No. 143, Original

In the Supreme Court of the United States

STATE OF MISSISSIPPI, PLAINTIFF

v.

STATE OF TENNESSEE, CITY OF MEMPHIS, TENNESSEE, AND MEMPHIS LIGHT, GAS & WATER DIVISION

ON MOTION FOR LEAVE TO FILE A BILL OF COMPLAINT

BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

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This brief is filed in response to the order of this Court inviting the Solicitor General to express the views of the United States. In the view of the United States, Mississippi's motion for leave to file a bill of complaint should be denied.

STATEMENT

The State of Mississippi seeks leave to file a bill of complaint against the State of Tennessee, the City of Memphis, and Memphis Light, Gas & Water Division (MLGW) (defendants) for wrongful conversion of groundwater from the Sparta-Memphis Aquifer (Aquifer). Mississippi alleges that groundwater pumping by MLGW in Tennessee has depleted water that is subject to Mississippi's ownership and control because, absent the effects of the pumping, the water would remain in the Aquifer beneath Mississippi's territory. Mississippi seeks declaratory and injunctive relief, as well as over $600 million in damages.

Defendants contend that, as this Court implied in its order denying Mississippi leave to file a similar complaint against defendants in 2010, see *Mississippi* v. *City of Memphis*, 559 U.S. 901, Mississippi has no legally cognizable claim for damages arising from Tennessee's use of the water in the Aquifer until there has been an equitable apportionment of that water—relief that Mississippi affirmatively disclaims here. Defendants further contend that Mississippi's claim of ownership of the groundwater at issue has already been rejected by the Fifth Circuit in *Hood* v. *City of Memphis*, 570 F.3d 625 (2009), cert. denied, 559 U.S. 904 (2010), and that Mississippi's claims are therefore barred under the doctrine of issue preclusion.

1. The Sparta-Memphis Aquifer is an expansive, water-bearing sand formation within the Mississippi embayment.[1] Tony P. Schrader, *Potentiometric Surface in the Sparta-Memphis Aquifer of the Mississippi Embayment, Spring 2007, Scientific Investigations Map 3014*, at 1 (2008) (Schrader sheet 1), http://pubs.usgs.gov/sim/3014/pdf/sim3014.pdf. The Aquifer extends beneath a surface area of approximately 70,000 square miles, including parts of Louisiana, Mississippi, Tennessee, Alabama, Arkansas, Missouri, Kentucky, and Illinois. Schrader sheet 1; United States Geological Survey (USGS), *The Sparta Aquifer: A Sustainable Water Resource?, Fact Sheet FS-111-02*, at 1 (2002) (*USGS Fact Sheet*), http://pubs.usgs.gov/fs/fs-111-02/fs-111-02.pdf; Brian R. Clark et al., *Groundwater Availability of the Mississippi Embayment,*

[1] An embayment is "[a] downwarped area containing stratified rocks, either sedimentary or volcanic or both, that extends into a terrain of other rocks." Klaus K.E. Neuendorf et al., *Glossary of Geology* 207 (5th ed. 2005).

USGS Professional Paper 1785, at 5 (2011) (Clark), http://pubs.usgs.gov/pp/1785/pdf/PP1785.pdf.

Underneath northwest Mississippi and southwest Tennessee, the Aquifer consists of Sparta Sand and the equivalent[2] Memphis Sand, which are unconsolidated sand formations (*i.e.*, not consolidated into sandstone) interstratified with clay and silt. Schrader sheet 1; *USGS Fact Sheet* 1; Compl. App. 25a. Sparta Sand and Memphis Sand are local names for what is essentially one sand layer that forms part of the middle Claiborne aquifer in the Claiborne Group, a regional geologic aquifer unit. Schrader sheet 1; *USGS Fact Sheet* 1; see Clark 1, 10; *id.* at 11 fig. 6 (showing Middle Claiborne aquifer); *id.* at 12 tbl. 1 (showing that Sparta Sand and Memphis Sand are part of the Middle Claiborne aquifer). USGS has referred to the water-permeable units of the Sparta Sand and the Memphis Sand as the Sparta-Memphis Aquifer. Schrader sheet 1. Water levels in the Sparta Sand generally correlate to water levels in the Memphis Sand, and the USGS considers those equivalent formations to be one hydrologic unit. *Ibid.*

On the west and east sides of the Mississippi embayment, the Aquifer outcrops at the surface, then becomes confined by an overlying geologic unit as it dips from both sides toward its greatest depth approximately below the Mississippi River, forming a U-like shape. *USGS Fact Sheet* 1 fig. 2; Schrader sheet 1; Clark 11 fig. 6. The depth of the Aquifer also increases southward toward the Gulf of Mexico, where it is buried deep below the ground. Clark 1. The Aquifer

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[2] Geologic formations are said to be "equivalent" if they are "contemporaneous in time of formation or deposition." Neuendorf, note 1, *supra*, at 216.

is recharged with rainfall at the outcrop areas. That water flows down-gradient through the Aquifer, and in "predevelopment" conditions it would discharge upward at natural discharge points into overlying aquifers. *USGS Fact Sheet* 1-2 & fig. 2; Clark 11 fig. 6, 14-15. As the groundwater in the Aquifer has been developed, however, pumping has created "cones of depression" in some areas that have resulted in a change in the direction of net discharge so that the postdevelopment flow is now downward from overlying aquifers. Clark 17, 19 fig. 10, 20 fig. 11. In the area of Memphis, the Aquifer outcrops to the east of Memphis in western Tennessee, and the water flows down-gradient into the Aquifer in a generally westward direction. *USGS Fact Sheet* 1 figs. 1 & 2; Clark 11 fig. 6, 19 fig. 10.

According to a USGS model, net horizontal flow within the middle Claiborne aquifer (as opposed to vertical flow from overlying and underlying aquifers) accounts for 48.7% of the groundwater inflow to the Memphis Sand in the Memphis area. See Clark 31 fig. 20. Net horizontal flow accounted for 43.2% of the groundwater inflow to the same area of the Memphis Sand under predevelopment conditions in 1870. *Id.* at 30 fig. 19; see Compl. App. 70a (modeling some natural flow from northwest Mississippi northwestward into southwest Tennessee in 1886); Gerald K. Moore, *Geology and Hydrology of the Claiborne Group in Western Tennessee* F28 (1965) (Moore), http://pubs.usgs.gov/wsp/1809f/report.pdf (stating that, in 1965, 25 million gallons of water per day flowed from Mississippi into Shelby County, Tennessee, through the Memphis Sand (referred to in the study as the "500-foot" sand)).

2. The City of Memphis began withdrawing water from the Aquifer for municipal use in 1886, Clark 17, and the Aquifer has been used to supply drinking water throughout the region for more than a century. *USGS Fact Sheet* 2; Clark 15, 17. In more recent years, water from the Aquifer has been increasingly used for irrigation and industrial purposes. *USGS Fact Sheet* 2; Clark 15. Water levels in the Aquifer beneath the Memphis area have dropped over the last century due to groundwater pumping. Schrader sheet 1; Clark 28-32. That reduction in groundwater levels has created a large differential in the water pressure between the section of the Aquifer underlying Memphis and the sections underlying surrounding areas of Tennessee, Mississippi, and Arkansas. Schrader sheet 1; Compl. App. 130a.

3. a. In 2005, Mississippi, through its Attorney General, brought an action for trespass and wrongful conversion against Memphis and MLGW (but not Tennessee) in the United States District Court for the Northern District of Mississippi. *Hood* v. *City of Memphis*, No. 2:05CV32-D-B Compl. (N.D. Miss. Feb. 2, 2005). In its complaint, Mississippi alleged that some portion of the groundwater that is pumped out of the Aquifer by MLGW is Mississippi's sovereign property, and that Mississippi must therefore be compensated. Tenn. App. 12a.

The district court dismissed the action. Tenn. App. 1a-10a. The court concluded that, absent an equitable apportionment between Mississippi and Tennessee of the water in the Aquifer, the court could not evaluate whether Memphis and MLGW had pumped water belonging to Mississippi. *Id.* at 4a-5a. The court explained that the relief requested by Mississippi would

require the court to "engag[e] in a *de facto* apportionment of the * * * [A]quifer," that such an apportionment would require the joinder of the State of Tennessee as a defendant, and that such a dispute would fall within the exclusive original jurisdiction of this Court. *Id.* at 5a, 7a (citing 28 U.S.C. 1251).

b. The court of appeals affirmed. Tenn. App. 11a-25a. The court held that the action could not proceed in Tennessee's absence because the Aquifer is an "interstate water source" that would have to be apportioned before any State had a judicially enforceable right to a particular share of water within it. *Id.* at 17a-20a. The court explained that "[t]he Aquifer flows, if slowly, under several states," and in that respect "it is indistinguishable from a lake bordered by multiple states or from a river bordering several states depending upon it for water." *Id.* at 18a. The court further explained that Tennessee could not be joined without depriving the district court of subject matter jurisdiction, because suits between States fall within this Court's exclusive original jurisdiction. *Id.* at 23a. This Court denied a petition for a writ of certiorari. 559 U.S. 904 (2010).

c. Simultaneously with filing its petition for a writ of certiorari, Mississippi filed a motion in this Court for leave to file a bill of complaint against Tennessee, the City of Memphis, and MLGW, seeking approximately $1 billion in damages. See No. 139, Orig. Compl. para. 5. Mississippi alleged that Tennessee had committed trespass and conversion because MLGW's pumping had the effect of taking groundwater from beneath Mississippi. *Id.* para. 1; No. 139, Orig., Br. in Support of Mot. 13-14 & n.1. Mississippi contended that an equitable apportionment was un-

necessary because there had already been an "inherent apportionment" of the groundwater in the Aquifer upon Mississippi's admission to the Union. No. 139, Orig. Compl. para. 5. Mississippi requested an equitable apportionment as an alternative form of relief, "*if and only if* th[e] Court determines that Mississippi does not own and control the ground water resources within its borders." *Ibid.*

This Court denied Mississippi's motion for leave to file a complaint. *City of Memphis*, 559 U.S. at 901. The Court's order stated:

> Motion for leave to file a bill of complaint denied without prejudice. See *Virginia* v. *Maryland*, 540 U.S. 56, 74, n. 9 (2003); *Colorado* v. *New Mexico*, 459 U.S. 176, 187, n. 13 (1982).

Id. at 901-902. Footnote 9 in *Virginia* v. *Maryland* states that "[f]ederal common law governs interstate bodies of water, ensuring that the water is equitably apportioned between the States and that neither State harms the other's interest in the river." 540 U.S. at 74 n.9. Footnote 13 in *Colorado* v. *New Mexico* states that "a State seeking to prevent or enjoin a diversion by another State bears the burden of proving that the diversion will cause it real or substantial injury or damage." 459 U.S. at 187 n.13 (citation and internal quotation marks omitted).

4. a. Four years after the Court denied Mississippi's motion for leave to file a bill of complaint without prejudice, Mississippi has again sought leave to file a bill of complaint in this Court against Tennessee, Memphis, and MLGW. Mississippi alleges that MLGW has developed a groundwater pumping and distribution system consisting of "more than 170 wells in ten well fields pumping over 140 million gallons of

groundwater daily for sale to MLGW's customers." Compl. para. 20. Mississippi alleges that much of this pumping occurs at three well fields that are near the Tennessee-Mississippi border, across from DeSoto County, Mississippi. *Id.* para. 19; see Tenn. App. 12a.

Mississippi alleges that the groundwater at issue was "naturally collected and stored" in the Sparta Sand in Mississippi, and that "[u]nder natural conditions, [the water] would not leave Mississippi's groundwater storage." Compl. paras. 14-15, 17. Mississippi further alleges, however, that pressure differentials caused by MLGW's pumping create a "cone of depression" that causes water in the Sparta Sand in Mississippi to move north toward Memphis, "altering the water's natural east-to-west path." *Id.* paras. 24-25. As a result, Mississippi contends, there has been a "drawdown of stored groundwater in * * * substantially all of DeSoto County." *Id.* para. 25. Mississippi maintains that, by pumping groundwater from the Aquifer, Tennessee has removed more than 252 billion gallons of water from Mississippi since 1985, *id.* para. 26, and that Tennessee continues to "permanently tak[e] between 20 and 27" million gallons of water from Mississippi every day. *Id.* para. 22.

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." Compl. para. 8; see *id.* paras. 9-10, 42-45. Mississippi thus contends that defendants' 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." *Id.* para. 52.

Unlike in 2009, Mississippi does not seek an equitable apportionment of the groundwater at issue, even in the alternative. See Compl. pp. 23-24 (prayer for relief). Mississippi instead contends 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." Compl. paras. 38, 41, 48-49. According to Mississippi, the water "(a) naturally accumulated within Mississippi's sovereign territory before the formation of the States; and (b) would never through 'the agency of natural laws' have moved into, or been available in Tennessee." *Id.* para. 38 (citation omitted).

Mississippi alleges that it "has suffered actual, present, and substantial injury and damages as the proximate result of [d]efendants' wrongful conduct," including (i) the "permanent[] los[s]" of 252 billion gallons of groundwater that has been pumped by Tennessee since 1985; (ii) "well installation and electric operations costs" incurred by Mississippi residents who must lower their pumps in order to reach the groundwater in the Sparta Sand; and (iii) the "material[] alter[ation] [of] Mississippi's groundwater * * * inventory" by altering the "natural steady state equilibrium of groundwater in the Sparta Sand," thereby "siphoning water at an accelerated, unnatural velocity and northward direction out of Mississippi." Compl. para. 54.

As relief, Mississippi requests "a declaratory judgment establishing Mississippi's sovereign right, title

and exclusive interest in the groundwater stored naturally in the Sparta Sand formation underlying Mississippi." Compl. paras. 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.* para. 55; see Miss. Br. 25 (seeking $197 million for water and $418 million in prejudgment interest). In the alternative, Mississippi requests an accounting and disgorgement of "all profits, proceeds, consequential gains, saved expenditures, and other benefits realized by" defendants. Compl. para. 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.* para. 57.

b. Defendants contend (Tenn. Br. in Opp. (Tenn. Br.) 12-21; Memphis & MLGW Br. in Opp. (Memphis Br.) 9-11) that Mississippi is relying on the same "territorial property rights" theory that this Court rejected when it denied Mississippi leave to file a bill of complaint against defendants in 2010. Defendants further contend (Tenn. Br. 12-13; Memphis Br. 14-15, 21-22) that Mississippi has no enforceable rights to water in the Aquifer until that water has been apportioned.

Defendants maintain (Tenn. Br. 15; Memphis Br. 15-19) that this 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. In

defendants' view, the doctrine of equitable apportionment applies "whenever . . . the action of one [S]tate reaches[] through the agency of natural laws[] into the territory of another [S]tate," thereby requiring the Court to reconcile the competing rights of the States to take water within their own boundaries. Tenn. Br. 18 (quoting *Kansas* v. *Colorado*, 206 U.S. 46, 97-98 (1906) (alterations to quoted source omitted)); Memphis Br. 12-14. Tennessee contends that the drop in pressure caused by MLGW's pumping within Tennessee is an example of the actions of one State reaching into another through the agency of natural laws. Tenn. Br. 18-19.

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." Tenn. Br. 18; see Memphis Br. 11-12. Because Mississippi "has abandoned its equitable apportionment claim," Tennessee reasons, "it has no legally cognizable claim for damages arising out of Memphis's and MLGW's use of the Aquifer." Tenn. Br. 21.

Finally, defendants contend (Tenn. Br. 22-33; Memphis Br. 22-35) that Mississippi's claims are barred by the doctrine of issue preclusion because the Fifth Circuit rejected Mississippi's territorial-property-rights theory in *Hood*.

DISCUSSION

This Court has original and exclusive jurisdiction over a justiciable case or controversy between States. See U.S. Const. Art. III, § 2, Cl. 2; 28 U.S.C. 1251(a). The Court has determined that its exercise of this

exclusive jurisdiction is "obligatory only in appropriate cases." *Mississippi* v. *Louisiana*, 506 U.S. 73, 76 (1992) (quoting *Illinois* v. *City of Milwaukee*, 406 U.S. 91, 93 (1972)); see *Nebraska* v. *Wyoming*, 515 U.S. 1, 8 (1995); *Texas* v. *New Mexico*, 462 U.S. 554, 570 (1983). When deciding whether to exercise its exclusive original jurisdiction, the Court examines "the nature of the interest of the complaining State," "focusing on the seriousness and dignity of the claim." *Mississippi* v. *Louisiana*, 506 U.S. at 77 (citation and internal quotation marks omitted). The Court also considers "the availability of an alternative forum in which the issue tendered can be resolved." *Ibid.* In analyzing those considerations, this Court has "substantial discretion to make case-by-case judgments as to the practical necessity of an original forum in this Court for particular disputes within [the Court's] constitutional original jurisdiction." *Texas* v. *New Mexico*, 462 U.S. at 570.

Applying those standards, Mississippi's complaint does not warrant the exercise of this Court's original jurisdiction. Although there is no alternative forum in which Mississippi's claims against Tennessee can be resolved, see 28 U.S.C. 1251(a), Mississippi has not alleged any cognizable cause of action against defendants. As the Court recognized in its 2010 order denying Mississippi leave to file a similar bill of complaint against defendants, *Mississippi* v. *City of Memphis*, 559 U.S. 901, 901-902 (2010), Mississippi cannot claim that Tennessee is taking Mississippi's water until the Aquifer has been apportioned, and Mississippi expressly does not seek an equitable apportionment here. Furthermore, Mississippi has not alleged injuries to its present or expected future uses of the water

that are sufficiently specific to justify this Court's immediate commitment of resources to resolve the claims in the complaint. Accordingly, the 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.

I. MISSISSIPPI'S PROPOSED COMPLAINT DOES NOT ALLEGE A COGNIZABLE CAUSE OF ACTION AGAINST DEFENDANTS

For a complaint to present a "justiciable controversy" within this Court's original jurisdiction, "it must appear that the complaining State has suffered a wrong * * * furnishing ground for judicial redress" or "is asserting a right against the other State which is susceptible of judicial enforcement." *Massachusetts* v. *Missouri*, 308 U.S. 1, 15 (1939). Thus, at the threshold, the Court must "determine whether there is any principle of law, and, if any, what, on which the plaintiff can recover." *Missouri* v. *Illinois*, 200 U.S. 496, 519 (1906). As the Court implied in 2010 in its order denying Mississippi leave to file a bill of complaint against defendants, *City of Memphis*, 559 U.S. at 901-902 (citing *Virginia* v. *Maryland*, 540 U.S. 56, 74 n.9 (2003)), Mississippi has no cognizable cause of action against defendants for pumping water from the Aquifer because the Aquifer is an interstate water source that has not yet been apportioned among the relevant States. Because Mississippi unequivocally disclaims equitable apportionment as a remedy for the injuries that it allegedly has sustained due to Tennessee's pumping, Compl. paras. 38, 50, the complaint

contains no theory of relief under which Mississippi can recover.

A. When no federal statute or congressionally approved interstate compact defines a State's right to use water from an interstate water source, federal common law determines the extent of such rights. *Hinderlider* v. *La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 110 (1938) (citing *Kansas* v. *Colorado*, 206 U.S. 46, 95 (1906)); *Arizona* v. *California*, 373 U.S. 546, 560, 569-586 (1963) (discussing the Boulder Canyon Project Act, ch. 42, 45 Stat. 1057 (43 U.S.C. 617 *et seq.*), which apportioned water in the Colorado River basin). The federal common-law doctrine that governs disputes between States concerning their rights to an interstate water source is known as "equitable apportionment." *Virginia* v. *Maryland*, 540 U.S. at 74 n.9; *Colorado* v. *New Mexico*, 459 U.S. 176, 183 (1982).

B. Mississippi contends (Compl. paras. 38, 41, 48-49) that an equitable apportionment of the Aquifer is not appropriate because the groundwater in the Sparta Sand in Mississippi is *intrastate* water. According to Mississippi (*id.* para. 38), absent pumping by MLGW, the water in the Sparta Sand "would never[,] through the agency of natural laws[,] have moved into, or been available in Tennessee." (internal quotation marks omitted). That analysis is misguided.

This Court has taken a practical approach to assessing whether a natural resource is interstate in character. Under this Court's precedents, a resource that crosses state lines, even intermittently, can be an interstate resource. See, *e.g.*, *Kansas* v. *Colorado*, 206 U.S. at 115 (rejecting claim that a river with intermittent flow between two reaches in different States was

actually "two rivers"); cf. *Idaho* v. *Oregon*, 462 U.S. 1017, 1024 (1983) (anadromous fish moving seasonally between States). The Court has explained that "a State may not preserve solely for its own inhabitants natural resources located within its borders." *Idaho* v. *Oregon*, 462 U.S. at 1025. That principle is "[a]t the root of the doctrine" of equitable apportionment, *ibid.*, and it applies to groundwater just as to any other resource, see *Sporhase* v. *Nebraska*, 458 U.S. 941, 951 (1982); First Report of the Special Master (Subject: Nebraska's Motion to Dismiss) 44-45, in *Kansas* v. *Nebraska*, No. 126, Orig. (Jan. 28, 2000) (recommending that Nebraska's motion to dismiss Kansas's complaint be denied because groundwater pumping that impacts streamflow in the Republican River Basin must be included in the pumping State's compact apportionment); *Kansas* v. *Nebraska*, 530 U.S. 1272 (2000) (denying Nebraska's motion to dismiss); *Kansas* v. *Colorado*, 514 U.S. 673, 693-694 (1995) (agreeing with Special Master's conclusion that post-compact pumping in Colorado had caused material depletions of the usable state-lime flow of the Arkansas River, in violation of the Arkansas River Compact).

1. The interstate character of the groundwater in the Aquifer is apparent from the face of Mississippi's proposed complaint. Mississippi acknowledges that the Aquifer "underlies both Mississippi and Tennessee." Compl. para. 50. And it is clear from the allegations underlying Mississippi's claims that when Tennessee pumps groundwater from the Aquifer *in Tennessee*, it has an impact on the movement of groundwater in the Aquifer in Mississippi. See, *e.g.*, *id.* paras. 22, 26.

Contrary to Mississippi's contention, the need for an equitable apportionment does not turn on whether the groundwater in the Sparta Sand in Mississippi would remain within Mississippi if Tennessee did not pump any water from the Aquifer. See, *e.g.*, Compl. para. 41 (alleging that groundwater in the Sparta Sand is not "naturally shared" with Tennessee). When "the action of one State reaches through the agency of natural laws into the territory of another State," an equitable apportionment is required to reconcile the competing rights of the States to take water from within their own boundaries. *Kansas* v. *Colorado*, 206 U.S. at 97-98. That is the case here, where Tennessee's pumping of groundwater within its own boundaries creates, through the natural principles of hydraulics, a cone of depression that causes groundwater to flow from Mississippi into Tennessee. Territorial boundaries are relevant in an equitable apportionment, but the Court also considers a multitude of factors to determine each State's equitable share of the water, including the uses already occurring within each State. *Colorado* v. *New Mexico*, 459 U.S. at 183. In this case, for example, Mississippi itself alleges that MLGW has pumped significant amounts of groundwater from the Aquifer in the Memphis area for more than 50 years. See Compl. paras. 18-20, 26, 28, 54.

2. Moreover, the historical flows of the Aquifer demonstrate that water flowed between States within the Aquifer even before the development of groundwater resources in southwest Tennessee. A figure in Mississippi's own expert report depicts a "limited natural flow" of water from Mississippi into Tennessee under predevelopment conditions. Compl. App. 70a.

Mississippi declares that any water depicted in that figure entering Tennessee from Mississippi under natural conditions "is not included in [its] claim." Miss. Br. 9 n.7. But the figure undermines Mississippi's core theory that groundwater in the Sparta Sand in Mississippi is a purely intrastate resource that would stay within Mississippi absent Tennessee's pumping. In any event, under the way Mississippi conceptualizes the ownership of water in the Aquifer, even though part of the Aquifer underlies Tennessee, Tennessee could not pump *any* water from the Aquifer because doing so would cause water that is underneath Mississippi to flow out of Mississippi into Tennessee.

Furthermore, the USGS has modeled a natural "horizontal flow" of 43.2% in the middle Claiborne aquifer in the Memphis area in predevelopment conditions in 1870, Clark 30 fig. 19, and USGS considers the Sparta Sand and the Memphis Sand to be one hydrologic unit because water levels in those equivalent formations generally correlate to one another. Schrader sheet 1. As far back as 1965, 25 million gallons of water per day flowed from Mississippi into Shelby County, Tennessee, through the Memphis Sand. Moore F28. The Aquifer is also being studied as an interstate resource, precisely because of its interconnectedness. See Clark 1 (describing Mississippi Embayment Regional Aquifer Study); *id.* at 3-4 ("A holistic analysis of groundwater-flow systems is increasingly important. * * * While it is useful to examine parts of the system at local scales, there is a need to look at the larger regional and aquifer scale system to better understand how all the parts interact.").

In sum, the Aquifer itself is an interstate formation through which water is moving at all times, however slowly. The Court's 2010 order denying Mississippi leave to file a bill of complaint against defendants suggested as much by citing footnote 9 in *Virginia* v. *Maryland*, which states that "[f]ederal common law governs interstate bodies of water, ensuring that the water is equitably apportioned between the States and that neither State harms the other's interest in the river." *Virginia* v. *Maryland*, 540 U.S. at 74 n.9, cited in 559 U.S. at 901-902.

In addition, it appears that there is at least some movement of water between the Sparta-Memphis Aquifer and other aquifers and strata within the Mississippi embayment. Clark 19 fig. 10, 20 fig. 11. Accordingly, in determining whether an equitable apportionment would be appropriate and what form such an apportionment might take, it would be necessary to consider whether the particular Aquifer on which the parties have focused should be viewed in isolation, or as part of a broader assessment of groundwater uses from other aquifers as well in the various strata of the Mississippi embayment.

C. Mississippi contends (Miss. Br. 17) that it obtained ownership over all water underlying the territory within its borders pursuant to the equal-footing doctrine when Mississippi was admitted to the Union. In support of that contention, Mississippi cites (Miss. Br. 17; Reply Br. 5) *Kansas* v. *Colorado*, which states that "each State has full jurisdiction over the lands within its borders, including the beds of streams and other waters," 206 U.S. at 93, for the proposition that the State owns *all waters* within its borders. But the Court in *Kansas* v. *Colorado* was referring to the

States' ownership of *the lands* within their respective borders, including *the beds* of streams and other waters, not the waters themselves. *Ibid.*; see *United States* v. *Alaska*, 521 U.S. 1, 5 (1997) (equal-footing doctrine gives the States "title to *the beds of navigable waters* within their boundaries") (emphasis added). No decision of this Court holds that States have title to subsurface groundwater within their borders that is flowing through an aquifer spanning multiple States. To the contrary, the Court rejected that contention in *Sporhase*, where it held that Nebraska's groundwater regulations were subject to the constraints of the Commerce Clause. 458 U.S. at 951.

The groundwater at issue in this case is located in an interstate aquifer that has established interstate flows. Unless and until the Aquifer is apportioned among the relevant States—either alone or along with other groundwater sources in the Mississippi embayment—Mississippi has not asserted any right "susceptible of judicial enforcement." *Massachusetts* v. *Missouri*, 308 U.S. at 15.[3] Because Mississippi has affirmatively disclaimed an equitable apportionment remedy (Compl. paras. 38, 41, 48-49), the complaint does not allege any cognizable cause of action against defendants.[4]

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[3] An equitable apportionment of the Aquifer would likely require the participation of at least Arkansas, and possibly other States. *USGS Fact Sheet* 1-2.

[4] Because this Court's precedents demonstrate that the Aquifer is an interstate water source that must be apportioned before any State has a cognizable cause of action based on another State's use of the water, the Court does not need to address whether Mississippi's claims are foreclosed by the doctrine of issue preclusion. See Tenn. Br. 22-33; Memphis Br. 22-35. In *Arizona* v. *California*, 530 U.S. 392 (2000), the Court appeared to assume that the doc-

II. MISSISSIPPI HAS NOT SUFFICIENTLY ALLEGED CONCRETE INJURY

In theory, the Court could grant Mississippi leave to file its complaint, invite the defendants to file a motion to dismiss, and confirm in a written opinion that the Aquifer is an interstate water source that must be equitably apportioned before one State has any rights to enforce against another State's use of water in the Aquifer. But the Court's exercise of its original jurisdiction is "obligatory only in appropriate cases." *Mississippi* v. *Louisiana*, 506 U.S. at 76 (quoting *City of Milwaukee*, 406 U.S. at 93). In deciding whether to exercise its original jurisdiction, the Court, in addition to examining whether there is a legal basis for recovery, focuses on "the seriousness and dignity of the claim," *id.* at 77 (internal quotation marks and citation omitted), and it has "substantial discretion to make case-by-case judgments as to the practical necessity of an original forum in this Court," *Texas* v. *New Mexico*, 462 U.S. at 570.

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trine of issue preclusion could bar relitigation in an original action of an issue that was already decided by the Court of Claims—although in that case, the Court concluded that the doctrine was inapplicable because the Indian tribe and the United States had reached a settlement concerning the tribe's water rights in the Court of Claims, and those rights therefore had not been "actually litigated." *Id.* at 414-415. In this case, however, there is some force to Mississippi's observation (Reply Br. 9-10) that the application of issue preclusion (based on the decisions of the district court and court of appeals in *Hood*) on the question whether an equitable apportionment is required before Mississippi would have a cognizable cause of action against Tennessee, could be characterized as "delegat[ing]" this Court's exclusive jurisdiction to federal district courts and courts of appeals because the very subject of an equitable apportionment *between two States* is one committed to that exclusive jurisdiction.

As the Court recognized in its 2010 order denying without prejudice Mississippi's motion for leave to file its previous complaint, *City of Memphis*, 559 U.S. at 901-902, "a State seeking to prevent or enjoin a diversion by another State bears the burden of proving that the diversion will cause it 'real or substantial injury or damage.'" *Colorado* v. *New Mexico*, 459 U.S. at 187 n.13. In evaluating claims brought under its original jurisdiction, the Court has insisted that the complaining State make concrete allegations about adverse impacts to its present or certain future uses of the disputed water. Allegations of injury to present use that are "unsubstantial" and "uncertain" do not meet this bar. *Washington* v. *Oregon*, 297 U.S. 517, 526 (1936); *New York* v. *Illinois*, 274 U.S. 488, 490 (1927) (Court will not decide "abstract questions respecting the right of the plaintiff State and her citizens" for uses that might occur "in the indefinite future"); *Idaho* v. *Oregon*, 462 U.S. at 1028 (dismissing bill of complaint because Idaho's submissions "d[id] not demonstrate that Oregon and Washington are now injuring Idaho * * * or that they will do so in the future"); *Connecticut* v. *Massachusetts*, 282 U.S. 660, 672 (1931) (dismissing bill of complaint where record did not "justify an inference that any real or substantial injury or damage will presently result to Connecticut from the diversions [of water] by Massachusetts").

Mississippi's alleged injuries do not justify an exercise of this Court's original jurisdiction at this time, especially given the absence of precedent for its territorial-property-rights theory of recovery. Mississippi's allegations of injury to its sovereignty (Compl. para. 52) cannot be sustained if the Court rejects Mississippi's equal-footing argument. *Idaho* v. *Ore-*

gon, 462 U.S. at 1027-1028 & n.12 (holding that Idaho could not show injury based on theory of "legal ownership" where resource required equitable apportionment). In conjunction with the alleged injury to its sovereignty, Mississippi's primary complaint is that, since 1985, Tennessee has taken 252 billion gallons of water that would have remained in the Aquifer underneath Mississippi absent Tennessee's pumping. Compl. para. 54(a) and (c); see also Miss. Br. 13-14. But Mississippi does not allege that its residents would have used that groundwater themselves or have had any definite future plans to use that groundwater.

The only current injury Mississippi alleges to water users in its State is that, because of the draw-down of groundwater in northern Mississippi, "water wells located in the Sparta Sand formation in Mississippi must now be drilled and pumps lowered to substantially greater depths," and residents of northern Mississippi thus have "well installation and electric operations costs for water wells * * * that are significantly greater than the costs they would have borne" in the absence of defendants' pumping. Compl. para. 54(b). But Mississippi does not explain how much groundwater is being pumped in northern Mississippi; how many water users have had to lower their wells on account of falling water levels; or the amount of any such costs, even approximately. And if water use in northern Mississippi is substantial, then some of the lowering of groundwater levels could be due to pumping in Mississippi. Because Mississippi's complaint does not contain sufficiently concrete allegations of injury to present or certain future uses, it does not warrant the Court's immediate commitment

of resources to address the claims Mississippi asserts here.

CONCLUSION

The 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.

Respectfully submitted.

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