sovereign interests, such as the property, health, safety, and welfare of its citizens, would provide a sufficient basis for suit against another state.[363] Additionally, indirect action by a state or direct action by a state's entity or subdivision (e.g., the Chicago Sanitary District) would satisfy the state action requirement.[364]

With the Court's jurisdiction established, the *Missouri II* court addressed the substantive merits of Missouri's nuisance claim. Ultimately, as in so many environmental disputes, Missouri's claim was undermined by the lack of technical and scientific certainty regarding its allegations and other equitable factors. The Court held that Missouri could not make an adequate proof of causation because the scientific evidence presented could not establish Illinois' discharge of sewage into the Chicago River as the sole or primary source of pollution in the Mississippi River.[365] Justice Holmes's conclusion relies on two themes repeated throughout the opinion: technical complexity regarding novel scientific issues and the complication of potentially harmful conduct by

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356 *See Missouri I*, 180 U.S. at 212; *Missouri II*, 200 U.S. at 526.
357 *See Missouri II*, 200 U.S. at 526.
358 *See Missouri I*, 180 U.S. at 216–18.
359 *Id.* at 241.
360 *Id.* at 249 (Fuller, C.J., dissenting).
361 *Missouri II*, 200 U.S. at 521.
362 *See id.*
363 *See Missouri I*, 180 U.S. at 236–37, 241.
364 *See id.* at 237–38, 241.
365 *Missouri II,* 200 U.S. at 526.

the plaintiff state itself (cities in Missouri also discharged waste to waterways).

The Supreme Court has since expanded its application of interstate nuisance to alleged harms in a neighboring state to private property through air pollution[366] and to riparian property through pumping of standing bodies of water.[367] One of these disputes, *Wisconsin v. Illinois*, involves the same Chicago diversion that was the subject of litigation in *Missouri v. Illinois* and is again particularly applicable and instructive for the present dispute.

After Illinois prevailed against Missouri regarding the discharged pollution, Wisconsin, Michigan, New York, and other Great Lakes states brought another suit in the Supreme Court against Illinois. These complainant states alleged that the Chicago diversion had lowered levels in Lake Michigan, as well as Lakes Huron, Erie, and Ontario, by more than six inches, harming navigation and causing serious injury to their citizens and property.[368] Illinois again denied that the diversion caused any actual injury.[369]

The Supreme Court again relied on its doctrine of interstate nuisance and the need to equitably balance the sovereign interests at stake in the dispute. The Court did not consider the matter under equitable apportionment, but many of the same issues of technical determinations and consideration of equitable factors came into play.[370] Recognizing the need for assistance in handling the complex technical issues being raised, the Court appointed former Justice Charles Evan Hughes to serve as special master.[371] His report found that Chicago's diversion lowered the levels of Lakes Michigan and Huron by six inches and Lakes Erie and Ontario by five inches,[372] causing damage "to navigation and commercial interests, to structures, to the convenience of summer resorts, to fishing and hunting grounds, to public parks and other enterprises, and to riparian property generally."[373] The Court adopted the special master's report, concluding that the reduced lake levels caused

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366 Georgia v. Tenn. Copper Co., 237 U.S. 474 (1915); Georgia v. Tenn. Copper Co., 206 U.S. 230 (1907); *see also* Hall, *supra* note 9, at 690–91.

367 Wisconsin v. Illinois, 449 U.S. 48 (1980); Wisconsin v. Illinois, 388 U.S. 426 (1967); Wisconsin v. Illinois, 289 U.S. 395 (1933); Wisconsin v. Illinois, 281 U.S. 696 (1930); Wisconsin v. Illinois, 281 U.S. 179 (1930); Wisconsin v. Illinois, 278 U.S. 367 (1929).

368 *See Wisconsin*, 278 U.S. at 399–400.

369 *See id.* at 400.

370 *See* Noah D. Hall, *Toward A New Horizontal Federalism: Interstate Water Management in the Great Lakes Region*, 77 U. COLO. L. REV. 405, 421–22 (2006).

371 *See id.* at 420.

372 *See id.*

373 *Id.* at 420–21.

the complainant states and their citizens and property owners "great losses."[374]

While generally supporting the technical claims of the complainant states, the Court also appreciated the public health implications and economic costs that would come with immediately halting the entire Chicago diversion.[375] The Court thus referred the matter back to the special master for determination of the proper relief, with consideration of all of the equitable and practical factors in play.[376] The special master's report ultimately recommended a modest phased partial reduction in the Chicago diversion, allowing the city time to build adequate sewage treatment.[377]

Most instructively for the present dispute, the Court did not rely on the limited doctrine of equitable apportionment but instead applied the same process and many of the same factors by using its interstate nuisance doctrine. There was no clear or express reasoning offered for using interstate nuisance instead of equitable apportionment in the Great Lakes disputes. Perhaps the Court instinctively recognized the challenge of apportioning a large continuous waterbody with a low recharge rate like the Great Lakes (and the Sparta-Memphis Aquifer) with fixed allocations to the states. Perhaps the Court simply wanted to address the water use and resulting harm without making an apportionment decision. Perhaps there is little distinction between equitable apportionment and interstate nuisance, as both doctrines involve the same analyses and frameworks and would produce the same results. But if the Court is concerned about using equitable apportionment in the Sparta-Memphis Aquifer dispute, it has an ideal alternative ready that avoids the legal errors and radical new approach to state water law inherent in Mississippi's requested relief.

As a technical matter, interstate nuisance avoids the difficult evidentiary and fact-determining task of quantifying the available water supply—the first step in apportioning any resource. The available water supply of a flowing river is relatively easy to determine using observed data, although historic flows have proven to be overly generous

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374 *Id.* at 421.

375 *See id.*

376 *See id.*

377 *See* Wisconsin v. Illinois, 281 U.S. 179, 198, 201 (1930); *see also* Wisconsin v. Illinois, 281 U.S. 696, 697 (1930). Subsequent litigation in the Supreme Court continued over several decades regarding Illinois's compliance with the diversion reduction schedule and the amount of water allowed for domestic pumping, with the ultimate result being that the total allowable diversion was increased to 3,200 cubic feet per second, the level at which it is now capped. *See* Wisconsin v. Illinois, 449 U.S. 48 (1980); Wisconsin v. Illinois, 388 U.S. 426, 427 (1967); Wisconsin v. Illinois, 289 U.S. 395 (1933).

predictors as the climate changes. But determining the available water supply of an aquifer requires extensive measuring and modeling, and is at best an educated guess. Interstate nuisance avoids the question of how much resource is available to divide and allocate, and instead focuses on the impact and harms of the use on competing interests in the neighboring state. Equitable apportionment requires quantification of the natural resource, while interstate nuisance only requires quantification of the use—a far easier task with groundwater.

These technical considerations relate to a more fundamental policy difference between equitable apportionment and interstate nuisance. Equitable apportionment assumes that the entire resource is available for division and allocation. This reflects the historically prevailing values towards natural resources, which assume a goal of total consumption and consider any remainder economic waste. Modern conservation and preservation values, and recent concepts such as ecosystem services, have been left out of the equitable apportionment equation.[378] This can be reformed as a matter of doctrinal evolution, as Professors J.B. Ruhl and Robert Abrams have suggested.[379] But interstate nuisance would be a doctrinal head start on that evolutionary path. Interstate nuisance was developed not to divide and allocate a shared resource, but to balance harms of use and interests in preservation of a shared resource. It has been used to limit consumptive uses of interstate resources to protect "the environment" decades before the term "environment" entered law and society. As values shift from total consumption to at least some restraint and preservation, interstate nuisance is more aligned with modern goals. The Court can apply interstate nuisance to transboundary groundwater withdrawals, avoid quantifying an undefined subterranean resource, and respect state interests in conservation of resources for future generations.

VII. CONCLUSION

The Sparta-Memphis Aquifer dispute between Mississippi and Tennessee presents the Supreme Court with an opportunity to establish a rule and precedent for interstate groundwater disputes, which will become more common and significant in coming years. While this is a novel issue, the Court has been here many times before. It has been dealing with arguments about sovereign ownership of water since the

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[378] *See generally* Robert Haskell Abrams, *Broadening Narrow Perspectives and Nuisance Law: Protecting Ecosystem Services in the Acf Basin*, 22 J. LAND USE & ENVTL. L. 243 (2007); J.B. Ruhl, *Equitable Apportionment of Ecosystem Services: New Water Law for A New Water Age*, 19 J. LAND USE & ENVTL. L. 47 (2003).

[379] *See supra* note 378.

birth of the nation. And each time it has told the states the same thing: water is unique and it cannot be "owned" by anyone, state sovereign or otherwise. Federal law rejects state ownership of water; state law rejects individual ownership of water. The only real question is this: how should the Court allocate interstate groundwater resources and resolve resulting disputes in the most equitable way?

The Court has been applying the equitable apportionment and interstate nuisance doctrines for over a hundred years to efficiently and fairly resolve disputes over transboundary resources between states. There is no reason to treat groundwater differently. Absolute rules based on physical ownership have no place in water law. Mississippi's arguments and claims are based on a fundamentally flawed view of water resources and the rules applicable to them. The Supreme Court could apply its equitable apportionment doctrine to groundwater in this and similar disputes, leaving the complex technical details to a special master. And if the Court has concerns about that approach, the logical alternative is application of the interstate nuisance doctrine to similarly balance state needs and harms in an equitable fashion. Interstate nuisance allows the Supreme Court to consider the benefits and harms resulting from use of a shared interstate resource to determine whether such use is reasonable, without the technical burden of quantifying the interstate aquifer, while protecting modern conservation interests.