

# [***ARTICLES: INTERSTATE WATER LITIGATION IN THE WEST: A FIFTY-YEAR RETROSPECTIVE***](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5RH0-3KT0-00SW-50SB-00000-00&context=1516831)

Spring, 2017

**Reporter**

20 U. Denv. Water L. Rev. 153 \*

**Length:** 41634 words

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**Text**

**[\*153]**

[*I*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T2X2-D6RV-H374-00000-00&context=1516831). Introduction: the Structural Realities of Interstate Water Allocation

Persons of Soveraigne Authority, because of their Independency, are in continuall jealousies, and in the state and posture of Gladiators, having their weapons pointing, and their eyes fixed upon one another; that is, their Forts, Garrisons, and Guns upon the Frontiers of their Kingdomes; and continuall Spyes upon their neighbours, which is a posture of War.

- Thomas Hobbes [[1]](#footnote-2)1

Robert T. Stephan, Attorney General of Kansas: Our armies are massed at the border.

J. D. MacFarlane, Attorney General of ***Colorado***: What are they going to drink?

- Arkansas ***River*** Compact Administration meetings, Lamar, ***Colorado***, circa 1982 [[2]](#footnote-3)2

**[\*154]** I have twenty thousand words, more or less, to discuss the last fifty years of interstate water litigation in the West. That is a small allocation for a large territory. Worse, the conflicts that invite and often require such litigation are built into the legal and political frameworks of western water. The dominance of these structures can obscure historical change.

Consider the country and the political geography. The West is the largest but most water-short region in the United States, where small and irregular ***river*** basins descend from above fourteen thousand feet to sea level across thousands of ***river*** miles of hugely various terrains. [[3]](#footnote-4)3 These basins do not correspond with the state lines drawn by politicians unable or unwilling to recognize their "arbitrary and, therefore, stupid" cartography. [[4]](#footnote-5)4 As lawyers for ***Colorado*** complained regarding a suit between Wyoming and Nebraska, "***Colorado*** is in the case because of the geographical accident of artificial boundaries which have placed the headwaters of the North Platte in Jackson County, ***Colorado***." [[5]](#footnote-6)5 Aside from minor adjustments, the states are stuck with their boundaries. [[6]](#footnote-7)6

Next, consider the inherent problems of federalism in western water. State water codes usually conflict with each other and with federal water law, frustrating basin-wide water management. [[7]](#footnote-8)7 Interstate compacts can address some of **[\*155]** this troublesome diversity, [[8]](#footnote-9)8 but because they are the product of negotiation, they are riddled with both unintentional flaws and intentional ambiguities. [[9]](#footnote-10)9 Regardless of how an interstate ***river*** has been allocated - whether by an interstate compact, [[10]](#footnote-11)10 a judicial apportionment, [[11]](#footnote-12)11 or an act of Congress [[12]](#footnote-13)12 - upstream states enjoy a permanent advantage over downstream states. That is because the law of gravity always trumps the equal footing doctrine: [[13]](#footnote-14)13 "there is always the danger that the upper states will simply shut off the water." [[14]](#footnote-15)14 Among themselves, the western states have long harbored a "deep-seated hostility" to federal power and jurisdiction. [[15]](#footnote-16)15 Federal agencies have regularly reciprocated that hostility with over-reaching efforts to reserve and secure water supplies for Bureau of Reclamation (Reclamation) irrigation projects and other federal interests. [[16]](#footnote-17)16 For all of **[\*156]** this chronic mutual resentment, cooperative federalism has nonetheless "developed water resources in an engineering effort unparalleled in history." [[17]](#footnote-18)17

Then consider how the permanent problem of water shortage has become worse, as increased demand for water outstrips a falling and failing supply. The population of the West has grown faster than any other region of the United States over the past half-century. Technology has enabled ever-greater and more consumptive water usage, causing the permanent depletion of western aquifers and ***rivers***. [[18]](#footnote-19)18 Global climate change has altered the timing of western hydrological cycles, making droughts more severe, frequent, and enduring. [[19]](#footnote-20)19 It also threatens the validity of a fundamental precedential assumption of natural resources law and policy - that climatic and hydrological conditions in the future will generally be like those of the past. [[20]](#footnote-21)20 An over-populated and evermore desic-cated West should secure the inevitability of further interstate conflicts. [[21]](#footnote-22)21 Extended droughts have rehabilitated Malthusian visions of permanent scarcity and depletion. [[22]](#footnote-23)22 Between inevitability and permanence, there seems to be little room for history. [[23]](#footnote-24)23

Finally, consider the problem of definition. More broadly conceived as disputes between sovereigns, the subject of interstate water litigation falls into four main categories. The first comprises suits between states under the Supreme Court's original jurisdiction, to resolve disputes over interstate allocations established by compact or judicial decree. [[24]](#footnote-25)24 The second includes suits brought by Native American tribes against states and the United States to secure water rights impliedly reserved under federal law for tribal lands and reservations, usually at the expense of established state law-based water rights held by **[\*157]** non-Indians. [[25]](#footnote-26)25 These lawsuits typically produce basin-wide water rights adjudications in state court. [[26]](#footnote-27)26 The third category concerns federal public lands: excluding Alaska, the federal estate in the West approaches 350 million acres - nearly half the total acreage of the West. [[27]](#footnote-28)27 This category includes a wide variety of suits between western states and the United States, concerning such matters as federal reserved water rights apart from those held by tribes. [[28]](#footnote-29)28 The final cate-gory concerns water quality, whether brought by tribes, states, or the United States, usually under the Clean Water Act. [[29]](#footnote-30)29

This is all too much to consider. Woody Allen comically summarized War and Peace as a novel that "is about Russia." [[30]](#footnote-31)30 The enduring conflicts between states over western ***rivers*** can be similarly summarized as something that "is about water." Readers looking for a comprehensive legal survey of the subject should look elsewhere. [[31]](#footnote-32)31 What, then, to do here? Interstate water litigation in the West is the recurring consequence of the longstanding structural relationships of western water, and of the irreconcilable conflicts among hydrological and geological facts, arbitrary and flawed political decisions, and constitutional and legal fictions. The original sins of interstate water allocation have repeatedly required litigation brought under the original jurisdiction of the Supreme Court. A brief history of this litigation cannot do these structures justice; it is better to stress the role of contingency. If these structures and structural conflicts do not change over time (and for the most part, they have not), then it is something **[\*158]** beyond them that has forced litigation. Something, presumably, that is about water.

Over the past fifty years, that water has been groundwater. Across most of the western states, water law developed into a state of reliable maturity and general doctrinal consistency roughly between 1890 and 1950, when the West's available water supplies were predominantly surface water supplies. [[32]](#footnote-33)32 Because groundwater was relatively unimportant by comparison during that period, western groundwater law and its attendant doctrines remained marginal and balkanized. [[33]](#footnote-34)33 No less an authority than Elwood Mead confidently predicted that the "millions and millions of acres" of fertile and gently sloping farmland outside the reach of surface-water irrigation projects across the West "will never be farmed, however, because water is lacking." [[34]](#footnote-35)34 The industrial groundwater revolution proved Mead wrong, and turned the world of western water upside down during the postwar period. Groundwater irrigation soon dwarfed surface water irrigation across much of the West, and especially across the Great Plains. [[35]](#footnote-36)35 As pumping depleted the surface flows of interstate ***rivers***, groundwater raised new boundary issues - jurisdictional, legal, and technical - that groundwater depletion made impossible to ignore, disturbing interstate water relations established by compact or decree.

This article looks back across the cases that confronted that epochal disturbance, highlighting their principal causes, characteristics, and consequences. Most of these cases concerned the construction and application of interstate compacts enacted prior to the groundwater revolution. [[36]](#footnote-37)36 Part II of this article **[\*159]** reviews the first half-century of conflict between Kansas and ***Colorado*** over the Arkansas ***River*** (1902-1949), a seminal conflict that generated and still illuminates many of the archetypical arguments and characteristics of modern interstate water litigation. Part III provides a similarly brief review of the ground-water revolution, including the western states' failure to integrate groundwater within the legal structures of interstate compact administration and within their own distinct state water laws. That failure owed something to the surface-water assumptions of most interstate compacts, but it also resulted from the states' internal political calculations, which favored groundwater development at the expense of depleted - but compacted - surface flows.

Part IV summarizes the principal interstate compact cases of the groundwater revolution: Texas v. New Mexico, which litigated the Pecos ***River*** Compact; [[37]](#footnote-38)37 Kansas v. ***Colorado***, which litigated the Arkansas ***River*** Compact; [[38]](#footnote-39)38 and Kansas v. Nebraska & ***Colorado***, which twice litigated the Republican ***River*** Compact. [[39]](#footnote-40)39 These cases revolved around three interdependent issues. The threshold issue was that of compact interpretation: because these compacts predated the groundwater revolution, did the compacts and their allocations account for groundwater supplies and the effects of groundwater pumping? In litigating this textual issue, states redeployed pre-compact arguments to serve their respective interpretations of the compacts, but they also brought extensive historical analysis to bear upon the intended hydrological scope of the compacts. The Court repeatedly found that these compacts did include ground-water, but that general finding raised the second issue: by what method should the Court quantify the hydrological effects of groundwater pumping on the states' respective allocations? Resolving this difficult technical issue required the use of groundwater modeling. As the states put forth competing ground-water models, modeling and accounting disputes became the most heavily litigated component of these cases. The final issue concerned remedies: how **[\*160]** should the Court determine the appropriate damages for past compact violations and order other relief that would serve to deter states from committing violations in the future? Litigation over remedies involved close coordination among groundwater modelers, water engineers, and economists. Interstatewater litigation, like other forms of complex litigation, has become a thoroughly interdisciplinary enterprise.

Part IV includes a discussion of the cases currently before the Court concerning interstate groundwater supplies. The first case is Montana v. Wyoming & North Dakota, a dispute between Wyoming and Montana over the Yellowstone ***River*** Compact that has addressed the issue of how groundwater supplies related to irrigation and to coal-bed methane production fall within the compact's allocations. [[40]](#footnote-41)40 The second case is Texas v. New Mexico & ***Colorado***, a dispute between Texas and New Mexico over the Rio Grande Compact that addresses the issue of how groundwater pumping in New Mexico affects compact allocations and the Rio Grande Project, a Reclamation project with lands in both New Mexico and Texas. [[41]](#footnote-42)41 The third case is Florida v. Georgia, a dispute involving groundwater depletions across the waters of the Apalachicola-Chattahoochee-Flint ***river*** basin (ACF Basin) - waters that are not subject to an interstate compact, but over which the U.S. Army Corps of Engineers (Corps) exercises substantial control. [[42]](#footnote-43)42 The Rio Grande and ACF Basin cases have raised important questions about the role of the United States in interstate water litigation. The final case is Mississippi v. Tennessee, a novel dispute over the water supplies of an interstate aquifer that is not connected to an interstate ***river***. [[43]](#footnote-44)43 Because these are pending cases, Part IV provides some informed speculation about how the Court might employ its established interstate groundwater jurisprudence to resolve them.

Part V explores two of the most important and revealing consequences of interstate groundwater litigation. Litigation has served the salutary purpose of forcing necessary legal reforms within states' water codes, reforms that have enabled more effective regulation of groundwater pumping. Yet litigation has also forced the development of alternative mechanisms to comply with interstate compacts and the Court's decrees, such as water right retirement programs and stream augmentation projects. Part VI concludes with several observations about interstate water litigation. It has forced states to integrate groundwater within the federalist structures of interstate water governance, but it has not yet forced the states to meet their interstate obligations by confronting the problem of groundwater depletion. Interstate water litigation has also revealed problematic political and jurisdictional asymmetries across interstate basins, while exposing troubling inconsistencies on the part of the United States. And the means by which states have chosen to comply with their interstate obligations have raised basic questions about western water law doctrine. Throughout, this article relies heavily upon the reports issued by Special Masters in these cases. While they lack the power of the Court's decisions, they provide a level of historical detail, context, and analysis which the Court's decisions rarely do.

**[\*161]**

[*II*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T352-D6RV-H379-00000-00&context=1516831). Interstate Water Litigation before the Groundwater Revolution

At the turn of the twentieth century, there were few settled rules for how to divide interstate waters among the sovereigns which claimed them. [[44]](#footnote-45)44 Over the next several decades, both state and federal litigants marched into this legal wilderness, frequently equipped with uncompromising legal and technical positions. The Court discredited the parties' respective arguments on the grounds that they were fundamentally inequitable. Through the assertion of its considerable equitable powers, the Court sought to establish more diplomatic relations between both the states and the United States; but it generally fell to the states themselves to resolve the underlying causes of these early conflicts.

The long dispute over the waters of the Arkansas ***River*** during the first half of the twentieth century presents the paradigmatic example of how sovereigns with competing claims to an interstate ***river*** - and conflicting intrastate water laws - tend to put forth polarizing legal principles. [[45]](#footnote-46)45 Kansas originally claimed the right to the ***river***'s continuous, "uninterrupted and unimpeded flow," as it existed "before any human interference." [[46]](#footnote-47)46 Such a claim was based on the English common law and its riparian water law doctrines, which Kansas had adopted at statehood. [[47]](#footnote-48)47 For its part, ***Colorado*** denied that Kansas had any right to the Arkansas, and claimed all of the water that originated within ***Colorado*** based on its own constitutional commitment to the prior appropriation doctrine, and without regard to any downstream impact in Kansas. [[48]](#footnote-49)48 ***Colorado*** also found merit in the Harmon Doctrine, a roughly contemporary doctrine of international law asserting sovereignty over natural resources originating within the sovereign's borders. [[49]](#footnote-50)49 Not to be outflanked by these diametrically opposed claims - and eager to secure water rights for irrigation projects to be built under the "so-called Reclamation Act" of 1902 [[50]](#footnote-51)50 - the United States attacked them both **[\*162]** as incorrect and claimed instead that any unappropriated waters in the western states remained within the purview of federal sovereignty. [[51]](#footnote-52)51

***Colorado*** made a similarly aggressive hydrological argument: that the Arkansas ***River*** was not an interstate resource at all. Rather, the ***river*** was two distinct ***rivers***. The first ***river*** originated in the ***Colorado*** Rockies and terminated near the Kansas-***Colorado*** border, having exhausted its mountain runoff-fed supplies; this ***river*** was thus wholly (and conveniently) within the domain and ownership of ***Colorado***. [[52]](#footnote-53)52 A second, plains-type ***river*** emerged at or near the state line, "from springs and branches … to flow onward through Kansas and Oklahoma towards the Gulf of Mexico." [[53]](#footnote-54)53 ***Colorado***'s attempt to divide the Arkansas ***River*** into two different ***rivers*** promised a signal legal benefit: if the Court accepted ***Colorado***'s theory, then it need not effect an interstate apportionment at all. [[54]](#footnote-55)54 Kansas had no truck with ***Colorado***'s theory; it simply stressed the fact of interstate flows upon which its irrigating citizens had long relied. [[55]](#footnote-56)55

These divergent legal and hydrological arguments revealed what has since become a reliable pattern in interstate water litigation. States take positions justified by their respective water law codes and by their own interpretations of water-based federalism. [[56]](#footnote-57)56 Unsurprisingly, these positions accord nicely with the respective interests of the states, which probably explains why their readings of these codes were also selective. [[57]](#footnote-58)57 The Court repudiated these absolutist positions in Kansas v. ***Colorado***. It rejected both ***Colorado***'s legal claim to absolute dominion of the ***river***'s supplies and Kansas's rival legal claim to the ***river***'s uninterrupted flows, holding instead that the ***river*** should be allocated according to "the equitable apportionment of benefits between the two states resulting from the flow of the ***river*** … ." [[58]](#footnote-59)58 It similarly rejected ***Colorado***'s theory of two ***rivers***, based upon the same principle of equitable apportionment, and recognizing the reliance by Kansas irrigators upon flows originating well upstream of the Kansas-***Colorado*** border. [[59]](#footnote-60)59

Most importantly of course, the Court declared its power to effect the equitable apportionment of an interstate ***river***. [[60]](#footnote-61)60 Having nonetheless asserted this robust equitable power, and having deflected the parties' most aggressive **[\*163]** legal and technical arguments, the Court declined to apportion the ***river***: the Court was not "satisfied that Kansas has made out a case entitling it to a decree." [[61]](#footnote-62)61 The opposing doctrinal positions asserted in Kansas v. ***Colorado*** probably informed the Court's reticence, a reticence supported by the Court's high standard of proof in interstate cases. [[62]](#footnote-63)62

When the Court did exercise its powers of equitable apportionment, the obstacle of fundamental and opposing legal doctrines did not arise. In Wyoming v. ***Colorado*** (1922), the Court apportioned the Laramie ***River*** between two prior appropriation states by applying the doctrine at the interstate level. [[63]](#footnote-64)63 That apportionment, "between two states having an identical system of laws in respect to the use of water from flowing streams," [[64]](#footnote-65)64 defeated ***Colorado***'s reassertion of the Harmon Doctrine, [[65]](#footnote-66)65 and informed subsequent negotiations over the ***Colorado*** ***River*** Compact. [[66]](#footnote-67)66 In New Jersey v. New York (1931), the Court equitably apportioned the Delaware ***River*** Basin among eastern states with similar riparian doctrines. [[67]](#footnote-68)67 And in Nebraska v. Wyoming (1945), the Courtequitably apportioned the North Platte ***River*** between two prior appropriation states by using that doctrine as the guiding principle, but accounting for other equitable factors and their importance as well, which informed the extent of deviation from priority. The equitable calculus of the North Platte decree relegated to academic irrelevance the United States' reassertion of a right to the unappropriated waters in each state. [[68]](#footnote-69)68

On the Arkansas though, the Court's reticence immediately provoked further litigation. Between 1909 and 1923, Kansas irrigation companies brought several lawsuits against ***Colorado*** irrigation companies to obtain an adjudication of priorities to their respective ditches; two of these suits produced settlements **[\*164]** that established interstate priority schedules. [[69]](#footnote-70)69 In response, ***Colorado*** sued Kansas in 1928 to enjoin these suits and schedules; Kansas answered with a renewed complaint of ***Colorado***'s overuse and a renewed request for an equitable apportionment of the Arkansas ***River***. [[70]](#footnote-71)70 This second round of interstate litigation over the Arkansas presented a different set of technical and doctrinal problems. Despite extensive fact-finding by the Special Master, the Court again declined to apportion the ***river*** in 1943, because Kansas did not establish that ***Colorado***'s increases in irrigation between 1907 and 1943 had worked sufficient harm to Kansas. Indeed, new upstream reservoirs and irrigation improvements constructed in ***Colorado*** since 1907 had actually increased flows into Kansas, by increasing return flows from those improvements to the Arkansas ***River***. [[71]](#footnote-72)71 A second flaw in Kansas's case lay in the state's own doctrinal impotence. Its hybrid water law code, one that was generally riparian but provided for prior appropriation rights from the streams of western Kansas, [[72]](#footnote-73)72 prevented Kansas from demonstrating harms allegedly incurred by all of its western irrigators as a consequence of ***Colorado***'s diversions. [[73]](#footnote-74)73 In brief, the Court could not apportion what Kansas could not quantify. [[74]](#footnote-75)74 One year later, the Kansas Supreme Court held that the state's water law was essentially powerless to regulate groundwater pumping. [[75]](#footnote-76)75 These two decisions immediately forced fundamental reform in Kansas water law; and in 1945, Kansas adopted the prior appropriation doctrine for both surface and groundwater statewide. [[76]](#footnote-77)76

The second round of Kansas v. ***Colorado***, alongside other developments, eventually brought some peace to the Arkansas ***River*** Valley. The Court's decision in Hinderlider v. La Plata ***River*** & Cherry Creek Ditch ***Co***. (1938) provided newfound security for the interstate compact mechanism. [[77]](#footnote-78)77 Meanwhile, the construction of John Martin Reservoir, a federal reservoir on the Arkansas ***River*** in eastern ***Colorado*** operated by the Corps, required the two states to execute various interim agreements regarding the management of its supplies. [[78]](#footnote-79)78 Together, these finally enabled Kansas and ***Colorado*** to follow the Court's repeated and earnest advice - that they apportion the ***river*** themselves, "pursuant **[\*165]** to the compact clause of the Federal constitution." [[79]](#footnote-80)79 The litigation had not been for naught: indeed, the Arkansas ***River*** Compact of 1949 significantly relied upon its findings to establish the relative rights of the states both to the ***river*** and to the supplies stored in John Martin Reservoir. [[80]](#footnote-81)80

Across the West, the need for state-federal cooperation in managing interstate ***river*** basins for both irrigation and flood control projects motivated the negotiation and enactment of similar compacts during the 1930s and 1940s. [[81]](#footnote-82)81 Through the mechanism of the compact, state and federal parties sought to quantify and to equitably apportion interstate waters among the compacting states. The United States effectively required interstate compacts as a condition for the states to obtain new federal water storage facilities in their respective basins. [[82]](#footnote-83)82 It further required these compacts to contain explicit protections for federal interests in interstate basins - especially Reclamation projects. [[83]](#footnote-84)83

[*III*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T372-8T6X-731R-00000-00&context=1516831). The Groundwater Revolution

By the mid-1960s, the Court, the States, and Congress appeared to have met the basic legal challenges posed by the West's interstate waters. [[84]](#footnote-85)84 The Court had set rules for their equitable allocation. [[85]](#footnote-86)85 Just as importantly, the Court's reticence to so allocate and the unpredictability of such an allocation had convinced the states to do so themselves, by negotiating interstate compacts. The western states' earlier claims to the exclusive ownership of the waters within their borders, and their arguments that water resources development undertaken by the United States should be subject exclusively to state control, eventually fell into disregard. [[86]](#footnote-87)86 Based largely on the security that these compacts provided to federal interests, especially to Reclamation, Congress funded the **[\*166]** construction of hundreds of reservoirs and irrigation districts across the West. Interstate comity, the noble idea memorialized in the preambles of western interstate ***river*** compacts, appeared at last to be realizable. [[87]](#footnote-88)87

Unfortunately, the security of water supply provided by these legal, political, and infrastructural achievements was quickly threatened by technological disruption on a regional scale. Since the late nineteenth century, westerners had known about the vast groundwater supplies within alluvial aquifers and deeper aquifers such as the High Plains-Ogallala Aquifer. [[88]](#footnote-89)88 In Kansas v. ***Colorado***, the Court had likewise noted the potential for groundwater development in the Arkansas ***River*** Basin. [[89]](#footnote-90)89 Contemporary water law scholars stressed the inter-dependence of surface water and groundwater supplies, advocating for legal reforms that would unify surface and groundwater rights into a coherent administrative regime. [[90]](#footnote-91)90 The issue remained largely theoretical as long as irrigators lacked the means to pump groundwater cheaply enough for agricultural use; but by 1955 or so, those means were at hand. New Deal and postwar federal power projects had electrified much of the rural West, thanks partly to hydro-electric power plants sited within Reclamation projects. [[91]](#footnote-92)91 Wartime technological advancements produced the high-capacity centrifugal water pump, powered by electric or internal combustion motors; inventors soon applied these breakthroughs to farming, developing the center-pivot irrigation system. [[92]](#footnote-93)92

Center-pivot irrigation transformed the waterscape of the West. [[93]](#footnote-94)93 Previously limited to land irrigable by gravity, irrigation spread to wherever farmers could profitably pump groundwater. [[94]](#footnote-95)94 The effect on interstate water supplies was immediate and substantial. Surface flows of the Arkansas ***River*** in ***Colorado*** had long suffered from over-appropriation; indeed, the ***river*** was fully appropriated by the turn of the twentieth century, and in most years, water rights **[\*167]** junior to 1880 rarely received their full decreed quantities. [[95]](#footnote-96)95 Groundwater pumping significantly exacerbated this situation, increasing from 31,000 acre-feet in 1950 to as much as 230,000 acre-feet by 1965 - an increase due almost entirely to wells constructed after the Arkansas ***River*** Compact was enacted in 1949. [[96]](#footnote-97)96 On the Pecos ***River*** in New Mexico, whose flows depend upon artesian groundwater supplies, pumping from artesian wells was depleting the ***river*** of 20,000 acre-feet every year. [[97]](#footnote-98)97 Depletions averaged nearly one acre-foot per acre in the basin between 1950 and 1983. [[98]](#footnote-99)98 And in the Republican ***River*** Basin in Nebraska, the number of wells expanded from approximately 500 at the time the Republican ***River*** Compact was enacted in 1943 to more than 4,500 by 1965, and to over 18,000 by 2000, with commensurate increases in irrigated acreage. [[99]](#footnote-100)99

Across the West, the disruptive technology of modern groundwater irrigation "began to erode the early promise" of interstate compacts in the West. [[100]](#footnote-101)100 But while compacts and their administration can be plagued with chronic flaws, the failure to consider interstate groundwater supplies was not among them. As early as 1941, the states negotiating the Republican ***River*** Compact understood that groundwater was an integral part of the compact's allocations. [[101]](#footnote-102)101 Reclamation did its best to estimate the impacts of groundwater pumping on its reservoirs in the Republican ***River*** Basin. [[102]](#footnote-103)102 Similarly, the Pecos ***River*** Compact of **[\*168]** 1949 was fundamentally informed by contemporary understandings of the complex groundwater hydrology of the lower reach of the Pecos ***River*** Basin. [[103]](#footnote-104)103

Rather, it was the legal and policy failure to respond to the impacts of modern groundwater irrigation on a regional scale that caused the administration of certain compacts to break down. [[104]](#footnote-105)104 The staggering increases in groundwater pumping, and the commensurate depletions they inflicted upon interstate streamflows, produced different legal and political responses depending on their location. [[105]](#footnote-106)105 Some of these differences had to do with state law diversity in the interstate compact context. [[106]](#footnote-107)106 Nebraska, for example, has never extended the prior appropriation doctrine to groundwater, opting instead for the doctrine of reasonable use. [[107]](#footnote-108)107 Moreover, Nebraska has maintained its commitment to local control over groundwater, delegating regulatory authority to local Natural Resources Districts (NRDs) instead of the state's Department of NaturalResources (DNR), which has centralized jurisdiction over surface water rights. [[108]](#footnote-109)108 Without the centralized power to reduce groundwater pumping to protect senior surface rights, and with local groundwater irrigators opting not to reduce their use, pumping continued apace in Nebraska. [[109]](#footnote-110)109 In ***Colorado***, most of the large irrigation wells in the Arkansas ***River*** Basin were drilled before the state required anything beyond a ministerial permit; when the State Engineer attempted to regulate groundwater pumping by bringing those wells within his jurisdiction under the prior appropriation system, the ***Colorado*** Supreme Court repeatedly struck down those efforts. [[110]](#footnote-111)110

Yet these doctrinal and jurisdictional complications do not tell the whole story; never underestimate the power of a state's self-interest. Consider New Mexico, a state with similar constitutional commitments to the doctrines of beneficial use and prior appropriation as ***Colorado***, [[111]](#footnote-112)111 and with generally the same comprehensive and centralized jurisdictional powers over groundwater as Kansas. [[112]](#footnote-113)112 Nonetheless, the New Mexico State Engineer's office made the deliberate choice to favor beneficial use at the expense of priority: it granted an excessive number of groundwater permits, but neglected priority administration during **[\*169]** times of shortages. [[113]](#footnote-114)113 As a consequence of this choice, groundwater pumping in the New Mexico portion of the Pecos ***River*** Basin expanded at the expense of both senior surface rights in New Mexico and Texas's allocation under the Pecos ***River*** Compact. [[114]](#footnote-115)114 In retrospect, it is easy to criticize such a selective application of New Mexico water law, or to attack Nebraska's bifurcated water law system for failing to protect prior surface rights from groundwater pumping. [[115]](#footnote-116)115 But such legalistic critiques would themselves be partial, obscuring the more important motivations behind these flaws. For the over-pumping of ground-water is often the result of political calculations that determine state action - and state inaction, which is often just as deliberate - regardless of the particulars of the state's water code. Time and again, the economic benefits of groundwater pumping have led states to disobey their compact obligations rather than to make the politically unpopular decision to reduce pumping. [[116]](#footnote-117)116

Such political calculation can also be sound cost-benefit analysis. The plaintiff state must summon the political and financial resources to undertake and maintain litigation, which is expensive and can take decades. [[117]](#footnote-118)117 Under the rules of the Supreme Court's original jurisdiction, a plaintiff state must first obtain leave to file its petition; only if the Court grants the motion for leave and survives motions to dismiss does the case proceed to trial before a Special Master appointed by the Court. [[118]](#footnote-119)118 Proving non-compliance with the compact at issue requires proving over-consumption upstream, which in turn requires baseline historical data concerning wells, groundwater pumping, and water use; but upstream states have traditionally not gathered or kept such data, partly because there is no reason to assist the downstream plaintiff state in proving up its case. [[119]](#footnote-120)119 Without pumping data, "trying to calculate what usable Stateline flows would have been in the absence of the compact violations … is a most formidable task." [[120]](#footnote-121)120 Lack of well data can also enable the defendant state to claim equitable defenses, such as laches, [[121]](#footnote-122)121 and any number of affirmative defenses, such as blaming streamflow depletions on phreatophytes rather than on pumping upstream. [[122]](#footnote-123)122 Litigation before the Special Master can produce unexpected results **[\*170]** at trial, while further surprises can occur when the Court overturns the Special Master's recommendations [[123]](#footnote-124)123 or allows non-state parties to intervene. [[124]](#footnote-125)124 The Court's equitable powers in interstate water disputes can be so substantial as to rewrite settlement agreements among the states. [[125]](#footnote-126)125 And if a plaintiff state eventually prevails, the defendant state has almost certainly reaped the economic benefits obtained from water over-consumption prior to the lawsuit and even during its pendency. [[126]](#footnote-127)126

[*IV*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T3H2-D6RV-H37G-00000-00&context=1516831). Litigating the Groundwater Revolution

Despite these obstacles, by the last quarter of the twentieth century downstream states had little choice but to seek relief from the Court. Depletions caused by upstream surface diversions and groundwater pumping had reached intolerable levels, as had the level of upstream states' intransigence; together, these convinced downstream states to abandon the diplomatic means of resolving interstate differences through their respective compact administrations and to become plaintiffs instead. [[127]](#footnote-128)127 In 1974, Texas filed against New Mexico over the Pecos ***River*** Compact. [[128]](#footnote-129)128 In 1985, Kansas filed against ***Colorado*** over the Arkansas ***River*** Compact. [[129]](#footnote-130)129 In 1998, Kansas filed a separate suit against Nebraska over the Republican ***River*** Compact; [[130]](#footnote-131)130 and in 2010, it filed again, to **[\*171]** enforce the same compact. [[131]](#footnote-132)131 Across this litigation, tendencies and patterns from the pre-compact era of interstate water litigation resurfaced, such as the taking of aggressive (and starkly opposed) legal and technical positions. This time, however, the Court focused its energies on interpreting and applying the compacts to groundwater, and directed its equitable powers to ensuring that these compacts would still bind the states in the turbulent wake of the groundwater revolution.

A. The Importance of Historical Analysis in Compact Interpretation

First, there is the threshold matter of compact interpretation. Because a compact is both a contract and a federal statute, the principles of contract law and statutory interpretation typically intermingle in interstate litigation. [[132]](#footnote-133)132 The Court presumes that interstate compacts are "the subject of careful consideration before they are entered into, and are drawn by persons competent to express their meaning and to choose apt words in which to embody the purposes of the high contracting parties." [[133]](#footnote-134)133 If the text of a compact is unambiguous within its historical context, the text is conclusive. [[134]](#footnote-135)134 If the text is ambiguous, then it is appropriate for the Court to examine extrinsic evidence of the negotiation history of the compact and its legislative history. [[135]](#footnote-136)135 Yet all interstate compacts are ambiguous because they result from intense and iterative negotiations. [[136]](#footnote-137)136 More importantly, because most interstate compacts were enacted before ground-water came to dominate irrigation across the West, interstate groundwater litigation required the Court to resolve competing historical interpretations of the compacts under its review.

Across the different allocation formulas set forth in the Pecos, Arkansas, and Republican ***River*** Compacts, the most important issue in all three cases was "the extent to which the compact's water apportionment restricted ground-water pumping." [[137]](#footnote-138)137 Unsurprisingly, the states took strongly divergent positions on this common issue. But over nine decades after the diametrically opposed legal positions set forth in Kansas v. ***Colorado*** - which today are as obsolete as the hydrological theories upon which they partially depended - the breadth of that divergence is nonetheless striking. [[138]](#footnote-139)138 The first round of litigation in Kansas v. Nebraska & ***Colorado*** provides one such example. The Republican ***River*** **[\*172]** Compact refers neither to "surface water" nor to "groundwater," but rather allocates the "virgin water supply," which the compact defines as "the water supply within the Basin undepleted by the activities of man." [[139]](#footnote-140)139 In its petition, Kansas alleged that Nebraska's thousands of wells in the Republican ***River*** Basin, together with its failure to protect surface flows, had caused Nebraska to appropriate far more of the "virgin water supply" of the basin than the Republican ***River*** Compact allocated to Nebraska. [[140]](#footnote-141)140 Kansas's position was anchored in the compact, but it accorded nicely with Kansas's own water code, which had extended the prior appropriation doctrine to both surface and groundwater and placed both supplies under the centralized jurisdiction of the state's Chief Engineer soon after the enactment of the compact in 1943. [[141]](#footnote-142)141 In response, Nebraska took the position that the compact did not restrict groundwater pumping at all, because it never mentions groundwater - a position generally consistent with Nebraska's reasonable use doctrine and its delegation of groundwater regulation to NRDs. [[142]](#footnote-143)142 Further, Nebraska accused Kansas of the opposite extreme, of claiming millions of acre-feet of High Plains-Ogallala Aquifer groundwater supplies that were clearly not hydrologically connected to the waters of the basin (even though Kansas never actually made this claim). [[143]](#footnote-144)143 For its part, ***Colorado*** was most concerned about the Ogallala, and dedicated its efforts to the proposition that the compact did not allocate Ogallala groundwater but only alluvial groundwater. [[144]](#footnote-145)144 This proposition accorded well with ***Colorado*** water law, which during the 1960s had established a fundamental statutory distinction between tributary and non-tributary groundwater. [[145]](#footnote-146)145

These positions took the old wine of pre-compact arguments - bold and mutually incompatible assertions of the states' sovereign control of water supplies within their boundaries, in accordance with their respective water law codes - and decanted them into new but similarly incompatible vessels of compact interpretation. [[146]](#footnote-147)146 They also took place during the same decade in which the United States was making similarly bold claims to unappropriated water supplies for federal lands in the West. [[147]](#footnote-148)147 These claims and the arguments supporting them were analogous to those put forth by Reclamation earlier in the **[\*173]** twentieth century, most notably in Kansas v. ***Colorado*** and Nebraska v. Wyoming. [[148]](#footnote-149)148

Whereas those earlier cases had wrestled with fundamental problems of equitable allocation absent an interstate compact, the later cases placed a premium on historical analysis, to uncover the states' original positions regarding how groundwater affected the equitable apportionments set forth in the compacts themselves. [[149]](#footnote-150)149 In resolving these disparate claims about the intent of the compacting states, the Special Masters considered extensive documentation amassed and organized by historians and other experts specializing in water law. [[150]](#footnote-151)150 To buttress New Mexico's defense in Texas v. New Mexico, State Engineer Steve Reynolds hired G. Emlen Hall, a water lawyer with expertise in the history of nineteenth-century Spanish and Mexican water law, as well as a command of the engineering archives of the Pecos ***River*** Commission. [[151]](#footnote-152)151 Hall's work served to explain New Mexico's position regarding the state of the Pecos ***River*** at the time the compact was negotiated - the now-infamous "1947 Condition," the compact term around which much of that litigation revolved. [[152]](#footnote-153)152 In Kansas v. ***Colorado***, the states held "disparate views on the intent and meaning" of the Arkansas ***River*** Compact, ruling out an agreed statement of facts in the case. [[153]](#footnote-154)153 To support its interpretation of that document, the Kansas litigation team hired Dr. Douglas R. Littlefield to compile an extensive two-volume history of the compact, based on hundreds of thousands of pages of sources from archives across the United States. [[154]](#footnote-155)154 In reviewing that history and the twelve days of Dr. Littlefield's cross-examination by ***Colorado***, Special Master Arthur L. Littleworth found that "the accuracy and thoroughness of his historical presentation **[\*174]** generally hold up well." [[155]](#footnote-156)155 In Kansas v. Nebraska & ***Colorado***, Kansas again hired Dr. Littlefield to assemble the documentary history of the Republican ***River*** Compact, to support Kansas's claim that the compact incorporated groundwater. [[156]](#footnote-157)156 Largely as a consequence of these efforts, in all three cases, the Special Masters and the Court found that the compacts at issue "included the effects of groundwater pumping despite the absence [in the compact] of the term "groundwater.'" [[157]](#footnote-158)157 As Special Master McKusick wrote, "neither the parties to the [Republican ***River***] Compact, nor the Congress and the President who approved it, could have intended that an upstream State could, with impunity, unilaterally enlarge its allocation by taking some of the virgin water supply before it reached the stream flow." [[158]](#footnote-159)158

Recovering the intended place of groundwater within interstate compacts that predate the groundwater revolution has likewise figured prominently in two pending cases before the Court. The first, Montana v. Wyoming & North Dakota, concerns Wyoming's violations of the Yellowstone ***River*** Compact, a compact enacted in 1951. [[159]](#footnote-160)159 Besides its allegations of compact violations related to increased surface use and reservoir storage in Wyoming, Montana alleged that Wyoming had also violated the compact by allowing groundwater development for irrigation and other uses, and by allowing the pumping of groundwater associated with coal-bed methane production in two tributary basins, the Tongue and Powder ***River*** Basins. [[160]](#footnote-161)160 Wyoming took the position that the compact governed surface water but not groundwater, based on the fact that the compact never uses the term "groundwater" - just as Nebraska had argued regarding the Republican ***River*** Compact in Kansas v. Nebraska & ***Colorado***. [[161]](#footnote-162)161 In line with that position, Wyoming suggested that Montana could request Wyoming (and North Dakota) to renegotiate the compact, or bring an equitable apportionment action in the Court to apportion groundwater. [[162]](#footnote-163)162

Wyoming's arguments gained little traction with Special Master Barton H. Thompson, Jr., a professor of law at Stanford and an expert in water law. [[163]](#footnote-164)163 He first noted the decisions in the Arkansas and Republican ***River*** cases, in which the Court had found that those compacts regulate groundwater pumping even though they never use the word "groundwater." [[164]](#footnote-165)164 He then examined the text of the Yellowstone ***River*** Compact, and found that its language was "sufficiently broad and inclusive to encompass at least some forms of groundwater that are hydrologically connected to the surface waters of the Powder and Tongue **[\*175]** ***Rivers***." [[165]](#footnote-166)165 In support of this finding, Special Master Thompson provided a brief but effective review of the historical context of western water law during the five decades leading up to the enactment of the Yellowstone ***River*** Compact. [[166]](#footnote-167)166 The Court has long recognized (since Kansas v. ***Colorado*** in 1907) that groundwater that is hydrologically interconnected with a surface stream should "in at least some instances" be treated as part of that stream. [[167]](#footnote-168)167 The Court has likewise construed western water law to prohibit the interception and collection of "groundwater that otherwise would have flowed to surface appropriators." [[168]](#footnote-169)168 Contemporary water law scholars recognized that groundwater was an important component of a surface water course, [[169]](#footnote-170)169 as did the Montana Supreme Court. [[170]](#footnote-171)170 Amendments to the water codes of both Montana and Wyoming enacted after the groundwater revolution had begun in earnest - for Wyoming in 1947 and 1957, and for Montana in 1973 - formalized the legal integration of hydrologically interconnected groundwater and surface water. [[171]](#footnote-172)171 Having reviewed the language of the Yellowstone ***River*** Compact within the historical context of its negotiations and contemporary western water law and practice, Special Master Thompson reached a carefully wrought conclusion: the compact protected Montana's pre-1950 uses from interference by at least some forms of groundwater pumping within the basin from after 1950, where that groundwater is hydrologically interconnected to the surface channels of the Yellowstone ***River*** and its tributaries. [[172]](#footnote-173)172 This interference potentially included the pumping of groundwater associated with coal-bed methane production; but a determination of "exactly what groundwater is covered or the exact circumstances under which groundwater pumping" violates the compact required subsequent briefing and fact-finding. [[173]](#footnote-174)173 Neither Montana nor Wyoming took an exception to this conclusion. [[174]](#footnote-175)174

The historical context of the Yellowstone ***River*** Compact and the history of **[\*176]** its administration returned as litigated matters during the second phase of Montana v. Wyoming & North Dakota, which dealt with liability issues. [[175]](#footnote-176)175 Dr. Littlefield, the historian and veteran expert witness from the Arkansas and Republican ***River*** cases, [[176]](#footnote-177)176 reappeared in the service of Montana; Wyoming sought to exclude his testimony, provoking motion pleading on the admissibility and scope of his expert testimony. [[177]](#footnote-178)177 Special Master Thompson admitted Dr. Littlefield's report, but limited his testimony to intrastate procedures required under the compact. [[178]](#footnote-179)178 In determining Wyoming's liability for its compact violations, Special Master Thompson relied upon other witnesses, who provided testimony regarding the shortages Montana had suffered for storage and direct-flow rights. [[179]](#footnote-180)179

The second case pending before the Court, Texas v. New Mexico & ***Colorado***, concerns New Mexico's alleged noncompliance with the Rio Grande Compact. [[180]](#footnote-181)180 As a lawyer for New Mexico remarked, "people have been fighting over this ***river*** for about 400 years and there's a lot of information to be imparted." [[181]](#footnote-182)181 Texas alleges that New Mexico has violated the compact by authorizing the diversion of surface water and hydrologically connected groundwater downstream of Elephant Butte Reservoir in the long reach between the reservoir and the Rio Grande Project, a Reclamation project predating the compact and with lands in both New Mexico and Texas. [[182]](#footnote-183)182 Texas contends that these diversions violate the compact because once New Mexico delivers water to the reservoir as required by the compact, it belongs exclusively to the beneficiaries of the Rio Grande Project, and is thus legally unavailable for any intermediate diversions within New Mexico. [[183]](#footnote-184)183 According to Texas, these intercepting diversions of water below the reservoir have deprived Texas of tens of thousands of **[\*177]** acre-feet annually. [[184]](#footnote-185)184 The United States successfully intervened in the case to protect its interests in the Rio Grande Project. [[185]](#footnote-186)185

New Mexico responded with a full-throated defense of its sovereign power to regulate water within the state. While New Mexico accepts that the compact does require it to deliver the requisite amount of water to Elephant Butte Reservoir, New Mexico asserts that the compact imposes no obligations upon New Mexico to limit post-compact development within New Mexico to ensure that deliveries to the Rio Grande Project arrive at the New Mexico-Texas state line. [[186]](#footnote-187)186 According to this interpretation, New Mexico may intercept and divert water between the reservoir and the Texas border "because that water - and indeed, the entire administration of the Rio Grande Project within New Mexico - is governed by New Mexico state water law." [[187]](#footnote-188)187

The case once again highlights the aggressive legal positions that have become hallmarks of interstate water litigation in both its pre-compact and post-compact periods. Texas demands that the Rio Grande be allowed "to flow unimpeded" by any diversions between Elephant Butte Reservoir and Rio Grande Project lands, as Kansas similarly demanded of the Arkansas ***River*** in its original lawsuit against ***Colorado***. [[188]](#footnote-189)188 New Mexico has responded by asserting that its sovereignty and the primacy of its own state water law should determine interstate water distribution, [[189]](#footnote-190)189 as ***Colorado*** responded to Kansas's claims over a century ago, [[190]](#footnote-191)190 and as Nebraska asserted in 1998-2000 regarding groundwater hydrologically connected to the Republican ***River***. [[191]](#footnote-192)191 And in defense of Reclamation interests, the United States has made forceful claims against the upstream state's sovereign control of its waters, [[192]](#footnote-193)192 as it did for unappropriated water supplies during both the pre-compact and post-compact periods. [[193]](#footnote-194)193 This time, however, the water supplies have been appropriated within both New Mexico and Texas by the Rio Grande Project, which explains the United States' intervention in the case. [[194]](#footnote-195)194

The signal difference between these periods is, of course, the existence of interstate compacts. New Mexico's claims do not rest upon some bald reassertion of the Harmon Doctrine. [[195]](#footnote-196)195 Rather, New Mexico relies upon an aggressive **[\*178]** interpretation of the Rio Grande Compact, one which argues that in approving the compact, New Mexico limited its state sovereignty only by agreeing to deliver water to Elephant Butte Reservoir; any further concession would constitute a relinquishment of its sovereignty and a disavowal of the Court's longstanding recognition of the primacy of state water law under the Reclamation Act. [[196]](#footnote-197)196 Special Master A. Gregory Grimsal disagreed: the "unambiguous text and structure" of the Rio Grande Compact were sufficient to require New Mexico to relinquish control of Rio Grande Project water permanently once it delivers water to Elephant Butte Reservoir, [[197]](#footnote-198)197 because the compact "integrates the Rio Grande Project wholly and completely," thereby protecting both deliveries to and releases from the reservoir for project purposes. [[198]](#footnote-199)198

Perhaps more importantly, Special Master Grimsal conducted an independent investigation of the long history of the Rio Grande and the legal-historical context of the Rio Grande Compact negotiations to bear upon his interpretation of the compact. As he stressed at the beginning of his report, ""the meaning and scope' of the 1938 Compact "can be better understood when [the Compact] is set against its background.'" [[199]](#footnote-200)199 He devoted over half of his nearly three-hundred-page report to reconstituting the historical context of the ***river***'s development, starting with the Treaty of Guadalupe Hidalgo (1849) and its creation of the International Boundary Commission, proceeding to the development of the Rio Grande Project, and concluding with the decade of negotiations which culminated in the 1938 compact itself. [[200]](#footnote-201)200 In discrediting New Mexico's claim to have the right to recapture waters downstream from Elephant Butte Reservoir, Special Master Grimsal emphasized the historical evidence surrounding the compact: "the purpose and history of the 1938 Compact confirm the reading that the signatory states intended to use the Rio Grande Project to guarantee delivery of Texas's … equitable apportionment of the stream, thereby supporting the finding that Texas has, in fact, stated a claim under the 1938 Compact." [[201]](#footnote-202)201 Five decades of historical evidence - most notably of the records of the Rio Grande Project, of the interim compacts and compact commission meetings, and correspondence contemporary with the ratification of the Rio Grande Compact, all contained in a DVD attached to the Report - supported one emphatic conclusion: "it is unfathomable to accept that Texas would "trade away its right to the Court's equitable apportionment,' … had it contemplated then that New Mexico would be able to disown its obligations under the 1938 Compact and simply recapture water it delivered to the Project, destined for Texas, upon its immediate release from the Reservoir." [[202]](#footnote-203)202 Special Master Grimsal further found that the long history of the Court's application of the doctrine of equitable apportionment - anchored most firmly in both Hinderlider's affirmation of the interstate compact mechanism and the Court's own **[\*179]** equitable apportionment decrees - also prohibits New Mexico from intercepting and recapturing Rio Grande Project water after its release from Elephant Butte Reservoir. Acting upon Special Master Grimsal's recommendation, the Court denied New Mexico's motion to dismiss in October, 2017. [[203]](#footnote-204)203

Special Master Grimsal's report in Texas v. New Mexico & ***Colorado*** raises an interesting evidentiary issue: should the Court allow his extensive but independent historical investigation to support his recommendations - and thus become the law of the case - without providing the parties to that litigation an opportunity to analyze and challenge his investigation? As set forth above, Texas v. New Mexico, Kansas v. ***Colorado***, Kansas v. Nebraska & ***Colorado***, and Montana v. Wyoming & North Dakota all involved extensive historical analyses produced by the party states, which Special Masters and the Court evaluated in reaching their conclusions regarding the appropriate historical meaning and context of the compacts under review. [[204]](#footnote-205)204 The issue has divided the parties to the Rio Grande litigation. ***Colorado*** and New Mexico contend that Special Master Grimsal's historical investigations and conclusions, to the extent they support his recommendations, should not be allowed to become the law of the case. [[205]](#footnote-206)205 Going further, amicus briefs filed in support of New Mexico's exceptions have set forth additional historical materials. [[206]](#footnote-207)206 The United States disagrees, arguing instead that the pleadings are sufficient to support Special Master Grimsal's recommendation to deny New Mexico's motion to dismiss, without reliance on his independent investigation of the compact's history and historical context. [[207]](#footnote-208)207 Nonetheless, all parties to the litigation agree that further proceedings should provide for the parties to analyze and supplement the historical conclusions of Special Master Grimsal. [[208]](#footnote-209)208 The authoritativeness of his historical findings thus remains an open issue.

Taken as a whole, the historical analyses and conclusions contained in these reports and decisions are notable for several reasons. First and most importantly, they firmly incorporated groundwater into compacts that had been negotiated and enacted decades before large-scale groundwater pumping greatly expanded water usage across their respective basins. There is a second and less **[\*180]** obvious aspect to these reports and decisions: they firmly and consistently refused to allow the states' aggressive litigation positions - and their state-law doctrinal supports - to stand. In Kansas v. Nebraska & ***Colorado***, Special Master McKusick deftly displaced these to the periphery, largely ignoring the states' legal and jurisdictional categories of groundwater and focusing instead on the actual effects of groundwater pumping on compacted ***river*** systems. [[209]](#footnote-210)209 In Montana v. Wyoming & North Dakota, Special Master Thompson provided an authoritative analysis grounded in both the record and his own expertise in wes-tern water law to deny (albeit with professorial precision) Wyoming's claim that the Yellowstone ***River*** Compact excluded groundwater. [[210]](#footnote-211)210 In the Rio Grande litigation, Special Master Grimsal deployed the ***river***'s voluminous history to discredit New Mexico's claim of sovereign jurisdiction over flows whose diversion and use were governed by the Rio Grande Compact and its integration of the Rio Grande Project. [[211]](#footnote-212)211 Such practical restraint resembled the Court's earlier refusals to adopt litigant states' aggressive pre-compact positions. [[212]](#footnote-213)212 Finally, the Court's integration of hydrologically connected groundwater into interstate compacts has consistently reaffirmed the enforceability of the compact mechanism as first established in Hinderlider, but within a waterscape unimaginable in 1938 - one dominated by groundwater pumping on a basin-wide scale. [[213]](#footnote-214)213 In light of these decisions, it seems clear that states that seek to exclude ground-water from interstate compacts are tilting at windmills.

B. The Central Role of Hydrologic Modeling

All interstate water litigation relies heavily upon experts: their expert reports, their testimony, and their performance under cross-examination. In a typical scenario, water resource engineers, groundwater modelers, and other groundwater experts cooperate to measure and calculate the water shortages suffered by the downstream state as a result of an upstream state's over-consumption. Next, agronomists take these water shortage calculations and compute the decrease in crop yields that result from insufficient water supplies. Agricultural economists then estimate the monetary damages, both primary and secondary, that were caused by these lower yields, typically through the use of economic models; these estimations include losses in tax revenue, as well as the time value of money (assessed as prejudgment interest). [[214]](#footnote-215)214

Arriving at the right number for water over-consumption - upon which most subsequent expert analysis depends - is a difficult task because of the often-complex interactions between the groundwater supplies and the diverse surface **[\*181]** waters of an interstate basin, and because of how groundwater pumping affects these interactions. [[215]](#footnote-216)215 The movement of groundwater baseflow and its effect upon surface water supplies, as well as the impact of groundwater pumping on both baseflow and surface flows, cannot be easily measured; there is no groundwater equivalent for surface gages and flumes. Rather, the dynamics of groundwater must be estimated primarily through the use of hydrologic models, whose accuracy can be evaluated according to measurable well depths and stream flows. [[216]](#footnote-217)216 The dominant technological development in western water since 1965 - high-volume groundwater irrigation - has driven the most important technological development in interstate water litigation - computer-based ground-water modeling. [[217]](#footnote-218)217 Groundwater modeling experts perform tasks that seem mysterious to the layman. They quantify what is unseen - depletions to groundwater baseflow caused by pumping - and then calculate the impact of those depletions on the visibly absent - diminished surface flows.

As a consequence, groundwater modeling has proven to be the most difficult and contentious component of an interstate water case, both within the teams of states' respective technical experts and between the states themselves. In Texas v. New Mexico, the first Special Master, Jean Breitenstein, warned the engineers and other technical experts from both states that they should evaluate the impacts of groundwater pumping based on sound science, not self-interest. [[218]](#footnote-219)218 New Mexico engineers did not heed his warning; they were soon pressuring their groundwater modelers to deliver particular results rather than to assemble a realistic model of the basin's hydrology, one that would obey the technical requirements for compliance with the Pecos ***River*** Compact. [[219]](#footnote-220)219 Texas and New Mexico eventually agreed on a groundwater modeling approach, largely because Breitenstein's successor, Charles J. Meyers, had threatened to employ his own if the states could not agree. [[220]](#footnote-221)220

On the Arkansas ***River***, Kansas and ***Colorado*** also faced a hydrological system daunting in its complexity. The states' groundwater modelers were tasked with modeling the basin's many features, both natural and man-made: its highly variable flows across one hundred fifty ***river*** miles; the impact of John Martin Reservoir, a large federal reservoir, and numerous large private reservoirs; trans-mountain flows from the western slope of ***Colorado***; surface diversions and the **[\*182]** reuse of surface flows by twenty-three different irrigation canals in ***Colorado***, operating under priority administration on an hourly basis; the reuse of surface flows; the consumptive use of various crops and phreatophytes; the pumping of over one thousand high-capacity wells; and the effects of fallowing land to offset pumping impacts. [[221]](#footnote-222)221 "And the model is then asked," noted Special Master Littleworth dryly, "to estimate what usable Stateline flows in the ***river*** would have been at any point in time if there had been no post-compact well pumping." [[222]](#footnote-223)222

Given the opportunities for error across such a complex system, mistakes were inevitable. Nonetheless, the courtroom combat over groundwater modeling in Kansas v. ***Colorado*** must rank as one of the most intense, extensive, and grueling in the history of interstate litigation. Of the two hundred seventy days of trial in that case, about two hundred of them concerned controversies over groundwater modeling. [[223]](#footnote-224)223 Kansas based its estimates of ***Colorado***'s compact violations on the results of outputs from Kansas's "Hydrologic-Institutional Model," (H-I Model), developed to estimate depletions in stateline flows from 1950 to 1985 caused by post-compact wells. [[224]](#footnote-225)224 ***Colorado*** subjected Kansas experts to withering attacks, especially its lead technical expert, Timothy J. Durbin. [[225]](#footnote-226)225 The attack took a heavy toll on Durbin and the Kansas case. Special Master Littleworth's clinical description understates the severity of the situation by a country mile, and it is worth excerpting here.

After testifying for approximately one month, under direct and cross-examination, Mr. Durbin suffered a breakdown and was admitted to a psychiatric hospital. In the latter part of his cross-examination, it began to appear that a number of errors had been made in various Kansas exhibits, including at least one significant mistake in the coding instructions to the Kansas hydrologic-institutional model. Kansas began to file overnight revisions, sometimes more than once, to certain key conclusionary exhibits. This computer model was crucial to the Kansas case.

The trial was recessed while I attempted to find out more about Durbin's condition and when he would be able to return. A medical report was obtained from his attending physician, and ***Colorado*** requested that I obtain a second opinion which it paid for. I kept the details of these medical reports confidential, although their general conclusions were made known to the parties. From my conversations with the two psychiatrists, and my review of their reports, I concluded that to protect Mr. Durbin's future well-being, and ultimately the proper presentation of the Kansas case, he should not be pressured into returning. It was clear that he would not have been able to resume his trial responsibilities soon, if at all. [[226]](#footnote-227)226

**[\*183]** These circumstances forced Kansas to move for a continuance, which it received, and to prepare replacement experts for a full replacement case. [[227]](#footnote-228)227 Steven P. Larson, a pioneer in the field of groundwater modeling, replaced Durbin as the state's chief modeling expert, and Kansas modified the H-I Model, partially in response to recommendations made by ***Colorado*** experts. [[228]](#footnote-229)228 The modified H-I Model produced much lower estimates of stateline depletions - nearly half as much as those which Kansas had originally alleged. [[229]](#footnote-230)229 ***Colorado*** then put forth a competing groundwater model, but eventually agreed to use the modified H-I Model, largely because its estimates of stateline depletions were generally lower than the ***Colorado*** model. [[230]](#footnote-231)230

The fight over the H-I Model did not end there; it continued for another decade. A major controversy concerned how accurately the modified H-I Model measured water consumption by crops. [[231]](#footnote-232)231 The model had originally employed an estimate of potential evapotranspiration, or PET, which was based on the long-established, modified Blaney-Criddle formula, a temperature-based method of estimating seasonal crop water use. [[232]](#footnote-233)232 Neither state advocated for the continuance of the Blaney-Criddle formula; rather, they proposed competing methods that would replace it as the model input for PET. [[233]](#footnote-234)233 Kansas proposed the Penman-Monteith equation, while ***Colorado*** advocated for a different reference equation, the 1982 Kimberly Penman method. [[234]](#footnote-235)234 The controversy over PET "became a major trial issue." [[235]](#footnote-236)235 In resolving that controversy, Special Master Littleworth considered the rival methods and the information supporting their accuracy, which included weather and climate data, adjustments for aridity, irrigation management and salinity - all of which relied upon extensive expert testimony. [[236]](#footnote-237)236 The Special Master found that the PET values to be used in the modified H-I Model should be those advocated by Kansas. [[237]](#footnote-238)237

Following that fight, ***Colorado*** next challenged the fitness of the modified H-I Model for calculating compact compliance on a prospective basis, in ad-dition to its original function, that of estimating ***Colorado***'s depletions and compact violations retrospectively. [[238]](#footnote-239)238 Special Master Littleworth found that the modified H-I Model was not adequate for the purpose of assessing compliance on an annual basis, as Kansas had sought. [[239]](#footnote-240)239 Instead, he sided with ***Colorado***, which had proposed that the model evaluate compliance based on a ten-year rolling **[\*184]** average - a significant victory for ***Colorado***, which gained the flexibility afforded by ten-year compliance horizons. [[240]](#footnote-241)240 Ultimately, a modified version of the H-I Model emerged, convincing both the Special Master and the Court of the extent of ***Colorado***'s violations, and prescribing a path forward for future compliance. [[241]](#footnote-242)241 The trial exposed the model's flaws, which the parties remedied and improved. [[242]](#footnote-243)242 The Arkansas ***River*** Compact Administration continues to use the modified H-I Model in applying the terms of the Court's decree, and the two states have revised the model on a regular basis. [[243]](#footnote-244)243

By contrast, Kansas v. Nebraska & ***Colorado*** avoided litigation over groundwater modeling altogether. After Special Master McKusick ruled that the "virgin water supply" allocated by the Republican ***River*** Compact required the accounting of all groundwater depletions to streamflow caused by pumping, the Court implicitly rejected Nebraska's argument to the contrary by denying its motion to dismiss. [[244]](#footnote-245)244 The case then moved into its next phase: how the states would conduct discovery to construct a hydrologic model for the Republican ***River*** Basin. [[245]](#footnote-246)245 Undoubtedly informed by the scorched earth of Kansas v. Colo-rado (a case still active at the time Special Master McKusick made his legal ruling over groundwater in 2000), the states moved for a stay to enable mediation and negotiation regarding the joint development of a groundwater model. [[246]](#footnote-247)246 The stay was granted, and in less than two years, the three states succeeded in negotiating the Final Settlement Stipulation of 2002 (FSS), whose principal technical achievement is the Republican ***River*** Compact Administration Groundwater Model (RRCA Model), developed by all three states with the important assistance of the United States Geological Survey (USGS) and Reclamation. [[247]](#footnote-248)247 While groundwater modeling experts have criticized certain aspects of the RRCA Model, [[248]](#footnote-249)248 Special Master McKusick, almost certainly mindful of previous litigation, stressed the superiority of a groundwater model produced through the process of a negotiated settlement compared to one otherwise emerging **[\*185]** from a typical "battle of the experts." [[249]](#footnote-250)249 The RRCA Model has generally succeeded as the tool by which the states measure the impacts of groundwater pumping and its effects on compliance across the basin and its sub-basins. Tel-lingly, when Kansas v. Nebraska & ***Colorado*** returned to the Court in 2010, the RRCA Model was not a subject of dispute among the states. [[250]](#footnote-251)250

Conflict over groundwater modeling returned to the Court in the second phase of Montana v. Wyoming & North Dakota. [[251]](#footnote-252)251 Special Master Thompson had earlier found that the Yellowstone ***River*** Compact protects Montana from "at least some forms" of post-1950 groundwater pumping, "where the groundwater is hydrologically connected to the surface channels of the ***river*** and its tributaries." [[252]](#footnote-253)252 The next task was to determine whether those pumping impacts, in particular those related to coal-bed methane extraction in the Tongue ***River*** Basin, reduced stateline flows in violation of the compact. [[253]](#footnote-254)253 Wyoming had earlier argued, unsuccessfully, that the compact did not include groundwater. [[254]](#footnote-255)254 Wyoming now took a similarly aggressive legal and technical position: the hydrological connection between coal-bed methane-related groundwater depletions and surface flows was too tenuous to include those alleged impacts within **[\*186]** the compact. [[255]](#footnote-256)255 The Yellowstone ***River*** Compact emphasizes the protection of the states' respective rights to the basin according to the doctrine of prior appropriation. [[256]](#footnote-257)256 Wyoming argued further that both Wyoming and Montana had previously determined that the hydrological connection between coal-bed methane-related groundwater production and the appropriated surface waters within their states was also too tenuous to warrant intrastate regulation under their respective appropriation systems; therefore, the Court should not disturb those determinations. [[257]](#footnote-258)257

Special Master Thompson quickly disposed of these legal arguments. First, regardless of the states' respective laws related to coal-bed methane production, they had no bearing upon the ultimate question in an interstate compact case - "the meaning of the Compact and not the intrastate practices of the parties to the Compact." [[258]](#footnote-259)258 He then pointed out that the prior appropriation water codes of both Wyoming and Montana did provide protections to holders of surface appropriation rights against interference caused by coal-bed methane-related groundwater pumping. [[259]](#footnote-260)259 Therefore, the depletions caused by such pumping could violate the compact. Regardless of state water laws and the technical positions of state water officials, "this Court is the ultimate arbiter of the connection between CBM [coal-bed methane] groundwater production and surface flows for determining whether there has been a violation of the Yellowstone ***River*** Compact in this case." [[260]](#footnote-261)260

Montana had the twofold burden of establishing that hydrological connection and then showing that pumping related to coal-bed methane groundwater production in Wyoming had produced compact violations. As its name implies, coal-bed methane is found within the pore space of coal deposits, where hydrostatic pressure holds it in place. Producing coal-bed methane is a two-step process. First, the driller relieves that holding pressure by pumping groundwater out of the coal deposit; dewatered and depressured, the gas then migrates to fractures within the coal deposit. Next, the driller sinks production wells into the coal deposit to pump out the gas. Coal-bed methane extraction produces significant amounts of groundwater, known as produced water; this groundwater production can affect and potentially impair both nearby wells and hydrologically connected surface waters. [[261]](#footnote-262)261 Yet as with any other use of groundwater, the relationship between pumping and surface flows is often attenuated **[\*187]** in volume and in time: "the pumping of one acre-foot of water from a groundwater aquifer may reduce surface flow by only a fraction of that amount, and the effect might not appear for months or years." [[262]](#footnote-263)262 Montana had little difficulty in meeting its first burden: Wyoming generally conceded that coal-bed methane production in the Tongue ***River*** Basin of Wyoming had caused hydrological impacts upon Tongue ***River*** flows. [[263]](#footnote-264)263

That raised Montana's second burden - that of showing, through the use of groundwater modeling, that these hydrological impacts caused Wyoming to vio-late the Yellowstone ***River*** Compact. In deciding this issue, Special Master Thompson refereed a fight between two groundwater modeling experts and veterans of interstate groundwater litigation: Mr. Steven P. Larson for Montana, and Dr. Willem Schreuder for Wyoming. [[264]](#footnote-265)264 Larson did not construct an independent groundwater model to estimate the effects of coal-bed methane groundwater production on Tongue ***River*** flows, probably because developing and refining groundwater models is an expensive enterprise. Rather, he relied upon a model that the Bureau of Land Management (BLM) had developed to assess coal-bed methane-related groundwater impacts in the nearby Powder ***River*** Basin. [[265]](#footnote-266)265 Employing the BLM model effectively required Montana experts to deduce estimated pumping impacts on the Tongue ***River*** based on their own professional judgment. [[266]](#footnote-267)266

Montana's decision to rely upon the BLM model proved difficult to defend **[\*188]** at trial. Wyoming first attacked the appropriateness of the BLM model: it covered eight thousand square miles of the Powder ***River*** Basin but did not address pumping impacts on the Tongue ***River*** specifically; moreover, Wyoming argued that the BLM model suffered from limited data for observation wells, produced water amounts, and the basin's geology, making it inappropriate to calculate the local effects of coal-bed methane production on the Tongue ***River***. [[267]](#footnote-268)267 Indulging in the high, uncluttered ground reserved for rebuttal experts whose client need not invest in and defend its own model, Dr. Schreuder attacked Montana's efforts to apply the BLM model to the Tongue ***River*** Basin. He testified that only a small, locally-focused area model, rather than a large regional one such as the BLM model, could calculate such impacts with credi-bility. [[268]](#footnote-269)268 Wyoming experts then undercut the assumptions Larson made concerning water consumption and groundwater recharge in the Tongue ***River*** Basin. Dr. Schreuder argued that the BLM model failed to properly estimate the effects of groundwater pumping on evapotranspiration by local phreatophytes - trees and other riparian plants that consume large amounts of shallow alluvial groundwater. Because pumping lowered the water table, it deprived local phreatophytes of water, reducing their evapotranspiration and thus potentially offsetting groundwater depletions caused by pumping; Montana's apparent inattention to this phenomenon reduced both the amount and the credibility of Montana's depletion estimates. [[269]](#footnote-270)269 Based on expert testimony by geologists and hydrologists for Wyoming, Special Master Thompson also found that Mr. Larson had misinterpreted data relating to how much produced water that was stored in impoundment reservoirs seeped back into the groundwater system; that misinterpretation had produced an under-estimation of groundwater recharge, and thus a commensurate over-estimation of groundwater depletions. [[270]](#footnote-271)270

Wyoming then turned to the more technical issue of how Larson had evaluated the accuracy of the BLM model's results as applied to the Tongue ***River*** Basin. Dr. Schreuder criticized him for failing to calibrate the BLM model to local baseflows in the Tongue ***River*** - that is, a failure to compare the model's estimated depletions with actual water levels measured at observation wells - and to adjust the model accordingly. [[271]](#footnote-272)271 While Special Master Thompson recognized the difficulties of calibration, he nonetheless found that the lack of calibration "raised serious questions regarding the reliability of the BLM model in calculating impacts of CBM groundwater pumping on the Tongue ***River***." [[272]](#footnote-273)272 Finally, Wyoming criticized Larson for not undertaking a formal analysis of the BLM model's overall sensitivity to the various inputs and assumptions he had used in applying that model to the Tongue ***River*** Basin; without such a systematic sensitivity analysis, it was difficult to evaluate the potential impact of these inputs and assumptions, and how the model's calculations would change with different **[\*189]** inputs and assumptions. [[273]](#footnote-274)273 For all of these reasons, Special Master Thompson ultimately found that Montana had failed to prove that it was injured by groundwater pumping related to coal-bed methane production in Wyoming for the years at issue. [[274]](#footnote-275)274 Wyoming's compact violations were limited to the overuse of surface water supplies. [[275]](#footnote-276)275

Montana's unsuccessful effort to use the BLM model to establish compact violations underscores some of the structural difficulties that downstream states face in proving up their case. Unless the plaintiff state invests in a groundwater model that is tailored to the specific hydrological characteristics of the basin or sub-basin at issue, it becomes vulnerable to the attacks that Wyoming successfully deployed. Yet even if Montana had invested in such a model, its defensibility would depend upon data compiled and controlled by the upstream state - data that the upstream state is unlikely to gather in the first place, or refuse to provide without compulsion, lest that data be weaponized to its own detriment. [[276]](#footnote-277)276 Wyoming came prepared with an explanation for its own lack of data regarding the hydrological connection between coal-bed methane-related groundwater pumping and depleted surface flows: the need for such data had not yet arisen within Wyoming itself. [[277]](#footnote-278)277 Kansas v. ***Colorado*** produced an epic fight over groundwater modeling because large-scale, long-term groundwater depletions were central to that case, but the depletions alleged in Montana v. Wyoming & North Dakota were miniscule by comparison. [[278]](#footnote-279)278 Given the relative unimportance of groundwater in the Yellowstone case, it seems probable that Montana made an informed decision to do its best with the BLM model. In response, Wyoming put forth a rebuttal worthy of an idiot-savant - and it succeeded. It led with a stubbornly uninformed denial that groundwater is part of the Yellowstone ***River*** Compact, together with a naive suggestion to renegotiate it accordingly. [[279]](#footnote-280)279 It followed with an incorrect recitation of the compacting states' intrastate groundwater laws. [[280]](#footnote-281)280 Then - and only then, apparently - it depended upon a formidable expert witness specializing in "applied research and development activities in mathematical modeling and computational mechanics, including groundwater modeling." [[281]](#footnote-282)281 At bottom, Wyoming prevailed on the groundwater issue largely by skillfully leveraging its own ignorance. Without the data necessary to transpose the BLM model to the hydrological dynamics of the Tongue ***River*** Basin, calibrate it accordingly, and conduct a formal sensitivity analysis of locally-informed model inputs, Montana's efforts largely failed. There is a lesson here, and at least one downstream state has asked the Court **[\*190]** to learn it. In Texas v. New Mexico & ***Colorado***, Kansas filed an amicus brief recommending that the Court adopt the presumption that interstate compacts cover any extraction of groundwater that reduces apportioned stream flow. [[282]](#footnote-283)282

C. Compliance through Deterrence: The Form and Measure of Compact Damages

The goal of interstate compact water litigation is to secure a decision that motivates and if necessary compels the violating state to comply with its compact obligations. Because violating a compact can be in the rational (and political) self-interest of an upstream state, it may not always comply unless forced to do so - through the powers of the Court. [[283]](#footnote-284)283 Recall that compacts are not just contracts; they are federal statutes, equitably apportioning interstate water supplies. [[284]](#footnote-285)284 As a consequence, the efficient breach of an interstate compact has provided neither an excuse nor an escape for the violating state.

Indeed, perhaps the most influential legal scholar of the Law and Economics movement as applied to water, Charles J. Meyers, [[285]](#footnote-286)285 made that abundantly clear in his role as Special Master in Texas v. New Mexico. [[286]](#footnote-287)286 First, he recommended that Texas, the successful plaintiff state, was entitled to be repaid in water; accordingly, he recommended that New Mexico be ordered to make deliveries of water to Texas to compensate for its overuse. [[287]](#footnote-288)287 Second, in a decision that shocked New Mexico, those water damages could be retrospective; he flatly found no merit in New Mexico's position that the Pecos ***River*** Compact did not authorize relief for past noncompliance. [[288]](#footnote-289)288 As a result, the scope of a violating state's obligations was no longer limited to remedying its current and future overuse. [[289]](#footnote-290)289 Under Special Master Meyers's recommendation, New Mexico would therefore be required to compensate for its 340,100 acre feet of overuse between 1950 and 1983 by delivering 34,010 acre-feet to Texas every year for ten years - in addition to meeting its annual compact obligations. [[290]](#footnote-291)290 Worse for New Mexico, bad-faith failure to make good on these deliveries could lead to the imposition of a penalty in kind, or "water interest," requiring further deliveries. [[291]](#footnote-292)291 Both states filed exceptions to the report, and in 1987, the Court somewhat softened the blow to New Mexico. [[292]](#footnote-293)292 While it upheld the Special Master's authorization of retrospective relief for Texas, the Court gave New Mexico the **[\*191]** option of paying for its noncompliance with either money or water. [[293]](#footnote-294)293 To that end, the Court remanded the case back to Special Master Meyers with instructions to determine the appropriate remedy. [[294]](#footnote-295)294 The states subsequently settled the retrospective noncompliance issue for $ 14 million in 1990. [[295]](#footnote-296)295

The decision had an immediate impact on interstate water litigation. [[296]](#footnote-297)296 In its original petition in Kansas v. ***Colorado*** (which the Court granted leave to file in 1986), Kansas had not sought money damages for ***Colorado***'s longstanding violations of the Arkansas ***River*** Compact. [[297]](#footnote-298)297 After the Court issued its 1987 decision in Texas v. New Mexico, Kansas amended its petition, praying for money damages. [[298]](#footnote-299)298 Kansas succeeded in proving up damages. The Court found that ***Colorado*** had depleted usable stateline flows caused by post-compact pumping in ***Colorado*** for 1950 through 1996 by 428,005 acre-feet. [[299]](#footnote-300)299 For these amounts, the Court awarded Kansas over $ 34 million for ***Colorado***'s violations - the first time that the Court awarded money damages for violations of an interstate compact in a contested proceeding. [[300]](#footnote-301)300 Importantly, however, ***Colorado*** succeeded in limiting Kansas's claims for prejudgment interest. Kansas had argued that it was entitled to damages reaching back to 1950, the first year of the compact; ***Colorado*** countered that Kansas should only receive prejudgment interest back to 1985, when it filed suit. [[301]](#footnote-302)301 The Court held that prejudgment interest should extend to 1968 - when, according to Special Master Littleworth, ***Colorado*** should have known it was violating the Arkansas ***River*** Compact. [[302]](#footnote-303)302

In the final phase of that case, Kansas sought to recover its expert witness fees, which were substantial, given the expert-intensive nature of interstate water **[\*192]** litigation. [[303]](#footnote-304)303 ***Colorado*** had a ready defense in the federal statutory limit of $ 40 per day for expert witness court appearances. [[304]](#footnote-305)304 The states' conflicting claims raised important issues regarding the relationship between the costs and procedures available under regular federal court jurisdiction, which is regulated by Congress, and the Court's original jurisdiction, which arguably is not. Needless to say, Kansas argued that the Court should not be bound by the former's limits. [[305]](#footnote-306)305 In a nominal victory for Kansas, the Court recognized the difference, and made clear that it was not so bound; but the real victory was ***Colorado***'s, as the Court found that the federal statutory limits were appropriate, and declined to impose the actual and considerable costs related to expert witnesses that Kansas had incurred. [[306]](#footnote-307)306

Both Texas v. New Mexico and Kansas v. ***Colorado*** concerned decades of noncompliance, and their numerous legal and factual issues required extensive litigation over both liability and damages. Kansas v. Nebraska & ***Colorado*** (1998-2003) also concerned Nebraska's long-term overpumping, but that case settled before going to trial; the FSS did not impose any stipulated damages in water or money. [[307]](#footnote-308)307 Yet almost as soon as the Court approved the FSS, [[308]](#footnote-309)308 Nebraska relapsed into noncompliance, overusing its 2005-2006 compact allocations by over 35,000 acre-feet annually. [[309]](#footnote-310)309 Intent to enforce the Compact and the FSS, Kansas promptly took the matter to arbitration and then to the Court. [[310]](#footnote-311)310 It sought monetary damages equivalent to Kansas's losses for 2005-06 or Nebraska's gains from its noncompliance, whichever was greater. [[311]](#footnote-312)311

Kansas's claim for disgorgement was based in both hydrology and law. Nebraska's sustained overpumping of groundwater created long-term depletions to streamflows and transit losses in the Republican ***River*** Basin, as measured by the RRCA Groundwater Model, as well as lagged depletions to groundwater baseflow. [[312]](#footnote-313)312 Because these losses had accumulated over time, Nebraska's overuse under the compact exceeded Kansas's water shortage; as a consequence, Nebraska's financial gains were "very much larger than Kansas' loss, likely by more than several multiples." [[313]](#footnote-314)313

The earlier interstate groundwater cases provided precedents for awarding **[\*193]** to Kansas the financial gains that Nebraska had obtained from its noncompliance. In Texas v. New Mexico, the Court had broadly discussed the possibility of disgorgement as one remedy it could apply under its equitable powers, but the question of the measure of damages was not presented, and so the Court declined to impose the remedy. [[314]](#footnote-315)314 In Kansas v. ***Colorado***, Kansas had requested disgorgement of ***Colorado***'s gains, and Special Master Littleworth took that request seriously. Ultimately, however, he declined to do so, stressing that the impact of large-scale groundwater pumping on stateline flows was not a well-understood phenomenon in the 1950s and 1960s, and that ***Colorado*** did not willfully violate the compact. [[315]](#footnote-316)315

Nebraska's conduct in the wake of the FSS told a different story. By 2003, Nebraska fully understood the impacts of excessive groundwater pumping on streamflows in the Republican ***River*** Basin, thanks to the accounting procedures of the FSS and the RRCA Groundwater Model, both to which it had agreed; but it failed to take adequate steps to insure against noncompliance. [[316]](#footnote-317)316 According to Special Master William J. Kayatta, Jr., "Nebraska hoped to comply, but knowingly failed." [[317]](#footnote-318)317 He found that disgorgement, albeit in a limited amount, was appropriate for 2005-06, the only years at issue in the case. [[318]](#footnote-319)318 However, if Nebraska failed to comply with the compact in the future, it could be forced to disgorge all of its profits gained by noncompliance. [[319]](#footnote-320)319 In 2015, the Court approved Special Master Kayatta's disgorgement recommendation, finding that Nebraska had "recklessly gambled with Kansas's rights" and should therefore pay $ 5.5 million in damages and disgorgement accordingly. [[320]](#footnote-321)320 The Court officially put Nebraska on notice that if it were to relapse again into noncompliance, it "may again be subject to disgorgement of gains - either in part or in full, as the equities warrant." [[321]](#footnote-322)321

The Court's disgorgement precedent in Kansas v. Nebraska & ***Colorado*** has spurred subsequent plaintiff states to seek the same remedy, but so far without success. In Montana v. Wyoming & North Dakota, Montana claimed that it should be entitled to disgorgement damages, based on its claim that Wyoming had repeatedly dismissed Montana's legitimate concerns about Wyoming's upstream administration of the Yellowstone ***River*** system. [[322]](#footnote-323)322 Special Master Thompson denied Montana's claim, finding that Wyoming's conduct did not rise to the level of knowing, willful, and reckless disregard for the Yellowstone ***River*** Compact that Nebraska had clearly shown for the Republican ***River*** Com- **[\*194]** pact; the dispute over the former resulted from good-faith differences in compact interpretation. [[323]](#footnote-324)323 (He also noted that the Court's disgorgement decision in Kansas v. Nebraska & ***Colorado*** was a significantly divided one. [[324]](#footnote-325)324 ) However, Special Master Thompson did not rule out disgorgement damages entirely. Rather, he concluded that they might be appropriate in the future, if Wyoming were to willfully or recklessly ignore the Court's rulings in the case; if it did, then "disgorgement damages would play a valuable role in deterring future violations without improperly penalizing Wyoming or providing a windfall to Montana." [[325]](#footnote-326)325 Although his recommendation awaits the Court's final decision, Special Master Thompson's recognition of the utility of the disgorgement remedy as a deterrent to future noncompliance may well broaden its application beyond the Republican ***River*** Basin.

D. Groundwater Litigation in Eastern Interstate Basins

The archetypical interstate water conflicts have been western conflicts. They began with the seminal all-or-nothing fight between Kansas and ***Colorado*** over the Arkansas ***River***, one that the Court resolved by establishing the doctrine of equitable apportionment. [[326]](#footnote-327)326 They continued during the "century-long political psychodrama of fear" between Arizona and California over the ***Colorado*** ***River***. [[327]](#footnote-328)327 And as the groundwater revolution depleted ***river*** basins across the southern High Plains, they produced showdowns over the hydrological scope of the Pecos, Arkansas, and Republican ***River*** Compacts. [[328]](#footnote-329)328 True to the western genre, commentators have indulged themselves with scenes of lawyers and engineers fighting it out in cowboy boots and bolo ties; and writers who should know better misquote Mark Twain. [[329]](#footnote-330)329 As if to perpetuate the stereotype, the justices of the Court, schooled near the banks of the Charles, Housatonic, and Hudson ***Rivers***, with nary a "genuine westerner" among them, [[330]](#footnote-331)330 eagerly analogize groundwater supplies to barnyard animals. [[331]](#footnote-332)331 Yet just as Twain moved **[\*195]** from the gold country of California to Connecticut, both sustained drought and increased groundwater pumping have spread eastward over the last several decades into regions long associated with floods rather than droughts. [[332]](#footnote-333)332 As a consequence, so too has interstate water litigation over groundwater supplies. Two pending cases merit discussion here, largely because they reveal several of the tensions and patterns that first emerged out west.

The first case, Florida v. Georgia, [[333]](#footnote-334)333 concerns the ACF Basin, a large and diverse basin extending from the foothills of the Blue Ridge Mountains northeast of Atlanta down through western Georgia, eastern Alabama, and finally to the Florida panhandle and the Gulf of Mexico. The Corps effectively controls the basin, operating five dams and four reservoirs on the Chattahoochee, including Lake Lanier, upon which Atlanta depends for its municipal water supply; eleven smaller non-federal dams regulate both the Chattahoochee and the Flint. These ***rivers*** merge at Lake Seminole, from which the Apalachicola ***River*** flows, traverses the Florida panhandle, and drains into the Gulf of Mexico at Apalachicola Bay. The bay's ecosystem supports one of the most productive estuaries in the northern hemisphere, as well as hundreds of endangered or threatened animal and plant species. [[334]](#footnote-335)334

Longstanding conflicts among hydropower, municipal, industrial, and irrigation interests have made the ACF Basin a rich habitat for litigation as well. It began in 1990, eventually developing into extensive multi-state and multi-district litigation focused on the Corps' authority to manage the waters of the basin. [[335]](#footnote-336)335 Meanwhile, the states and the United States agreed to a temporary compact in 1997, but the compact did not apportion the ACF Basin; it did little more than set out a process for negotiating one. [[336]](#footnote-337)336 When negotiations for a permanent compact broke down, the ACF Compact expired on its own terms in 2003. [[337]](#footnote-338)337 The resolution of the cases involving the Corps' authority required the Corps to issue a new manual governing its basin operations. [[338]](#footnote-339)338 Concerned by what it viewed as the two most serious threats to the fisheries and ecological sustainability of Apalachicola Bay - the Corps' new manual, now authorized to allocate increased quantities of storage to consumptive uses higher in the basin, and the increased groundwater pumping for irrigation in southern Georgia - Florida brought an original jurisdiction suit in 2013, seeking an equitable apportionment of the ACF Basin. [[339]](#footnote-340)339 The Court accepted the case in 2014. [[340]](#footnote-341)340

**[\*196]** Florida made a strong case that increased and more consumptive water usage upstream in the ACF Basin had inflicted serious harms upon the Apalachi-cola Bay region. [[341]](#footnote-342)341 These harms included the collapse of its oyster fisheries in 2013, threatening their long-term sustainability. [[342]](#footnote-343)342 The obvious suspect for this collapse was Georgia, and Special Master Ralph I. Lancaster was sympathetic to Florida's claims: "as the evidentiary hearing made clear, Florida points to real harm and, at the very least, likely misuse of resources by Georgia." [[343]](#footnote-344)343 Georgia's irrigated acreage in the ACF Basin has expanded elevenfold since 1970, but the state has taken few measures to limit irrigation; its irrigation permits contain no quantitative limitations on pumping. [[344]](#footnote-345)344 During the 2011-12 drought, one of the worst on record in the region, Georgia avoided making a drought declaration so that it could avoid the administrative burden of following its own statutes to reduce water usage; on the contrary, it continued to issue irrigation permits. [[345]](#footnote-346)345 Georgia was unrepentant. Assuming the mantle of the defiant upstream state, Georgia steadfastly maintained the uncompromising position that "its agricultural water use should be subject to no limitations, regardless of the long-term consequences for the Basin." [[346]](#footnote-347)346

Florida had suffered definite and severe harms; Georgia's agricultural water use was definitely unreasonable. [[347]](#footnote-348)347 There were just two problems with Florida's case, but to Special Master Lancaster, they were fatal. First, the Corps effectively controlled basin flows affecting Apalachicola Bay. [[348]](#footnote-349)348 The Corps' operational protocols for regulating reservoir levels and ***river*** flows in its projects across the ACF Basin - including, ironically, those to protect downstream species in Florida listed as threatened or endangered under the Endangered Species Act - broke the necessary link of causation between Georgia's increased consumptive water usage and reduced streamflow crossing into Florida. [[349]](#footnote-350)349 Unless the Corps changed these protocols, Court-ordered increases in flows in the ACF Basin's reservoir system upstream would not necessarily pass into Florida during times of drought and low flows - even if the Court were to impose a water consumption cap upon Georgia's usage upstream. [[350]](#footnote-351)350 The Corps' ability to regulate flows across the ACF Basin enabled it to offset increased streamflows with increased reservoir storage in Georgia, pursuant to its "extensive discretion" to "release (or not release) water largely as it sees fit," and there "is no guarantee that the Corps will exercise its discretion to release or hold back water at any particular time." [[351]](#footnote-352)351 Despite testimony to the contrary based upon extensive modeling by Florida experts, Florida did not meet its burden to prove, by the **[\*197]** Court's standard of clear and convincing evidence in equitable apportionment cases, that reductions in Georgia's water usage would provide a material benefit to Florida. [[352]](#footnote-353)352

The second problem also involved the Corps: it was completely absent from the litigation. [[353]](#footnote-354)353 The Corps was not a party to the case, did not waive its sovereign immunity, and showed no interest in entering the interstate fight; no representative of the Corps even appeared at the eleven-day trial. [[354]](#footnote-355)354 Because the Corps was not a party, no Court decree could "mandate any change" in the Corps' operations of the ACF Basin; and so "without the ability to bind the Corps," the Court could not assure Florida that its injury "can be redressed by an order equitably apportioning the waters of the Basin." [[355]](#footnote-356)355 Despite Georgia's aggressive and wholly inequitable assertion that its water usage should remain entirely unregulated, Georgia nonetheless prevailed at trial, based mostly on its bedrock response to Florida's suit: that only a change in Corps operations could provide the remedies Florida sought. [[356]](#footnote-357)356

The second case, Mississippi v. Tennessee, presents a new and completely subterranean frontier in interstate water litigation. [[357]](#footnote-358)357 While the Court has resolved earlier interstate cases by requiring the accounting of groundwater pumping impacts upon interstate ***river*** basin supplies, this case is limited to groundwater alone. [[358]](#footnote-359)358 Mississippi does not allege that Tennessee's pumping is depleting the flows of the Mississippi ***River***; rather, it alleges that that pumping is depleting groundwater supplies located entirely within Mississippi. [[359]](#footnote-360)359 The case thus raises the possibility of the Court equitably allocating the waters of an interstate aquifer that is largely independent of an interstate ***river*** system. As such, it may have important consequences in other areas where groundwater is not effectively connected to surface water supplies, such as the High Plains-Ogallala Aquifer. [[360]](#footnote-361)360

**[\*198]** The dispute originated as one between Mississippi and the City of Memphis in federal court. [[361]](#footnote-362)361 After Mississippi's claims were denied and the Court denied certiorari, the dispute moved to the Court under its original jurisdiction, and the Court granted Mississippi's motion for leave in 2015. [[362]](#footnote-363)362 Mississippi alleges that Tennessee's groundwater pumping from the interstate Sparta Sand Aquifer (or, as it is called in Tennessee, the Memphis Sand Aquifer), mostly for muni-cipal supplies used by the City of Memphis, has taken groundwater supplies from underneath Mississippi that would otherwise have remained there. [[363]](#footnote-364)363 Mississippi is not seeking an equitable apportionment of the aquifer, but rather advances a claim of absolute ownership to groundwater allegedly taken from beneath Mississippi's sovereign borders by the municipal wells of Memphis. [[364]](#footnote-365)364 The Court's acceptance of the original jurisdiction case suggests that it may consider these arguments of absolute ownership. [[365]](#footnote-366)365

Mississippi's unorthodox suit depends upon a mixture of legal and technical arguments. First, Mississippi contends that the doctrine of equitable apportionment - the doctrine of federal common law that, absent a compact, governs disputes between states concerning an interstate stream - should not govern the resolution of this dispute. [[366]](#footnote-367)366 That doctrine should not apply, argues Mississippi, because the water supplies within the aquifer are neither an interstate resource nor hydrologically connected to an interstate stream. [[367]](#footnote-368)367 Second, because that doctrine allegedly does not govern, the equal footing doctrine should apply instead. [[368]](#footnote-369)368 According to Mississippi, the latter doctrine applies to groundwater that is not hydrologically connected to a surface stream, and thus grants to Mississippi the sole authority to govern water supplies held by the aquifer, which, Mississippi presumes, are located solely within its borders. [[369]](#footnote-370)369 Finally, Mississippi **[\*199]** claims that Tennessee's groundwater pumping is actionable at state law as a trespass, and thus a violation of its state sovereignty: Tennessee has allegedly "invaded Mississippi's sovereign territory, committed trespass against Mississippi, converted Mississippi natural resources, and intentionally violated Mississippi water law." [[370]](#footnote-371)370 Mississippi's claim of trespass rests upon the same factual presumption that the groundwater at issue is not interstate water; it "originated in Mississippi and was naturally stored and resided" there. [[371]](#footnote-372)371 Although Mississippi concedes that the geological formation of the aquifer underlies both states, it distinguishes that formation from the groundwater supplies contained within the aquifer beneath Mississippi. That water is not interstate water because Tennessee "must mechanically pump the water from underneath Mississippi's borders in order to produce and use it." [[372]](#footnote-373)372 Drawing on the recent precedent of the Court's disgorgement award in Kansas v. Nebraska & ***Colorado***, Mississippi has prayed for disgorgement relief, alleging damages of $ 615 million - a figure nearly eighteen times greater than that awarded to Kansas in Kansas v. ***Colorado***. [[373]](#footnote-374)373

The Tennessee defendants and the United States (acting as amicus curiae) answered Mississippi's allegations using the Court's long-established interstate precedents. Citing the long line of cases between Kansas v. ***Colorado*** [[374]](#footnote-375)374 through ***Colorado*** v. New Mexico, [[375]](#footnote-376)375 the defendants chiefly stressed that these precedents require the application of the equitable apportionment doctrine: because the aquifer is an interstate resource rather than a purely intrastate one, Mississippi has failed to state a cognizable action and is thus not due any relief until the aquifer is equitably allocated accordingly. [[376]](#footnote-377)376 The defendants argued that the equal footing doctrine has no bearing on this case because that doctrine concerns title to lands within state boundaries, and the Court has never held that a state has exclusive title to subsurface groundwater flowing through an interstate aquifer. [[377]](#footnote-378)377 Both Tennessee and the United States contested Mississippi's state-law based claims of trespass and conversion: there was no physical trespass into the lands of Mississippi, as Mississippi law requires; and Mississippi state law does not confer state ownership upon interstate groundwater in place. [[378]](#footnote-379)378 As for Mississippi's geological distinction between the aquifer formation that underlies Mississippi and Tennessee and the allegedly distinct water supplies it holds, such a distinction would effectively preclude Tennessee from pumping, since **[\*200]** doing so would cause water to flow out of Mississippi. [[379]](#footnote-380)379 In sum, replied the defendants, Mississippi's suit "contravenes basic principles of water law." [[380]](#footnote-381)380

The most remarkable aspect of Mississippi's position is its atavism, recombining legal and technical arguments that the Court discredited generations ago, and applying them to the novel legal situation of an aquifer that is effectively unconnected to an interstate stream. [[381]](#footnote-382)381 But that atavism has its reasons. First, the Court could assert its powers under the equitable apportionment doctrine (which seems likely), but then decline to apportion the aquifer, as it did so repeatedly with the Arkansas ***River***. [[382]](#footnote-383)382 Such a finding would likely lead to a dismissal. Second, the Court could assert its equitable apportionment powers and then exercise them; but the Court's current equitable apportionment calculus would likely produce an apportionment unsatisfactory to Mississippi. In ***Colorado*** v. New Mexico, the Court articulated that calculus, updating the earlier version established in Nebraska v. Wyoming. [[383]](#footnote-384)383 That calculus does not favor Mississippi, largely because the case presents a conflict between high-value municipal wells in Memphis and lower value aquaculture and irrigation uses in northern Mississippi. [[384]](#footnote-385)384 The Vermejo ***River*** dispute pitted a proposed industrial use for a steel mill in ***Colorado*** against established irrigation uses of lower value in New Mexico; but the Court nonetheless found that ***Colorado*** had not met its burden - one of clear and convincing evidence - of showing that its benefits would outweigh New Mexico's harms. [[385]](#footnote-386)385 Given its lower-value uses, Mississippi would likely struggle to establish that an allocation protecting those uses would outweigh Tennessee's long-established, higher-value municipal uses. More-over, the doctrine of equitable apportionment can apply to future uses, and in evaluating those future uses, the Court accounts for how reasonable and practical conservation measures might make water available for a supplementary equitable allocation. [[386]](#footnote-387)386 Because agricultural use typically dwarfs all other uses of interstate water supplies, conservation measures applied to agriculture (andaquaculture) in Mississippi would likely yield even more water for supplemental apportionment to higher-value municipal uses in Tennessee. [[387]](#footnote-388)387

Perhaps most relevant, the decisions in ***Colorado*** v. New Mexico stressed that a state in which an interstate ***river*** originates does not have an automatic entitlement to a share of that ***river***; such a rule is inconsistent with the Court's equitable apportionment jurisprudence. [[388]](#footnote-389)388 In prior appropriation states, thelocation of a state's border is therefore "essentially irrelevant to the adjudication **[\*201]** of … sovereigns' competing claims" over a shared ***river***. [[389]](#footnote-390)389 While ***Colorado*** v. New Mexico involved two states that are constitutionally committed to the prior appropriation doctrine, such a holding should extend to riparian states. Recall the Court's rejection of the "two ***rivers***" approach in Kansas v. ***Colorado***, a case litigated when Kansas remained mostly a riparian state. [[390]](#footnote-391)390 In a salmon case contemporary with the Vermejo cases, the Court held that "a state may not preserve solely for its own inhabitants natural resources located within its borders," and that this principle is "at the root of the doctrine" of equitable apportionment. [[391]](#footnote-392)391 These holdings apply to groundwater, which is a natural resource (and also an article of commerce). [[392]](#footnote-393)392 The weight of these authorities probably explainsMississippi's steadfast resistance to the equitable apportionment doctrine.

Mississippi's state-law arguments also recall the chauvinism of earlier cases, where states championed their respective state water laws and regularly attacked their rivals as defective and insufficient, both in pre-compact equitable apportionment cases and post-compact groundwater cases. [[393]](#footnote-394)393 While plaintiff states have deployed the facts of upstream overuse effectively, attacks on a neighboring state's water code have rarely succeeded. [[394]](#footnote-395)394 The Court does not appear to be interested in making judgments about the efficacy of one state's water law regime against another's; and the Court's longstanding reticence to exercise its equitable powers is well-supported by cherished precedents for avoiding such an impolitic choice. [[395]](#footnote-396)395 Moreover, the Harmon Doctrine has been dead for over a century, and the Court will not exhume it. [[396]](#footnote-397)396 Mississippi's trespass and conversion claims will require Mississippi to show harm; and while Mississippi has alleged permanent harms as a result of Tennessee's municipal pumping, the modeling work already performed by the USGS may discredit that allegation by showing that the Sparta Sand Aquifer is a shared interstate resource. [[397]](#footnote-398)397 Finally, Mississippi's state-law trespass claims appear to conflict with Mississippi water law itself. All water in the Magnolia State, whether surface water or groundwater, "is hereby declared to be among the basic resources of this state" and "therefore belongs to the people of this state … ." [[398]](#footnote-399)398 And the use of groundwater "shall not constitute absolute ownership or absolute rights to the use of such waters, but such waters shall remain subject to the principle of bene-ficial use." [[399]](#footnote-400)399 Mississippi law therefore makes clear that the property right in groundwater is a use right, unlike Texas, where it has been held to be owned in **[\*202]** place as an attribute of the overlying land. [[400]](#footnote-401)400 Given the Court's longstanding emphasis on the principle of beneficial use in equitable apportionment cases, it may well look askance at Mississippi's assertion that its water supplies should be defended in place. [[401]](#footnote-402)401

Special Master Eugene E. Siler, Jr. treated Mississippi's claims withconsiderable skepticism when he issued his first report in 2016. Casting doubt upon Mississippi's threshold claim that the equitable apportionment doctrine should not apply to interstate groundwater resources, he returned repeatedly to the expansive rule originally announced in Kansas v. ***Colorado***: the doctrine applies whenever ""the action of one State reaches through the agency of natural laws into the territory of another State.'" [[402]](#footnote-403)402 He found that such a situation existed here, given Mississippi's own concessions: none of Tennessee's wells and pumps are located in Mississippi, but that pumping reduces water levels there; the Sparta Sand Aquifer formation extends into Tennessee; and the water within that formation moves between the states. [[403]](#footnote-404)403 Thus, Mississippi's complaint "appears to have failed to plausibly allege that the water at issue is not interstate in nature." [[404]](#footnote-405)404 He then dispensed with Mississippi's alternative equal-footing claim, relying largely upon the Vermejo ***River*** cases (and contemporary wildlife cases, whose Commerce Clause jurisprudence parallels the Court's equitable apportionment jurisprudence) to conclude that the equal footing doctrine did not apply to disputes over the depletion of interstate water supplies; Mississippi was not automatically entitled to water supplies originating within its borders. [[405]](#footnote-406)405 As for Mississippi's attempt to distinguish between the interstate geology of the Sparta Sand Aquifer formation and the allegedly non-interstate water supplies within that formation, Special Master Siler dredged up ***Colorado***'s ancient, long-abandoned "two-***rivers***" theory from Kansas v. ***Colorado***, to bury Mississippi's similar attempt. [[406]](#footnote-407)406 He quickly dispatched Mississippi's state law claims of trespass and conversion on the grounds that they were displaced by federal common law - that of equitable apportionment. [[407]](#footnote-408)407

But he did not recommend dismissal. He recognized that the doctrine of equitable apportionment is the Court's sole avenue through which a state may **[\*203]** pursue a claim against another state for "depleting the availability of interstate waters within its borders," and noted that dismissal would likely be appropriate under the Federal Rules of Civil Procedure, since Mississippi had disclaimed a request for such an apportionment. [[408]](#footnote-409)408 Yet cases brought under the Court's original jurisdiction are not bound by the federal rules, and the Court has regularly advised Special Masters to "err on the side of over-inclusiveness in the record" to assist the Court in deciding original jurisdiction cases. [[409]](#footnote-410)409 In light of that advice, Special Master Siler ordered an evidentiary hearing and subsequent pleadings limited to the threshold issue of whether the aquifer and its water supplies are an interstate resource. [[410]](#footnote-411)410

Special Master Siler's decision recalls the judicial prudence of earlier interstate compact cases, where Special Masters deflected doctrinaire legal arguments about interstate groundwater supplies by issuing straightforward orders to establish threshold hydrological facts. [[411]](#footnote-412)411 Yet Mississippi v. Tennessee presents a groundwater modeling situation that is distinct from these earlier cases. Unlike the Pecos and Arkansas ***River*** cases, where the states litigated competing groundwater models, or the Republican ***River*** cases, where the groundwater model emerged cooperatively, Mississippi v. Tennessee presents a third situ-ation: the USGS, unaffiliated with either of the litigant states, has already developed groundwater modeling tools for the Sparta Sand Aquifer and the other aquifers of the region. [[412]](#footnote-413)412 Indeed, the pre-existence of this USGS modeling work has enabled the states to employ it against each other. Mississippi has apparently relied upon it to estimate the amount of depletions to the aquifer caused by Tennessee's groundwater pumping. [[413]](#footnote-414)413 Conversely, Tennessee will likely employ the modeling work to establish what it has alleged in its pleadings - that if Tennessee's pumping affects Mississippi, then that is proof that the Sparta Sand Aquifer has an "interstate character" for which equitable allocation is appropriate. [[414]](#footnote-415)414

If Special Master Siler and the Court find that the Sparta Sand Aquifer is an interstate water resource (as seems likely), then dismissal should follow, unless the Court takes the unlikely step of ordering additional proceedings to effect an equitable allocation. [[415]](#footnote-416)415 Were it to dismiss the case, the Court may issue a recommendation to negotiate an interstate compact, as it is has recommended in the past. [[416]](#footnote-417)416 Yet following through on such a recommendation would be daunting, given the reach and multi-layered complexity of the larger groundwater system of which the Sparta Sand Aquifer is a part - the Mississippi Embayment **[\*204]** Regional Aquifer System. [[417]](#footnote-418)417 Were they to achieve a negotiated settlement short of an interstate compact, the states should be chastened by the recent example of Kansas v. Nebraska & ***Colorado***, where the Court asserted its vast equitable powers to rewrite an important technical aspect of an earlier (and decreed) settlement. [[418]](#footnote-419)418

[*V*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T3X2-8T6X-731X-00000-00&context=1516831). The Evolution of Interstate Compact Compliance in Groundwater-Dependent Basins

A. Interstate Litigation as a Forcing Tool for State Law Reform in Groundwater

Interstate litigation has proven to be a powerful forcing tool for state law reform in groundwater. Kansas fundamentally rewrote its water code in 1945, largely in response to its failure to secure an equitable allocation of the Arkansas ***River***, and in the hope of securing a defensible compact allocation on the Republican ***River***. [[419]](#footnote-420)419 More recently, Special Master Kayatta's belief that Nebraska's post-2007 legislative response to the problem of its noncompliance constituted a new era in Nebraska water law and policy kept him from imposing a higher amount of disgorgement. [[420]](#footnote-421)420 That belief raises an important point. Across the West, interstate compact litigation has served the salutary and politically difficult purpose of achieving important legal reforms in the regulation of groundwater pumping. ***Colorado*** struggled to regulate post-compact alluvial wells in the Arkansas ***River*** Basin during the 1950s, 1960s, and even the 1970s. [[421]](#footnote-422)421 Kansas v. ***Colorado***, however, provided the necessary impetus that allowed ***Colorado***'s State Engineer to reduce groundwater pumping significantly through rulemaking. ***Colorado***'s 1995 rules for wells in the Arkansas ***River*** Basin ordered the pumping of all post-compact wells discontinued, unless their depletions to usable stateline flows could be replaced in accordance with a plan approved by the State Engineer. [[422]](#footnote-423)422 The same rules similarly limited the aggregate pumping from all pre-compact wells to 15,000 acre-feet annually. [[423]](#footnote-424)423 The need for ***Colorado*** to **[\*205]** comply with its interstate compacts has also promoted compact-specific rulemaking in the Republican ***River*** and Rio Grande Basins. [[424]](#footnote-425)424 Groundwater models developed in response to interstate litigation have also enabled downstream states such as Kansas to effect important reforms in groundwater management. [[425]](#footnote-426)425

The two rounds of litigation in Kansas v. Nebraska & ***Colorado*** have similarly motivated Nebraska to make changes to its water code. In the wake of the 1998-2003 litigation, the Nebraska legislature required Nebraska's NRDs to adopt and implement "Integrated Management Plans" (IMPs), to promote better cooperation between the NRDs, which exercise local control over groundwater, and Nebraska DNR, which exercises centralized control over surface water - largely to ensure compliance with the Republican ***River*** Compact. [[426]](#footnote-427)426 Nebraska has also enacted statutes defining both "overappropriated" and "fully appropriated" ***river*** basins, with corresponding regulatory requirements. [[427]](#footnote-428)427 Special Master Kayatta stressed the importance of these statutory changes, as well as changes in its Republican ***River*** IMPs, in convincing him that Nebraska had significantly restructured its regulation of groundwater pumping. [[428]](#footnote-429)428 It is probably too early to evaluate the effects of these changes. So far, they have survived constitutional scrutiny. [[429]](#footnote-430)429

B. Alternative Compliance Mechanisms

Sadly for states upstream, the efficient breach of an interstate compact is not a legally available strategy. [[430]](#footnote-431)430 Happily, however, there is a compliance strategy that exchanges money for water while avoiding the political pitfalls of reducing groundwater pumping: the state leases or purchases irrigation rights, and then temporarily or permanently retires them, thereby reducing its water consumption. New Mexico has shouldered a heavy financial burden to comply with the demands of paying off the water debt to Texas imposed by the Court in the Pecos ***River*** litigation. By 2000, New Mexico had spent more than $ 40 million for its Water Rights Acquisition Program (WRAP), purchasing over 25,000 acre-feet of water rights appurtenant to nearly 9,000 acres in the lower **[\*206]** Pecos ***River*** Basin. [[431]](#footnote-432)431 By 2009, it had spent approximately $ 100 million in total for water rights retirements. [[432]](#footnote-433)432 In ***Colorado***'s portion of the Republican ***River*** Basin, the Republican ***River*** Water Conservation District (RRWCD) has also pursued an aggressive retirement policy. Financed by its own substantial irrigated land and water right assessments [[433]](#footnote-434)433 and assisted by a low-interest loan from the State of ***Colorado***, the RRWCD spent around $ 51 million by 2011 to purchase and retire water rights. [[434]](#footnote-435)434

To protect their sovereign rights under these various compacts, the states naturally seek federal subsidies. [[435]](#footnote-436)435 The most common federal programs are the Conservation Reserve and Enhancement Program (CREP), [[436]](#footnote-437)436 the Environmental Quality Incentives Program, [[437]](#footnote-438)437 and the (recently repealed) Agricultural Water Enhancement Program. [[438]](#footnote-439)438 These programs pay landowners to retire their lands from irrigation, typically on a temporary basis. [[439]](#footnote-440)439 Surface rights and groundwater rights close to the ***river*** bring the highest prices, because their retirement brings the highest returns in stream flow. [[440]](#footnote-441)440 By taxing themselves, and by obtaining state and federal funds to purchase and retire irrigation rights, irrigators can better maintain their current pumping levels on lands not enrolled in such programs.

A second alternative to reducing groundwater pumping is the "augmentation plan" - the "euphemism of choice" for relocating water supplies into depleted ***river*** basins. [[441]](#footnote-442)441 By the time interstate groundwater cases came to be litigated in the 1980s and 1990s, augmentation plans had been in use in both ***Colorado*** and New Mexico. [[442]](#footnote-443)442 An augmentation plan enables junior ground-water rights (such as the post-compact wells in ***Colorado***'s portion of the Arkansas ***River*** Basin) to continue to pump during water shortages as long as they have a state-approved and legally binding plan to "augment" the water supply, by **[\*207]** providing substitute water to senior rights that would otherwise be affected by such out-of-priority pumping. [[443]](#footnote-444)443 ***Colorado*** has applied this concept at the interstate level to zero its shortfalls under the Rio Grande Compact, by diverting San Luis Valley groundwater into the Rio Grande before it crosses into New Mexico; in the immediate wake of Texas v. New Mexico, New Mexico considered a similar but more ambitious plan, but shelved it in favor of WRAP. [[444]](#footnote-445)444 In 2003, state and federal stakeholders within New Mexico entered into the 2003 Pecos Settlement Agreement, under which New Mexico's Interstate Stream Commission operates two augmentation well fields and pipelines to supply water to the Pecos ***River*** under specified water-short conditions, to ensure compliance with the Pecos ***River*** Compact. [[445]](#footnote-446)445 ***Colorado*** has also relied upon replacement water from the western slope to offset stream depletions due to groundwater pumping in the Arkansas ***River*** Basin. [[446]](#footnote-447)446

The Republican ***River*** litigation has brought augmentation plans to the front and center of interstate compliance strategies in that basin. [[447]](#footnote-448)447 ***Colorado*** introduced the concept during the FSS negotiations, and the states agreed to allow such plans, subject to the unanimous approval of the states in each instance. [[448]](#footnote-449)448 Aside from rain, they have become the most important compliance tools for both ***Colorado*** and Nebraska. Their augmentation projects pump groundwater from supplies that are hydrologically more distant from the Republican ***River***, such as the High Plains-Ogallala Aquifer, pumping that creates a smaller effect on the compact accounting than pumping from wells closer to the ***river***, such as alluvial wells. [[449]](#footnote-450)449 The projects then pipe that groundwater to tributaries of the ***river*** and dump it there, where it augments streamflows. [[450]](#footnote-451)450 This artificial transportation of more distant groundwater compensates for depletions to streamflow caused by groundwater pumping closer to the streams, tributaries, and mainstem of the ***river***, which accordingly has a greater effect on the compact accounting. [[451]](#footnote-452)451 These plans do not augment the water supply of the basin; rather, they use low-impact groundwater pumping (as determined by the compact accounting procedures and the RRCA Model) to offset the effects ofhigh-impact groundwater pumping (also as determined by the same procedures and model). [[452]](#footnote-453)452

**[\*208]** In ***Colorado***, the RRWCD has spent approximately $ 50 million to construct its Compact Compliance Pipeline (CCP), which can pump 25,000 acre-feet of Ogallala water annually. [[453]](#footnote-454)453 The CCP then pipes it to a point just upstream of the gage at the Nebraska border, dumping it into the North Fork of the Republican ***River*** to ensure ***Colorado***'s compliance on the North Fork. [[454]](#footnote-455)454

Nebraska has built two similar augmentation projects. One pumps as much as 15,000 to 20,000 acre-feet of groundwater annually and pours it into Rock Creek, a distant tributary of the Republican ***River***. [[455]](#footnote-456)455 The other, the Nebraska Cooperative Republican Platte Enhancement Project (N-CORPE), can pump up to 65,000 acre-feet of deep groundwater from beneath Lincoln County, Nebraska, and pour it into Medicine Creek, a tributary of the Republican ***River***, and into the Platte ***River*** system as well. [[456]](#footnote-457)456 In 2014, Nebraska's Rock Creek and N-CORPE augmentation projects together pumped 65,000 acre-feet of groundwater into the Republican ***River*** system. [[457]](#footnote-458)457 While these projects are expensive - N-CORPE alone cost approximately $ 130 million - they are less expensive than reducing groundwater pumping to comply with the Republican ***River*** Compact. [[458]](#footnote-459)458 Absent the Rock Creek and N-CORPE plans, compact requirements would force the retirement from irrigation of approximately 330,000 acres in Nebraska's portion of the Republican ***River*** Basin, causing a commensurate decline in assessed land values of between $ 500 and $ 900 million. [[459]](#footnote-460)459

The impact of these augmentation plans has been substantial. With a combined annual capacity of 110,000 acre-feet, these three augmentation plans can compensate for significant groundwater over-pumping in ***Colorado*** and Nebraska under the Republican ***River*** Compact. [[460]](#footnote-461)460 Hydrologically, they rely upon and deplete largely non-renewable groundwater; ironically, they cause their **[\*209]** own, additional depletions to streamflows, which in turn must also be offset under the compact accounting. [[461]](#footnote-462)461 These hydrological facts aside, augmentation plans have already made a significant impact on the way in which states manage their compact allocations. Unlike delivery compacts such as the ***Colorado*** ***River*** Compact or the Rio Grande Compact, the Republican ***River*** Compact effectively adopted something like the precautionary principle: it allocates the water supplies of the basin across its various sub-basins and requires retrospective accounting. [[462]](#footnote-463)462 These features encouraged a certain amount of conservatism in how the states planned their water consumption - a conservatism that the ground-water revolution sorely tested, a test that the states mostly failed. By contrast, augmentation not only enables augmenting states to replace surface water supplies with increased groundwater pumping; it also enables them to retime the ***river***'s flows across the basin. Augmentation has thus changed the dynamics of compliance from one dependent upon the basin's natural hydrology to one built upon an artificial water delivery system.

[*VI*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T4F2-D6RV-H37N-00000-00&context=1516831). Conclusion

This article began with an assertion of the underlying structures of interstate water relations. It has surveyed how the groundwater revolution forced litigation, which in turn has produced decisions and settlements that have transformed those relations over the past half-century. With these historical developments in mind, let it end with some observations about that transformation. Readers should receive them with two cautions, however. First, be mindful of the tangled coexistence of the Court's federal common-law jurisprudence concerning interstate water relations with the unique features of each interstate basin, compact, and decree. Second, beware of "the old familiar story of heroic efforts to subdue a desert and at the same time maintain an action in court over a contested water right." [[463]](#footnote-464)463

The first observation concerns balance. The first half-century of interstate water disputes was tumultuous, but it eventually achieved a workable detente between two recurring rivalries: those between states, and those between the states and the United States. The year 1902 witnessed both the filing of Kansas v. ***Colorado*** and the enactment of the Reclamation Act; five decades later, most of the West's important interstate ***river*** basins had been allocated pursuant to interstate compacts or decrees, according to the doctrine of equitable apportionment. [[464]](#footnote-465)464 The compacts called for joint action by the states and the United States, including the protection of federal investments and interests in interstate basins - typically, reservoirs and irrigation projects upon which the compacting states predominantly depended for their water supply. [[465]](#footnote-466)465 The Court protected the compact mechanism against rival state law claims, ensuring the security and **[\*210]** durability of the states' equitable apportionments. [[466]](#footnote-467)466 Congress and the Executive, through Reclamation and the Corps, built most of the West's interstate water infrastructure accordingly, in general (but not complete) deference to state law. [[467]](#footnote-468)467 With the titanic exception of Arizona v. California (1952-1963), the 1950s and 1960s produced relatively little interstate water litigation in the West. Federal reservoir and irrigation projects regulated and stabilized interstate surface water supplies, which were, for a time, their principal and even exclusive water supplies.

Yet the groundwater revolution destabilized these supplies, eventually overwhelming surface water diversions across the West. [[468]](#footnote-469)468 That loss of stability eventually caused a collision between federal surface-water infrastructure and non-federal groundwater development. By the 1970s the ever-lowering water levels of Reclamation reservoirs had become sources of interstate conflict - and indicators of the growing hydrological imbalance inflicted by excessive groundwater pumping. Yet the Court, as well as the litigant states, largely addressed that imbalance - largely because the most prominent interstate groundwater cases were compact cases. [[469]](#footnote-470)469 Compacts provide a fundamental protection to their member states: the Court can interpret and enforce compacts, but it cannot rewrite them. [[470]](#footnote-471)470 Compacts achieve equitable allocations of basin water supplies, and once the states (and Congress) have fixed those allocations, the Court will not order relief inconsistent with their terms, "no matter what the equities of the circumstances might otherwise invite." [[471]](#footnote-472)471 Accordingly, the Court required the integration of the effects of groundwater pumping on compacted ***river*** basin water supplies, mitigating - for a time - the seriousness of the hydrological imbalance wrought by the groundwater revolution. Despite these decisions, however, groundwater's dominance has continued, exacerbating the already profound hydrological imbalance in western water. To comply with compacts in ground-water-dependent basins, states are making unprecedented investments in groundwater augmentation projects. [[472]](#footnote-473)472 Across the West's groundwater-dependent interstate ***river*** basins, the solution to an upstream state's overpumping of groundwater is to pump groundwater - but then to deliver it to the stream.

The second observation also concerns balance: specifically, the difficult balancing problems within jurisdiction and water-based federalism. The dominance of groundwater development has revealed problems of jurisdictional asymmetry. Between rival states, the Court's jurisdiction is both original and exclusive. [[473]](#footnote-474)473 Furthermore, there must be no alternative forum to resolve the conflict. [[474]](#footnote-475)474 Between a state and the United States, however, jurisdiction is original but not exclusive, and the appropriate forum is federal court, as in the major cases involving Reclamation or the Corps. [[475]](#footnote-476)475 Unless the United States waives its **[\*211]** sovereign immunity, the Court lacks jurisdiction to decide the case - to determine the appropriate rights, duties, and roles for these federal entities, which have become the pivotal and dominant actors in interstate ***river*** basins - even if the United States is a necessary party. [[476]](#footnote-477)476 This asymmetry has not traditionally been a problem in interstate compact litigation, largely because federal interests receive explicit protections in most compacts, even if the United States is not a signatory party to them, and water rights for federal projects within compacted basins are obtained under state law. [[477]](#footnote-478)477

Nonetheless, there are troubling signs that the established structures ofcooperative federalism in western water are falling out of balance, largely because the states' continued over-dependence on groundwater pumping has placed that balance under unprecedented stress. The federal role in compact litigation has become inconsistent and unpredictable, producing the legal equivalent of asymmetrical warfare. Consider the contrast between recent litigation over the Republican ***River*** Compact and the current litigation concerning the Rio Grande Compact. In the former, the Department of the Interior (Interior) played a minimal role. While it recommended that the Court accept Kansas's motion for leave, it did not intervene on behalf of its Reclamation projects in the Republican ***River*** Basin, which service irrigators in both Nebraska and Kansas from a common reservoir, Harlan County Lake. Far too late, Interior issued a comprehensive critique of Nebraska's excessive groundwater pumping and its deliberate hostility to surface water irrigation, in a demand letter that appears in retrospect to be more of a gesture than a commitment to defend Reclamation's own projects. [[478]](#footnote-479)478 By contrast, in the Rio Grande litigation, the United States has intervened and, in what appears to be an unprecedented decision, gone so far as to assert a cause of action against a state under an interstate compact to which it is not a signatory party, seeking injunctive relief against New Mexico to protect surface water irrigators in New Mexico and Texas who share a common dependence upon Elephant Butte Reservoir. [[479]](#footnote-480)479 In short, the United States of Kansas v. Nebraska & ***Colorado*** is unrecognizable to the United States of Texas v. New Mexico & ***Colorado***. Outside of these different litigation arenas, the United States continues to make jurisdictional claims to western groundwater, provoking predictably reactionary responses from western legislators. [[480]](#footnote-481)480 There **[\*212]** are even troubling signs from the Court itself: one Special Master has gone so far as to hold that the Court's power to interpret compacts "is so robust as to be almost indistinguishable from the act of rewriting." [[481]](#footnote-482)481

In response to the unpredictability and inconsistency of federal actions and positions, there are similarly troubling signs of the states' withdrawal from these long-established structures. In the Republican ***River*** Basin, the RRCA has rediscovered interstate comity by way of a shared hostility to Reclamation. [[482]](#footnote-483)482 Kansas has faced hydrological-political reality and grudgingly accepted ***Colorado***'s and Nebraska's augmentation plans; it has become clear that neither state will substantially reduce groundwater pumping to comply with the Republican ***River*** Compact. Frustrated by Reclamation's understandable concerns about augmentation, the RRCA has passed a series of resolutions that embrace augmentation and define compact compliance downwards, in apparent defiance of the compact, which requires the safeguarding of federal infrastructure. [[483]](#footnote-484)483 In the Republican ***River*** Basin at least, anti-federalism has replaced cooperative federalism. The United States remains reluctant to protect its own interests, as well as the irrigators who depend upon surface water stored in Reclamation reservoirs. In deference to groundwater irrigators, the RRCA may have engineered an efficient breach of its own.

What then, of the surface water irrigators within Reclamation projects whom their parent states have effectively abandoned? Here, the boundaries between compacting states may be yielding to the boundaries between surface and groundwater. [[484]](#footnote-485)484 In Kansas v. Nebraska & ***Colorado***, surface water irrigators in Nebraska assisted Kansas, because they shared a common interest in seeking reductions in Nebraska's groundwater pumping. When the Court refused to consider, much less order, such reductions, they sought remedies within Nebraska with a similar lack of success. [[485]](#footnote-486)485 And in Texas v. New Mexico & ***Colorado***, surface water irrigators in New Mexico who depend upon Reclamation's Rio Grande Project have aligned with Texas and the United States, in defiance of their own State Engineer, who asserts the sovereign right to allow continued groundwater pumping at their expense. [[486]](#footnote-487)486 In both basins, irrigators' dependence upon the source of water supply - whether surface or groundwater - is trumping allegiance to their parent states.

By contrast, eastern states have generally not entered into interstate compacts - and that has raised its own set of structural problems, even as upstream **[\*213]** states have condoned levels of groundwater development that have clearly injured downstream states. [[487]](#footnote-488)487 Without a compact or decree in place, states claiming that they have been deprived of water supplies managed or regulated by federal entities have been forced to pursue separate and arguably redundant litigation avenues to obtain relief. [[488]](#footnote-489)488 At this writing, Florida v. Georgia provides a cautionary tale reminiscent of the Republican ***River*** litigation: without the active involvement of the relevant basin-wide federal agency - Reclamation for the Republican ***River*** Basin, the Corps for the ACF Basin - interstate litigation does not provide a satisfactory result. Conversely, Mississippi v. Tennessee reveals what is perhaps the limit case of that frustration: an attempt to avoid the doctrine (and the inevitable structures) of equitable apportionment altogether. [[489]](#footnote-490)489 The Court should probably not have accepted either case. Florida v. Georgia is premature before the Corps decides how to manage the ACF Basin, and in such a way that it can be bound by that decision. In Mississippi v. Tennessee, Mississippi has requested the Court to reject or just ignore over a century of its own consistent equitable apportionment jurisprudence.

These problems of balance in hydrology, jurisdiction, and federalism lead to a third observation, one concerning doctrine. Western water law was founded upon the original condition of permanent aridity. That condition justified the prior appropriation doctrine, which was intended to protect, clearly and quickly, those with the oldest and thus best water rights. [[490]](#footnote-491)490 Without priority administration in times of drought, shared beneficial use would be insufficient for all rights, diluting them all into waste. [[491]](#footnote-492)491 Likewise, the principal purpose of interstate water compacts is to fix the equitable allocation of scarce water supplies among states that would rather not share them. [[492]](#footnote-493)492 These compacts matter most in times of drought, when water is most valuable, and so the temptation to overuse is greatest. The Court's application of the prior appropriation doctrine at the interstate level motivated the first interstate water compact, the ***Colorado*** ***River*** Compact, and most interstate compacts stress the importance of maxi-mizing beneficial uses of the allocated water. [[493]](#footnote-494)493

As long as most of the usable waters of the West ran above ground, western water law and interstate water compacts operated in a workable tandem. Before the groundwater revolution, prior appropriation and beneficial use were united indivisibly. [[494]](#footnote-495)494 In practice, however, the groundwater revolution led states to decouple them, to place the principle of beneficial use over that of priority, and **[\*214]** to regulate groundwater less stringently than surface water. [[495]](#footnote-496)495 For a time, the delayed impact of groundwater pumping on streamflows, and the imperfect understanding of the relationship between groundwater pumping and streamflow depletions, enabled these policy decisions. But as depletions became more obvious and their causes better understood, these decisions destabilized the administration of interstate compacts and eventually made their violationinevitable. Over the past fifty years, litigation to enforce these compacts has clarified their meaning, their scope, their measure, and their power.

Yet in making the states' obligations clear, litigation has produced an unintended consequence. The states have been reluctant to reduce groundwater pumping, and the Court has been reluctant to order such reductions or otherwise to intrude upon state law. [[496]](#footnote-497)496 This shared reluctance has created a divergence between the means of compliance and some of the founding principles of western water law, most prominently the prior appropriation doctrine. The pressure of interstate litigation on the doctrine has largely gone unrecognized by legal scholars. [[497]](#footnote-498)497 But it has long been an open secret among those who must comply with a decree from the Court. As an engineer candidly declared in the wake of Texas v. New Mexico, "administration of priorities in the Pecos ***River*** Basin … is the only option currently available for meeting the delivery obligation under the Amended Decree. That option should be avoided at all costs." [[498]](#footnote-499)498

The Nebraska Supreme Court has recently reached a similar conclusion, albeit one resting on different jurisdictional and doctrinal foundations. [[499]](#footnote-500)499 In a decision denying surface irrigators' inverse condemnation claims, the court essentially held that prior appropriation rights to the surface waters of the Republican ***River*** in Nebraska - rights which date back to the nineteenth century and upon which Nebraska's Reclamation projects substantially depend - are essentially defenseless against junior groundwater permits, because Nebraska has made a political bargain with its groundwater irrigators. Nebraska has decided to delegate groundwater pumping to NRD's, which Nebraska DNR does not **[\*215]** control; but in meeting its compact obligations, it has chosen to administer surface water rights - which it does control - before entertaining the politically suicidal option of reducing groundwater pumping. [[500]](#footnote-501)500 Thus, claiming as universal the protections established in Hinderlider, Nebraska has pursued, so far successfully, a peculiar but effective compliance strategy. Nebraska DNR has exercised its regulatory power over surface water in water-short years by shutting off all prior appropriation surface rights in the Republican ***River*** Basin; but because it has no authority to curtail groundwater pumping, it is thus excused from curtailing groundwater pumping during those same years. [[501]](#footnote-502)501 Despite their senior priorities, surface water users in the basin "are being singled out to bear the burden of water shortages for the benefit of the groundwater using majority." [[502]](#footnote-503)502 In both New Mexico and Nebraska, then, the means by which upstream states are fulfilling their compact obligations have raised fundamental questions about the efficacy of the prior appropriation doctrine in practice.

A final observation concerns interstate litigation itself. With all of these problems in mind - political, jurisdictional, and doctrinal, but always hydrological - we are left with a recurring question asked by risk-averse downstream governors, thoughtful journalists, and the often-weary Court: are interstate water conflicts best resolved or even resolvable by litigation? The answer, to conclude with lawyerly equivocation, depends upon the basin. Commentators have recently pointed to the agreements reached on the ***Colorado*** ***River*** as proof that negotiation is always superior to litigation. [[503]](#footnote-504)503 The ***Colorado*** ***River*** is the most important ***river*** in the West, but it is exceptional. Its "law of the ***river***" combines decades of binding federal law and federal and state agreements into a unique jurisprudence. [[504]](#footnote-505)504 Moreover, federal law confers upon the United States a central management role in the ***Colorado*** ***River*** Basin from which it cannot shrink - a role that convinced the Court to issue its sole decision on congressional apportionment in 1963, and one that continues to this day. [[505]](#footnote-506)505 The ***Colorado***'s importance to desert megalopolises such as Denver, Las Vegas, Phoenix, and Los Angeles, as well as its vast hydropower resources, make for considerably higher stakes compared to lesser and primarily agricultural theaters such as the Pecos, Arkansas, Republican, and Rio Grande Basins.

And most tellingly for this article, the parties to the ***Colorado*** ***River*** Compact have not confronted the problem of groundwater depletion - at least not yet. [[506]](#footnote-507)506 In other groundwater-dependent interstate ***river*** basins of the West, litigation has forced defendant states to own the consequences of their ground-water overuse, in the form of damages, remedies, legal reforms, and compliance **[\*216]** strategies. Without the weapon of litigation - without the guns of downstream states fixed upon the upstream "frontiers of their kingdoms" - it is certain that they never would have done so. [[507]](#footnote-508)507 Litigation has also forced states to enter into negotiated settlements and interstate compact resolutions whose endurance will certainly be tested over the next fifty years - at both the interstate and intrastate levels. In sum, litigation is not so much the answer to conflicts over interstate groundwater as it is their inevitable consequence - but one both ultimately necessary and the most effective in making the requisite "interstate adjustments" that the groundwater revolution has demanded. [[508]](#footnote-509)508

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1. 1 Thomas Hobbes, Leviathan 90 (Richard Tuck ed., Cambridge Univ. Press 1991) (1651). [↑](#footnote-ref-2)
2. 2 Personal Conversation with J. D. MacFarlane, former ***Colorado*** Attorney General, in Denver, ***Colo.*** (July 2009). [↑](#footnote-ref-3)
3. 3 Supreme Court decisions concerning interstate water disputes typically begin with a description of the ***river*** at issue. See, e.g., [*Kansas v.* ***Colorado****, 543 U.S. 86, 90 (2004)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4DYT-9560-004B-Y013-00000-00&context=1516831) (J. Breyer, describing the Arkansas ***River*** as a ***river*** once "proudly called the "Nile of America.'"). Others, in-cluding a future justice of the Court, saw the Nile elsewhere: Felix Frankfurter & James M. Landis, The Compact Clause of the Constitution: A Study in Interstate Adjustments, 34 Yale L. J. 685, 701 (1925) ("the ***Colorado*** ***River*** is the Nile for the Southwest; the State of ***Colorado*** its Soudan."). [↑](#footnote-ref-4)
4. 4 Marc Reisner, Cadillac Desert: The American West and its Disappearing Water 47 (rev. ed. 1993); see also Douglas R. Littlefield, Conflict on the Rio Grande: Water and the Law, 1879-1939, at 9-10 (2008). The Republican ***River*** is a good example of this original flaw: due to the Nebraska-Kansas boundary established by the Kansas-Nebraska Act of 1854, ch. 59, [*10 Stat. 277 (1854),*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C6W-DC70-01XN-S0PJ-00000-00&context=1516831) the State of Kansas is both upstream and downstream of the State of Nebraska under the Republican ***River*** Compact. Republican ***River*** Compact, arts. VI, VII, and VII, ch. 104, [*57 Stat. 86 (1943);*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) see also Republican ***River*** Compact Synopsis, Republican ***River*** Water Conservation District, at "Articles: VI, VII, and VII," [*http://www.republicanriver.com/CompactInfo/RepublicanRiverCompact1942/*](http://www.republicanriver.com/CompactInfo/RepublicanRiverCompact1942/) RepublicanRiverCompactSynopsis/ ta-bid/160/Default.aspx. [↑](#footnote-ref-5)
5. 5 Brief for the State of ***Colorado***, Impleaded Defendant at 3, Nebraska v. Wyoming, 325 U.S. 589 (1945), 1945 WL 48348 at 3. [↑](#footnote-ref-6)
6. 6 See, e.g., [*Oklahoma v. Texas, 256 U.S. 70, 87-93 (1921)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4MS0-003B-H3CJ-00000-00&context=1516831) (affirming the boundary between Oklahoma and Texas as the south bank of the Red ***River***, as established by earlier treaties between the United States and the King of Spain, Treaty of Amity, Settlement, and Limits, U.S.-Spain, Feb. 22, 1819, [*8 Stat. 252;*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C6W-DCJ0-01XN-S37P-00000-00&context=1516831) and between the United States and the United Mexican States, Treaty of Limits, U.S.-Mex., Jan. 12, 1828, [*8 Stat. 372,*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C6W-DCJ0-01XN-S387-00000-00&context=1516831) and in accordance with [*United States v. Texas, 162 U.S. 1 (1896));*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-DSB0-003B-H28B-00000-00&context=1516831) see also [*New Mexico v.* ***Colorado****, 267 U.S. 30, 37 (1925)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H5K0-003B-71N8-00000-00&context=1516831) (affirming the earlier survey of the 37th Parallel as that established by the Darling (1868) and Major Preston (1874) surveys, not the 1903-04 survey by Howard B. Carpenter, which would have transferred "a large strip of territory from ***Colorado*** to New Mexico"); and [*Texas v. New Mexico, 276 U.S. 557, 557-58 (1928)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-FH90-003B-732X-00000-00&context=1516831) (modifying the Court's earlier opinion in [*275 U.S. 279 (1927)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-FRT0-003B-73DV-00000-00&context=1516831) to account for the effects of accretion on the course of the Rio Grande, which had served as a boundary between the two states until the boundary was settled by survey). [↑](#footnote-ref-7)
7. 7 For a discussion of the problems between the territorial period and the Reclamation Act of 1902, see John Wesley Powell, Report on the Lands of the Arid Region of the United States: With a More Detailed Account of the Lands of Utah (W. Stegner ed., Univ. of Nebraska Press 2004) (1879); see also Wallace Stegner, Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West 217 (1954); and Donald J. Pisani, To Reclaim a Divided West: Water, Law, and Public Policy 1848-1902 (1992). For a discussion of the period between the Reclamation Act and World War II, see Donald J. Pisani, From the Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931 (1984). For an extensive discussion of the problem since World War II (but one that focuses on California), see Amy Kelley, Staging a Comeback: Section 8 of the Reclamation Act, 18 U.C. Davis L. Rev. 18 (1984). [↑](#footnote-ref-8)
8. 8 See Frankfurter & Landis, supra note 3, at 695-703. [↑](#footnote-ref-9)
9. 9 Charles J. Meyers, The ***Colorado*** ***River***, 19 Stan. L. Rev. 1, 12, 24-25 (1966) (on the ***Colorado*** ***River*** Compact); Paul Elliott, Texas' Interstate Water Compacts, 17 St. Mary's L.J. 1241, 1261-62 (1986). [↑](#footnote-ref-10)
10. 10 For an example of a compact reached after extensive interstate litigation, see the Arkansas ***River*** Compact, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) [↑](#footnote-ref-11)
11. 11 See generally [*Kansas v.* ***Colorado****, 206 U.S. 85 (1907)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) (asserting the power of the Court to equitably apportion interstate ***rivers***); [*Nebraska v. Wyoming, 325 U.S. 589, 618 (1945)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-JYY0-003B-S45W-00000-00&context=1516831) (setting forth the Court's multi-factor analysis for equitable apportionment); [***Colorado*** *v. New Mexico, 459 U.S. 176, 183 (1982)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) (stating the current formulation for equitable apportionment). [↑](#footnote-ref-12)
12. 12 An Act Relating to the Construction of a Dam and Reservoir on the Rio Grande, in New Mexico, for the Improvement of the Flood Waters of Said ***River*** for Purposes of Irrigation, ch. 798, ***33 Stat. 814 (1905)*** (apportioning the Rio Grande between New Mexico and Texas); [*Arizona v. California, 373 U.S. 546, 560 (1963)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) (holding that Congress has the power to apportion interstate waters, and that the Boulder Canyon Project Act of 1928, ch. 42, [*45 Stat. 1057,*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNP0-01XN-S392-00000-00&context=1516831) effected such a complete statutory apportionment of the states of the Lower ***Colorado*** ***River*** Basin (California, Arizona, and Nevada)). For the Rio Grande apportionment, see Littlefield, supra note 4, at 114-30; for a historical critique of the apportionment decision in Arizona v. California, see Norris Hundley, Jr., Clio Nods: Arizona v. California and the Boulder Canyon Act - A Reasses-sment, 3 Western Hist. Q. 455-82 (1972). In a dispute over the Missouri ***River*** two decades later, South Dakota imitated Arizona's argument, arguing that the O'Mahoney-Milliken Amendment to the Flood Control Act, [*33 U.S.C. § 701-1*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SDD-0FN2-D6RV-H2VX-00000-00&context=1516831)(b) (2012), apportioned the Missouri ***River*** Basin between upstream consumptive uses and downstream navigation uses, but the Court denied its motion for leave to file. ***South Dakota v. Nebraska, 475 U.S. 1093 (1986).*** Since Arizona v. California, Congress has apportioned an interstate stream only once, in the 1990 Truckee-Carson-Pyramid Lake Water Rights Settlement Act, Pub. L. No. 101-618, ***104 Stat. 3289, 3294-324 (1990),*** explicitly apportioning the Truckee ***River***, the Carson ***River***, and Lake Tahoe between California and Nevada. [↑](#footnote-ref-13)
13. 13 See Act for Admission of Kansas Into the Union, ch. 20, [*12 Stat. 126 (1861)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C6W-DC90-01XN-S2SW-00000-00&context=1516831) (memorializing the request by the Territory of Kansas to the Congress of the United States "to admit the said territory into the union as a state, on an equal footing with the other states"); [*Pollard v. Hagan, 44 U.S. 212 (1845);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-KBP0-003B-H49X-00000-00&context=1516831) [*Shively v. Bowlby, 152 U.S. 1 (1894);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-F7T0-003B-H3BG-00000-00&context=1516831) [*Kansas v.* ***Colorado****, 185 U.S. 125, 143, 145 (1902);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-CF60-003B-H50Y-00000-00&context=1516831) [*Arizona v. California, 373 U.S. 546, 596-97 (1963).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) However, in Kansas v. Nebraska & ***Colorado***, the Court, for the first time, explicitly acknowledged the inherent advantages of upstream states in the context of interstate compact disputes: "possessing the privilege of being upstream, Nebraska can (physically, though not legally) drain all the water it wants from the Republican ***River***." [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1057 (2015).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) [↑](#footnote-ref-14)
14. 14 Meyers, supra note 9, at 11. [↑](#footnote-ref-15)
15. 15 [*Arizona v. California, 373 U.S. 546, 612 (1963)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) (Harlan, J., dissenting). [↑](#footnote-ref-16)
16. 16 The most prominent example of federal action is probably the "Rio Grande Embargo" (1896-1925), in which successive Secretaries of the Interior prevented water supply development on the public domain in ***Colorado*** and northern New Mexico, to protect downstream interests in southern New Mexico, Texas, and Mexico. The Department of the Interior imposed similar embargoes in the North Platte ***River*** in Wyoming (to protect inflows to Pathfinder Dam and Reservoir and the irrigation interests downstream in Nebraska), and in the Salt ***River*** in Arizona (to protect irrigation in the Phoenix area). See Littlefield, supra note 4, at 170-74, 183-87; see also Donald J. Pisani, State vs. Nation: Federal Reclamation and Water Rights in the Progressive Era, in Water, Land, and Law in the West: The Limits of Public Policy, 1850-1920 38-49 (1996). [↑](#footnote-ref-17)
17. 17 George Cameron Coggins, Charles F. Wilkinson, & John D. Leshy, Federal Public Land and Resources Law 12 (5th ed., 2002); see also Reisner, supra note 4; Donald Worster, ***Rivers*** of Empire: Water, Aridity and the Growth of the American West (1992). [↑](#footnote-ref-18)
18. 18 See Leonard F. Konikow, U.S. Geological Survey, Scientific Investigations Report 2013-5079, Groundwater Depletion in the United States (1900-2008) 4-5 (2013). [↑](#footnote-ref-19)
19. 19 A. Park Williams et al., Contribution of Anthropogenic Warming to California Drought during 2012-2014, 42 Geophysical Research Letters 6819 (2015). [↑](#footnote-ref-20)
20. 20 John D. Leshy, Federal Lands in the Twenty-First Century, 50 Nat. Resources. J. 111, 113-14 (2010). [↑](#footnote-ref-21)
21. 21 See, e.g., Water Challenges, Dept. of the Interior, [*https://www.doi.gov/water*](https://www.doi.gov/water) (last accessed Sept. 15, 2015); see generally William deBuys, A Great Aridness: Climate Change and the Future of the American Southwest (1994). [↑](#footnote-ref-22)
22. 22 Paolo Bacigalupi, The Water Knife: A Novel (2015). [↑](#footnote-ref-23)
23. 23 See generally Herbert Butterfield, The Whig Interpretation of History (1931). [↑](#footnote-ref-24)
24. 24 Since [*Arizona v. California, 373 U.S. 546 (1963),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) the Court has not found another congressional apportionment of interstate waters; see supra note 12. [↑](#footnote-ref-25)
25. 25 See, e.g., [*Winters v. United States, 207 U.S. 564 (1908);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-9WV0-003B-H241-00000-00&context=1516831) [*Colville Confederated Tribes v. Walton, 647 F.2d 42 (9th Cir. 1981).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-1VJ0-0039-W2D7-00000-00&context=1516831) [↑](#footnote-ref-26)
26. 26 See generally John E. Thorson et al., Dividing Western Waters: A Century of Adjudicating ***Rivers*** and Streams, [*8 U. Denv. Water L. Rev. 355 (2005);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4H22-6RG0-00SW-509H-00000-00&context=1516831) John E. Thorson et al., Dividing Western Waters: A Century of Adjudicating ***Rivers*** and Streams, Part II, [*9 U. Denv. Water L. Rev. 299 (2006).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4VWJ-C0K0-00SW-50B0-00000-00&context=1516831) While groundwater has not driven tribal water rights adjudications, it has complicated efforts to reach workable and enduring accommodations between the federal reserved rights of tribes and their members, and the state law-based water rights of other citizens. See, e.g., [*Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist., 849 F. 3d 1262 (9th Cir. 2017).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5N1P-2T31-F04K-V08V-00000-00&context=1516831) For useful summaries of groundwater in the reserved water rights context, see Thorson et al., id.; Judith M. Royster, Indian Tribal Rights to Groundwater, [*15 Kan. J.L. & Pub. Pol'y 489 (2006);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4PCH-J5Y0-00CV-H062-00000-00&context=1516831) Lawrence J. MacDonnell, General Stream Adjudications, the McCarran Amend-ment, and Reserved Water Rights, [*15 Wyo. L. Rev. 313 (2015);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5H9M-3CW0-00SW-60PK-00000-00&context=1516831) Jason A. Robison, Wyoming's Big Horn General Stream Adjudication, [*15 Wyo. L. Rev. 243 (2015).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5H9M-3CW0-00SW-60PJ-00000-00&context=1516831) For a useful study of the first fifty years of tribes' rights to water, see generally John Shurts, Indian Reserved Water Rights: The Winters Doctrine in Its Social and Legal Context, 1880s-1930s (2000). [↑](#footnote-ref-27)
27. 27 Carol Hardy Vincent et al., Congressional Research Service, Federal Land Ownership: Overview and Data 21 (2017), [*https://fas.org/sgp/crs/misc/R42346.pdf*](https://fas.org/sgp/crs/misc/R42346.pdf) (tabulating federal acreage across the eleven western states (Arizona, California, ***Colorado***, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, excluding Alaska and Hawaii)). The federal government owns roughly 640 million acres across the United States; of that total, over 224 million acres are located in Alaska. Id. at 1, 21. [↑](#footnote-ref-28)
28. 28 See, e.g., [*United States v. New Mexico, 438 U.S. 696 (1978);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-8PR0-003B-S194-00000-00&context=1516831) [*Cappaert v. United States, 426 U.S. 128 (1976).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-9WH0-003B-S2DC-00000-00&context=1516831) [↑](#footnote-ref-29)
29. 29 See, e.g., [*City of Albuquerque v. Browner, 97 F.3d 415 (10th Cir. 1996)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-0HN0-006F-M42P-00000-00&context=1516831) (upholding tribal water quality standards set by the Pueblo of Isleta that were more stringent than federal standards, based on tribes' statutory right to be treated as states for purposes of the Clean Water Act); [*New Mexico v.* ***Colorado****, 582 U.S., No. 147*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5NTV-D8X1-F04K-F1MM-00000-00&context=1516831) Orig. (2017) (order denying New Mexico's motion for leave to file a bill of complaint against ***Colorado*** for the Gold King mine spill of August, 2015, which originated in ***Colorado*** and polluted the Animas and San Juan ***Rivers*** in New Mexico). [↑](#footnote-ref-30)
30. 30 Reader's Digest, vol. 91, p. 120 (Oct. 1967). [↑](#footnote-ref-31)
31. 31 See, e.g., Bret C. Birdsong & Douglas A. Grant, Water Apportionment Compacts Between States, Waters and Water Rights,§§46.01 to 46.30 (3d ed., 2017). [↑](#footnote-ref-32)
32. 32 The first systematic treatments of western water law date from the decades on either side of the Reclamation Act of 1902. See, e.g., John Norton Pomeroy, A Treatise on the Law of Water Rights as the same is formulated and applied to the Pacific states, including the doctrine of Appropriation and the statutes and decisions relating to Irrigation (1893); Clesson S. Kinney, A Treatise on the Law of Irrigation and Water Rights and the Arid Region Doctrine of Appropriation of Waters (1894); Elwood Mead, Irrigation Institutions: A Discussion of the Economic and Legal Questions Created by the Growth of Irrigated Agriculture in the West (1903); Henry P. Farnham, The Law of Waters and Water Rights (1904); Samuel C. Wiel, Water Rights in the Western States (1905). A second round of treatises and codifications emerged during the 1940s and 1950s. See, e.g., Wells A. Hutchins, Selected Problems on the Law of Water Rights in the West (1942). [↑](#footnote-ref-33)
33. 33 See, e.g., Wiel, supra note 32, at §§72-80 (describing contemporary legal categories of groundwater and their attendant doctrines). [↑](#footnote-ref-34)
34. 34 Mead, supra note 32, at 6. [↑](#footnote-ref-35)
35. 35 Nebraska is probably the best example, given its large groundwater supplies. Since 1950, surface water irrigation has remained relatively static, watering approximately 1 million acres. By contrast, groundwater irrigation has boomed, rising from approximately 500,000 acres in 1950 to over 7 million acres by 1990. Vincent H. Dreeszen, Water Availability and Use, Flat Water: A History of Nebraska and its Water 82 (Charles A. Flowerday ed. 1993). [↑](#footnote-ref-36)
36. 36 By contrast, interstate water decrees are unusual. The Court is exceedingly reluctant to apportion interstate ***rivers*** by decree, and has defended that reluctance with the principled requirement that "The threatened invasion of rights must be of serious magnitude and it must be established by clear and convincing evidence." [*New York v. New Jersey, 256 U.S. 296, 309 (1921);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4J60-003B-H396-00000-00&context=1516831) see also [***Colorado*** *v. New Mexico, 467 U.S. 310, 314-21 (1984).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) (Although the Court has not yet decided the appropriate standard of proof for liability under an interstate compact, Special Masters in compact cases have uniformly used the preponderance of evidence standard. [*Kansas v.* ***Colorado****, 514 U.S. 673, 693 (1995);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S3D-0XY0-003B-R3M8-00000-00&context=1516831) see Montana v. Wyoming & North Dakota, 2014 Second Interim Report, infra note 174, at 40-43.). The Court has issued equitable apportionment decrees allocating water supplies between states in only three watersheds - the Laramie, the Delaware, and the North Platte ***Rivers***. See [*Wyoming v.* ***Colorado****, 259 U.S. 419 (1922)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) (Laramie ***River*** Decree); [*New Jersey v. New York, 283 U.S. 336 (1931),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-DBH0-003B-74VB-00000-00&context=1516831) modified ***347 U.S. 995 (1954)*** (Delaware ***River*** Decree); [*Nebraska v. Wyoming, 325 U.S. 589 (1945)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-JYY0-003B-S45W-00000-00&context=1516831) (North Platte Decree). The enforcement of an interstate decree is subject to the preponderance of evidence standard, but the modification of a decree is subject to the same standard of clear and convincing evidence that is required for initial apportionments. [*Nebraska v. Wyoming, 507 U.S. 584, 590-93 (1993).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S70-NFH0-003B-R51C-00000-00&context=1516831) The Court has modified interstate decrees in response to both stipulated agreements and litigation. See, e.g., [*Nebraska v. Wyoming 345 U.S. 981 (1953)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-JFK0-003B-S02X-00000-00&context=1516831) (decree amended pursuant to a stipulation and cross-motion of the parties; and [*Nebraska v. Wyoming, 534 U.S. 40 (2001)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:44F0-59X0-004C-101P-00000-00&context=1516831) (approving the Final Settlement Stipulation, dismissing all claims with prejudice, and amending the 1945 and 1953 decrees). In two other cases, the Court allocated the entire water supply of an interstate ***river*** to one state. In Arizona v. California, the Court allocated the waters of the [*Gila* ***River*** *(a tributary of the* ***Colorado******River*** *which flows from New Mexico into Arizona) to Arizona. 373 U.S. 546, 594-95 (1963).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) This case, which serves as the most prominent example of congressional apportionment of an interstate ***river*** (the ***Colorado*** ***River***), is to some degree an equitable apportionment case (of the Gila ***River***) as well. [*Id. at 560.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) In ***Colorado*** v. New Mexico, the Court allocated the waters of the Vermejo ***River*** (which flows from ***Colorado*** to New Mexico) entirely to New Mexico, rejecting the Special Master's recommendation of a decree awarding 4,000 acre-feet of the ***river***'s water supply to [***Colorado****.* ***Colorado*** *v. New Mexico, 467 U.S. 310, 324 (1984).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [↑](#footnote-ref-37)
37. 37 [*Texas v. New Mexico, 482 U.S. 124, 129 (1987).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-38)
38. 38 [*Kansas v.* ***Colorado****, 514 U.S. 673, 677 (1995).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S3D-0XY0-003B-R3M8-00000-00&context=1516831) [↑](#footnote-ref-39)
39. 39 ***Kansas v. Nebraska & Colorado, 525 U.S. 1101 (1999);*** ***Kansas v. Nebraska & Colorado, 563 U.S. 915 (2011).*** [↑](#footnote-ref-40)
40. 40 See infra text accompanying notes 159-79, 251-81. [↑](#footnote-ref-41)
41. 41 See infra text accompanying notes 180-208. [↑](#footnote-ref-42)
42. 42 See infra text accompanying notes 333-56. [↑](#footnote-ref-43)
43. 43 See infra text accompanying notes 357-418. [↑](#footnote-ref-44)
44. 44 Littlefield, supra note 4, at 6. [↑](#footnote-ref-45)
45. 45 And irreconcilable pronunciations of the name of the ***river***. "The Arkansas ***River*** is unique in that the pronunciation of its name changes from State to State. In ***Colorado***, Oklahoma, and Arkansas, it is pronounced as is the name of the State of Arkansas, but in Kansas, it is pronounced Ar-KAN-sas." [*Kansas v.* ***Colorado****, 514 U.S. 673, 677 (1995).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S3D-0XY0-003B-R3M8-00000-00&context=1516831) Chief Justice Rehnquist's diplomatic observation supports Mark Twain's opinion that "foreigners always spell better than they pronounce." Mark Twain, The Innocents Abroad 145 (Library of America ed., 1984) (1869). [↑](#footnote-ref-46)
46. 46 [*Kansas v.* ***Colorado****, 206 U.S. 46, 57, 85, 98 (1907).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-47)
47. 47 [*Wear v. State of Kansas ex rel. Brewster, 245 U.S. 154, 157 (1917).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-6650-003B-H11W-00000-00&context=1516831) Under the riparian doctrine, the reasonable use of water is an inherent common law attribute of riparian property. For discussions of Kansas's riparian water law, see Shamleffer v. Council Grove Peerless Mill ***Co***., 1877 WL 935 (1877); Emporia v. Soden, 1881 WL 905 (1881). [↑](#footnote-ref-48)
48. 48 [*Kansas v.* ***Colorado****, 206 U.S. at 46, 57, 85, 98;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [*Kansas v.* ***Colorado****, 185 U.S. 125, 143 (1902).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-CF60-003B-H50Y-00000-00&context=1516831) [↑](#footnote-ref-49)
49. 49 [*Kansas v.* ***Colorado****, 206 U.S. at 97-98;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) James S. Lochhead, An Upper Basin Perspective on California's Claims to Water from the ***Colorado*** ***River*** - Part I: The Law of the ***River***, [*4 U. Denv. Water L. Rev. 290, 295, n.17 (2001);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:43XH-WN80-00SW-5022-00000-00&context=1516831) Stephen C. McCaffrey, The Harmon Doctrine One Hundred Years Later: Buried, Not Praised, 36 Nat. Resources. J. 725 (1996). ***Colorado*** made the same argument fifteen years later in [*Wyoming v.* ***Colorado****. 259 U.S. 419, 457 (1922)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) ("It is the right of ***Colorado*** as a state to dispose, as she may choose, of any part or all of the waters flowing in the portion of the ***river*** within her borders, "regardless of the prejudice that it may work' to Wyoming … .") The Court again rejected the argument. [*Id. at 466.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) [↑](#footnote-ref-50)
50. 50 [*Kansas v.* ***Colorado****, 206 U.S. at 46, 56.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-51)
51. 51 [*Id. at 86-87;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) Pisani, supra note 16, at 42-48 (on the efforts of Morris Bien). The United States maintained its claim of ownership to unappropriated water as late as 1945. See infra note 68. [↑](#footnote-ref-52)
52. 52 [*Kansas v.* ***Colorado****, 206 U.S. at 115.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-53)
53. 53 Id. [↑](#footnote-ref-54)
54. 54 Id. at 52-53. [↑](#footnote-ref-55)
55. 55 Id. at 48. Kansas did, however, offer a hydrological theory of its own: that below the Arkansas ***River*** flowed a second, subterranean ***river***, with "distinct and continuous flow as of a separate stream." Id. at 114. The Court rebuked that theory, stressing the hydrological intercon-nection between the surface flows of the Arkansas ***River*** and its alluvial groundwater. Id. at 114-15. [↑](#footnote-ref-56)
56. 56 See infra text accompanying notes 140-58. [↑](#footnote-ref-57)
57. 57 Kansas had adopted the doctrine of prior appropriation for the western part of the state as early as 1886 - a fact not acknowledged in the Court's 1907 decision, probably because of Kansas's riparian legal position in that case. 1886 Kan. Sess. Laws 154 ("As between appropriators, the one first in time is the first in right."); [*Kansas v.* ***Colorado****, 206 U.S. at 104-05.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-58)
58. 58 [*Kansas v.* ***Colorado****, 206 U.S. at 46, 118.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-59)
59. 59 [*Id. at 117.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-60)
60. 60 [*Id. at 46, 118.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-61)
61. 61 [*Id. at 117.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-62)
62. 62 See supra note 36. [↑](#footnote-ref-63)
63. 63 [*Wyoming v.* ***Colorado****, 259 U.S. 419 (1922).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) The Court had anticipated this interstate logic in Kansas v. ***Colorado***: in denying the claim of Kansas to the uninterrupted waters of the Arkansas ***River*** based on its own allegiance to the riparian doctrine, "which recognizes the right of appropriating the waters of a stream … subject to the condition of an equitable division between the riparian appropriators," the Court found that Kansas "cannot complain if the same rule is administered between herself and a sister state." [*Kansas v.* ***Colorado****, 206 U.S. at 104-105.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-64)
64. 64 [*Finney Cty. Water Users Ass'n v. Graham Ditch* ***Co****. et al., 1 F.2d 650, 652*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4V-P8B0-003B-W50M-00000-00&context=1516831) (D. ***Colo.***, 1924). [↑](#footnote-ref-65)
65. 65 [*Wyoming v.* ***Colorado****, 259 U.S. at 457*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) (claiming that "it is the right of ***Colorado*** as a state to dispose, as she may choose, of any part or all of the waters flowing in the portion of the ***river*** within her borders, "regardless of the prejudice that it may work' to Wyoming … .") The Court rejected the argument, as it had in Kansas v. ***Colorado*** fifteen years before. [*Id. at 466;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) see supra note 58. [↑](#footnote-ref-66)
66. 66 [*Wyoming v.* ***Colorado****, 259 U.S. 419;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) ***Colorado*** ***River*** Compact, ch. 42, [*45 Stat. 1057 (1928)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNP0-01XN-S392-00000-00&context=1516831) (negotiated 1921-22). That legislation did not include the text of the compact it enacted; in this regard the ***Colorado*** ***River*** Compact is unique. The text of the ***Colorado*** ***River*** Compact first occurs at 70 Cong. Rec. 324-25 (1928). For a discussion of the context in which the ***Colorado*** ***River*** Compact was negotiated, see Norris Hundley, Jr., Water and the West: The ***Colorado*** ***River*** Compact and the Politics of Water in the American West (2d ed., 2009). [↑](#footnote-ref-67)
67. 67 [*New Jersey v. New York, 283 U.S. 336 (1931),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-DBH0-003B-74VB-00000-00&context=1516831) decree amended by ***347 U.S. 995 (1954)*** (Delaware ***River*** Decree). [↑](#footnote-ref-68)
68. 68 [*Nebraska v. Wyoming, 325 U.S. 589, 611-12, 616 (1945);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-JYY0-003B-S45W-00000-00&context=1516831) see supra note 51. Although Wyoming follows the prior appropriation doctrine for both surface and groundwater, Nebraska does so only for surface water; see infra text accompanying note 107. [↑](#footnote-ref-69)
69. 69 For a summary of this litigation, see [***Colorado*** *v. Kansas, 320 U.S. 383, 386-89 (1943).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) Kansas irrigators could seek this relief because they held prior appropriation rights; see supra text accompanying note 57. [↑](#footnote-ref-70)
70. 70 [*Id. at 388-89.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) [↑](#footnote-ref-71)
71. 71 [*Id. at 396-98.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) The Court stressed that while Arkansas ***River*** flows had failed to reach the Kansas state line for most years between 1895 and 1907, "substantial amounts" of water had crossed the line since 1908. [*Id. at 398.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) [↑](#footnote-ref-72)
72. 72 See supra text accompanying notes 47 and 57. [↑](#footnote-ref-73)
73. 73 [***Colorado*** *v. Kansas, 320 U.S. at 395-99, 400.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) [↑](#footnote-ref-74)
74. 74 [*Id. at 398-99.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) [↑](#footnote-ref-75)
75. 75 [*State ex rel. Peterson v. Kan. State Bd. of Agric., 149 P.2d 604 (Kan. 1944)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3WXN-T460-00KR-D04D-00000-00&context=1516831) (holding that the Division of Water Resources lacks statutory authority to regulate groundwater). [↑](#footnote-ref-76)
76. 76 For a summary of these developments, see Burke W. Griggs, The Political Cultures of Irrigation and the Proxy Battles of Interstate Water Litigation, 57 Nat. Resources. J. 1, 29-30 (2017). [↑](#footnote-ref-77)
77. 77 [*Hinderlider v. La Plata* ***River*** *& Cherry Creek Ditch* ***Co****., 304 U.S. 92 (1938)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-8RW0-003B-709P-00000-00&context=1516831) (holding that the ***Colorado*** State Engineer could administer pre-compact rights to honor the state's obligations under the La Plata ***River*** Compact between ***Colorado*** and New Mexico); for a discussion of the impact of Hinderlider on subsequent compacts, see Daniel Tyler, Silver Fox of the Rockies: Delphus E. Carpenter and Western Water Compacts 274-77 (2003). [↑](#footnote-ref-78)
78. 78 Arkansas ***River*** Compact, art. II, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) [↑](#footnote-ref-79)
79. 79 [***Colorado*** *v. Kansas, 320 U.S. 383, 392 (1943).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3XB0-003B-71TC-00000-00&context=1516831) As early as 1902, the Court had pointed out the advantages of a compact between the two states. [*Kansas v.* ***Colorado****, 185 U.S. 125, 140 (1902).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-CF60-003B-H50Y-00000-00&context=1516831) [↑](#footnote-ref-80)
80. 80 Arkansas ***River*** Compact, art. II-V, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) [↑](#footnote-ref-81)
81. 81 Interstate water allocation compacts enacted in these decades include the following: Rio Grande Compact, ch. 151, [*53 Stat. 785 (1939)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1G0-01XN-S0HB-00000-00&context=1516831) (among ***Colorado***, New Mexico, and Texas); Republican ***River*** Compact, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) (among ***Colorado***, Nebraska, and Kansas); Belle Fourche ***River*** Compact, ch. 64, [*58 Stat. 94 (1944)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY20-01XN-S3FN-00000-00&context=1516831) (between South Dakota and Wyoming); Upper ***Colorado*** ***River*** Basin Compact, ch. 48, [*63 Stat. 31 (1949)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S056-00000-00&context=1516831) (among Arizona, ***Colorado***, New Mexico, Utah, and Wyoming); Arkansas ***River*** Compact, supra note 50 (between ***Colorado*** and Kansas); and Pecos ***River*** Compact, ch. 184, ***63 Stat. 159 (1949)*** (between New Mexico and Texas). [↑](#footnote-ref-82)
82. 82 First Interim Report of Barton H. Thompson, Jr., Special Master at 6, Montana v. Wyo-ming & North Dakota, No. 137 Orig. (Feb. 10, 2010) [hereinafter Montana v. Wyoming & North Dakota, 2010 First Interim Report]. [↑](#footnote-ref-83)
83. 83 For a discussion of this issue on the national level, see Reisner, supra note 4. For a treatment focused on Kansas, see Burke W. Griggs, Beyond Drought: Water Rights in the Age of Permanent Depletion, [*62 U. Kan. L. Rev. 1263, 1276-80 (2014).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5CVY-4MY0-00CV-N0WP-00000-00&context=1516831) [↑](#footnote-ref-84)
84. 84 See Meyers, supra note 9. [↑](#footnote-ref-85)
85. 85 Id.; see also supra notes 10-12. The standard overview of the equitable apportionment doctrine is A. Dan Tarlock, The Law of Equitable Apportionment Revisited, Updated, and Restated, 56 U. ***Colo.*** L. Rev. 381 (1985). [↑](#footnote-ref-86)
86. 86 See, e.g., [*Merrill v. Bishop, 287 P.2d 620 (Wyo. 1955).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4000-7F90-00KR-C17G-00000-00&context=1516831) For critiques of this position, see Frank J. Trelease, Government Ownership and Trusteeship of Water, 45 Cal. L. Rev. 638 (1957); B. Abbott Goldberg, Interposition - Wild West Water Style, 17 Stan. L. Rev. 1 (1964); Eva H. Morreale, Federal-State Water Conflicts over Western Waters - A Decade of Attempted "Clarifying Legislation," 20 Rutgers L. Rev. 423 (1966). [↑](#footnote-ref-87)
87. 87 The shibboleth of interstate comity typically occurs in the preamble or the first article of most interstate water allocation compacts. See, e.g., Arkansas ***River*** Compact, Preamble, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) But not one interstate compact contains a built-in mandatory remedy for noncompliance. The Arkansas ***River*** Compact contains a provision allowing the compact ad-ministration to refer disputed matters for binding arbitration, but the administration must vote unanimously to do so. It has never done so. Id. art. VIII, § D, [*63 Stat. at 150.*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) [↑](#footnote-ref-88)
88. 88 See, e.g., Erasmus Haworth, U.S. Geological Survey, Underground Waters of Southwestern Kansas (1897); George Evert Condra, U.S. Geological Survey, Geology and Water Resources of the Republican ***River*** Valley and Adjacent Areas, Nebraska 31-39 (1907). In deference to common usage, this article uses the terms "High Plains-Ogallala Aquifer," "Ogallala Aquifer," or just "Ogallala" interchangeably. [↑](#footnote-ref-89)
89. 89 [*Kansas v.* ***Colorado****, 206 U.S. 46, 114 (1907)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) ("If the bed of a stream is not solid rock, but earth, through which water will percolate … undoubtedly water will be found many feet below the surface, and the lighter the soil the more easily will it find its way downward and the more water will be discoverable by wells or other modes of exploring the subsurface."). [↑](#footnote-ref-90)
90. 90 See, e.g., Samuel C. Wiel, Need of Unified Law for Surface and Underground Water, 2 S. Cal. L. Rev. 358, 362 (1929) (noting that the "connection between surface streams and groundwater is usual, and in fact invariable."). [↑](#footnote-ref-91)
91. 91 Richard White, The Organic Machine: The Remaking of the Columbia ***River***, 71 (1995); Charles F. Wilkinson, Crossing the Next Meridian: Land, Water, and the Future of the West 266 (1992). [↑](#footnote-ref-92)
92. 92 James Aucoin, Water in Nebraska: Use, Politics, Policies 38-41 (1984); see generally D. E. Green, Land of the Underground Rain: Irrigation on the Texas High Plains, 1910-1970 (1981). [↑](#footnote-ref-93)
93. 93 Aucoin, supra note 92, at 38-41. [↑](#footnote-ref-94)
94. 94 Id. [↑](#footnote-ref-95)
95. 95 Report of Arthur L. Littleworth, Special Master, at 55, Kansas v. ***Colorado***, No. 105 Orig. (July 29, 1994) [hereinafter Kansas v. ***Colorado***, 1994 Report, vol. I], http://www.supremecourt .gov/SpecMastRpt/ORG105V1\_071994.pdf. [↑](#footnote-ref-96)
96. 96 Id. at 8-9, nn. 9-10. [↑](#footnote-ref-97)
97. 97 Report of Jean S. Breitenstein, Special Master, on Obligation of New Mexico to Texas Under the Pecos ***River*** Compact, at 29-32, Texas v. New Mexico, No. 65 Orig. (Oct. 15, 1979), 1979 U.S. S. Ct. Briefs LEXIS 1846 [hereinafter Texas v. New Mexico, 1979 Report]. Artesian wells tap groundwater supplies that are confined within geologic formations at higher elevations; as a consequence, they produce water at the wellhead under their own hydrostatic pressure. Artesian groundwater supplies formed a significant part of the available water supplies of the Pecos ***River*** Basin in southeastern New Mexico, especially between Roswell and McMillan; they used to "carry abundant water at all seasons." Cassius A. Fisher, U.S. Geological Survey, Preliminary Report on the Geology and Underground Waters of the Roswell Artesian Area, New Mexico 5, 9-21 (1906). [↑](#footnote-ref-98)
98. 98 Report of Charles J. Meyers, Special Master, at 24, n. 8, Texas v. New Mexico, No. 65 Orig. (July 29, 1986) [hereinafter Texas v. New Mexico, 1986 Report]. [↑](#footnote-ref-99)
99. 99 Final Report of Vincent L. McKusick, Special Master, with Certificate of Adoption of the Republican ***River*** Compact Administration (RRCA) Groundwater Model at 18, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Sept. 17, 2003) [hereinafter Kansas v. Nebraska & ***Colorado***, 2003 Final Report with Certificate]. [↑](#footnote-ref-100)
100. 100 Kansas v. ***Colorado***, 1994 Report vol. I, supra note 95, at 8. Another "erosive" factor was, paradoxically, contemporary federal conservation efforts to reduce soil erosion through subsidizing watershed dams and farm terracing efforts across the Great Plains. These conservation measures may have significantly reduced runoff from farms into the tributaries and federal reservoirs of interstate ***rivers*** such as the Republican ***River***. See, e.g., Republican ***River*** Compact Settlement Conservation Committee for the Republican ***River*** Compact Administration, Impacts of Non-Federal Reservoirs and Land Terracing on Basin Water Supplies x-xi, 128-36 (June 2014). [↑](#footnote-ref-101)
101. 101 First Report of Vincent L. McKusick, Special Master, (Subject: Nebraska's Motion to Dismiss), at 23-31, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Jan. 28, 2000) [hereinafter Kansas v. Nebraska & ***Colorado***, 2000 Report]. [↑](#footnote-ref-102)
102. 102 It woefully underestimated them. See, e.g., Bureau of Reclamation, U.S. Department of the Interior, Bostwick Definite Plan Report 1953: Water Supply, Flood Control, & Sediment, 38, 42-44 (1953) (assuming that groundwater pumping would be limited to municipal and industrial demands in the Republican ***River*** Basin, and that losses to reservoirs would be limited to seepage and evaporation, without considering depletions to groundwater baseflow caused by groundwater pumping for irrigation). [↑](#footnote-ref-103)
103. 103 [*Texas v. New Mexico, 462 U.S. 554, 557-61 (1983).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) [↑](#footnote-ref-104)
104. 104 [*Id. at 558-62.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) [↑](#footnote-ref-105)
105. 105 Id. [↑](#footnote-ref-106)
106. 106 Id. [↑](#footnote-ref-107)
107. 107 ***In re Metro. Util. Dist. of Omaha v. Merritt Beach, 140 N.W.2d 626, 635-37 (Neb. 1966).*** [↑](#footnote-ref-108)
108. 108 [*Neb. Rev. Stat. § 46-702*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5DHH-V8G1-7308-201S-00000-00&context=1516831) (2010) ("The Legislature also finds that natural resources districts have the legal authority to regulate certain activities and, except as otherwise specifically provided by statute, as local entities are the preferred regulators of activities which may contribute to ground water depletion."). [↑](#footnote-ref-109)
109. 109 Kansas v. Nebraska & ***Colorado***, 2003 Final Report with Certificate, supra note 99, at 18. [↑](#footnote-ref-110)
110. 110 [*Fellhauer v. People, 447 P.2d 986, 997 (****Colo.*** *1968);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3RX4-1Y50-003D-90XB-00000-00&context=1516831) [*Kuiper v. Atchison, Topeka & Santa Fe Ry., 581 P.2d 293, 296-97 (****Colo.*** *1978);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3RX4-1GF0-003D-92JJ-00000-00&context=1516831) Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 8-9, n. 10, 118-19. [↑](#footnote-ref-111)
111. 111 Compare ***Colo.*** Const. art. XVI,§§5, 6 with N.M. Const. art. XVI, § 2. [↑](#footnote-ref-112)
112. 112 Compare [*N.M. Stat. Ann.§§72-2-1*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5BXH-GJT1-64V8-109G-00000-00&context=1516831) to [*72-2-18*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5BXH-GJT1-64V8-10B5-00000-00&context=1516831), [*72-12-1*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5BXH-GJT1-64V8-10H4-00000-00&context=1516831) to [*72-12-28*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5BXH-GJT1-64V8-10J7-00000-00&context=1516831) (2015) with [*Kan. Stat. Ann. § 82a-706*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5BY4-TCW1-DYB8-31MX-00000-00&context=1516831) (2015). [↑](#footnote-ref-113)
113. 113 G. Emlen Hall, High and Dry: the Texas-New Mexico Struggle for the Pecos ***River*** 119-21 (2002). [↑](#footnote-ref-114)
114. 114 Id. [↑](#footnote-ref-115)
115. 115 See, e.g., [*Hill v. State, 894 N.W.2d 208 (Neb. 2017);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5N29-CH81-F04H-P006-00000-00&context=1516831) see also [*Frenchman-Cambridge Irrigation Dist. v. Neb. Dep't of Nat. Res., 801 N.W.2d 253 (Neb. 2011).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:82TY-SF01-652N-400X-00000-00&context=1516831) For a review of the problem in Nebraska, see J. David Aiken, Hydrologically-Connected Ground Water, Section 858, and the Spear T Ranch Decision, [*84 Neb. L. Rev. 962 (2006).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4JK3-N1N0-00CT-T01P-00000-00&context=1516831) [↑](#footnote-ref-116)
116. 116 See [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1057 (2015)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (noting the economic incentives for Nebraska to withhold water owed to Kansas, pay resulting damages, and still come out ahead are a "recipe for breach"); see, e.g., John B. Draper & Jeffrey J. Wechsler, Gunboats on the ***Colorado***: Interstate Water Controversies, Past and Present, 55 Rocky Mtn. Min. L. Inst. § 18, 18-27 to 18-32 (2009). [↑](#footnote-ref-117)
117. 117 Draper & Wechsler, supra note 116, at 18-10 to 18-12. [↑](#footnote-ref-118)
118. 118 Sup. Ct. R. 17 (2013); see Draper & Wechsler, supra note 116, at 18-8 to 18-12. [↑](#footnote-ref-119)
119. 119 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 145. [↑](#footnote-ref-120)
120. 120 Id. [↑](#footnote-ref-121)
121. 121 ***Colorado*** asserted the defense of laches, but neither Special Master Littleworth nor the Court accepted it. Id., at 147-70; [*Kansas v.* ***Colorado****, 514 U.S. 673, 687-89 (1995).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S3D-0XY0-003B-R3M8-00000-00&context=1516831) [↑](#footnote-ref-122)
122. 122 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 145; Pecos ***River*** Compact, ch. 184, ***63 Stat. 159 (1949),*** at art. II(c) (excepting the diminution of stream flows caused by "encroachment of salt cedars or other like growth" from the definition of "deplete by man's activities" in the Pecos ***River*** Compact). [↑](#footnote-ref-123)
123. 123 See, e.g., [*Texas v. New Mexico, 462 U.S. 554, 557-61 (1983)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) (reversing the Special Master's recommendation to reform the Pecos ***River*** Commission by adding a third-party, tie-breaking vote). [↑](#footnote-ref-124)
124. 124 See generally [*South Carolina v. North Carolina, 558 U.S. 256 (2010)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:7XKM-C3H0-YB0V-911R-00000-00&context=1516831) (allowing intervention by non-state parties). [↑](#footnote-ref-125)
125. 125 [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1059-64 (2015)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (approving, by a 5-4 decision, the Special Master's recommendation to modify the accounting procedures in the Final Settlement Stipulation of 2002-2003, despite its non-severability provision). The dissent strongly critiqued this extension of the Court's equitable power. See [*id. at 1071-74*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (Thomas, J., dissenting); see also infra note 250. [↑](#footnote-ref-126)
126. 126 In Arizona v. California, California extended the trial for as long as its lawyers could manage; "it had a vested interest in delay, since each year of irresolution meant 300 billion more gallons [or about 921,000 acre-feet] of water for the state." Reisner, supra note 4, at 261. In Kansas v. Nebraska & ***Colorado***, Nebraska continued to increase its number of wells in the Republican ***River*** Basin even after Kansas had filed its motion for leave to file a petition in 1998. See Kansas v. Nebraska & ***Colorado***, Final Report with Certificate, 2003, supra note 99. [↑](#footnote-ref-127)
127. 127 See [*Texas v. New Mexico, 462 U.S. 554, 562 (1983)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) (where compact commission failed to resolve dispute, forcing Texas to become a plaintiff to force New Mexico to honor the compact). Interstate water compacts typically establish a compact administration to effect the terms of the compact. See, e.g., Arkansas ***River*** Compact, art. VIII, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) See, e.g., [*Texas v. New Mexico, 462 U.S. at 561.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) [↑](#footnote-ref-128)
128. 128 [*Texas v. New Mexico, 462 U.S. at 562.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) The Court granted Texas's motion for leave to file a bill of complaint in 1975. ***Texas v. New Mexico, 421 U.S. 927, 927 (1975).*** [↑](#footnote-ref-129)
129. 129 [*Kansas v.* ***Colorado****, 543 U.S. 86, 90-91 (2004).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4DYT-9560-004B-Y013-00000-00&context=1516831) Kansas alleged that groundwater "development" in ***Colorado***, in particular increases in ground water consumption through new and existing wells, had "materially depleted" the water otherwise available "for use" by Kansas's "water users." [*Id. at 91.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4DYT-9560-004B-Y013-00000-00&context=1516831) The terms in quotation marks originate in Article: IV-D of the Arkansas ***River*** Compact, which requires that the "the waters of the Arkansas ***River*** … shall not be materially depleted in usable quantity or availability for use to the water users in ***Colorado*** and Kansas under this Compact by such future development … ." Arkansas ***River*** Compact, art. IV-D, ch. 155, [*63 Stat. 145 (1949).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1P0-01XN-S06T-00000-00&context=1516831) [↑](#footnote-ref-130)
130. 130 Motion for Leave to File Bill of Complaint, Bill of Complaint, and Brief in Support of Motion for Leave to File Bill of Complaint, at 4, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (May 1998), 1998 WL 35862312. Kansas's motion for leave was granted in 1999. ***Kansas v. Nebraska & Colorado, 525 U.S. 1101, 1101 (1999).*** [↑](#footnote-ref-131)
131. 131 Motion for Leave to File Petition, Petition, and Brief in Support, at 4, 9, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (May 2010), 2010 WL 10807806 [hereinafter 2010 Kansas Motion for Leave]. Kansas's motion for leave to file a petition was granted in 2011. ***Kansas v. Nebraska & Colorado, 563 U.S. 915, 915 (2011).*** [↑](#footnote-ref-132)
132. 132 See, e.g., [*Texas v. New Mexico, 462 U.S. at 564*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) (citing [*Cuyler v. Adams, 449 U.S. 433, 438 (1981)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-6RN0-003B-S356-00000-00&context=1516831) [↑](#footnote-ref-133)
133. 133 [*New Jersey v. Delaware, 552 U.S. 597, 615-16 (2008)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4S5V-W280-TXFX-127Y-00000-00&context=1516831) (quoting [*Rocca v. Thompson, 223 U.S. 317, 332 (1912)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-8PP0-003B-H563-00000-00&context=1516831) [↑](#footnote-ref-134)
134. 134 [*Kansas v.* ***Colorado****, 514 U.S. 673, 690 (1995);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S3D-0XY0-003B-R3M8-00000-00&context=1516831) see also [*Connecticut Nat'l Bank v. Germain, 503 U.S. 249, 253-254 (1992)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S65-KJK0-003B-R4X5-00000-00&context=1516831) (stating the cardinal rule in interpreting statutes is that unambiguous wording is conclusive). [↑](#footnote-ref-135)
135. 135 [*Oklahoma v. New Mexico, 501 U.S. 221, 235, n.5 (1991).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S65-KS20-003B-R0N7-00000-00&context=1516831) [↑](#footnote-ref-136)
136. 136 See Meyers, supra note 9. [↑](#footnote-ref-137)
137. 137 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 37. [↑](#footnote-ref-138)
138. 138 See supra sources and text accompanying notes 46-55. [↑](#footnote-ref-139)
139. 139 Republican ***River*** Compact, art. II, ch. 104, [*57 Stat. 86 (1943).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) [↑](#footnote-ref-140)
140. 140 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 18. [↑](#footnote-ref-141)
141. 141 See supra text accompanying notes 72-76. [↑](#footnote-ref-142)
142. 142 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 21. [↑](#footnote-ref-143)
143. 143 Id. at 22. [↑](#footnote-ref-144)
144. 144 Id. at 41-44. [↑](#footnote-ref-145)
145. 145 See Water Right Determination and Administration Act of 1969, [***Colo.*** *Rev. Stat.§§37-92-101-37-92-602*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J3FM-00000-00&context=1516831) (2016) (establishing the statutory regime for tributary groundwater, which qualifies as "waters of the state" under ***Colo.*** Const. art. XVI,§§5-6 and is therefore subject to the doctrine of prior appropriation and its attendant protections); ***Colorado*** Ground Water Management Act of 1965, [***Colo.*** *Rev. Stat.§§37-90-101*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J3C1-00000-00&context=1516831)- [*37-90-143*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J3DN-00000-00&context=1516831) (2016) (establishing the statutory regime for designated groundwater, which does not so qualify, and is governed by a less stringent version of the doctrine). [↑](#footnote-ref-146)
146. 146 See supra text accompanying notes 46-54. [↑](#footnote-ref-147)
147. 147 In 1979, Solicitor Leo Krulitz of the Department of the Interior issued a legal opinion asserting that, in the absence of an explicit congressional directive to the contrary, a federal agency may claim and use whatever unappropriated water is necessary to carry out congressionally authorized management programs for federal lands, without regard to state law. Dept. of Interior Solicitor's Opinion No. M-36914, "Federal Water Rights of the National Park Service, Bureau of Reclamation and the Bureau of Land Management," [*86 I.D. 553 (1979).*](https://advance.lexis.com/api/document?collection=administrative-materials&id=urn:contentItem:3RH0-V4F0-003M-T2NH-00000-00&context=1516831) This opinion, which became known as the federal non-reserved water rights theory, provoked a firestorm of criticism by western states and considerable critical scholarly comment; it was soon restricted in January 1981 by Krulitz's successor, Solicitor Clyde O. Martz. Dept. of Interior Solicitor's Opinion No. M-36914 (Supp.), "Supplement to Solicitor Opinion No. M-36914, on Federal Rights of the National Park Service, Fish and Wildlife Service, Bureau of Reclamation and Bureau of Land Management," [*88 I.D. 253 (1981).*](https://advance.lexis.com/api/document?collection=administrative-materials&id=urn:contentItem:3RH0-V3B0-003M-T297-00000-00&context=1516831) Solicitor William H. Coldiron repudiated the federal non-reserved water rights theory in September of that year. Dept. of Interior Solicitor's Opinion M-36914 (Supp. I), "Non-Reserved Water Rights - United States Compliance with State Law," (Sept. 11, 1981). In 1982, the Office of Legal Counsel concluded that the federal non-reserved water rights theory "does not have a sound legal or constitutional basis and does not provide an appropriate legal basis for assertion of water rights by federal agencies." Theodore B. Olson, Assistant Attorney General, Office of Legal Counsel, Federal "Non-Reserved" Water Rights, Memorandum for the Assistant Attorney General, Land and Natural Resources Division 328, 383 (June 16, 1982) [hereinafter Olson Memorandum]. For the arguments of Reclamation decades before, see supra text accompanying notes 51-68. [↑](#footnote-ref-148)
148. 148 Olson Memorandum, supra note 147, at 363, n.80 (recognizing the Krulitz Opinion as analogous to that put forth by the United States in [*Nebraska v. Wyoming, 325 U.S. 589, 615 (1945)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-JYY0-003B-S45W-00000-00&context=1516831) The United States had made the same claim decades before in Kansas v. ***Colorado***; see supra note 51. [↑](#footnote-ref-149)
149. 149 See supra text accompanying notes 135-36. [↑](#footnote-ref-150)
150. 150 Perhaps the most luminary legal expert in an interstate compact case was the late Professor Joseph L. Sax, who submitted an expert report concerning riparian jurisdiction on behalf of the State of Delaware in [*New Jersey v. Delaware. 552 U.S. 597, 610-11 (2008).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4S5V-W280-TXFX-127Y-00000-00&context=1516831) Delaware was the prevailing party in that case. [*Id. at 609.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4S5V-W280-TXFX-127Y-00000-00&context=1516831) [↑](#footnote-ref-151)
151. 151 Hall, supra note 113, at 132-33. [↑](#footnote-ref-152)
152. 152 Id.; [*Texas v. New Mexico, 482 U.S. 124, 126 (1987).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-153)
153. 153 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 27. [↑](#footnote-ref-154)
154. 154 Id. at 71-72. [↑](#footnote-ref-155)
155. 155 Id. at 72-73. ***Colorado*** offered no historian in opposition. Id. at 73. [↑](#footnote-ref-156)
156. 156 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 23-24, 26, n. 17. Dr. Littlefield is also an expert on the Rio Grande: see Littlefield, supra note 4. [↑](#footnote-ref-157)
157. 157 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 37. [↑](#footnote-ref-158)
158. 158 Id. at 21. [↑](#footnote-ref-159)
159. 159 Yellowstone ***River*** Compact, Pub. L. No. 82-231, [*65 Stat. 663 (1951).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CFP-G8K0-01XN-S4J4-00000-00&context=1516831) The Court granted Montana's motion for leave to file its complaint in 2008. ***Montana v. Wyoming & North Dakota, 552 U.S. 1175 (2008).*** [↑](#footnote-ref-160)
160. 160 Montana v. Wyoming & North Dakota, 2010 First Interim Report, supra note 82, at 12, 43. [↑](#footnote-ref-161)
161. 161 Id. at 43; see supra text accompanying note 142. [↑](#footnote-ref-162)
162. 162 Montana v. Wyoming & North Dakota, 2010 First Interim Report, supra note 82, at 53. [↑](#footnote-ref-163)
163. 163 Barton H. Thompson, Jr., John D. Leshy, & Robert H. Abrams, Legal Control of Water Resources: Cases and Materials (5th ed. 2012). [↑](#footnote-ref-164)
164. 164 Montana v. Wyoming & North Dakota, 2010 First Interim Report, supra note 82, at 43. [↑](#footnote-ref-165)
165. 165 Id. at 44. [↑](#footnote-ref-166)
166. 166 Id. at 45-53. [↑](#footnote-ref-167)
167. 167 Id. at 47 (citing [*Kansas v.* ***Colorado****, 206 U.S. 46, 114-115 (1907));*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) see supra note 55. [↑](#footnote-ref-168)
168. 168 [*Id. at 48*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) (citing [*Snake Creek Mining & Tunnel* ***Co****., 260 U.S. 596, 606 (1923),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4170-003B-H1YW-00000-00&context=1516831) which construed Utah law). Special Master McKusick relied upon the same case. Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 23. [↑](#footnote-ref-169)
169. 169 Id. at 48-49 (discussing, among others, Wiel, supra notes 32 and 90). [↑](#footnote-ref-170)
170. 170 Id. at 49 (citing [*Smith v. Duff, 102 P. 984, 986 (Mont. 1909)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4007-XCV0-00KR-F05T-00000-00&context=1516831) and [*Ryan v. Quinlan, 124 P. 512 (Mont. 1912)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4013-29F0-00KR-F130-00000-00&context=1516831) [↑](#footnote-ref-171)
171. 171 Id. at 49-50 (internal citations omitted). [↑](#footnote-ref-172)
172. 172 Id. at 53-54, 90. The year 1950 plays a central role in the Yellowstone ***River*** Compact: Article: V(A) provides that appropriative rights to the waters of the Yellowstone ***River*** system existing as of January 1, 1950 "shall continue to be enjoyed in accordance with the laws governing the acquisition and use of water under the doctrine of appropriation." Yellowstone ***River*** Compact, Pub. L. No. 82-231, [*65 Stat. 663 (1951).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CFP-G8K0-01XN-S4J4-00000-00&context=1516831) [↑](#footnote-ref-173)
173. 173 Id. at 53-54, 90; for Special Master Thompson's resolution of this issue, see infra text accompanying notes 264-75. [↑](#footnote-ref-174)
174. 174 Second Interim Report of Barton H. Thompson, Jr., Special Master, Liability Issues, at 25, Montana v. Wyoming & North Dakota, No. 137 Orig. (Dec. 29, 2014) [hereinafter Montana v. Wyoming & North Dakota, 2014 Second Interim Report]. In [*Montana v. Wyoming & North Dakota, 563 U.S. 368 (2011),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:52S5-SNV1-F04K-F32Y-00000-00&context=1516831) the Court affirmed Special Master Thompson's First Interim Report (supra note 82), against Montana's exception, holding that the Yellowstone ***River*** Compact permitted Wyoming to approve more efficient surface-water irrigation systems so long as the water conserved by those efficiency gains was applied to the same acreage irrigated in 1950. [↑](#footnote-ref-175)
175. 175 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 31-32. [↑](#footnote-ref-176)
176. 176 See supra text accompanying notes 154-56. [↑](#footnote-ref-177)
177. 177 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at App. I, I-27 to I-29, I-32, I-34, I-35 (docket sheet). [↑](#footnote-ref-178)
178. 178 Id. at 32. [↑](#footnote-ref-179)
179. 179 Id. at 99-200. [↑](#footnote-ref-180)
180. 180 The Court granted Texas's motion for leave to file its complaint in 2014. ***Texas v. New Mexico & Colorado, 134 S. Ct. 1050 (2014);*** First Interim Report of A. Gregory Grimsal, Special Master, at 2-3, Texas v. New Mexico & ***Colorado***, No. 141 Orig. (Feb. 9, 2017) [hereinafter Texas v. New Mexico & ***Colorado***, 2017 First Interim Report]. For the cases that precipitated this original action, see New Mexico v. Elephant Butte Irrigation Dist., CV-96-888 (N.M. 3d Jud. Dist., filed Sept. 24, 1996) (adjudication determining the rights to the water of the Rio Grande between Elephant Butte Reservoir and New Mexico-Texas state line); [*New Mexico v. United States, 2013 WL 1657355*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5872-9DW1-F04D-X00P-00000-00&context=1516831) (D. New Mex., 2013) (suit by New Mexico against Reclamation, alleging that it is improperly operating the Rio Grande Project). [↑](#footnote-ref-181)
181. 181 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 31 (internal citations omitted). The Rio Grande Compact has been the subject of two earlier cases, ***Texas v. New Mexico & Colorado, 342 U.S. 874 (1951),*** and ***Texas v. Colorado, 389 U.S. 1000 (1967).*** [↑](#footnote-ref-182)
182. 182 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 4-5, 92-116. The Rio Grande Project was established by Congress in 1905. Id. at 99-101 (internal citations omitted). The states had agreed to an interim compact in 1930, Act of June 17, 1930, ch. 506, [*46 Stat, 467,*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FX90-01XN-S00C-00000-00&context=1516831) largely to protect the Rio Grande Project, id. at art. XII, ***46 Stat. 772.*** In 1935, the states extended the interim compact to 1937, Act of June 5, 1935, ch. 177, ***49 Stat. 325.*** Congress approved the permanent compact in 1939. Rio Grande Compact, ch. 155, [*53 Stat. 785 (1939).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1G0-01XN-S0HB-00000-00&context=1516831) [↑](#footnote-ref-183)
183. 183 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 5. The Rio Grande Compact contains explicit reference to the Rio Grande Project. Rio Grande Compact, art. 1.k, ch. 155, [*53 Stat. 786 (1939).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1G0-01XN-S0HB-00000-00&context=1516831) [↑](#footnote-ref-184)
184. 184 Texas v. New Mexico, & ***Colorado*** 2017 First Interim Report, supra note 180, at 5. [↑](#footnote-ref-185)
185. 185 ***Texas v. New Mexico & Colorado, 134 S. Ct. 1783 (2014);*** Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 2-3. [↑](#footnote-ref-186)
186. 186 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 7. [↑](#footnote-ref-187)
187. 187 Id. at 211. [↑](#footnote-ref-188)
188. 188 Id. at 5; for Kansas's position in the 1902-1907 litigation over the Arkansas ***River***, see supra text accompanying note 46. [↑](#footnote-ref-189)
189. 189 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 7, 211. [↑](#footnote-ref-190)
190. 190 See supra text accompanying notes 48-49. [↑](#footnote-ref-191)
191. 191 See supra text accompanying notes 142-43. [↑](#footnote-ref-192)
192. 192 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 6. [↑](#footnote-ref-193)
193. 193 See supra note 16 and text accompanying notes 51, 68, and 147. The United States made a similar claim in 1906 to all the unappropriated waters of the Rio Grande, for the Rio Grande Project. Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 104-06 (internal citations omitted). [↑](#footnote-ref-194)
194. 194 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 6. [↑](#footnote-ref-195)
195. 195 See supra text accompanying notes 49 and 65. [↑](#footnote-ref-196)
196. 196 Texas v. New Mexico & ***Colorado***, 2017 First Interim Report, supra note 180, at 211, 215-16 (internal citations omitted). [↑](#footnote-ref-197)
197. 197 Id. at 194, 195. [↑](#footnote-ref-198)
198. 198 Id. at 198. [↑](#footnote-ref-199)
199. 199 Id. at 8 (quoting [*Arizona v. California, 373 U.S. 546, 552 (1963)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) [↑](#footnote-ref-200)
200. 200 Id. at 31-187. [↑](#footnote-ref-201)
201. 201 Id. at 204 (internal citations omitted). [↑](#footnote-ref-202)
202. 202 Id. at 209 (quoting [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1052 (2015)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) For the index of material contained in the DVD, see id. at vii-xiii. [↑](#footnote-ref-203)
203. 203 Id. at 210-17. Indeed, Special Master Grimsal cited [*Nebraska v. Wyoming, 515 U.S. 1, 16-18 (1995)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S36-4160-003B-R3M5-00000-00&context=1516831) to emphasize that "this is not the only instance where equitable apportionment is premised upon the operation of a federal reclamation project and its distribution of water pursuant to [a Reclamation] contract, as the Court has recognized." Id. at 213, n. 54. Texas v. New Mexico & ***Colorado***, - -S. Ct. - - , 2017 WL 4506765 (Oct. 10, 2017) (denying New Mexico's motion to dismiss). [↑](#footnote-ref-204)
204. 204 See supra text accompanying notes 150-78. [↑](#footnote-ref-205)
205. 205 Texas v. New Mexico & ***Colorado***, State of ***Colorado***'s Exceptions to the First Interim Report of the Special Master 9-12 (June 9, 2017); Texas v. New Mexico & ***Colorado***, State of New Mexico's Exceptions to the First Interim Report of the Special Master 49-55 (June 9, 2017) (both generally requesting the Court to abstain from adopting the historical judgments of Special Master Grimsal as the law of the case). [↑](#footnote-ref-206)
206. 206 Texas v. New Mexico & ***Colorado***, Brief Amicus Curiae of City of Las Cruces, New Mexico 21-29 (June 9, 2017); Texas v. New Mexico & ***Colorado***, Brief Amicus Curiae of New Mexico Pecan Growers 8-16 (June 9, 2017). [↑](#footnote-ref-207)
207. 207 Texas v. New Mexico & ***Colorado***, Reply Brief for the United States 21-23 (July 28, 2017). [↑](#footnote-ref-208)
208. 208 Id. at 23. The Court's 2017 order denying New Mexico's motion to dismiss did not address this issue and did not set it for oral argument. Texas v. New Mexico & ***Colorado***, - -S. Ct. - - , 2017 WL 4506765 (Oct. 10, 2017). [↑](#footnote-ref-209)
209. 209 Kansas v. Nebraska & ***Colorado***, 2000 Report, supra note 101, at 37. [↑](#footnote-ref-210)
210. 210 See supra text accompanying notes 165-72. [↑](#footnote-ref-211)
211. 211 See supra text accompanying notes 199-203. [↑](#footnote-ref-212)
212. 212 See supra text accompanying notes 45-62. [↑](#footnote-ref-213)
213. 213 See supra text accompanying note 77. [↑](#footnote-ref-214)
214. 214 For a summary of the damages phase of Texas v. New Mexico, see Hall, supra note 113, at 193-96. For a superb presentation of economic damages in interstate water litigation, see Third Report of Arthur L. Littleworth, Special Master, at app. 1-86, Kansas v. ***Colorado***, No. 105 Orig. (Aug. 31, 2000) [hereinafter Kansas v. ***Colorado***, Third Report, 2000], [*http://www.supremecourt.gov/SpecMastRpt/ORG105-8-2000EXB1-9.pdf*](http://www.supremecourt.gov/SpecMastRpt/ORG105-8-2000EXB1-9.pdf); see also Report of William J. Kayatta, Jr., Special Master, at 136-72, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Nov. 15, 2013) [hereinafter Kansas v. Nebraska & ***Colorado***, 2013 Report]. [↑](#footnote-ref-215)
215. 215 Thomas C. Winter, Judson W. Harvey, O. Lehn Franke & William M. Alley, U.S. Geological Survey Circular 1139, Ground Water and Surface Water: A Single Resource 58-60 (1998). [↑](#footnote-ref-216)
216. 216 National Judicial College & Dividing the Waters Initiative, Hydrologic Modeling Benchbook 33-39 (2011) [hereinafter Benchbook]. [↑](#footnote-ref-217)
217. 217 Id. at 33. [↑](#footnote-ref-218)
218. 218 Hall, supra note 113, at 172, n.22 (citing transcripts from 1977 hearings in Texas v. New Mexico). In the Arkansas ***River*** litigation, Special Master Littleworth made a similar warning: "The issue should not be, however, which state might gain an advantage … but rather which model input is likely to produce more accurate results." Fourth Report of Arthur L. Littleworth, Special Master, at 55, Kansas v. ***Colorado***, No. 105 Orig. (Oct. 2003) [hereinafter Kansas v. ***Colorado***, Fourth Report, 2003]. [↑](#footnote-ref-219)
219. 219 Hall, supra note 113, at 171-73; Pecos ***River*** Compact, arts. II(g), III(a), ch. 84, ***63 Stat. 159 (1949)*** (determining compact compliance based on the hydrological condition of the Pecos ***River*** Basin in 1947, the "1947 condition," a condition defined by a technical report of the Pecos ***River*** Compact Commission Engineering Advisory Committee). [↑](#footnote-ref-220)
220. 220 Hall, supra note 113, at 171-73. [↑](#footnote-ref-221)
221. 221 Kansas v. ***Colorado***, Fourth Report, 2003, supra note 218, at 109. [↑](#footnote-ref-222)
222. 222 Id. at 109-10. [↑](#footnote-ref-223)
223. 223 Correspondence with John B. Draper (Dec. 1, 2015) (notes on file with author). Mr. Draper served as Kansas's counsel of record in the case. The liability phase of the trial lasted 141 trial days. See Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 28. [↑](#footnote-ref-224)
224. 224 First Report of Arthur L. Littleworth, Special Master, at 228-36, Kansas v. ***Colorado***, No. 105 Orig., vol. II (July 29, 1994) [hereinafter Kansas v. ***Colorado***, 1994 Report, vol. II], [*http://www.supremecourt.gov/SpecMastRpt/ORG105V2\_071994.pdf*](http://www.supremecourt.gov/SpecMastRpt/ORG105V2_071994.pdf). [↑](#footnote-ref-225)
225. 225 Id. at 236-40. [↑](#footnote-ref-226)
226. 226 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 28-29. Another of Kansas's chief expert witnesses, Brent E. Spronk, died unexpectedly, postponing trial for several months in 1996. See Second Report of Arthur L. Littleworth, Special Master, at 6, Kansas v. ***Colorado***, No. 105 Orig. (Sept. 9, 1997) [hereinafter Kansas v. ***Colorado***, Second Report, 1997]. [↑](#footnote-ref-227)
227. 227 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at app. 86-95. [↑](#footnote-ref-228)
228. 228 Id. at 29-30; Kansas v. ***Colorado***, 1994 Report, vol. II, supra note 224, at 294-96. [↑](#footnote-ref-229)
229. 229 Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 29-30. [↑](#footnote-ref-230)
230. 230 Kansas v. ***Colorado***, 1994 Report, vol. II, supra note 224, at 305; see also Kansas v. ***Colorado***, Second Report, 1997, supra note 226, at 9-10. [↑](#footnote-ref-231)
231. 231 Kansas v. ***Colorado***, Fourth Report, 2003, supra note 218, at 53-79. [↑](#footnote-ref-232)
232. 232 Id. at 53-54. [↑](#footnote-ref-233)
233. 233 Id. at 54. [↑](#footnote-ref-234)
234. 234 Id. [↑](#footnote-ref-235)
235. 235 Id. [↑](#footnote-ref-236)
236. 236 Id. at 55-78. [↑](#footnote-ref-237)
237. 237 Id. at 78-79. [↑](#footnote-ref-238)
238. 238 Id. at 95-106. [↑](#footnote-ref-239)
239. 239 Id. at 108-09. [↑](#footnote-ref-240)
240. 240 Id. at 139. [↑](#footnote-ref-241)
241. 241 Id. at 122-24. [↑](#footnote-ref-242)
242. 242 Id. [↑](#footnote-ref-243)
243. 243 The H-I Model was revised in 2011 and 2015, by mutual agreement of the States. Agreement on H-I Model Changes to Address Increases in Irrigation Efficiency for Pumped Groundwater, Kansas v. ***Colorado***, No. 105 Orig. (Sept. 2011, amended Aug. 2015), [*http://www.supremecourt.gov/SpecMastRpt/2011%20Agreement%20as%20*](http://www.supremecourt.gov/SpecMastRpt/2011%20Agreement%20as%20) Amended%20August%202015.pdf (last accessed Apr. 4, 2017). The Benchbook authors create a false dichotomy between good and undocumented groundwater models. See supra Benchbook, note 216, at 74-77. Just because a model is undocumented, such as the modified H-I model, which emerged from the Kansas v. ***Colorado*** litigation (see supra notes 223-37 and accompanying text), does not make it a bad model. [↑](#footnote-ref-244)
244. 244 Second Report of Vincent L. McKusick, Special Master (Subject: Final Settlement Stipulation), at 36, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Apr. 16, 2003) [hereinafter, Kansas v. Nebraska & ***Colorado***, Second Report, 2003], [*http://www.supremecourt.gov/*](http://www.supremecourt.gov/) SpecMastRpt/ ORG126\_4162003.pdf; see also***Kansas v. Nebraska & Colorado, 530 U.S. 1272 (2000)*** (denying Nebraska's motion to dismiss). [↑](#footnote-ref-245)
245. 245 Kansas v. Nebraska & ***Colorado***, Second Report, 2003, supra note 244, at 21-22. [↑](#footnote-ref-246)
246. 246 Id. at 23. [↑](#footnote-ref-247)
247. 247 Kansas v. Nebraska & ***Colorado***, Final Report with Certificate, 2003, supra note 99, at 6, 10-52. [↑](#footnote-ref-248)
248. 248 Benchbook, supra note 216, at 220. [↑](#footnote-ref-249)
249. 249 Kansas v. Nebraska & ***Colorado***, Second Report, 2003, supra note 244, at 73-77. For a detailed description of the RRCA Model, see generally Kansas v. Nebraska & ***Colorado***, Final Report with Certificate, 2003, supra note 99. For criticism of Special Master McKusick's faith in cooperatively-developed groundwater models, see [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1072 (2015)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (Thomas, J., dissenting) (quoting ***Colorado***'s groundwater model expert, Dr. Willem Schreuder, for his claim that at the time the RRCA Model was constructed, he was "intellectually aware" of certain problems with it, but did not believe that "that was going to be a big deal."). [↑](#footnote-ref-250)
250. 250 The states did, however, contest some accounting procedures that computed the states' respective allocations. See e.g., Report of Vincent L. McKusick, Final Settlement Stipulation vol. 3, at F-1 to F-3, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Dec. 15, 2002) [hereinafter Kansas v. Nebraska & ***Colorado***, FSS, 2002]. The Court accepted the Special Master's recommendation that these procedures be modified, despite the non-severability clause of the FSS, which includes the accounting procedures. [*Kansas v. Nebraska &* ***Colorado****, 538 U.S. 720 (2003).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:48MP-9J40-004B-Y024-00000-00&context=1516831) As a consequence, the Court altered the procedures it had previously approved by decree in 2003, altering the established combination of model runs and thereby lessening Nebraska's burden to reduce groundwater pumping. [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. at 1059-64.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) Chief Justice Roberts dissented on this issue, opining "I do not believe our equitable power … permits us to alter the Accounting Procedures to which the States agreed." [*Id. at 1064.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) He joined Justices Thomas, Scalia, and Alito in this regard, who stressed that the States did not make a mistake in the accounting procedures, and so the contract remedy of reformation was not available; indeed, the "terms of the Settlement are thus crystal clear." [*Id. at 1071*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (Thomas, J., dissenting). "If there is any mistake in this Settlement, it is not a mistake in writing, but in thinking. The parties knew what the methodology was and they expressly agreed to that methodology. They simply thought the methodology would work better than it did. Even though the methodology they agreed upon was imperfect, a writing may be reformed only to conform with the parties' actual agreement, not to create a better one." [*Id. at 1072.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) The Court's 5-4 decision on this issue could have a chilling effect on subsequent settlement agreements, even those with explicit technical methodologies and non-severability clauses. [↑](#footnote-ref-251)
251. 251 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 200-19. [↑](#footnote-ref-252)
252. 252 Id. at 201; see supra text accompanying notes 163-72. [↑](#footnote-ref-253)
253. 253 Id. at 200-01. Montana had originally alleged broader violations related to groundwater pumping: those related to excessive pumping for both irrigation and coal-bed methane extraction occurring across both the Powder and Tongue ***River*** Basins. See supra text accompanying notes 160-65. By 2014, the issue had apparently narrowed to that of pumping for coal-bed methane extraction, and in the Tongue ***River*** Basin alone. [↑](#footnote-ref-254)
254. 254 See supra text accompanying notes 161-73. [↑](#footnote-ref-255)
255. 255 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 204-05. [↑](#footnote-ref-256)
256. 256 Yellowstone ***River*** Compact, Pub. L. No. 82-231, [*65 Stat. 663,*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CFP-G8K0-01XN-S4J4-00000-00&context=1516831) art. V (1951). [↑](#footnote-ref-257)
257. 257 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 205. [↑](#footnote-ref-258)
258. 258 Id. at 206 (citing [*Kansas v. Nebraska &* ***Colorado****, 538 U.S. 720 (2003)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:48MP-9J40-004B-Y024-00000-00&context=1516831) [↑](#footnote-ref-259)
259. 259 Id. at 206-07 (providing citations to relevant Wyoming and Montana water law). [↑](#footnote-ref-260)
260. 260 Id. at 208. [↑](#footnote-ref-261)
261. 261 Id. at 200. The permitting systems of prior appropriation states vary in their approach to whether the pumping of groundwater for coal-bed methane production constitutes a beneficial use of water that requires an appropriation permit. Montana does not require an appropriation permit, because Montana does not recognize coal-bed methane production to be a beneficial use of water unless the produced water is later used for a recognized beneficial use such as irrigation. Holders of water rights impaired by dewatering wells related to coal-bed methane production thus do not have protections under Montana water law, but they can pursue compensation under the Montana Coal Bed Methane Protection Act of 2001, [*Mont. Code Ann. § 76-15-905(b)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5B62-2FR1-DYNH-C0K3-00000-00&context=1516831) (2016). Id. at 207 (discussing Montana law). By contrast, Wyoming requires an appropriation permit for water uses related to coalbed-methane production; but as Wyoming State Engineer Patrick Tyrrell testified in the Yellowstone case, no surface appropriator in Wyoming has ever brought an impairment complaint against the holder of one, and so the State Engineer has never needed to determine the hydrological connection between coal-bed methane dewatering wells and senior water rights or to regulate them in priority. Id. at 206-207 (discussing Wyoming law); but see [*William F. West Ranch, LLC v. Tyrrell, 206 P.3d 722 (Wyo. 2009)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:7VRT-S7Y0-Y9NK-S34R-00000-00&context=1516831) (dismissing as non-justiciable a declaratory judgment action brought by senior water rights holders against the State Engineer and Board of Control for their alleged failure to administer junior rights held by coal-bed methane operators; the court held that the plaintiffs must first pursue the administrative remedy of a well interference action). The court in Tyrrell did state, however, that "we do not want to leave the impression that we approve of the State's administration of CBM water. [The plaintiffs] raise serious allegations of damages to their property from CBM water and failures on the part of the State to properly regulate CBM water statewide." [*Id. at 737.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:7VRT-S7Y0-Y9NK-S34R-00000-00&context=1516831) In ***Colorado***, ranchers with senior wells in the San Juan Basin brought an impairment action against coal-bed methane operators, alleging that dewatering constituted a beneficial use of water that required a permit from the State Engineer - and one that must be administered in deference to their senior rights. The ***Colorado*** Supreme Court agreed: because coal-bed methane operators both depend upon the hydrostratic pressure of groundwater to hold the gas in place, and then divert that water to dewater the deposit, the water used in coal-bed methane production was an integral part of the coal-bed methane extraction process - as opposed to "nuisance water," as the operators described it - and so the court held that the operators must obtain appropriation rights. [*Vance v. Wolfe, 205 P.3d 1165, 1170-73 (****Colo.*** *2009).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:7VM5-7FF1-2R6J-232N-00000-00&context=1516831) Upon the issuance of that decision, the ***Colorado*** State Engineer became, at least for a time, the most important regulator of coal-bed methane production in ***Colorado***. [↑](#footnote-ref-262)
262. 262 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 211. [↑](#footnote-ref-263)
263. 263 Id. at 219. [↑](#footnote-ref-264)
264. 264 See supra text accompanying notes 228 and 249. [↑](#footnote-ref-265)
265. 265 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, note 174 supra, at 211-12. [↑](#footnote-ref-266)
266. 266 Id. at 211-12 (citing the expert report of Dale E. Book, Montana's primary expert witness); id. at 215. [↑](#footnote-ref-267)
267. 267 Id. at 212-13. [↑](#footnote-ref-268)
268. 268 Id. at 213. [↑](#footnote-ref-269)
269. 269 Id. at 213-14. For the groundwater modeling battle over evapotranspiration in the Arkansas ***River*** Basin - a fight over crop, rather than phreatophytic, evapotranspiration - see supra text accompanying notes 231-37. [↑](#footnote-ref-270)
270. 270 Id. at 215-17. [↑](#footnote-ref-271)
271. 271 Id. at 214-15. [↑](#footnote-ref-272)
272. 272 Id. at 215. [↑](#footnote-ref-273)
273. 273 Id. at 218. [↑](#footnote-ref-274)
274. 274 Id. at 219. [↑](#footnote-ref-275)
275. 275 Id. at 231; ***Montana v. Wyoming & North Dakota, 136 S. Ct. 1034 (2016).*** [↑](#footnote-ref-276)
276. 276 See supra text accompanying notes 119-22. [↑](#footnote-ref-277)
277. 277 See supra note 261. [↑](#footnote-ref-278)
278. 278 In Kansas v. ***Colorado***, the Court found that over-pumping in ***Colorado*** caused 428,005 acre-feet of depletions between 1950 and 1996. See infra text accompanying note 299. By contrast, Montana alleged just 1,079 acre feet of depletions in the Tongue ***River*** Basin for just two years, 2004 and 2006. Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at 212. [↑](#footnote-ref-279)
279. 279 See supra text accompanying notes 161-73. [↑](#footnote-ref-280)
280. 280 See supra text accompanying notes 257-60. [↑](#footnote-ref-281)
281. 281 Montana v. Wyoming & North Dakota, 2014 Second Interim Report, supra note 174, at App. H-9 (describing Dr. Schreuder). [↑](#footnote-ref-282)
282. 282 Brief of the State of Kansas as Amicus Curiae in Support of Texas, at 7-12, Texas v. New Mexico & ***Colorado***, No. 141 Orig. (Aug. 4, 2017). [↑](#footnote-ref-283)
283. 283 See supra sources and text accompanying notes 116-26. [↑](#footnote-ref-284)
284. 284 [*Texas v. New Mexico, 462 U.S. 554, 564 (1983)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) (citing [*Cuyler v. Adams, 449 U.S. 433, 438 (1981)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-6RN0-003B-S356-00000-00&context=1516831) [↑](#footnote-ref-285)
285. 285 See generally Charles J. Meyers & Richard Posner, Market Transfers of Water Rights: Towards an Improved Market in Water Resources (1973); see also Nat'l Water Comm'n, Water Policies for the Future (1973), [*https://www.gpo.gov/fdsys/pkg/CZIC-hd1694-a57-1973/*](https://www.gpo.gov/fdsys/pkg/CZIC-hd1694-a57-1973/) html/CZIC-hd1694-a57-1973.htm. [↑](#footnote-ref-286)
286. 286 See generally Texas v. New Mexico, 1986 Report, supra note 98. Special Master Meyers succeeded Special Master Breitenstein. [↑](#footnote-ref-287)
287. 287 Id. at 35-38. [↑](#footnote-ref-288)
288. 288 Id. at 38, 28-42; Hall, supra note 113, at 175-79. [↑](#footnote-ref-289)
289. 289 [*Texas v. New Mexico, 482 U.S. 124, 129 (1987).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-290)
290. 290 [*Id. at 127-28;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) Texas v. New Mexico, 1986 Report, supra note 98, at 36. [↑](#footnote-ref-291)
291. 291 Texas v. New Mexico, 1986 Report, supra note 98, at 33, 36-37. [↑](#footnote-ref-292)
292. 292 [*Texas v. New Mexico, 482 U.S. at 128.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-293)
293. 293 [*Id. at 129-33.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-294)
294. 294 [*Id. at 132.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-295)
295. 295 [*Texas v. New Mexico, 494 U.S. 111 (1990)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-7XR0-003B-419V-00000-00&context=1516831) (accepting the states' Joint Motion for Entry of Stipulated Judgment, requiring New Mexico to pay Texas $ 14 million for its breaches of the Pecos ***River*** Compact for the years 1952 through 1986). [↑](#footnote-ref-296)
296. 296 According to Hall, the 1987 decision started a "cottage industry" in interstate lawsuits, motivated by the potential for "huge" money damages. Hall, supra note 113, at 189. But the damages received in interstate water compact litigation are dwarfed by the subsequent costs of compliance; see supra and infra notes 295, 431-32 and associated text ($ 14 million in damages in Texas v. New Mexico, compared with $ 100 million in compliance costs incurred by New Mexico for water rights retirements); see also infra notes 320, 433-34, and 453-58 and associated text ($ 5.5 million in damages assessed against Nebraska in Kansas v. Nebraska & ***Colorado***, compared with more than $ 200 million in compliance costs incurred by ***Colorado*** and Nebraska for water rights retirements and augmentation projects). So far, the only interstate water case with alleged damages that qualify as truly "huge" would be Mississippi v. Tennessee, where the State of Mississippi claims damages of not less than $ 615 million. Mississippi Motion for Leave, infra note 359, at 21, P 55; see also infra note 373 and associated text. [↑](#footnote-ref-297)
297. 297 [*Kansas v.* ***Colorado****, 533 U.S. 1, 24 (2001)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:437X-DYJ0-004C-0033-00000-00&context=1516831) (O'Connor, J., dissenting). [↑](#footnote-ref-298)
298. 298 [*Id. at 24-25;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:437X-DYJ0-004C-0033-00000-00&context=1516831) see Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 18-19. [↑](#footnote-ref-299)
299. 299 Fifth and Final Report of Arthur L. Littleworth, Special Master, at 3, Kansas v. ***Colorado***, No. 105 Orig., vol. II (Jan. 31, 2008) [hereinafter Kansas v. ***Colorado***, Fifth and Final Report, 2008]; [*Kansas v.* ***Colorado****, 556 U.S. 98, 103 (2009).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VT0-N5R0-TXFX-122P-00000-00&context=1516831) [↑](#footnote-ref-300)
300. 300 [*Kansas v.* ***Colorado****, 533 U.S. 1, 8, 20 (2001)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:437X-DYJ0-004C-0033-00000-00&context=1516831) (remanding the case to the Special Master for a determination of damages); Kansas v. ***Colorado***, Fifth and Final Report, 2008, supra note 299, at 3, 16-20 (awarding damages to Kansas of $ 34,615,156). [↑](#footnote-ref-301)
301. 301 [*Kansas v.* ***Colorado****, 533 U.S. at 12.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:437X-DYJ0-004C-0033-00000-00&context=1516831) [↑](#footnote-ref-302)
302. 302 [*Id. at 12-16.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:437X-DYJ0-004C-0033-00000-00&context=1516831) [↑](#footnote-ref-303)
303. 303 [*Kansas v.* ***Colorado****, 556 U.S. at 99.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VT0-N5R0-TXFX-122P-00000-00&context=1516831) [↑](#footnote-ref-304)
304. 304 See [*id. 99-101;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VT0-N5R0-TXFX-122P-00000-00&context=1516831) [*28 U.S.C. § 1821*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SG9-5HW2-D6RV-H0PF-00000-00&context=1516831)(b) (1996). [↑](#footnote-ref-305)
305. 305 See generally Stephen R. McAllister, Can Congress Create Procedures for the Supreme Court's Original Jurisdiction Cases?, [*12 Green Bag 2d 287 (2009).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4WTK-MJG0-01DP-30NW-00000-00&context=1516831) [↑](#footnote-ref-306)
306. 306 Those fees exceeded $ 9 million. [*Kansas v.* ***Colorado****, 556 U.S. at 100-01.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VT0-N5R0-TXFX-122P-00000-00&context=1516831) Chief Justice Roberts filed a concurring opinion to stress the Court's independent authority "to decide on its own, in original cases, whether there should be witness fees and what they should be." [*Id. at 109*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VT0-N5R0-TXFX-122P-00000-00&context=1516831) (Roberts, C.J., concurring). Contra Shapiro et al., Supreme Court Practice 620, n.5 (10th ed., 2013) (discussing numerous cases). [↑](#footnote-ref-307)
307. 307 Kansas v. Nebraska & ***Colorado***, Second Report, 2003, supra note 244; see also Kansas v. Nebraska & ***Colorado***, FSS, 2002, supra note 250. [↑](#footnote-ref-308)
308. 308 [*Kansas v. Nebraska &* ***Colorado****, 538 U.S. 720 (2003).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:48MP-9J40-004B-Y024-00000-00&context=1516831) [↑](#footnote-ref-309)
309. 309 [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1053 (2015)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) (70,869 acre-feet over the 2005-2006 period at issue). [↑](#footnote-ref-310)
310. 310 Under the terms of the FSS, a dispute must be submitted to non-binding arbitration before going to the Court. See Kansas v. Nebraska & ***Colorado***, FSS, 2002, supra note 250, at 37. [↑](#footnote-ref-311)
311. 311 2010 [*Kansas Motion for Leave, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-6650-003B-H11W-00000-00&context=1516831) note 131, at 12. [↑](#footnote-ref-312)
312. 312 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 105-06. [↑](#footnote-ref-313)
313. 313 Id. at 178. [↑](#footnote-ref-314)
314. 314 [*Texas v. New Mexico, 482 U.S. 124, 132 (1987).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H720-003B-450D-00000-00&context=1516831) [↑](#footnote-ref-315)
315. 315 Kansas v. ***Colorado***, Second Report, 1997, supra note 226, at 77, 80. [↑](#footnote-ref-316)
316. 316 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 106-12. [↑](#footnote-ref-317)
317. 317 Id. at 112. [↑](#footnote-ref-318)
318. 318 At approximately 35,000 acre-feet of annual overuse for 2005-2006, Nebraska's annual violations of the Republican ***River*** Compact greatly exceeded those of New Mexico under the Pecos ***River*** Compact (approximately 10,000 acre-feet per year, between 1950 and 1983) and of ***Colorado*** under the Arkansas ***River*** Compact (also approximately 10,000 acre-feet per year, between 1950 and 1996). See supra notes 290 and 299 and accompanying text. [↑](#footnote-ref-319)
319. 319 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 103-87. [↑](#footnote-ref-320)
320. 320 [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1056-57 (2015).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) [↑](#footnote-ref-321)
321. 321 [*Id. at 1059.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) [↑](#footnote-ref-322)
322. 322 Opinion of the Special Master on Remedies at 18-19, Montana v. Wyoming & North Dakota, No. 137 Orig. (Dec. 19, 2016). [↑](#footnote-ref-323)
323. 323 Id. at 20-21. [↑](#footnote-ref-324)
324. 324 Id. at 20. [↑](#footnote-ref-325)
325. 325 Id. at 21 (discussing [*Kansas v. Nebraska &* ***Colorado****, 135 S. Ct. 1042, 1052 (2015)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5FCF-6DF1-F04K-F12R-00000-00&context=1516831) For Mississippi's claim to disgorgement damages in Mississippi v. Tennessee, see infra text accompanying note 373. [↑](#footnote-ref-326)
326. 326 See supra Part II. [↑](#footnote-ref-327)
327. 327 John Fleck, Water is for Fighting Over and Other Myths about Water in the West 66 (2016). [↑](#footnote-ref-328)
328. 328 See supra Part IV.A-IV.B. [↑](#footnote-ref-329)
329. 329 Twain's alleged quote that "whiskey is for drinking, but water is for fighting over" has populated numerous stories on western water, even scholarly ones. See, e.g., Stephen D. Mossman, "Whiskey is for Drinkin' but Water is for Fightin' About': A First-Hand Account of Nebraska's Integrated Management of Ground and Surface Water Debate and the Passage of L.B. 108, [*30 Creighton L. Rev. 67 (1996).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:3S3T-9RX0-00CV-74J3-00000-00&context=1516831) Responsible journalists have pointed out the error. Fleck, supra note 327, at 6. [↑](#footnote-ref-330)
330. 330 The accusation is that of the late Justice Scalia, who made it despite (or because of) the long tenure of Justice Kennedy, who hails from Sacramento; but "California does not count." [*Obergefell v. Hodges, 135 S. Ct. 2584, 2629 (2015)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5G9F-J651-F04K-F077-00000-00&context=1516831) (J. Scalia, dissenting). [↑](#footnote-ref-331)
331. 331 See, e.g., Kansas v. Nebraska & ***Colorado***, No. 126 Orig., Oral Argument, Oct. 14, 2014, Tr. at 7, [*www.supremecourt.gov/oral\_arguments/argument\_*](http://www.supremecourt.gov/oral_arguments/argument_) transcripts/2014/126,%20orig\_ppl4 .pdf (J. Breyer, analogizing Nebraska's allegation of a mutual mistake in the accounting procedures of the FSS to a situation in which "I bought 17 cows from the barn and it turned out the barn didn't have any cows. It just had horses.") [↑](#footnote-ref-332)
332. 332 See, e.g., John M. Barry, Rising Tide: The Great Mississippi Flood of 1927 and How it Changed America (1997). [↑](#footnote-ref-333)
333. 333 ***Florida v. Georgia, 135 S. Ct. 471 (2014).*** [↑](#footnote-ref-334)
334. 334 For a more detailed description of the ACF Basin, see Report of Ralph L. Lancaster, Jr., Special Master, at 4-10, Florida v. Georgia, No. 142 Orig. (Feb. 14, 2017) [hereinafter Florida v. Georgia, 2017 Report]. [↑](#footnote-ref-335)
335. 335 [*Se. Fed. Power Customers, Inc. v. Geren, 514 F.3d 1316 (D.C. Cir. 2008);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RS5-BMV0-TXFX-H38T-00000-00&context=1516831) [*In re MDL-1924 Tri-State Water Rights Litig., 644 F.3d 1160 (11th Cir. 2011).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:536C-5D01-F04K-X128-00000-00&context=1516831) [↑](#footnote-ref-336)
336. 336 Apalachicola-Chattahoochee-Flint ***River*** Basin Compact, Pub. L. No. 105-104, ***111 Stat. 2219 (1997)*** [hereinafter ACF Compact]. [↑](#footnote-ref-337)
337. 337 Special Master Lancaster lamented that "it is apparent that both States have allowed acrimony and accusations of bad faith to permanently poison their approach to management of the waters of the Basin." Florida v. Georgia, 2017 Report, supra note 334 at 12, n. 18. [↑](#footnote-ref-338)
338. 338 Id. at 12-13. [↑](#footnote-ref-339)
339. 339 Id. at 13-16. [↑](#footnote-ref-340)
340. 340 ***Florida v. Georgia, 135 S. Ct. 471 (2014).*** [↑](#footnote-ref-341)
341. 341 Florida v. Georgia, 2017 Report, supra note 334, at 31-34. [↑](#footnote-ref-342)
342. 342 Id. at 31-32. [↑](#footnote-ref-343)
343. 343 Id. at 31. [↑](#footnote-ref-344)
344. 344 Id. at 32-33 (noting an increase from under 75,000 irrigated acres to more than 825,000 acres); id. at 34. [↑](#footnote-ref-345)
345. 345 Id. at 33-34. [↑](#footnote-ref-346)
346. 346 Id. at 34 (internal citations omitted). [↑](#footnote-ref-347)
347. 347 Id. [↑](#footnote-ref-348)
348. 348 Id. at 6, 35-46. [↑](#footnote-ref-349)
349. 349 These protocols included the Corps' general operations, as well as the Revised Interim Operating Plan issued in May 2012 and the Proposed Water Control Manual developed in the wake of the 1990-2012 litigation. Id. at 36-46, 61. [↑](#footnote-ref-350)
350. 350 Id. at 61-62. [↑](#footnote-ref-351)
351. 351 Id. at 69. [↑](#footnote-ref-352)
352. 352 Id. at 68-70. [↑](#footnote-ref-353)
353. 353 See supra the cases cited in note 335. [↑](#footnote-ref-354)
354. 354 Florida v. Georgia, 2017 Report, supra note 334, at 3, 36, App. A48-A49. [↑](#footnote-ref-355)
355. 355 Id. at 3. [↑](#footnote-ref-356)
356. 356 Id. at 16. [↑](#footnote-ref-357)
357. 357 ***Mississippi v. Tennessee, 135 S. Ct. 2916 (2015).*** [↑](#footnote-ref-358)
358. 358 See supra Part IV.A-IV.B. [↑](#footnote-ref-359)
359. 359 State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action, Complaint, and Brief in Support of Motion, at 5, P 14, Mississippi v. Tennessee, No. 143 Orig. (June 6, 2014) 2014 WL 5319728 [hereinafter Mississippi Motion for Leave]. Mississippi's prayer for relief includes the request that Tennessee use the Mississippi ***River*** as an alternate source of supply. State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action, Complaint, and Brief in Support of Motion, at 23-24, P D, Mississippi v. Tennessee, No. 143 Orig. (June 6, 2014), 2014 WL 5319728 [hereinafter Mississippi Complaint]. If the Mississippi ***River*** does become involved, the Court may need to revisit its analogy of the Arkansas to the Nile; see supra note 3. If there is an American Nile, the much larger Mississippi (including its aquifers) would be a more appropriate candidate, especially after it receives the waters of the Ohio ***River*** at Cairo, Illinois, and flows downstream past Memphis. [↑](#footnote-ref-360)
360. 360 Two qualifications are in order. First, all aquifers are highly various formations; and by "effectively connected," I mean a connection between groundwater pumping and surface flows that is discernible in judicial time, not geological time. Courts tend not to endorse projections of groundwater depletion that extend beyond several decades. See, e.g., Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 119-22 (criticizing Kansas experts' sixty-year projections of groundwater depletions in the Nebraska portion of the Republican ***River*** Basin). Second, the potential equitable allocation of an interstate aquifer raises difficult boundary questions about the relationship between those aquifer supplies that have been found to be part of the equitable allocations of established interstate compacts and those that have not; see supra text accompanying notes 141-45. [↑](#footnote-ref-361)
361. 361 [*Hood ex rel. Mississippi v. City of Memphis, 533 F.Supp.2d 646 (N.D. Miss. 2008),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) aff'd, [*570 F.3d 625 (5th Cir. 2009),*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4WFT-7Y90-TXFX-725S-00000-00&context=1516831) cert. denied, ***130 S. Ct. 1319 (2010)*** (dismissing Mississippi's claim that the City of Memphis was wrongfully taking Mississippi groundwater under [*Fed. R. Civ. P. 19*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5GYC-2101-FG36-137D-00000-00&context=1516831), by finding that Tennessee was an indispensable party but could not be joined without divesting the district court of its jurisdiction). [↑](#footnote-ref-362)
362. 362 ***Mississippi v. Tennessee, 135 S. Ct. 2916 (2015).*** [↑](#footnote-ref-363)
363. 363 [*Mississippi Motion for Leave, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at 5. In this case, the states cannot even agree to the name of the contested water supply; see supra note 45. [↑](#footnote-ref-364)
364. 364 [*Mississippi Complaint, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at 5-20 (June 6, 2014); Brief of the State of Mississippi in Support of Motion for Leave to File Bill of Complaint in Original Action, at 17-21 (June 6, 2014) [hereinafter Mississippi Brief in Support of Motion]. [↑](#footnote-ref-365)
365. 365 Noah D. Hall and Joseph Regalia, Interstate Groundwater Law Revisited: Mississippi v. Tennessee, [*34 Va. Envtl. L. J. 152, 162 (2016).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5JK5-8D70-00CV-S1PH-00000-00&context=1516831) Between Mississippi's claim of absolute ownership and Tennessee's assertion that the aquifer be equitably apportioned, Hall and Regalia recommend that the doctrine of interstate nuisance should apply instead. [*Id. at 198-202.*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5JK5-8D70-00CV-S1PH-00000-00&context=1516831) See also Christine A. Klein, Owning Groundwater: The Example of Mississippi v. Tennessee, 35 Va. Envtl. L.J. \_\_ (2017, forthcoming). [↑](#footnote-ref-366)
366. 366 Memorandum of Decision by Eugene E. Siler, Jr., Special Master, on Tennessee's Motion to Dismiss, Memphis and Memphis Light, Gas, & Water Division's Motion to Dismiss, and Mississippi's Motion to Exclude, at 19, Mississippi v. Tennessee, No. 143 Orig. (Aug. 12, 2016) [hereinafter Mississippi v. Tennessee, 2016 Decision] (citing [***Colorado*** *v. New Mexico, 459 U.S. 176, 183 (1982)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [↑](#footnote-ref-367)
367. 367 Id. at 20. [↑](#footnote-ref-368)
368. 368 Id. at 20-21. [↑](#footnote-ref-369)
369. 369 Id. [↑](#footnote-ref-370)
370. 370 [*Mississippi Complaint, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at 5, P 14. [↑](#footnote-ref-371)
371. 371 Id. [↑](#footnote-ref-372)
372. 372 Id. at P 50; Mississippi v. Tennessee, 2016 Decision, supra note 366, at 6-7. [↑](#footnote-ref-373)
373. 373 [*Mississippi Complaint, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at 21, P 55; Kansas v. ***Colorado***, Fifth and Final Report, 2008, supra note 299, at 3, 16-20 (awarding damages to Kansas of $ 34,615,156). Given the lack of an interstate compact or other contract between the two states, it may be more difficult to establish that the theories of restitution supporting disgorgement would apply in this case. See supra text accompanying notes 311-25. [↑](#footnote-ref-374)
374. 374 [*Kansas v.* ***Colorado****, 206 U.S. 46 (1907).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-375)
375. 375 [***Colorado*** *v. New Mexico, 459 U.S. 176 (1982);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [***Colorado*** *v. New Mexico, 467 U.S. 310 (1984).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [↑](#footnote-ref-376)
376. 376 Brief of Defendant State of Tennessee in Opposition to State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action, at 14-21, Mississippi v. Tennessee, No. 143 Orig. (Sept. 5, 2014) 2014 WL 5449619; Mississippi v. Tennessee, 2016 Decision, supra note 366, at 7-10. [↑](#footnote-ref-377)
377. 377 Brief for the United States as Amicus Curiae, at 12, Mississippi v. Tennessee, No. 143 Orig. (May 2015). [↑](#footnote-ref-378)
378. 378 Mississippi v. Tennessee, 2016 Decision, supra note 366, at 9-11. [↑](#footnote-ref-379)
379. 379 Brief for the United States as Amicus Curiae, Mississippi v. Tennessee, supra note 377, at 13. [↑](#footnote-ref-380)
380. 380 Id. [↑](#footnote-ref-381)
381. 381 See supra text accompanying notes 46-59, 360. [↑](#footnote-ref-382)
382. 382 See supra text accompanying notes 61-62, 69-74. [↑](#footnote-ref-383)
383. 383 [***Colorado*** *v. New Mexico, 459 U.S. 176 (1982);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [***Colorado*** *v. New Mexico, 467 U.S. 310 (1984)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) (setting forth the Court's current approach to equitable apportionment). [↑](#footnote-ref-384)
384. 384 [*Mississippi Complaint, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at 23. [↑](#footnote-ref-385)
385. 385 [***Colorado*** *v. New Mexico, 467 U.S. at 323-24.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [↑](#footnote-ref-386)
386. 386 [***Colorado*** *v. New Mexico, 459 U.S. at 189-90;*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [***Colorado*** *v. New Mexico, 467 U.S. at 321-22.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [↑](#footnote-ref-387)
387. 387 See Hall & Regalia, supra note 365, at 196-97; [***Colorado*** *v. New Mexico, 459 U.S. at 187-88.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [↑](#footnote-ref-388)
388. 388 [***Colorado*** *v. New Mexico, 467 U.S. at 323*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) (citing [***Colorado*** *v. New Mexico, 459 U.S. at 181, n. 8).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [↑](#footnote-ref-389)
389. 389 Id. at 323. [↑](#footnote-ref-390)
390. 390 See supra text accompanying notes 46-48, 52-55, and 58-59. [↑](#footnote-ref-391)
391. 391 [*Idaho v. Oregon & Washington, 462 U.S. 1017, 1024, 1025 (1983).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4MV0-003B-S3TR-00000-00&context=1516831) This is consistent with the anti-hoarding principle in [*Hughes v. Oklahoma, 441 U.S. 322 (1979).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-88Y0-003B-S22P-00000-00&context=1516831) [↑](#footnote-ref-392)
392. 392 [*Sporhase v. Nebraska, 458 U.S. 941, 951 (1982).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-5D60-003B-S4C4-00000-00&context=1516831) [↑](#footnote-ref-393)
393. 393 See supra text accompanying notes 47-57, 188-94; see also Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 122-27. [↑](#footnote-ref-394)
394. 394 See, e.g., Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 105-12, 122-27. [↑](#footnote-ref-395)
395. 395 Id.; see also supra note 36. [↑](#footnote-ref-396)
396. 396 See supra text accompanying notes 58, 65. [↑](#footnote-ref-397)
397. 397 See infra note 412. [↑](#footnote-ref-398)
398. 398 [*Miss. Code Ann. § 51-3-1*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8P6B-84G2-D6RV-H0XN-00000-00&context=1516831) (2015). [↑](#footnote-ref-399)
399. 399 Id. § 51-3-13. [↑](#footnote-ref-400)
400. 400 [*Edwards Aquifer Auth. v. Day, 369 S.W.3d 814, 831-32 (2012)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:551R-5R51-F04K-D07D-00000-00&context=1516831) (applying the law regarding ownership of oil and gas in place beneath a landowner's land - that of "absolute title" - to the ownership of groundwater in place.). [↑](#footnote-ref-401)
401. 401 See, e.g., [*Kansas v.* ***Colorado****, 206 U.S. 85, 97-98 (1907).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-402)
402. 402 Mississippi v. Tennessee, 2016 Decision, supra note 366, at 20, 30-31 (quoting [*Kansas v.* ***Colorado****, 206 U.S. at 97-98).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) [↑](#footnote-ref-403)
403. 403 Id. at 32. [↑](#footnote-ref-404)
404. 404 Id. [↑](#footnote-ref-405)
405. 405 Id. at 20-24, 31 n.5 (citing [***Colorado*** *v. New Mexico, 459 U.S. 176, 181, n. 8 (1982));*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-57V0-003B-S1W7-00000-00&context=1516831) [***Colorado*** *v. New Mexico, 467 U.S. 310, 323 (1984);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [*Idaho ex rel. Evans v. Oregon, 462 U.S. 1017, 1025 (1983)).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4MV0-003B-S3TR-00000-00&context=1516831) [↑](#footnote-ref-406)
406. 406 Id. at 31-32 (citing [*Kansas v.* ***Colorado****, 206 U.S. at 115 (1907)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) for the proposition that "no Supreme Court decision appears to have endorsed one State suing another State, without equitable apportionment, for the depletion of water that is part of a larger interstate resources by limiting its claims to a specific portion of the water."). Earlier in his decision, Special Master Siler noted that Mississippi's identification of the water at issue as intrastate water is a legal conclusion only. Id. at 25. [↑](#footnote-ref-407)
407. 407 Id. at 24, 35. For Special Master Thompson's similar impatience with Wyoming's state law claims in Montana v. Wyoming & North Dakota, but within the context of an interstate compact, see supra text accompanying notes 258-60. [↑](#footnote-ref-408)
408. 408 Id. at 35 (noting the appropriateness of dismissal pursuant to [*Fed. R. Civ. P. 12(c)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5GYC-1WP1-6N19-F0YW-00000-00&context=1516831) for a federal case outside of the Court's original jurisdiction). [↑](#footnote-ref-409)
409. 409 Id. at 35-36. [↑](#footnote-ref-410)
410. 410 Id. at 36. The hearings will probably take place in late 2017 or early 2018. Mississippi v. Tennessee, No. 143 Orig., Case Management Plan 11-12 (Oct. 26, 2016). [↑](#footnote-ref-411)
411. 411 See supra text accompanying notes 149-74, 209-12. [↑](#footnote-ref-412)
412. 412 Brian R. Clark, Rheannon M. Hart, & Jason J. Gurdak, U.S. Geological Survey, Groundwater Availability of the Mississippi Embayment, Professional Paper 1785 (2011). [↑](#footnote-ref-413)
413. 413 [*Mississippi Complaint, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4RSS-B6H0-TXFR-72B2-00000-00&context=1516831) note 359, at PP 20-26. [↑](#footnote-ref-414)
414. 414 Id. at PP 15-19. [↑](#footnote-ref-415)
415. 415 See supra note 36. [↑](#footnote-ref-416)
416. 416 See supra text accompanying note 79; for a less optimistic view, see supra note 337. [↑](#footnote-ref-417)
417. 417 This aquifer system consists of both confined and unconfined (or alluvial) components and lies beneath seven states (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee). The Sparta Sand Aquifer is a confined aquifer within this system. See Clark, Hart, & Gurdak, supra note 412, passim. [↑](#footnote-ref-418)
418. 418 See supra note 250. [↑](#footnote-ref-419)
419. 419 See supra text accompanying notes 72-76. [↑](#footnote-ref-420)
420. 420 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 112. [↑](#footnote-ref-421)
421. 421 See text accompanying note 110; see also Kansas v. ***Colorado***, 1994 Report, vol. I, supra note 95, at 8-9. The 1973 pumping rules for the Arkansas ***River***, which were in effect during the Kansas v. ***Colorado*** litigation, did not reduce groundwater pumping. "Dr. [Jeris] Danielson, then State Engineer for the State of ***Colorado***, was called as a hostile witness during the trial of this case. He acknowledged that the 1973 rules and regulations have not, in fact, reduced pumping below the 1973 levels. Indeed, pumping increased." Id. at 125. [↑](#footnote-ref-422)
422. 422 ***Colo.*** Div. of Water Res., Amended Rules and Regulations Governing the Diversion and Use of Tributary Groundwater in the Arkansas ***River*** Basin, Rule 3.1 (1995). This Order replaced the 1973 rules. [↑](#footnote-ref-423)
423. 423 Id. at 3, Rule 3.2. For Special Master Littleworth's discussion of the efficacy of these rules, see Kansas v. ***Colorado***, Fourth Report, 2003, supra note 218, at 8-10. [↑](#footnote-ref-424)
424. 424 ***Colo.*** Code Regs. § 402-16 (2015); see ***Colo.*** Div. of Water Res., Rules Governing New Withdrawals of Ground Water in Water Division 3 Affecting the Rate or Direction of Movement of Water in the Confined Aquifer System (2004) (establishing rules for the Rio Grande Basin). See also [***Colo.*** *Rev. Stat. § 37-92-501(4)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J3GH-00000-00&context=1516831) (2015) (requiring that groundwater use "shall not unreasonably interfere" with ***Colorado***'s ability to comply with the Rio Grande Compact). [↑](#footnote-ref-425)
425. 425 Northwest Kansas Groundwater Management District No. 4, for example, adapted the RRCA Model to create the "Northwest Kansas Groundwater Model," which estimates impacts of groundwater pumping on both streamflows in the South Fork Republican ***River*** and upon Ogallala groundwater levels. The latter model enabled the Kansas Chief Engineer to establish a local enhanced management area pursuant to [*Kan. Stat. Ann. § 82a-1041*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5G4G-MTB1-DXC8-00CY-00000-00&context=1516831), reducing groundwater pumping by twenty percent. See Kan. Dep't of Agric., Order of Designation Approving the Sheridan 6 Local Enhanced Management Area Within Groundwater Management District No. 4 at 12 (2013), [*http://dwr.kda.ks.gov/LEMAs/SD6/LEMA.SD6.OrderOfDesignation.20130417.pdf*](http://dwr.kda.ks.gov/LEMAs/SD6/LEMA.SD6.OrderOfDesignation.20130417.pdf). [↑](#footnote-ref-426)
426. 426 [*Neb. Rev. Stat. § 46-715(1)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5DHH-V8G1-7308-2027-00000-00&context=1516831) (2011). [↑](#footnote-ref-427)
427. 427 Id. § 46-713(3)-(4)(a) (2011). [↑](#footnote-ref-428)
428. 428 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214, at 112-19. [↑](#footnote-ref-429)
429. 429 [*Hill v. State, 894 N.W.2d 208 (Neb. 2017);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5N29-CH81-F04H-P006-00000-00&context=1516831) [*Garey v. Nebraska Dep't of Nat. Res., 759 N.W.2d 919 (2009);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4VJD-T6S0-TXFV-81SY-00000-00&context=1516831) [*Kiplinger v. Nebraska Dep't of Nat. Res., 803 N.W.2d 28 (2011).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:836D-BDX1-652N-402H-00000-00&context=1516831) [↑](#footnote-ref-430)
430. 430 See supra sources and text accompanying notes 285-325. [↑](#footnote-ref-431)
431. 431 Hall, supra note 113, at 214. [↑](#footnote-ref-432)
432. 432 Draper & Wechsler, supra note 116, at 18-38. [↑](#footnote-ref-433)
433. 433 The annual assessment is $ 14.50/acre for land irrigated by groundwater. Water Use Fees, Republican ***River*** Water Conservation District, [*http://www.republicanriver.com/RRWC*](http://www.republicanriver.com/RRWC) DInfo/WaterUseFees/tabid/105/Default.aspx (last visited Jan. 29, 2016). [↑](#footnote-ref-434)
434. 434 In Re: Non-Binding Arbitration Pursuant to the Final Settlement Stipulation, Kansas v. Nebraska & ***Colorado***, ***Colorado*** Compact Compliance Pipeline Dispute, Arbitrator's Final Decision, Oct. 7, 2010, at 5, [*http://www.republicanriver.com/LinkClick.aspx?file*](http://www.republicanriver.com/LinkClick.aspx?file) ticket=W8kBf%2blFmAI%3d&tabid=72 [hereinafter Kansas v. Nebraska & ***Colorado***, Arbitrator's Final Decision, 2010] (summarizing ***Colorado***'s 2010 testimony about the costs of water rights retirements in its portion of the Republican ***River*** Basin for the purposes of compact compliance). [↑](#footnote-ref-435)
435. 435 In this regard, western water managers have followed the western stockmen's creed concerning the federal government: "Get out and give us more money." Wallace Stegner, The Uneasy Chair: A Biography of Bernard DeVoto 302 (1988) (quoting DeVoto). [↑](#footnote-ref-436)
436. 436 [*16 U.S.C.§§3831*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8TR7-WGS2-8T6X-73FW-00000-00&context=1516831)-3835 (2012). [↑](#footnote-ref-437)
437. 437 [*16 U.S.C. § 3839aa*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8V2R-3BD2-D6RV-H27G-00000-00&context=1516831) to aa-8 (2012). [↑](#footnote-ref-438)
438. 438 [*16 U.S.C. § 3839aa-9*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8V2R-3BD2-D6RV-H290-00000-00&context=1516831) (repealed 2014). [↑](#footnote-ref-439)
439. 439 See, e.g., [*16 U.S.C. § 3831*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8TR7-WGS2-8T6X-73FW-00000-00&context=1516831)(e)(1) (2014) (establishing a general contract range of between 10 and 15 years for CREP lands). [↑](#footnote-ref-440)
440. 440 See Conservation Reserve Enhancement Program (CREP), Republican ***River*** Water Conservation District, [*http://www.republicanriver.com/*](http://www.republicanriver.com/) Programs/CREP/tabid/110/Default .aspx (last visited Jan. 29, 2016). [↑](#footnote-ref-441)
441. 441 Reisner, supra note 4, at 264. [↑](#footnote-ref-442)
442. 442 For New Mexico, see N.M. Stat. Ann. § 72-12(A)(4) (2015) (Right of Replacement); see also Hall, supra note 113, ch. 5. For ***Colorado***, see [***Colo.*** *Rev. Stat. § 37-92-103(9)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:689F-SY73-CGX8-03R2-00000-00&context=1516831) (2014) ("plan for augmentation"). [↑](#footnote-ref-443)
443. 443 [***Colo.*** *Rev. Stat. § 37-92-103(9)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:689F-SY73-CGX8-03R2-00000-00&context=1516831) (2014); see also [*Cache LaPoudre Water Users Ass'n v. Glacier View Meadows, 550 P.2d 288, 293-94 (****Colo.*** *1976).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3RX4-1KB0-003D-93BD-00000-00&context=1516831) [↑](#footnote-ref-444)
444. 444 See Hall, supra note 113, at 199. [↑](#footnote-ref-445)
445. 445 New Mexico ex rel. State Engineer, New Mexico Interstate Stream Commission, U.S. Department of the Interior, Bureau of Reclamation, Carlsbad Irrigation District, & Pecos Valley Artesian Conservancy District, Settlement Agreement 10-12 (2003), [*www.ose.state.nm.us/Compacts/Pecos/PDF/settlement\_03-25-2003.pdf*](http://www.ose.state.nm.us/Compacts/Pecos/PDF/settlement_03-25-2003.pdf) (establishing obligations for augmentation well pumping). [↑](#footnote-ref-446)
446. 446 Kansas v. ***Colorado***, Fourth Report, 2003, supra note 218, at 10-24. [↑](#footnote-ref-447)
447. 447 For a more extensive discussion of interstate augmentation plans in the Republican ***River*** Basin, see Griggs, supra note 76, at 44-49. [↑](#footnote-ref-448)
448. 448 Kansas v. Nebraska & ***Colorado***, FSS, 2002, supra note 250, § III.B.1.k, at 15. [↑](#footnote-ref-449)
449. 449 Kansas v. Nebraska & ***Colorado***, Final Report with Certificate, 2003, supra note 99, passim, and especially at App. A (RRCA Model DVD). [↑](#footnote-ref-450)
450. 450 Id. [↑](#footnote-ref-451)
451. 451 Id. [↑](#footnote-ref-452)
452. 452 Kansas v. Nebraska & ***Colorado***, FSS, 2002, supra note 250, at vol. I.17-25, App. C1; Kansas v. Nebraska & ***Colorado***, Final Report with Certificate, 2003, supra note 99, passim, and especially at App. A (RRCA Model DVD). The RRCA Model has been regularly updated since 2003. See [*www.republicanrivercompact.org*](http://www.republicanrivercompact.org). [↑](#footnote-ref-453)
453. 453 Kansas v. Nebraska & ***Colorado***, Arbitrator's Final Decision, 2010, supra note 434, at 5. [↑](#footnote-ref-454)
454. 454 The Pipeline, Republican ***River*** Water Conservation Dist., [*http://www.republicanriver.com/Pipeline/tabid/101/Default.aspx*](http://www.republicanriver.com/Pipeline/tabid/101/Default.aspx) (last visited Nov. 17, 2015). [↑](#footnote-ref-455)
455. 455 Russ Pankonin, First Water Flows from Rock Creek Augmentation Project, Grant Trib. Sentinel, [*http://www.granttribune.com/index.php?option=com\_*](http://www.granttribune.com/index.php?option=com_) content&view=article&i d=7834%3Afirst-water-flows-from-rock-creek-augmentation-project&Itemid=64 (last accessed Mar. 10, 2016). [↑](#footnote-ref-456)
456. 456 About N-Corpe, [*www.ncorpe.org/about*](http://www.ncorpe.org/about) (last accessed Mar. 5, 2017). [↑](#footnote-ref-457)
457. 457 Russ Pankonin, Augmentation Pumping from Lincoln County Project Complete, Wauneta Breeze (Apr. 9, 2015), [*http://www.waunetanebraska.com/index.php?option=com\_*](http://www.waunetanebraska.com/index.php?option=com_) content&view=article&id=6137:augmentation-pumping-from-lincoln-county-project-complete ("In 2014, more than 20,000 acre-feet were pumped from [the] Rock Creek [project]."); Kamie Stephen, N-CORPE Ceases Republican ***River*** Compliance, N. Platte Telegraph, (Apr. 22, 2015 3:00 AM), [*http://www.nptelegraph.com/news/local\_news/n-corpe-ceases-republican-****river****-compliance/article\_036cd71f-bb18-5c85-883a-*](http://www.nptelegraph.com/news/local_news/n-corpe-ceases-republican-river-compliance/article_036cd71f-bb18-5c85-883a-) f98e3506d3d8.html. N-CORPE pumped approximately 45,000 acre-feet in 2014. Hearing on L.R. 323 Before the Nat. Res. Comm., 104th Leg., First Sess. 5 (Neb. 2015) (statement of Senator Mike Groene). For more information on the N-CORPE project, see N-Corpe, [*http://www.ncorpe.org*](http://www.ncorpe.org) (last accessed Jan. 29, 2016). [↑](#footnote-ref-458)
458. 458 Republican ***River*** Compact Arbitration, N-Corpe Augmentation Plan, Direct Testimony of Dr. Jasper E. Fanning (2014), Exhibit N30000, at 3, [*http://dwr.kda.ks.gov/NCORPE\_*](http://dwr.kda.ks.gov/NCORPE_) Trial\_Exhibits\_All/Nebraska/NE%20Exhibits/NCORPE\_ N30000.pdf (last accessed Mar. 5, 2017) (estimating the total land and construction costs of the N-CORPE pipeline as $ 120 to $ 130 million). [↑](#footnote-ref-459)
459. 459 Overview, N-CORPE, [*http://www.ncorpe.org/overview*](http://www.ncorpe.org/overview) (last accessed Mar. 5, 2017). [↑](#footnote-ref-460)
460. 460 By way of comparison, see Republican ***River*** Compact, art. IV, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) (establishing original default allocations of 54,100 acre-feet and 234,500 acre-feet of consumptive use to ***Colorado*** and Nebraska respectively). [↑](#footnote-ref-461)
461. 461 Kansas v. Nebraska & ***Colorado***, FSS, 2002, supra note 250, § IV.H, at 25. [↑](#footnote-ref-462)
462. 462 Republican ***River*** Compact, art IV, ch. 104, [*57 Stat. 86, 88-89 (1943).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) [↑](#footnote-ref-463)
463. 463 Mead, supra note 32, at 307 (quoting Professor S. Fortier, of Bozeman, Montana). [↑](#footnote-ref-464)
464. 464 See supra text accompanying notes 63-83. [↑](#footnote-ref-465)
465. 465 See, e.g., Republican ***River*** Compact, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) at art. I (stating that a major purpose of the compact is "to promote joint action by the States and the United States); id. at art. X (protecting the property of the United States); Rio Grande Compact, ch. 151, [*53 Stat. 785 (1939)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R1G0-01XN-S0HB-00000-00&context=1516831) at art X (specifically protecting the Rio Grande Project). [↑](#footnote-ref-466)
466. 466 [*Hinderlider v. La Plata* ***River*** *& Cherry Creek Ditch* ***Co****., 304 U.S. 92 (1938).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-8RW0-003B-709P-00000-00&context=1516831) [↑](#footnote-ref-467)
467. 467 See supra text accompanying notes 17, 81-83. [↑](#footnote-ref-468)
468. 468 See supra Part III. [↑](#footnote-ref-469)
469. 469 See generally supra Part IV. [↑](#footnote-ref-470)
470. 470 [*Texas v. New Mexico, 462 U.S. 554, 564 (1983).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-4SF0-003B-S40N-00000-00&context=1516831) [↑](#footnote-ref-471)
471. 471 Id. [↑](#footnote-ref-472)
472. 472 See supra text accompanying notes 441-62. [↑](#footnote-ref-473)
473. 473 [*U.S. Const. art. III, § 2, cl. 2*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-R212-8T6X-72X4-00000-00&context=1516831); [*28 U.S.C. § 1251*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SG9-5HW2-D6RV-H0FF-00000-00&context=1516831)(a). [↑](#footnote-ref-474)
474. 474 [*Mississippi v. Louisiana, 506 U.S. 73, 77 (1992).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S5B-0B00-003B-R4YP-00000-00&context=1516831) [↑](#footnote-ref-475)
475. 475 [*28 U.S.C. § 1251*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SG9-5HW2-D6RV-H0FF-00000-00&context=1516831)(b); see also supra note 335. [↑](#footnote-ref-476)
476. 476 [*Idaho v. Oregon & Washington, 444 U.S. 380, 386-91 (1980).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-7N50-003B-S3HD-00000-00&context=1516831) [↑](#footnote-ref-477)
477. 477 See, e.g., Republican ***River*** Compact, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) at art. X(a) (protecting the rights of the United States to acquire water rights at state law for Reclamation projects). [↑](#footnote-ref-478)
478. 478 Griggs, supra note 76, at 62. [↑](#footnote-ref-479)
479. 479 Exception of the United States and Brief for the United States in Support of Exception, at 32-48, Texas v. New Mexico & ***Colorado***, No. 141 Orig. (June 2017). [↑](#footnote-ref-480)
480. 480 In 2014, the United States Forest Service proposed a groundwater rule that would increase federal supervision of groundwater withdrawals from national forest lands, potentially at the expense of state jurisdiction. The Service withdrew the directive after a year of intensive criticism from western governors, congressmen, and state interests. United States Department of Agriculture, Forest Service, Notice of Withdrawal of Proposed Directive, ***80 Fed. Reg. 35299*** (withdrawn June 19, 2015). Western senators responded with "The Water Rights Protection Act of 2017," which would prohibit the federal government from conditioning federal land use permits on the transfer of water rights to the United States, on the acquisition of water rights on behalf of the United States, or upon the limitation and modification of existing rights, including groundwater rights. S. 1230, 115th Cong. § 3 (2017). Notably, the bill would prohibit the Secretary of the Interior and the Secretary of Agriculture from asserting "any connection between surface and groundwater that is inconsistent with such a connection recognized by state law." Id. at § 4(2)(B). [↑](#footnote-ref-481)
481. 481 Kansas v. Nebraska & ***Colorado***, 2013 Report, supra note 214 at 40; see also supra note 250 (on the Court's amendment of the RRCA Accounting Procedures contained in the FSS). [↑](#footnote-ref-482)
482. 482 For a detailed summary of the developments described in this paragraph, see Griggs, supra note 76, at 68-70. [↑](#footnote-ref-483)
483. 483 Republican ***River*** Compact, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) at art. X (protecting the property of the United States). [↑](#footnote-ref-484)
484. 484 See Griggs, supra note 76, for a detailed summary of the developments within the Republican ***River*** Basin. [↑](#footnote-ref-485)
485. 485 [*Hill v. State, 894 N.W.2d 208 (Neb. 2017).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5N29-CH81-F04H-P006-00000-00&context=1516831) [↑](#footnote-ref-486)
486. 486 See supra text accompanying notes 180-87. [↑](#footnote-ref-487)
487. 487 See supra text accompanying notes 341-47. [↑](#footnote-ref-488)
488. 488 See supra text accompanying notes 335-40. [↑](#footnote-ref-489)
489. 489 See supra text accompanying notes 366-72. [↑](#footnote-ref-490)
490. 490 Mead, supra note 32, at 65-66. [↑](#footnote-ref-491)
491. 491 Id.; see, e.g., [*Armstrong v. Latimer Cty. Ditch* ***Co****., 27 P. 235, 237 (****Colo.*** *App. 1891).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3VW7-5100-0039-4514-00000-00&context=1516831) [↑](#footnote-ref-492)
492. 492 See Hundley, supra note 66, at 53. [↑](#footnote-ref-493)
493. 493 [*Wyoming v.* ***Colorado****, 259 U.S. 419, 467-68 (1922);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) Hundley, supra note 66, at 169; see, e.g., Republican ***River*** Compact, ch. 104, [*57 Stat. 86 (1943)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY10-01XN-S2VT-00000-00&context=1516831) at art. I (expressing a primary purpose of the compact to maximize beneficial use of basin waters). The ***Colorado*** ***River*** Compact was the first interstate water allocation compact to be negotiated by the states, and was signed in 1922, but it did not become effective until 1929. Boulder Canyon Project Act, sec. 4, ch. 42, [*45 Stat. 1057 (1928).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNP0-01XN-S392-00000-00&context=1516831) The first interstate compact to gain congressional consent was the La Plata ***River*** Compact (between ***Colorado*** and New Mexico). La Plata ***River*** Compact, ch. 110, [*43 Stat. 796 (1925).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNG0-01XN-S4MV-00000-00&context=1516831) [↑](#footnote-ref-494)
494. 494 See, e.g., [*Washington v. Oregon, 297 U.S. 517, 545 (1936)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-9V80-003B-73JY-00000-00&context=1516831) ("The essence of the doctrine of prior appropriation is beneficial use … ." (internal citations omitted)). [↑](#footnote-ref-495)
495. 495 See Hall, supra note 113, at 119-20 (for New Mexico); see also supra text accompanying notes 421-24 (for ***Colorado***). [↑](#footnote-ref-496)
496. 496 See supra text accompanying note 420. [↑](#footnote-ref-497)
497. 497 Scholarly literature on the death, life, or irrelevance of the prior appropriation doctrine has generally been limited to discussing federal environmental law and innovations in state water law, such as the accommodation of instream flow rights. See, e.g., David H. Getches, The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the States' Role?, [*20 Stan. Envtl. L.J. 3 (2001)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4293-04G0-00CT-V0TW-00000-00&context=1516831) (focusing on federal environmental law and state law modifications to the doctrine); Justice Gregory J. Hobbs, Priority: the Most Misunderstood Stick in the Bundle, [*32 Envtl. L. 37 (2002)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:45R7-VBT0-00CW-B478-00000-00&context=1516831) (defending the utility of the doctrine largely based on federal environmental law and ***Colorado*** state court decisions); Reed D. Benson, Alive but Irrelevant: The Prior Appropriation Doctrine in Today's Western Water Law, [*83 U.* ***Colo.*** *L. Rev. 675, 690-704 (2012)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:55WD-TRB0-00CV-N03S-00000-00&context=1516831) (discussing an assortment of state law cases); Michelle Bryan, Valuing Sacred Tribal Waters Within Prior Appropriation, 57 Nat. Resources J. 139 (2017) (advocating for an evolution in state prior appropriation law regimes to provide yet unrecognized protections for tribal sacred waters). [↑](#footnote-ref-498)
498. 498 Hall, supra note 113, at 205 (quoting John Whipple, engineer for the New Mexico Interstate Stream Commission). [↑](#footnote-ref-499)
499. 499 [*Hill v. State, 894 N.W.2d 208 (Neb. 2017).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:5N29-CH81-F04H-P006-00000-00&context=1516831) For an astute summary of this decision, see Anthony Schutz, Takings Litigation against Nebraska Department of Natural Resources, Rocky Mtn. Mineral L. Found. Water Law Newsletter, vol. L, No. 2, 1-3 (2017). [↑](#footnote-ref-500)
500. 500 See supra text accompanying notes 107-09, 116. [↑](#footnote-ref-501)
501. 501 [*In re Cent. Neb. Pub. Power & Irrigation Dist., 699 N.W.2d 372, 378 (Neb. 2005).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4GJC-C700-0039-43KC-00000-00&context=1516831) [↑](#footnote-ref-502)
502. 502 Schutz, supra note 499, at 3; see also Aiken, supra note 115. [↑](#footnote-ref-503)
503. 503 See, e.g., Fleck, supra note 327 (summarizing recent negotiated compromises within the ***Colorado*** ***River*** Basin). [↑](#footnote-ref-504)
504. 504 See, e.g., Lochhead, supra note 49. [↑](#footnote-ref-505)
505. 505 [*Arizona v. California, 373 U.S. 546, 560 (1963);*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) see supra notes 12 and 24; see also Central Arizona Project Act, ***82 Stat. 887 (1968),*** codified at [*43 U.S.C. § 1521*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SDD-0HD2-8T6X-74DB-00000-00&context=1516831)(b) (establishing a priority schedule within the lower ***Colorado*** ***River*** Basin). [↑](#footnote-ref-506)
506. 506 One recent study reports that groundwater supplies in the ***Colorado*** ***River*** Basin have decreased by 41 million acre-feet between 2004 and 2013. Stephanie Castle et al., Groundwater Depletion during Drought Threatens Future Water Capacity of the ***Colorado*** ***River*** Basin, Geophysical Research Letters 41:16, 5904-11 (2014). [↑](#footnote-ref-507)
507. 507 Hobbes, supra note 1; see also Transcript of Proceedings, Special Master William J. Kayatta, Jr., to John B. Draper, Counsel of Record for Kansas, at 1794, Kansas v. Nebraska & ***Colorado***, No. 126 Orig. (Aug. 23, 2012) ("Part of the fundamental concern you had was that Nebraska had allocated its governmental power in a way that tied its own hands and effectively kept it from complying. And it seems to me you made a very good case that that's precisely what happened in "05 and "06. The evidence then shows though that Kansas put a gun to Nebraska's head. In fact, I may be talking to the gun right here."). [↑](#footnote-ref-508)
508. 508 Frankfurter & Landis, supra note 3. [↑](#footnote-ref-509)