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OPENING THE UNDERGROUND FLOODGATES: *MISSISSIPPI v. TENNESSEE* AND THE DOCTRINE OF EQUITABLE APPORTIONMENT

PATRIC J. FRIEND*

I. Introduction

Article III, § 2, Clause 2 of the United States Constitution grants the United States Supreme Court original jurisdiction in "all cases . . . in which a state shall be a party."[1] This constitutional mandate establishes the Court as the final arbiter of disputes between States.[2] A frequently litigated area on the Supreme Court's original jurisdiction docket are disputes between States concerning the use of, and claim to, interstate waters. When disputes between States arise concerning interstate waters there are three mechanisms at their disposal to resolve the issue. First, States may bring an original action in front of the United States Supreme Court for a declaration of rights and an equitable apportionment of waters.[3] Second, the States involved may negotiate an interstate compact dividing the resource, which becomes binding with approval from both States' legislators and Congress.[4]

* Patric J. Friend is entering his third year at the University of Oklahoma College of Law. This article is dedicated to Chris and Suzanne Friend. Special thanks to the ONE-J Editorial Board and to Professor M. Alexander Pearl.

1. U.S. Const. Art. III, § 2, cl. 2.

2. Anthony Dan Tarlock, L. of Water Rts. & Res. § 10.3. Equitable Apportionment—Original Jurisdiction as Basis. (July 2021 update)

3. *See* Tarlock, *supra* note 2, at § 10.1. Scope.

4. *Id.*

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Third, Congress itself may enact a statutory apportionment of the disputed resource by passing legislation outlining each States' share of the resource.[5]

Interstate water compacts have received judicial approval as the preferred method of allocating interstate waters.[6] During negotiations of these compacts, States may allocate unallocated water supplies without consideration of the jurisdictional boundaries, and length, of equitable apportionment litigation.[7] Not only is the creation of interstate compacts "a better method of considering the relationship among all uses of water" but during negotiation, "[m]ore comprehensive technical information can be considered."[8] This results in interstate compacts with "more flexible allocation formulas and enforcement mechanisms" instead of an equitable apportionment riddled with federalism considerations dictated by the Supreme Court in original jurisdiction actions.[9] Interstate compacts have been negotiated and created settling State controversies of water allocation, pollution control, and aquatic biodiversity protection among other topics of issue.[10]

Congress, through the commerce clause, has the power to apportion interstate rivers without State input—as seen in the creation of interstate compacts.[11] Congress can use this power to guarantee the distribution of essential natural resources fairly, while simultaneously protecting federal interests against inconsistent State allocation decisions. Congress first administered the Congressional apportionment power, and the Court first recognized, during *Arizona v. California*, both States' claims of the Lower Colorado River.[12] The decision in *Arizona* is the only instance of adjudicated Congressional apportionment. However, the Supreme Court has held congressional ratification of interstate compacts is another exercise of Congress's apportionment power.[13]

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5. *Id.*

6. *See In re Tri-State Water Rights Litigation*, 639 F. Supp 2d 1308, 1355 (M.D. Fla. 2009) ("Only by cooperating, planning, and conserving can we avoid the situation that gave rise to this litigation.").

7. Tarlock, *supra* note 2, at § 10.25. Interstate Compacts.

8. *Id.*

9. *Id.*

10. *Id.*

11. *Arizona v. California*, 373 U.S. 546 (1936), *but see* Tarlock, *supra* note 2, at § 10.29. Congressional Apportionment ("Other powers such as the general welfare power give Congress the same power.").

12. *Arizona*, 373 U.S. 546 (1963).

13. *See Texas v. New Mexico*, 462 U.S. 544 (1983).

Interstate water disputes have been remedied through all three mechanisms of apportionment for over a century. Common to all interstate water disputes originally adjudicated by the Supreme Court is the apportionment of surface waters—bodies of water that form state boundaries or flow within multiple states.[14] Previously, an unresolved issue in the Supreme Court's equitable apportionment jurisprudence is whether groundwater is subject to allocation between States through the doctrine.[15] The Court has previously held that groundwater pumping can interfere with surface allocations and in dicta stated, "it is likely that equitable apportionment applies to all water resources, including interstate aquifers."[16] In addition, the Court has recognized that groundwater and surface water may be interconnected, and the Court has gone as far as indirectly apportioning groundwater connected to surface streams.[17] During the October 2021 term, Mississippi presented the Court with a conflict opportune for the expansion of its equitable apportionment doctrine concerning groundwater.

This note will examine the Court's recent decision in *Mississippi v. Tennessee*.[18] Part II will present a historical view of how the Supreme Court developed the doctrine of equitable apportionment through its original jurisdiction precedents—including insight into how different approaches to water rights in the Eastern and Western United States led to its doctrinal development. Part III will analyze the Court's holding in *Mississippi v. Tennessee* and provide background on how this litigation unfolded. Part IV will discuss the implications and possible limitations the Court's holding has for the development of equitable apportionment concerning future groundwater conflicts.

14. Tarlock, *supra* note 2, at § 10.6. Equitable Apportionment—Waters Subject to Apportionment.

15. *Mississippi v. Tennessee et al.*, 595 U.S. No. 143, Orig. 4 (2021).

16. Tarlock, *supra* note 2, at § 10.6. Equitable Apportionment—Waters Subject to Apportionment, *citing Kansas v. Colorado*, 514 U.S. 673 (1995) (Upholding the Special Master's finding that wells in Colorado cause material depletions in useable river flows in Kansas).

17. *See Cappaert v. United States*, 426 U.S. 128 (1976); *see also Washington v. Oregon*, 297 U.S. 517 (1936).

18. *Mississippi*, 595 U.S. No. 143, Orig.

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Part II

A. Riparianism vs. Prior Apportionment

Essential to comprehending both past and current Supreme Court equitable apportionment jurisprudence is an understanding of the regional split concerning the recognition of water rights between the Eastern and Western United States.[19] From its founding, the United States developed its geographical reach from East to West. The original thirteen colonies hugged the Atlantic Ocean coastline and fastened their economic success to both the Atlantic Ocean and North America's internal waterways.[20] The earliest supply chains moved goods inland from Atlantic harbors using the abundant waterways of the East through rivers, canals, and streams.[21] These waterways were not only vital for economic sustainability. Inland settlers relied on the river systems to obtain water for agricultural purposes, as a drinking water source, and eventually to power industrial mills to grow local economies during the industrial revolution.[22]

The abundant uses of river systems and other surface waters in the East helped instigate the development of the riparian water rights doctrine. In a riparian system, there is no recognition of water rights without property ownership.[23] Specifically, every individual who owns land along a watercourse possesses the right to use the natural waterflow without diversion.[24] The caveat of riparian water rights is water may not be entirely harvested for use.[25] Any riparian who harvests water for consumption—for either economic or sustenance reasons—must return the water to its natural flow within the watercourse so downstream riparian property owners can exercise their entitled rights without interruption.[26]

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19. Robin Kundis Craig, Robert W. Adler & Noah D. Hall, Water Law 15 (Robert C. Clark et al. eds., 2017).

20. Duncan P. Randall, *Wilmington, North Carolina: The Historical Development of a Port City*, 58 Annals of the Ass'n of Am. Geographers no. 3 (1968) at 441.

21. *Id.*

22. Craig et al., *supra* note 19, at 24.

23. 16 Mary Ellen West, Maryland Law Encyclopedia § 54 (December 2021 update)

24. *Id.*

25. The riparian doctrine has been stated as follows: "The owner of land contiguous to a watercourse is entitled to have the stream flow by or through his land undiminished in quantity and unpolluted in quality, except that any riparian proprietor may make whatever use of the water that is reasonable with respect to the needs of other appropriators." *Colorado v. New Mexico*, 459 U.S. 176, 179 n.4 (1982). [hereinafter *Colorado v. New Mexico (I)*].

26. 16 Mary Ellen West, Maryland Law Encyclopedia § 56 (December 2021 update).

Opposed to the abundant water in the East, as United States territory expanded West, a new form of water rights developed, reflecting the West's vast, arid geographical space and limited water flows.[27] The Western States' high demand for irrigation presented a problem that riparian water rights would not solve.[28] A water rights doctrine in the West required permanent diversion of water coupled with a mechanism to protect those diversions for further use.[29] These issues culminated in the development of the Prior Appropriation Doctrine and most Western states adopted prior appropriation specifically in their state constitutions or blanketly rejected riparianism.[30] The cornerstone of prior appropriation is beneficial usage of appropriated water sources to create an enforceable property right in diverted waters.[31] The property right created is not absolute and rights can be relinquished if the owner of a diversion does not use their apportionment beneficially.[32]

The creation of water rights under the doctrine of prior appropriation occurs as follows. First, Person A identifies an unappropriated water source (200 gallons) they wish to divert for a beneficial use on their property. Person A, as the first user of the unappropriated water, becomes the "senior user" and their diversion for use (100 gallons) becomes an enforceable right. Person B later identifies the same water source and wishes to divert (50 gallons) for irrigation purposes on their property. Person B becomes the "junior user" and may not interfere with the diversion of 100 gallons used by Person A. After Person B establishes use of those fifty gallons, Person A may not later interfere with the fifty-gallon diversion Person B is entitled to even though they are a "senior user." However, if the "senior user"—Person A—ceases to beneficially use their apportionment the "junior user"—Person B—may step in and acquire rights to the portion of Person A's apportionment that is no longer beneficially used.

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27. Craig et al., *supra* note 19, at 39.

28. *See Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 446 (1882).

29. Craig et al., *supra* note 19, at 40.

30. *See* CO Const. art. 16 § 6; *see also* WY Const. art. 8 § 3; *see also* CA Const. art. 10 § 2; *but see Lux v. Haggin*, 10 P. 674 (1886) (holding that water rights are property interests which cannot be disavowed; therefore, creating a water rights system known as the "California Doctrine" recognizing an interplay of riparian and appropriative rights).

31. *See In re Adjudication of the Missouri River Drainage Area*, 55 P.3d 396 (Wyo. 2002) (holding beneficial use rather than diversion is the "touchstone" of the prior appropriation doctrine).

32. CA Const. art. 10 §2; *see also Dick v. Caldwell*, 14 Nev. 167, 170 (1879).

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B. The Development of Equitable Apportionment

In 1907, the Supreme Court adjudicated Kansas and Colorado's conflicting claims to the Arkansas River under its original jurisdiction.[33] Kansas alleged that Colorado diverted water from the Arkansas River Kansas is entitled to as a riparian state.[34] The issue hindering an easy solution of this case was Colorado's adherence to a classic version of prior appropriation, while Kansas recognized a modified version of riparian rights.[35] The Court reasoned that Kansas "recognizes the right of appropriating the water of a stream for the purposes of irrigation, subject to the condition of an equitable division between riparian proprietors," therefore, "she cannot complain if the same rule is administered between herself and a sister state."[36] The Court concluded Colorado had reduced the river's flow into Kansas's borders, and the harm to Kansas was substantially outweighed by the benefit enjoyed by Colorado—who was using the diversion for irrigation purposes.[37] The Court allowed Colorado to continue diverting the Arkansas River for irrigation but noted that if Colorado were to increase their usage Kansas may seek relief to return the usage to an equitable amount between States.[38] The Court's creative decision to seek commonality between two states' recognition of different water rights led *Kansas v. Colorado* to be recognized as the conception of the Supreme Court's equitable apportionment doctrine.

Over a decade later, Wyoming approached the Court to enjoin Colorado's proposed diversion of the Laramie River.[39] This litigation differed from *Kansas v. Colorado*[40] as both Colorado and Wyoming adhere to the water rights system of prior appropriation.[41] The Court declined to follow the balancing approach created in *Kansas* and distinguished Wyoming's challenge on three grounds. First, in *Kansas*, both states recognized separate forms of water rights; here, both States recognize prior appropriation.[42] Second, Colorado's diversion in *Kansas* left the opportunity for the diverted water to potentially return to Kansas; here, the

33. *Kansas v. Colorado*, 206 U.S. 46 (1907).
34. *Id.*
35. *Id.* at 48.
36. *Id.* at 104–05.
37. *Id.* at 113–14.
38. *Id.* at 117.
39. *Wyoming v. Colorado*, 259 U.S. 419 (1922).
40. *Kansas*, 206 U.S. 46.
41. *Wyoming*, 259 U.S. at 458–59.
42. *Id.* at 466.

diversion, insinuated by Colorado, would be collected and stored in a watershed "from which none of the water could find its way into [Wyoming]."[43] Third, Colorado's diversion in *Kansas* "had been practiced for years" rather than a mere proposal for diversion seen in the case at bar.[44] Because Wyoming and Colorado both adhere to the doctrine of prior appropriation, the Court declined to balance competing state laws nor develop new aspects of the new doctrine of equitable apportionment.[45] The Court remedied the competing claims to the Laramie through the standard lens of prior appropriation.[46] The Court limited Colorado's yearly diversion through the Laramie-Poudre Project because Colorado was the junior user of the water source and could not interfere with Wyoming's senior rights.[47] Reliance on prior appropriation instead of equitable apportionment in suits between States that both recognize prior appropriation in their state laws was affirmed in *Washington v. Oregon*.[48]

Most of the Court's equitable apportionment jurisprudence was developed in litigation between Western states. However, a suit between two Eastern states has shown to be vital in the acceptance of equitable apportionment as a legal doctrine. In *New Jersey v. New York*, New Jersey sought to prevent New York from diverting 600-million gallons of water a day from the Delaware River and its tributaries to increase the water supplies of New York City.[49] In its complaint, New Jersey advocated for a strict application of riparianism, claiming entitlement to the undiminished flow of the Delaware River.[50] Even with both States' laws adhering to riparianism, the Court nonetheless stated, "[b]oth States have real and substantial interest in the River that must be reconciled as best they may," signaling a departure from riparianism to solve the conflict.[51] This case was one of the first referred to a Special Master for evidentiary findings—a practice that has since been utilized by the Supreme Court in almost all interstate water disputes.[52] The Special Master found the proposed removal of 600-million gallons a day would not impede the river's navigability,

43. *Id*.
44. *Id*.
45. *Id.* at 470.
46. *Id*.
47. *Id*. at 496.
48. *Washington v. Oregon*, 297 U.S. 517, 521 (1936).
49. *New Jersey v. New York*, 283 U.S. 336 (1931).
50. Id. at 342.
51. *Id*. at 342–43.
52. *E.g., Colorado v. New Mexico (I)*, 459 U.S. 176 (1982).

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would not affect the sanitary conditions of the water, do not effect on the river's industrial and agricultural uses, nor affect other municipalities' water supply.[53] The master did raise concerns that the proposed diversion could impact the region's oyster fisheries but suggested all threats to those fisheries could be avoided by: (1) reducing the proposed diversion to 440-million gallons daily; (2) constructing a new sewage treatment plant; and (3) the releasing of water reservoirs to restore the flow of the lower river and its tributaries.[54] The Court agreed with the Special Master's findings and ordered all three of the suggestions be complied with.[55] The only deviation made by the Court was that water would be released from New York City's reservoirs if river flows fell below a certain threshold.[56] To reconcile their departure from riparian legal doctrine the Court added:

> The diversion herein allowed shall not constitute a prior appropriation and shall not give the State of New York and City of New York any superiority of right over the State of New Jersey and Commonwealth of Pennsylvania in the enjoyment and use of the Delaware River and its tributaries.[57]

After *Washington v. Oregon*,[58] the Court was convinced that the controlling doctrine of prior appropriation should be employed when all States in a lawsuit recognize prior appropriation within their borders. In *Nebraska v. Wyoming*, the Court prescribed the use of prior appropriation principles to resolve the dispute but added new factors not conventionally utilized in prior appropriation jurisprudence.[59] The result was the emergence of the modern doctrine of equitable apportionment. Justice Douglas, writing for the Court, referenced the decision in *Wyoming*[60] and acknowledged that "principle would seem to be equally applicable here."[61] Justice Douglas then elaborated, "[t]hat does not mean that there must be a literal application of the priority rule."[62] Justice Douglas distinguished

53. *New Jersey*, 283 U.S. at 345.
54. *Id*.
55. *Id*. at 345–46.
56. *Id.* at 346.
57. *Id*. at 347.
58. 297 U.S. 517 (1936).
59. *Nebraska v. Wyoming*, 325 U.S. 589 (1945).
60. *Wyoming v. Colorado*, 259 U.S. 419 (1922) (holding that when a dispute is between two states who follow the same water rights doctrine, the Court should apply that doctrine to come to an equitable decision).
61. *Nebraska*, 325 U.S. at 618.
62. *Id.*

Nebraska from *Wyoming*[63] and declined to follow the precedent set in *Washington v. Oregon*,[64] "if an allocation between appropriation States is to be just and equitable, strict adherence to the priority rule may not be possible."[65] Justice Douglas then cited the balancing approach wielded in *Colorado v. Kansas*[66] first utilized in *Kansas v. Colorado*[67]:

> Apportionment calls for the exercise of informed judgment on a consideration of many factors. Priority of appropriation is the guiding principle. But 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, the damage to upstream areas as compared to the benefits of downstream areas if a limitation is imposed on the former—these are all relevant factors.[68]

Justice Douglas declined to institute adherence to prior appropriation citing strict application of the doctrine could lead to established diversions relied on by economies of junior appropriators becoming imperiled.[69] *Nebraska v. Wyoming* remains a landmark in Supreme Court equitable apportionment jurisprudence because of Justice Douglas's near abandonment of utilizing strict prior appropriations in disputes between two prior appropriation states.[70]

Justice Douglas's new approach became reaffirmed over thirty years later when the Supreme Court resolved *Colorado v. New Mexico (I)*.[71] New Mexico, a prior appropriation state, historically appropriated almost the entirety of the Vermejo River, which originates in Colorado.[72] Colorado sought to divert portions of the river, for the first time in its history, for future uses within its borders.[73] A strict application of prior appropriation would result in New Mexico's "entitle[ment] to have their needs fully

63. *Wyoming*, 259 U.S. 419 (1922).
64. 297 U.S. 517 (1936).
65. *Nebraska*, 325 U.S. at 618.
66. *Colorado v. Kansas*, 320 U.S. 383 (1943).
67. *Kansas v. Colorado*, 206 U.S. 46 (1907).
68. *Nebraska*, 325 U.S. at 618.
69. *Id.*
70. *See* William D. Olcott, *Equitable Apportionment: A Judicial Bridge over Troubled Waters*, 66 Neb. L. Rev. (1987).
71. *Colorado v. New Mexico (I)*, 459 U.S. 176 (1982).
72. *Id.* at 177.
73. *Id*. at 177–78.

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satisfied because their appropriation was prior in time" to Colorado's first-ever proposed diversion of the river's waters.[74] The Court charged a Special Master to conduct evidentiary findings, and the Special Master concluded "that strict application of the rule would not permit Colorado any diversion since the entire supply is needed to satisfy the demands of appropriators in New Mexico with senior rights."[75] This result would have been attainable for New Mexico under *Wyoming v. Colorado*.[76] Instead, the Court employed Justice Douglas's approach in *Nebraska v. Wyoming*[77] and held "state law is not controlling. Rather, 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.'"[78] The Special Master suggested Colorado be permitted a diversion of 4,000 acre-feet per year from the river because any injury to New Mexico would be offset by the benefits to Colorado.[79] The Court was not persuaded by this recommendation because "the Special Master did not clearly state the factual findings supporting his reliance on these factors."[80] As a result, the Court remanded for further, more specific, factual findings that would determine an equitable apportionment of the Vermejo River.[81]

Two years later, the Court was reapproached by the Special Master upon completion of specific factual findings. In *Colorado v. New Mexico (II)*,[82] Justice O'Connor articulated an important guideline shaping the modern understanding of equitable apportionment. Now, any state proposing a diversion—or alleging an injury because of another State's use—must meet the standard of clear-and-convincing evidence before the Court will consider an equitable apportionment.[83] This standard "accommodates

74. *Id*. at 179.

75. *Id*. at 180.

76. 259 U.S. 419 (1922) (holding when both states follow the doctrine of prior appropriation the doctrine is applied between interstate borders as it would be intrastate).

77. *Nebraska v. Wyoming*, 325 U.S. 589 (1945).

78. *Colorado v. New Mexico (I)*, 459 U.S. at 184 (1982) (quoting *Connecticut v. Massachusetts*, 282 U.S. at 670–71 (1931)). The Court also defined the doctrine of equitable apportionment 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." *Colorado v. New Mexico (I)*, 459 U.S. 176, 183 (1982) (quoting *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945)).

79. *Colorado v. New Mexico (I)*, 459 U.S. at 189 (1982).

80. *Id.*

81. *Id.* at 190.

82. *Colorado v. New Mexico*, 467 U.S. 310 (1984) [hereinafter *Colorado v. New Mexico (II)*].

83. *Id.* at 312.

society's competing interests in increasing the stability of property rights and in putting resources to their most efficient uses."[84] Before, in *Colorado v. New Mexico (I)*,[85] New Mexico met its initial burden of showing "real or substantive injury," as a result, "the burden shifted on remand to Colorado."[86] The Special Master suggested "more careful water administration in New Mexico would alleviate shortages."[87] These shortages were cited by New Mexico as to why their full appropriation of the Vermejo was necessary. Instead of following the Special Master's findings, the Court, besides a dissenting Justice Stevens, disagreed Colorado had met their evidentiary burden to support Colorado's claim that reasonable conservation efforts by New Mexico would mitigate the injury of the proposed diversion.[88]

The Court also asked the Special Master on remand to compare the benefits and harms potentially resulting from the proposed diversion.[89] The Special Master concluded the diversion would "at a minimum alleviate existing water shortages in Colorado," therefore any injury to New Mexico would be "insubstantial" because conservation efforts in New Mexico could "offset the entire diversion."[90] The Court again disagreed. The Court held Colorado had not presented any evidence supporting the prediction of future benefits of the proposed diversion.[91] In the Court's view, all Colorado had shown was "a steel corporation wants to take water for some unidentified use in the future."[92] On the contrary, New Mexico had identified future harms the diversion would create.[93] The Court concluded Colorado did not meet its evidentiary burden with "generalizations about unidentified conservation measures and unstudied speculation about future uses" and as a result, the Court sustained New Mexico's objections to the Special Master's report and dismissed the case.[94] Colorado was not entitled to divert water from the Vermejo, and New Mexico continued to enjoy the full appropriations it had historically diverted.[95]

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84. *Id*. at 316.
85. *Colorado v. New Mexico (I)*, 459 U.S. 176 (1982).
86. *Colorado v. New Mexico (II)*, at 317.
87. *Id*. at 318.
88. *Id*. at 319–20.
89. *Id*. at 321.
90. *Id.*
91. *Id.* at 321–22.
92. *Id*.
93. *Id*. at 322.
94. *Id.* at 324.
95. *Id*.

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Justice Stevens was the lone dissenter in *Colorado v. New Mexico (II)*. According to Justice Stevens, Colorado's consistent claim that New Mexico's use of the Vermejo had been "wasteful and inefficient" should have persuaded the majority to conclude there was "a significant amount of waste" when the litigation began.[96] Justice Stevens pointed to the Special Master's report concluding such waste only occurred in the Vermejo Conservatory District, and this district was the only New Mexico user identified whose water supply would face injury because of Colorado's proposed diversion.[97] A consideration of "all relevant factors" would have led Justice Stevens to equitably apportion the Vermejo River and allow Colorado's diversion of 4,000 acre-feet per year.[98]

Part III: Mississippi v. Tennessee et al.

In 2014, Mississippi filed suit against Tennessee, the City of Memphis, and Memphis Light, Gas & Water Division ("MLGW") to enjoin the defendants from pumping groundwater out of the Middle Claiborne Aquifer.[99] Mississippi alleged that Tennessee and her co-defendants extracted groundwater out of the aquifer, and the groundwater is collected through an invasion of Mississippi's sovereign territory.[100] Mississippi also contends the limited natural resource—groundwater—taken originated in Mississippi, was naturally stored in Mississippi, and under natural conditions would not leave Mississippi's groundwater storage.[101] In response, Tennessee asserts that Mississippi has no rightful claim to the groundwater, therefore, cannot enforce the rights asserted against Tennessee.[102] Tennessee presented the Middle Claiborne Aquifer as an interstate resource stating the only available remedy is the equitable apportionment of the aquifer.[103] At the outset of litigation, the doctrine of

96. *Id.* at 324 (Stevens, J., dissenting).

97. *Id.* at 327 (Stevens, J., dissenting).

98. *Id*. at 329 (Stevens, J., dissenting).

99. Mississippi's Motion for Leave to File Complaint in Original Action at 3–5, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

100. *Id*. at 5.

101. *Id.*

102. Memphis, MLGW Brief in Opposition for Leave to File Complaint if Original Action at 2, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

103. *Id*. at 6.

equitable apportionment had never been applied to groundwater, presenting an opportunity for the Court to expand its jurisprudence.[104]

In 2015, the Court referred the case to Special Master the Honorable Eugene E. Siler, Jr. of London, Kentucky.[105] After five years, the Special Master submitted his findings to the Court for review.[106] The Special Master recommended the groundwater in the Middle Claiborne Aquifer be treated as an interstate resource, and such classification leaves Mississippi with only one remedy: equitable apportionment.[107] This conclusion was based on four findings: (1) the Middle Claiborne Aquifer and its groundwater "is a single hydrogeological unit underneath several states"; (2) Tennessee's pumping of groundwater affected groundwater underneath Mississippi, "showing that the aquifer is an interconnected resource"; (3) the natural flow patterns of the aquifer "indicate that the water inside the Aquifer would ultimately—even if slowly—flow across Mississippi's borders"; and (4) the groundwater "inside the Aquifer interacts with, and discharges into, interstate surface waters."[108] The Special Master recommended that because Mississippi did not seek equitable apportionment, the Court should dismiss Mississippi's claim with leave to amend based on a theory of equitable apportionment.[109] The Special Master stated that the doctrine of equitable apportionment's strength is its ability to apply to unique situations, and even though application to groundwater would be challenging, "difficulty alone cannot dictate the use of a different doctrine."[110]

On the first day of the Supreme Court's October 2021 term, the Court heard oral arguments from both Mississippi and Tennessee, as well as arguments from the Solicitor General's office on behalf of the United States. The Justices presented a livelier bench than usual after their lengthy-term of phoned in oral arguments, presenting many hypotheticals, though

104. *But see, e.g.*, *Kansas v. Colorado*, 514 U.S. 673 (1995) (upholding the Special Master's finding that wells in Colorado cause material depletions in useable river flows in Kansas); *Cappaert v. United States*, 426 U.S. 128 (1976) (holding that the United States can protect both ground and surface water from diversion by the State of Nevada).

105. Oath of the Special Master, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

106. Mississippi v. Tennessee Report of the Special Master, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

107. *Id*. at 2.

108. *Id*. at 11.

109. *Id.* at 32.

110. *Id*. at 28.

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Justice Alito "was virtually silent."[111] Aside from both State advocates, Frederick Liu, assistant to the U.S. Solicitor General, made a clear case of equitable apportionment's application to groundwater.[112] Liu identified two characteristics of the Middle Claiborne Aquifer, subjecting the aquifer to equitable apportionment.[113] First, the groundwater moves naturally across state lines. Second, the presence of Tennessee's use of the aquifer inside its state borders affect the presence of groundwater in another state.[114]

The Court reached a decision in November of 2021. Chief Justice Roberts, writing for a unanimous Court, adopted the recommendation of the Special Master that the waters of the Middle Claiborne Aquifer are subject to equitable apportionment.[115] The Court dismissed Mississippi's complaint, as the Special Master recommended, but diverted from the Special Master and held Mississippi is not granted leave to amend to seek equitable apportionment of the aquifer's groundwater.[116] The Court's decision in *Mississippi v. Tennessee et al.* broke new and important ground for the doctrine of equitable apportionment. The Court's decision is well-grounded in the Court's equitable apportionment legal principles that govern the apportionment of interstate resources.

First, proper identification of the aquifer's "multistate character"[117] allowed the Court to begin consideration "of all relevant factors"[118] because the Court has never applied equitable apportionment to intra-boundary resources.[119] There was evidence presented by both parties that the Middle Claiborne Aquifer is transboundary and the scientific discovery employed by the Special Master in his report allowed the Court to base the first finding of its analysis—the aquifer's multi-state character—not just on legal precedent but on science too.[120] The multi-state character of the

111. Robin Craig, *Justices throw cold water on Mississippi's claim to groundwater*, SCOTUSblog (Oct. 6, 2021, 10:43 AM).

112. Oral Arguments at 51:21, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021), www.oyez.org/cases/2021/143-orig.

113. Oral Arguments at 53:17, *Mississippi v. Tennessee et al*., 595 U.S. No 143, Orig. (2021), www.oyez.org/cases/2021/143-orig.

114. *Id*.

115. *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. 9 (2021).

116. *Mississippi*, 595 U.S. at 11.

117. *Id*. at 8.

118. *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945).

119. *See Colorado v. New Mexico (I)*, 459 U.S. 183 (1982); *see also Virginia v. Maryland*, 540 U.S. 56, 74, n.9 (2003).

120. Mississippi v. Tennessee Report of the Special Master at 20, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

aquifer is essential for the application of equitable apportionment, but it is not alone dispositive of proper application.

The resource itself, groundwater, must flow organically between the two States who have competing claims to the resource for equitable apportionment to apply.[121] Groundwater percolates between rock formations lying below the Earth's surface through interconnected pore spaces.[122] The permeability of various pore spaces, depending on the sediment composition of the aquifer, fluctuates, and the convoluted nature of interconnected pore spaces presents extreme frictional resistance to the movement of groundwater.[123] This fact was raised by Mississippi in an argument against the application of equitable apportionment, however, the Court found the minimal flow of "one to two inches per day" amounted to over ten billion gallons of water a year in flow between Mississippi and Tennessee's respective boundaries.[124] The Court held the minimal flow rate "does not place the aquifer beyond equitable apportionment."[125]

Along with the competing resources' multi-state character and organic transboundary flow, a key to prior equitable apportionment decisions is the actions of one state affecting the availability of the competed-for resource within the boundaries of another.[126] Here, the Court held that Tennessee's pumping of groundwater formed a "cone of depression" inside the aquifer that extended into northern Mississippi.[127] Mississippi alleged in its original complaint the cone of depression has caused Mississippi's groundwater storage and pressure inside the aquifer to be depleted.[128] Mississippi further alleged the extension of the cone of depression resulted in Tennessee taking "tens of millions of gallons of groundwater" from Mississippi's portion of the aquifer each day.[129] Consulting precedent, the Court concluded "such

121. *Kansas v. Colorado*, 206 U.S. 46, 98 (1907); *see also Idaho ex rel. Evans v. Oregon*, 462 U.S. 1017, 1024 (1983) (applying the doctrine of equitable apportionment to the flowing resource of Chinook salmon and steelhead trout).

122. R. W. Buddemeier, J. A. Schloss, Groundwater Storage and Flow, https://www.kgs.ku.edu/HighPlains/atlas/apgengw.htm (Last visited Jan. 19, 2022).

123. Pamela Vaughn, *A Basic Study in Groundwater and the Hydrogeological Characteristics of Principal Aquifers in the United States*, U. Fla. Master of Science Program at 21 (2015) https://soils.ifas.ufl.edu/media/soilsifasufledu/sws-main-site/pdf/technical-papers/Vaughn_Pamela_Immediate_Release.pdf.

124. *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. 8 (2021).

125. *Id.*

126. *See Kansas v. Colorado*, 206 U.S. 46, 97 (1907).

127. *Mississippi*, 595 U.S. at 9.

128. *Id.*

129. *Id.*

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interstate effects are a hallmark of our equitable apportionment cases."[130] The identification of the aquifer as a transboundary resource, with naturally flowing groundwater between State boundaries, and with interstate effects of a state's action concerning the disputed groundwater allowed the Court to hold that the Middle Claiborne Aquifer is "subject to the judicial remedy of equitable apportionment."[131]

After proper identification that groundwater is subject to equitable apportionment, the Court turned to Mississippi's argument of sovereign ownership of the groundwater that resides beneath the State's borders and therefore is beyond the reach of equitable apportionment.[132] The Court agreed that Mississippi retains sovereign control within its borders but "such jurisdiction does not confer unfettered 'ownership or control' of flowing interstate waters themselves."[133] The Court relied on *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*,[134] in support of this conclusion, which held a State may not retain undivided possession and control of interstate waters that abide within their borders.[135] The Court further recognized that its past decisions have predominately concerned interstate surface waters but "when a water resource is shared between several States, each one 'has an interest which should be respected by the other.'"[136] If the Court had found persuasive Mississippi's sovereign ownership argument Mississippi would be permitted to obstruct the flow of groundwater to other States "contrary to [the Court's] equitable apportionment jurisprudence."[137]

Mississippi unfaithfully relied on the holding of *Tarrant Regional Water Dist. v. Herrmann*[138] in support of its sovereignty arguments because in *Tarrant Regional* the Court was not apportioning a water source.[139] Instead, *Tarrant Regional* presented questions requiring the Court to interpret an interstate compact previously agreed to between States.[140] *Tarrant Regional* did not stand for the comprehensive principle restricting States from entering another's territory to forcible extract water resources; its holding

130. *Id*.
131. *Id.*
132. *Id*.
133. *Id*. (citing *Kansas v. Colorado*, 206 U.S. 46, 93 (1907)).
134. 304 U.S. 92 (1938).
135. *Mississippi*, 595 U.S. at 9.
136. *Id*. at 9–10 (citing *Wyoming v. Colorado*, 259 U.S. 419, 466 (1922)).
137. *Id.* at 10.
138. 569 U.S. 614 (2013).
139. *Mississippi*, 595 U.S. at 10.
140. *Id.*

merely concerned interstate compact implementation.[141] Had *Tarrant Regional* implicated such a principle, it would be of no service to Mississippi in this case because Mississippi's borders have not been penetrated by Tennessee's actions.[142] Dissolution of this argument along with a determination of groundwater being subject to equitable apportionment culminated in Mississippi's complaint and Tennessee being dismissed.[143]

The Special Master recommended the Court grant Mississippi leave to amend its complaint and seek equitable apportionment of the Middle Claiborne Aquifer.[144] The Court declined to grant leave, citing Mississippi's complete disinterest in equitable apportionment from the outset of litigation.[145] Mississippi's unresponsiveness to equitable apportionment theories was not the only reason for the Court's refusal of leave to amend. The Court also declined to grant leave because an exercise of equitable apportionment theories with respect to the Middle Claiborne Aquifer would require consideration of more extensive evidence than was in front of the Court in this case.[146] The Special Master was not charged with gathering evidence leading to an actual apportionment, he was tasked with gathering evidence about if equitable apportionment could be used. Just as more evidence would be required to apportion the waters of the aquifer, the Court noted an equitable apportionment of the Middle Claiborne Aquifer "might require the joinder of additional parties . . . as Mississippi and Tennessee are not the only States that rely" on the aquifer's groundwater as a resource.[147] The Court left a final reminder for Mississippi if it chose to seek equitable apportionment in the future, "its complaint would be subject to our longstanding rule," which is a State seeking equitable apportionment must meet the evidentiary burden of clear-and-convincing evidence of a real and substantive injury to obtain original jurisdiction for apportionment.[148]

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141. *Id.*

142. *Id*.

143. *Id*. at 10–11.

144. Mississippi v. Tennessee Report of the Special Master at 32, *Mississippi v. Tennessee et al*., 595 U.S. No. 143, Orig. (2021).

145. *Mississippi*, 595 U.S. No. at 11.

146. *Id.*

147. *Id*.

148. *Id*. at 12; *see Colorado v. New Mexico (II)*, 467 U.S. 310, 316 (1984).

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Part IV: Possible Solutions to Groundwater's Complex Nature

The holding of *Mississippi v. Tennessee* is a watershed moment that will lead to greater beneficial use of the United States' groundwater reservoirs. Groundwater is a crucial natural resource currently supplying a source of drinking water for millions of citizens, is the primary supply of drinking water for almost all rural populations, is used daily to support U.S. agriculture, and has shown the play an intrinsic role in supporting the health and flow of riparian, aquatic, and wetland ecosystems.[149] Subjecting groundwater to equitable apportionment was only the first step in solving the problems groundwater and interstate aquifers present for equitable apportionment. More developments will only arise with the presentation of the first *actual* equitable apportionment of groundwater to the Supreme Court and will be taxing both scientifically and legally.[150]

First and foremost, aquifers are highly complex hydrological formations. There are currently sixty-two principal aquifers identified in the United States with a range of lithologies.[151] Each lithology has different hydrogeologic features, and those hydrogeologic features present unique challenges to maximize useable groundwater harvesting.[152] Wide-ranging circumstances of each principal aquifer brought for apportionment must be probed, dissected, and put into distinct categories so the Court can deliver an equitable solution to all interested parties. This process will most likely result in a role expansion of the Special Master, who is already heavily relied upon by the Court. The potential fact-finding increase charged to the Special Master could result in the prolonging of equitable apportionment cases. As a result, equitable apportionment cases would require more judicial resources and result in expanded wait time for States. To gain standing a State must have requisitely shown substantial injury,[153] with the increased wait times, a State who has met this burden will continue to experience injury until a decision is reached. In a world where resources continue to be scarce and valuable, is this an equitable result? The evidence

149. Devin L. Galloway et al., U.S. Geological Survey Circular No. 1247, *Evolving Issues and Practices in Maintaining Ground-Water Resources*: *Case Studies on the Role of Science* 1 (2003).

150. Emphasis added.

151. Pamela Vaughn, *A Basic Study in Groundwater and the Hydrogeological Characteristics of Principal Aquifers in the United States*, U. Fla. Master of Science Program at 37 (2015) https://soils.ifas.ufl.edu/media/soilsifasufledu/sws-main-site/pdf/technical-papers/Vaughn_Pamela_Immediate_Release.pdf.

152. *Id.* at 37.

153. *See Colorado v. New Mexico (II)*, 467 U.S. 310 (1984).

presented, the conclusory findings and Special Master recommendations of the first apportionment of an aquifer by the Court will be one to monitor as it will be informative to later parties and to the Court itself.

One aspect of the Special Master's fact-finding that will become complex in groundwater cases will be the measurement of the resource inside each aquifer formation presented for apportionment. The exact amount of groundwater inside aquifers is notoriously hard to calculate because of the aquifer's natural propensity to fluctuate.[154] To measure the volume of a single aquifer requires a consideration of many scientific factors that only produces a volume or mass estimation.[155] These factors can be but are not limited to groundwater recharge and discharge, groundwater flow, porosity, hydraulic gradient, lithology, permeability, and hydraulic conductivity.[156] The measurement of these characteristics can only be reasonably estimated, and approximate calculations of these factors can be found using multiple formulas, which is further complicated by the factor's inherent interconnectedness.[157] If the volume of an aquifer can only be reasonably estimated, how will the Court manage an equitable apportionment considering these scientific limitations and the evidentiary burden necessary to compel an equitable apportionment?[158]

Given all the challenges that face apportionment of groundwater, states may find a preferable remedy in settling competing claims to groundwater of interstate aquifers through negotiation of an interstate compact or in congressional apportionment. Interstate compacts currently govern the bulk of interstate surface water allocations in the United States.[159] The Court in 1909 proffered judicial acceptance to interstate compacts in *Washington v. Oregon*, after appreciating the difficulties of apportionment.[160] When States do enter into a compact, the Compacts Clause of the United States

154. *See* Vaughn, *supra* note 151 at 21.

155. *Id*.

156. *Id.*

157. *See id.*

158. *See Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945) ("Apportionment calls for the exercise of an informed judgment on a consideration of many factors . . . They indicate the nature of the problem of apportionment and the delicate adjustment of interest which must be made.").

159. Noah D. Hall, *Interstate Water Compacts and Climate Change Adaptation*, 5 Envtl. & Energy L. & Pol'y J. 237, 239–40 (2010).

160. 214 U.S. 205, 218 (1909) ("We submit to the States of Washington and Oregon whether it will not be wise for them to pursue the same course, and, with the consent of Congress, through the aid of commissioners, adjust, as far as possible, the present appropriate boundaries between the two States and their respective jurisdictions.").

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Constitution mandates congressional ratification before the terms of the agreement take effect.[161] States have sought negotiation of interstate compacts because these agreements "allow [states] to jointly provide for the efficient use and equitable apportionment of the water from shared rivers while promoting 'interstate comity.'"[162] Interstate compacts also have been praised by the judiciary because negotiations allow for the exchange of more information that ensures a fair sharing of resources.[163] However, not all compact negotiations and implementation plans go smoothly. If negotiations fail before the ratification of an agreement, both States will return to their original positions. On the other hand, if an interstate compact is acceptable to both parties and ratified by Congress, its terms become binding federal law on both the States.[164] As binding federal law, the Federal judiciary possesses jurisdiction to resolve implementation issues and State claims of breach of contract.[165]

The potential of interstate compact negotiations to support mass exchanges of information, including scientific, between States could be essential concerning interstate aquifers because of their complex hydrological properties. Congressional ratification of these compacts would serve as a safeguard for negotiating states because Congress would ensure the fair sharing of groundwater as a limited resource while simultaneously opening judicial review of implementation to hold all sides accountable to the agreed-upon terms. Agreed upon groundwater compacts would further prevent rapid depletion of groundwater storage, which has been a rising concern since 1960.[166]

If the creating an interstate compact is not attainable, Congress can sidestep any state involvement and directly apportion interstate waters. This authority is granted to Congress through the Commerce Clause and was

161. U.S. Const. art. I, § 10, cl. 3.

162. Edella Schlager & Tanya Heikkila, *Resolving Water Conflicts: A Comparative Analysis of Interstate River Compacts*, 37 Pol'y Stud. J. 367, 369 (2009).

163. *See In re Tri-State Water Rights Litigation*, 639 F. Supp. 2d 1308, 1355 (M.D. Fla. 2009) ("Only by cooperating, planning, and conserving can we avoid the situation that gave rise to this litigation.").

164. *See* Charles T. DuMars & Stephen Curtice, *Interstate Compacts Establishing State Entitlements to Water: An Essential Part of the Water Planning Process*, 64 Okla. L. Rev. 515, 528 (2012).

165. *Id.*

166. Frank J. Trelease, *State Water and State Lines: Commerce in Water Resources*, 56 U. Colo. L. Rev. 347, 349 (1985); Vaughn, *supra* note 151 at 2 ("From 1960 and after 2000 groundwater depletion rates increased to about 24 km3/year (6.3 billion gallons per year)").

recognized for the first and only time in *Arizona v. California*.[167] Giving rise to the litigation in *Arizona* was Congress's passing of the Boulder Canyon Project Act ("BCPA").[168] The BCPA was a public works project and statutory apportionment of the Colorado River and its tributaries among the seven Western states the river's waters flow through.[169] The Colorado River presented challenges across the Southwest, "[t]he natural flow of the Colorado was too erratic . . . the engineering and economic hurdles too great . . . spring flood due to melting snows and seasonal storms were a recurring menace."[170] The physical properties of the river and its waters led to the involvement of the U.S. government to construct the required infrastructure to "control floods and store river waters for irrigation."[171]

The federal undertaking would be tarnished in the wake of state fears that waters made available for apportionment would be lost to others for a variety of reasons.[172] Before the development of the public works project could begin, Congress granted the seven States the authority to enter compact negotiations for the apportionment of the Colorado River's waters.[173] Negotiations resulted in an agreement of the Colorado River Compact, yet Arizona never accepted the agreement, making the fruits of State negotiation valueless and further stalling the construction of a dam.[174] Dialogue amongst the States labored for years, and during that time, members of Congress sought to pass legislation in hopes of propelling the dam construction forward.[175] In 1928, the Boulder Canyon Project Act was enacted, authorizing the Secretary of the Interior "to construct, operate and maintain a dam and other works in order to control floods, improve navigation, regulate the river's flow, store and distribute water for reclamation and other beneficial uses."[176] The Act further created a "complete statutory apportionment intended to put an end to the long-standing dispute over Colorado River waters."[177] Congress became wary of California, Arizona, and Nevada—the lower basin states—to apportion the

167. *Arizona v. California*, 373 U.S. 546 (1936).
168. *Id.*
169. *Id*. at 560.
170. *Id*. at 553.
171. *Id*. at 555.
172. *Id*.
173. *Id.* at 556–57.
174. *Id.* at 557.
175. *Id.*
176. *Id.* at 560.
177. *Id.*

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water amongst themselves and so provided its own method "for a complete apportionment of the mainstream water among" those three states by the Secretary of the Interior.[178]

The passing of the Boulder Canyon Project Act produced one of the United States' largest infrastructure accomplishments, the Hoover Dam.[179] Construction of the dam put over 16,000 Americans to work amid the Great Depression and its completion symbolized a beacon of hope for the future.[180] The BCPA is the first and only evidence of a Congressional apportionment of interstate waters. If Congressional apportionment can lead to a man-made wonder of the world, why can't it solve the country's emerging plethora of groundwater disputes?

Conclusion

The Supreme Court's holding in *Mississippi v. Tennessee* is a sweeping development in the Court's equitable apportionment jurisprudence as groundwater is now subject to equitable apportionment among the States. The Court's holding is correct and well-grounded in its equitable apportionment legal principles. It was reasonable to decline Mississippi's leave to amend because of their continued rejection of equitable apportionment theories and because the potential joinder of additional States is necessary as the Middle Claiborne Aquifer stretches across six states' boundaries. The Supreme Court has now opened the floodgates to what could potentially be numerous equitable apportionment claims, given the large number of aquifers in the United States with transboundary sprawl. Although the doctrine of equitable apportionment with respect to groundwater has not been tested through litigation, the Court may find equitable apportionment of aquifers precarious because of their precarious characteristics compared to surface waters. The presence of alternative dispute resolutions of interstate compacts and Congressional apportionment may offer a more comprehensive sharing of interstate groundwater resources. This watershed ruling leaves more to be desired, and States will have to test the waters themselves or wait until additional developments are made concerning equitable apportionments of groundwater in interstate aquifers.

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178. *Id.* at 575.

179. National Archives, Boulder Canyon Project Act (1928) (last reviewed February 8, 2022), https://www.archives.gov/milestone-documents/boulder-canyon-project-act.

180. *Id.*