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Managing Water Resources in Georgia: Lessons from Experiences in the Western States

Ronald G. Cummings

Abstract: This paper addresses the critical importance for Georgia of a comprehensive state-wide water plan, as well as statutory and regulatory structures that make manifest the state's commitment to the efficient use of its water resources. To establish this importance, the author draws from experiences in Western States. Aside from benefits attributable to improved in-state allocations of water, the benefits of comprehensive state water plans are shown to relate to criteria now being used by the Supreme Court in adjudications involving equitable apportionment and/or commerce clause limitations on a state's right to protect intrastate groundwater resources.

Key Words and Phrases: Water planning, Equitable apportionment, Groundwater management, State's rights to control resources.

Prior to about a month ago, and for the last eighteen years, I was with the Department of Economics at the University of New Mexico in Albuquerque. While I know little about the specifics of Georgia's water resources environment, what I have read and heard about evolving water resources issues in this state leaves me with a sense of *deja vu*. Many areas of the state are beginning to face problems that have plagued states in the West for many decades. With continued economic growth in Georgia and surrounding states, there is a growing realization that water supplies are not infinite—that the potential for water scarcity is real. The results of increasing water scarcity, familiar in the West, can be increased social conflicts: intrastate, interstate and, in some instances, international in nature. Historically, the result of increasing social conflict has been an evolution of new laws and institutions that respond to changing economic and public interest demands.

I focus my comments on what is probably the most visible water resources conflict in Georgia: the ongoing conflict between Georgia, Alabama and Florida concerning waters in the Apalachicola-Chattahoochee-Flint River Basin. I choose this particular focus for two reasons. First, it makes clear the primary theme that I would like to develop, namely, what I see as the contemporary interface between law and economics shaped by

changes in federal water law over the last decade. An appreciation of this interface can serve to make compelling the critical importance of truly *comprehensive* statewide water plans and water use policies. I argue that “comprehensive” in this sense has a very specific meaning. It means these plans and policies must make manifest a state’s commitment to the “diligent” or *efficient* use of its water resources in achieving rational goals for economic growth and environmental protection. Second, this focus provides the opportunity to make clear a perspective for policy research that emphasizes the importance of collaborative efforts by economists and their colleagues in hydrology and other disciplines, particularly their colleagues in law. The end sought by such collaboration is not research *per se*, but the development of actual policy instruments, e.g., model legislation, regulations, compacts or treaties. An outstanding example of such collaborative research is seen in the ongoing work of the American Society of Civil Engineers (ASCE) Model State Water Code Task Committee focusing on “model” state water rights codes.¹ Whether or not this perspective is strictly Western, I hope it stimulates ideas for ways our research might play an important role in assuring Georgia’s water future. I should note that, in a recent article in the *Georgia State University Law Review*, Robert Vest² states the importance of learning from Western perspectives in a somewhat different way: Eastern states may well benefit from the *mistakes* of their Western counterparts.³

To these ends, I will first consider interstate streams and review relevant federal water law in the United States and the manner in which it has changed over recent years in response to growing water scarcity. I will briefly extend this review to groundwater. This review will hopefully set the stage for discussion of a Western perspective for the nature and scope of policy-related research that might serve well the interests of a state such as Georgia.

Evolution of Legal Mandates for Water Resources Planning

The two primary (but not exclusive) methods used to resolve interstate conflicts over water resources are the interstate compact and what is referred to as “equitable apportionment.”⁴ An interstate compact involves two or more states agreeing to terms guiding the allocation of a common resource.⁵ A compact must be approved by the U.S. Congress as provided by Article I of the U.S. Constitution.⁶ Equitable apportionment refers to a body of federal interstate common law and involves allocation of water resources between two states by the U.S. Supreme Court. The Supreme Court has original and exclusive jurisdiction in suits between the states. Recourse to

the Court for equitable apportionment is not limited by a state's laws governing water rights. The Court effectively ignores considerations related to the basis of a state's water laws—whether they are based upon riparian or prior appropriation doctrines—and focuses primarily on how equity and the interests of two states are to be balanced. Thus the term *equitable apportionment*.

It is important to understand how the doctrine of equitable apportionment has evolved over time; most importantly, how it has changed over the last decade. It is also important to recognize parallel legal developments over the last decade that relate to a state's ability to control water resources that are *intrastate* in character, i.e., water resources that lie totally within a state's boundaries. The salient aspects of these developments follows.⁷

The equitable apportionment doctrine had its beginning in *Kansas v. Colorado*.⁸ In this case, Kansas (a riparian state) sought to prevent water uses in Colorado (a prior appropriation state) that diminished downstream flows in the Arkansas River. The doctrine was expanded in a number of later cases, a few of which warrant mention here. *Wyoming v. Colorado*⁹ involved two appropriation states. The state of Wyoming sought to prevent Colorado's transmountain diversion of water from the Laramie River based on two major arguments: its claims to prior and senior appropriations of such waters; and the argument that the transbasin diversion would result in no return flows to the river. Early equitable apportionment actions involving two riparian states are seen in *Connecticut v. Massachusetts*¹⁰ and *New Jersey v. New York*.¹¹ Both cases involved efforts by one state (Connecticut and New Jersey) to enjoin the other state's diversion of water from an interstate stream for urban water supplies in major cities (Boston and New York, respectively).

Diversions by the defendant state were upheld in all of these cases, and three primary principles were established that were to guide the Court's decisions in equitable apportionment actions for several decades:¹² diversions need not be restricted to a particular basin (i.e., interbasin transfers were allowed); upstream states have no absolute duty to provide undiminished stream flows to downstream states; and, referring to actions that seek to enjoin or limit diversions by an upstream state, the downstream state has the burden of demonstrating that upstream diversions result in "real or substantial injury or damage."¹³

However, in the early 1980s we find the Court moving well beyond the "real or substantial injury" principle established in these earlier cases. The stage is set for this change in the Court's 1945 decision in *Nebraska v. Wyoming*.¹⁴ Here the Court sets out a number of factors that are to be

considered in equitable apportionment suits, two of which are of particular interest for our purposes. These factors include the following:

- Physical and climatic conditions;
- Consumptive use in the several sections of the river;
- The nature and rate of return flows;
- The extent of established uses;
- The availability of storage water;
- *The practical effect of wasteful uses of water; and*
- *Damage to upstream areas as compared to benefits to downstream areas if a limitation is imposed on the former.*

Emphasis is given to *efficiency* criteria¹⁵ and criteria related to *comparative* impacts (arguably, *a la* cost-benefit analyses) as primary factors to be considered in equitable apportionment actions.¹⁶

This brings us to the case that establishes the ground rules for contemporary equitable apportionment actions, ground rules that clearly establish the need for comprehensive planning by the states: *Colorado v. New Mexico* (commonly referred to as the *Vermejo* case).¹⁷ It is in this case that considerations related to efficiency and comparative impacts are given primary status.

At issue in *Colorado v. New Mexico* was water use in the Vermejo River, a river that originates in the Colorado's Sangre de Cristo Mountains and flows into the state of New Mexico. Colorado wished to divert water from the Vermejo River for urban water uses and for industrial uses by a steel company that was considering location in southern Colorado. However, virtually the entire flow of the river had already been fully appropriated by users in New Mexico, primarily by the most downstream user: New Mexico's Vermejo Conservancy District which used the water for irrigation. New Mexico argued that, based upon prior appropriation (both states are prior appropriation states), all of her water rights must be satisfied before any commitments to rights established by Colorado could be met.

Three aspects of the Court's rulings in this case are of interest.¹⁸ First, while recognizing that the protection of water uses by an existing economy will usually be compelling, the Court goes on to establish the principle that wasteful or inefficient uses of water will *not* be protected, notwithstanding the priority of such uses. The Court states that it

will protect only those rights to water that are “reasonably required and applied”...there must be no waste...of the “treasure” of a river....Only diligence and good faith will keep the privilege alive....Thus, wasteful or inefficient uses will not be protected....Similarly, concededly senior water rights will be deemed forfeited or substantially diminished where the rights have not been exercised or asserted with reasonable diligence.¹⁹

Thus, states “have an affirmative duty to take reasonable steps to conserve and augment the water supply of an interstate stream.”²⁰ In the first round of deliberations in *Colorado v. New Mexico*, the Court’s special master found the Vermejo Conservancy District was inefficient in its use of water and that, *via* appropriate investments on their part to eliminate the waste of water, they could accommodate Colorado’s planned diversions of water with minimal adverse effects.

Second, echoing earlier decisions noted above, the Court required that Colorado show clear and convincing evidence of “real or substantial injury.” It went on, however, to require more than a preponderance of such evidence. It required a showing that the injury or damage be highly probable: “Colorado’s diversion should and will be allowed only if actual inefficiencies in present uses or future benefits from other uses are highly probable.”²¹ My good friend Jerry Sherk, an outstanding legal scholar in the area of water resources, gives the following allegorical interpretation of this requirement:

Had Moses (on behalf of the Children of Israel) asked the Supreme Court to divide the Red Sea, he would have been forced to provide clear and convincing evidence of the need for the division, of the intent of the Pharaoh’s army and of the harm that would have befallen his people had the division not occurred. Mere knowledge of the army’s pursuit would have been inadequate. The battle had to be imminent before the waters could be divided.²²

Third, given a clear and convincing showing by the diversion-seeking state that, in the absence of the diversion, it is highly probable it will suffer a real or substantial injury, the Court then shifted the burden to the state with existing diversions—New Mexico in this case—to prove by clear and convincing evidence *that existing diversions should be continued*. Equitable apportionment would then be based on a “balancing” of these factors: the extent to which it is shown that existing uses can be reduced by eliminating inefficiencies and wastes; and a showing that benefits to the petitioning state would outweigh harms or injury caused by the reduction of water made

available to existing users in the defendant state. The “benefits” test stressed by the Court is summarized in the following way:

We have held that...it is proper to weigh the harms and benefits to competing states...we held water rights...which under state law were senior, had to yield to the “countervailing equities” of an established economy...even though it was based on junior appropriations.... We noted that the rule of priority should not be strictly applied where it “would work more hardship” on the junior user than it would bestow benefits on the senior user. The same principle is applicable in balancing the benefits of a diversion for proposed uses against the possible harms to existing uses.²³

In this instance, Colorado failed to meet these burdens and the case was dismissed.

Let me summarize what we have so far. For the balancing of equities that lies at the heart of equitable apportionment actions, the state that initiates the action must be prepared to present “clear and convincing” evidence that it is being harmed by another state, and the facts underlying this evidence must be “highly probable.” The defending state must then be prepared, again in a clear and convincing way, to prove that its uses should be continued—that any benefits that might accrue to the complaining state are small relative to the costs that would attend reduced diversions.

Thus, the evidentiary burdens of contemporary equitable apportionment actions are stringent indeed and few plaintiff (usually, downstream) states have succeeded in meeting them. As a result, many legal scholars view the weight of these evidentiary burdens as providing incentives for aggrieved states to seek alternatives to equitable apportionment actions as means for obtaining “their share” of water in an interstate stream. Examples of such alternatives are compacts, new federal legislation or some form of negotiated settlements.²⁴ Still another alternative is the search for legal strategies that allow a state to avoid the Supreme Court and its stringent evidentiary requirements. For those conversant with *State of Alabama v. the United States Corps of Engineers, et al.*,²⁵ the following example of a case, that may or may not reflect one such strategy, should sound very familiar.²⁶

In a post-*Vermejo* action, *North Carolina v. Hudson*,²⁷ the state of North Carolina sought to prevent the state of Virginia’s diversion of waters from the Roanoke River for urban water supplies in Virginia Beach. In the pre-*Vermejo* era, one might speculate that North Carolina might have sought relief in an equitable apportionment action. Here in the post-*Vermejo* era, however, *North Carolina v. Hudson* is an action by North Carolina *not* against Virginia, but against a third party: the Corps of Engineers. North

Carolina claimed that, in issuing permits for the construction of diversion facilities required for Virginia's delivery of water to Virginia Beach, the corps failed to satisfy requirements of the National Environmental Policy Act,²⁸ the Coastal Zone Management Act,²⁹ and the Water Supply Act.³⁰ Based on its findings that, in issuing the challenged permits, the corps had not adequately considered environmental impacts and Virginia Beach's actual needs for the diverted water, the Court remanded the case to the corps for further study.

It can be (arguably) said that actions seen in *North Carolina* and in *Alabama* are, at a minimum, consistent with what one might expect to see in efforts to bypass the evidentiary requirements of the Supreme Court in equitable apportionment actions. Whatever the facts of the matter, it is interesting to note that two considerations make unclear the extent to which any downstream state might ultimately succeed with such a strategy. First, while equitable apportionment is typically thought of as a "downstream" action, precedents exist for the initiation of such actions by the upstream state as a direct response to what might be viewed as "harassment" in the form of litigations in lower courts.³¹ Second, Sherk³² sees in *North Carolina* a potential signal of the district court's intent to require that the corps consider equitable apportionment criteria in its review of the public interest effects and benefits claimed for a proposed diversion. The language in question here is as follows:

Any diversion of water from the basin is contrary to its interests and must be balanced against the actual need for the diversion of the water.³³

It then seems reasonable to conclude that, whether or not a state anticipates direct involvement in an equitable apportionment action, it may be well advised to structure its water planning efforts with equitable apportionment criteria in mind.³⁴

But before we take up the implications for research of equitable apportionment criteria, there is one other set of developments in water law germane to our discussions.

Groundwater and Legal Planning Mandates

Economists most likely would think of water as a factor of production; certainly this would be true for the bulk of agricultural water use. As such, like minerals and other natural resources, such productive factors within a state would essentially be "owned," privately or in common, by the citizens of that state. Surely this would be the case with groundwater. For many

decades a similar view prevailed in water law. In *Wilson v. Blackbird Creek Marsh Co.*,³⁵ Justice Marshall concedes the power of states to regulate water resources exclusively within their boundaries; and Justice Holmes made clear his view that states had the right to control such resources in *Hudson Water Co. v. McCarter*.³⁶

This view of the world was dramatically changed in 1982, however, with the Court's decision in *Sporhase v. Nebraska*.³⁷ Here the Supreme Court essentially relegates the notion of state ownership of water to the status of a "legal fiction." The Court held, in essence, that rather than being factors of production, water resources are outputs or goods: they are *an article in commerce* and, as such, "trade" with these goods is protected under the Commerce Clause of the U.S. Constitution.

This decision imposes an important limitation on any state's administrative rules or statutes regulating the use of water resources. Laws or regulations that have the effect of prohibiting or limiting access to a state's groundwater by out-of-state entities (such as those in Nebraska, in *Sporhase*, and New Mexico, in *City of El Paso v. Reynolds*³⁸) may be invalid on their face as violations of the Commerce Clause. Therefore, in the post-*Sporhase* era a state cannot (all else equal) deny access to its in-state water supplies to individuals wishing to obtain such water for use in a sister state.³⁹

There are important caveats to this rule, however, the nature of which is of direct interest. The *Sporhase* Court did acknowledge possible instances in which a state might legitimately assert a limited preference for its citizens in terms of access to water resources.⁴⁰ Basic to the instances cited by the *Sporhase* Court, as well as to those cited by the federal district court in *El Paso*, is the showing that state policies be manifestly designed to serve compelling state interests, and that the state be prepared to demonstrate its efforts to promote efficient water use.⁴¹

The Contemporary Georgia Challenge

The bottom line from all of this is that continued economic growth in the state of Georgia requires that our new industry, new businesses and growing population be assured adequate access to water resources. If the state is to provide such assurances, our review of contemporary water law makes clear the critical importance to a state of comprehensive basin water plans. Within this context, it is clear the term "comprehensive planning" has reasonably specific connotations. It implies the need for the state to go beyond the typical planning process of estimating trends for water demands to the development of clear and compelling plans that make manifest the

state's diligent use of its water and a demonstration of the full range of benefits that accrue as a result of such use.

Growing water scarcity then imposes a duty on the state to "plan its work and work its plan." It requires that the state be "forward looking" in terms of its policies for managing water resources. Moreover, as noted above, this duty requires that the state have a cogent and comprehensive plan for present and future water use that *clearly sets out the benefits* that accrue to the state from planned patterns of water use in all sectors: municipal, industrial, agricultural, recreational and in-stream uses, as well as uses related to the maintenance of water quality. Finally, in its development of policies that are to implement water plans, the state is well advised to formulate them within a context that anticipates judicial scrutiny regarding their "even-handedness" *vis-a-vis* entities in neighboring states.

I am not familiar enough with the nature of water planning in the state of Georgia to comment on the extent to which it satisfies the demands for comprehensive water planning in the post-*Vermejo* era.⁴² However, I can and will suggest just a few examples of questions that I feel should be addressed by contemporary water plans and policies.

- We might begin with the observation that, while in Georgia, as in most eastern states, the riparian doctrine has been dramatically altered by legislation affecting such things as use permits and area-of-use restrictions, a piecemeal response to changing water conditions may be a poor substitute for a comprehensive state water code.⁴³ The obvious question then becomes: should the state initiate efforts to develop such a code? In this process might it look to a modified priority system joined with marketable water rights?
- Should public water using entities—municipalities, counties, special use districts, etc.—be allowed (encouraged) to apply for water use permits to satisfy estimated future needs; if so, for what "future?" Forty years, fifty years?
- Focusing on aspects related to "diligence," what are "reasonable" technologies for efficient water use and the reclamation of waste waters in each sector (municipal, industrial and agriculture) and what strategies might the state adopt to provide incentives for the adoption of these technologies?
- Should the state establish priorities among water uses?⁴⁴

- Should the state seek ways to facilitate intrabasin and interbasin transfers of diversion rights? As one example, should the state explore the implementation of *marketable* diversion rights?
- Should the state consider renewable-term diversion rights; i.e., diversion rights that expire after a fixed period of time (e.g., three, four, five or six years)? Renewal of the right might be predicated on confirmation the water has been put to beneficial use and the absence of a compelling case that the water could be put to alternative *higher-valued* uses.⁴⁵
- For water management policies in Georgia, what does *value* mean? Are there public interests in particular distributions of water use and, if so, how are such interests to be reflected in public policy?
- Are there compelling cases for regional systems for providing water?
- What is the nature of in-stream flows required for the maintenance of environmental standards along the river; should specific water “rights” be established for these purposes?
- Are there instances in which established water management policies fail to appropriately consider ground and surface water interrelationships?
- Should the state more aggressively pursue water conservation goals for both ground and surface waters? As examples, one might consider legislation that requires as a part of the permit system an evaluation by applicants of water reuse potential. Greater attention might be given to the conjunctive management of water supplies and recharge/discharge policies.

Let me add two additional questions that relate directly to potential problems in the Apalachicola-Chattahoochee-Flint Basin. While I am certain the state is already considering these obvious questions, their mention may stimulate interesting research ideas.

- What are “ideal” outcomes for the ongoing negotiation process? One example is a compact. Thus, should the state, drawing on the substantial pool of scholarly expertise within the state, initiate efforts to develop a “model” compact?
- In the event ongoing efforts to develop a negotiated settlement do not result in a satisfactory settlement, what are alternative means

by which problems with Alabama and Florida might be resolved and what are the research needs implied by these alternatives?⁴⁶

Conclusion

I do not wish to have my remarks interpreted as advocating an adversarial or contentious stance by a state in response to disputes with other states concerning water. Georgia's efforts to compromise and seek amicable solutions to problems with her sister states are laudable indeed. The point I hope to make is that, notwithstanding the blessing Georgia enjoys in terms of annual rainfall, water supplies are not infinite. If one looks to the not-too-distant future it is surely clear laws and regulatory structures that will shape the state's water future may be very different from those in the past. Correspondingly, the nature and scope of water planning needed by the state is changing. In considering the state's water future, it is equally clear the stakes can be high. Thus, even in the absence of problems with other states, this state's best interests are well served by water resources research and planning that anticipates the strains of growing scarcity in future decades. It then follows that mandates for plans that demonstrate a state's diligence in the efficient use of water implied by contemporary water law should be accepted as a matter of course. This is to say that, in principle, such mandates call for no more than what the state should already have in place.

Many substantive changes have occurred over the last decade, not only in federal water law, but in the entire federal-state interface concerning water resources. While the need to redefine this interface has been urged by a number of writers,⁴⁷ little progress has been made to date. One thing is certain, however. States will be playing an increasingly central role *vis-a-vis* the federal government in the shaping of policies and institutions that will determine the quality of their water future. In my view, herein lies the challenge for innovative and imaginative policy research involving collaboration between economists and their colleagues in law and other disciplines.

I look forward to being a part of the Georgia community of scholars concerned with public policy and to joining you in your efforts to provide decision makers in this great state with the very best we have to offer in the way of policy research directly relevant to the myriad resource and environmental problems facing them.

Notes

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1. The Model State Water Code Task (MSWCT) Committee has completed draft reports of two documents, *Model State Water Rights Code (Regulated Riparian Chapters)* and *Model State Water Rights Code (Prior Appropriation Chapters)*, dated Summer, 1993. Completed drafts are to be presented at the summer, 1994, meetings of the American Water Resources Association (AWRA) in Jackson Hole, WY. Information regarding these ongoing works is available from Professor Ray Davis, School of Law, Brigham Young University, Provo, UT; See, also, "Model Water Use Act," in *Suggested State Legislation Program for 1959*, Council of State Governments (1958):1-50-166 (reprint 1972); "State Appropriation of Unappropriated Groundwater: A Strategy for Insuring New Mexico a Water Future," New Mexico Water Resources Research Institute and University of New Mexico Law School, Jan. 1986 (Second Report, Jan. 1987); Rogers, A., and A. Utton, "The Ixtapa Draft Agreement Relating to the Use of Transboundary Groundwaters," *Natural Resources J.* 25(1985); and Hayton, Robert D., and Albert E. Utton, "Transboundary Groundwaters: The Bellagio Draft Treaty," *Natural Resources J.* 29(Summer, 1989):663-722.
2. Vest, Robert E., "Water Wars in the Southeast: Alabama, Florida, and Georgia Square Off Over the Apalachicola-Chattahoochee-Flint River Basin," *Georgia State University Law Review* (1993)9:717.
3. *Ibid.*, 716.

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4. Abrams, Robert H., "Moving Water: Theory and Law," Annual Meeting of the American Bar Association, Section of Natural Resources, Energy and Environmental Law, vol. I, Session on "Growth and Development When the Water Runs Short: New Challenges for Eastern Water Law," Sept. 30, 1993, 14 pp., Ashville, North Carolina.
 5. For a discussion of the strengths and weaknesses of interstate compacts, see Abrams, "Moving Water," and Vest, "Water Wars."
 6. "No State shall, without the consent of Congress,...enter into any agreement or compact with another state...." U.S. Constitution, Article I, Section 10, Clause 3.
 7. For a more comprehensive review of these arguments, see, *Natural Resources J.* 29 (Spring, 1989):347-388, 565-584, respectively, Johnson, N.K., and C.T. DuMars, "A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands," and Sherk, G.W., "Equitable Apportionment After *Vermejo*: The Demise of a Doctrine." Legal implications of these developments for the Georgia-Alabama-Florida conflict are discussed in Vest, "Water Wars," 689.
 8. *Kansas v. Colorado*, 206 U.S. 46 (1907).
 9. *Wyoming v. Colorado*, 259 U.S. 419 (1922). See, also, 260 U.S. 1 (1922) and 353 U.S. 953 (1957).
 10. *Connecticut v. Massachusetts*, 282 U.S. 660 (1931).
 11. *New Jersey v. New York*, 283 U.S. 336 (1931).
 12. *Washington v. Oregon*, 297 U.S. 517 (1936); *Colorado v. Kansas* 320 U.S. 383 (1943)—note here that, referring to the burden of proof concerning damages to the complaining state, the Court states such burden is "...much greater than generally required to be borne by private parties (p. 393)."
 13. *Connecticut v. Massachusetts*, 669.
 14. *Nebraska v. Wyoming*, 325 U.S. 589 (1945). See, also, 345 U.S. 981 (1953).
 15. I do not mean to imply the Court ignored efficiency criteria in earlier cases. See, for example, Justice Holmes' view, "A river is more than an amenity, it is a treasure. It offers a necessity of life that must be

rationalized among those who have power over it." *New Jersey v. New York*, 342.

16. In this instance, the Court found that benefits to Nebraska from reduced diversions in Colorado would likely be much less than costs Colorado would suffer from such reductions. It then allowed the more junior uses in Colorado to continue.
17. There are actually two distinct sets of rulings here. In 459 U.S. 176 (1982)—typically referred to as *Vermejo I*—the Court ultimately remands the case to a special master for additional factual determinations concerning impacts of Colorado water use on Colorado and New Mexico. The Court's final decision is given in 467 U.S. 310 (1984), referred to as *Vermejo II*.
18. *Ibid.*, *Vermejo II* (1984) 187.
19. *Colorado v. New Mexico* (1982) 184.
20. *Ibid.*, 185.
21. *Colorado v. New Mexico* (1982) 317.
22. Sherk, "Equitable Apportionment," 566.
23. *Ibid.*, 186-187.
24. Sherk, "Equitable Apportionment," discusses these alternatives along with a possible "market" alternative. Strengths and weaknesses of various alternatives are addressed in Abrams, "Moving Water."
25. Civil Action (inactive) CV-90-H-01331-E, U.S. District Court, Northern District of Alabama, Eastern Division.
26. Sherk, "Equitable Apportionment," 582-583, and Vest, "Water Wars," particularly 712-713.
27. *North Carolina v Hudson*. Eastern District North Carolina, No. 84-36-CIV-5, July 7, 1987.
28. *National Environmental Policy Act*, 42 U.S.C. 4332 (1977).
29. *Coastal Zone Management Act*, 16 U.S.C. 1451 (1985).
30. *Water Supply Act*, 43 U.S.C. 390 (1986).
31. One example, *Colorado v. Kansas*.
32. Sherk, "Equitable Apportionment," 583.

33. *North Carolina v. Hudson*, 39.
34. An overview of trends in eastern states' water laws is given in Sherk, George W., "Eastern Water Law: Trends in State Legislation," *Virginia Environmental Law J.* 9(Spring, 1990):287-321. Alabama's basically initial efforts to exert some degree of control over water use is seen in recent legislation establishing a new Office of Water Resources as a division of the state's Department of Economic and Community affairs and a new Alabama Water Resources Commission charged with the promulgation and enforcement of new rules and regulations related to water use. See S.140, approved Feb. 23, 1993, amending Section 41-23-1, Code of Alabama, 1975.
35. *Wilson v. Blackbird Creek Marsh*, 27 U.S. (2 Pet.) 245 (1829).
36. "...it appears to us that few public interests are more obvious, indisputable and independent of particular theory than the interest of the public of a State to maintain the rivers that are wholly within it substantially undiminished, except by such drafts upon them as the guardian of the public welfare may permit for the purpose of turning them to a more perfect use." *Hudson County Water Company v. McCarter*, 209 U.S. 349 (1908).
37. *Sporhase v. Nebraska ex rel. Douglas*, 458 U.S. 941 (1982).
38. 563 F. Supp. 379 (D.N.M. 1983), later proceeding, 597 F. Supp. 694 (D.N.M. 1984).
39. For statutory or regulatory provisions that limit access to a state's waters to a sister state, Abrams, "Moving Water," 12, notes, "In order to withstand attack the discriminatory provision must be necessary to effectuate a compelling state interest...the Court will insist on a very close means-end fit, a vital state interest, and the absence of less commerce burdensome alternatives."
40. Abrams, "Moving Water," 3-4, 11-12.
41. In striking down New Mexico's provisions prohibiting out of state exports, the *El Paso* court found New Mexico was not facing an imminent shortage, *that its present policies were not designed to conserve water*, and that the embargo was not a narrowly tailored means to achieve the goals found acceptable by the Court in *Sporhase*. Abrams, "Moving Water," 14.

42. I am only beginning to become aware of interesting and innovative papers written by Georgia scholars on this topic. An exceptional example is Kundell, James E., and Linda Griffin, "Water Management Options: A Report for the Georgia General Assembly," Institute of Government, University of Georgia, Athens, Dec. 1979.
43. See Sherk, "Eastern Water Law."
44. Georgia presently has legislation that sets out use priorities in the event of a water shortage: human needs have first priority, agricultural needs second priority; and a *statutory* preference for existing water uses. Problems with priority systems are discussed in Sherk, "Eastern Water Law," and in Trelease, D., "The Model Water Code, The Wise Administrator and the Goddam Bureaucrat," *Natural Resources J.* 14(1974). In this regard, Trelease's requiem for the bureaucrat charged with administering priorities is irresistible: "I think the poor Bureaucrat, juggling equality, equity, economic efficiency, public health and safety, protection of investment, and protection of workers' jobs and farmers' livelihoods, might at this point take to the bottle, either milk for his ulcer or whiskey to forget his troubles. I think he would think that there must be a better way to run this railroad, some way to get all those arguing, pleading people off his back (p. 217)."
45. I am indebted to D. Briane Adams, U.S. Geological Survey Southeastern Region, for a stimulating discussion of these and related issues. In considering fixed term permits, however, one must carefully consider the tradeoff between short terms (with their associated advantages for control over water use but disadvantages related to disincentives for investment) and long terms (better incentives for investment but reduced control). See Sherk, "Eastern Water Law," 291-292.
46. A place to start for efforts of this kind might well be seen in the ongoing work of the ASCE's Model State Water Code Task Committee cited in footnote 1.
47. See Dworsky, Leonard B., David J. Allee and Ronald M. North, "Water Resources Planning and Management in the United States Federal System: Long Term Assessment and Intergovernmental Issues." *Natural Resources J.* 31 (Summer, 1992):475-547, and Light, Stephen S., and John R. Wodraska, "Forging a New State-Federal Alliance in Water Management," *Natural Resources J.* 30 (Summer, 1990):477-484.