

***Interbasin Transfers:  
A Promising, but Currently Flawed, Solution to  
the World's Increasing Water Scarcity***

by

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The rain is plenteous but, by God's decree,  
Only a third is meant for you and me;  
Two-thirds are taken by the growing things  
Or vanish Heavenward on vapour's wings:  
Nor does it mathematically fall  
With social equity on one and all.  
The population's habit is to grow  
In every region where the water's low:  
Nature is blamed for failings that are Man's,  
And well-run rivers have to change their plans.<sup>1</sup>

*Introduction*

Global climate change continues to have demonstrated impacts on the planet, especially its freshwater resources. Negative impacts abound, be they from increases in water evaporation and irrigation needs, decreases in the current water tables, or the contamination of existing water supplies through toxic materials, irrigation runoff, septic tank and feedlot runoff, improper sewage disposal, or nitrate saturation. As urban population centers continue to demonstrate their commitment not to conservation, but to the utility concept of providing as much as water as necessary, regardless of cost, it has become clear that a solution is needed to the problems facing areas with severe water shortages.

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<sup>1</sup> Sir Alan Herbert, "Water" (retrieved from <http://www.oaecwater.org/water-poetry> on April 20, 2010).

Water scarcity breeds conflict, and nowhere is this proposition more evident than when transboundary waters are involved. Growing concern over the scarcity and shortage of freshwater resources requires new measures in water sharing and water transfer among different jurisdictions. As the human population continues to grow, demand for water has increased dramatically, often exceeding regional supply. Although specific regions of the world continue to see these marked increases in water demand, the current resources available to many of these regions simply cannot support the current demands for water use. Many basins in the country have a surplus of water resources, while others face serious shortages. Creation of storages and interbasin transfers of water from surplus to deficit regions has the potential to be a viable option for achieving more equitable distribution of water wealth and its optimal utilization.

The concept of transferring water from one basin to another has evolved over centuries as a useful means of meeting water demands. These interbasin transfers are used worldwide, with varying levels of success. This paper will attempt to parse through the tangle of questions that remain unanswered regarding interbasin transfers through a brief background and history of interbasin transfers and their use, followed by some of the demonstrated ecological and structural problems with interbasin transfers. The author will then analyze the interbasin transfer system in the United States through a review of cases involving the litigation of interbasin transfers and these cases' relation to the future use of interbasin transfers. Finally, the author will conclude with possible solutions to the ever-important issues of water scarcity, water demand, and future interbasin transfers.

## **I. The Background and History of Interbasin Transfers**

“Taken as a whole, the United States has plenty of water, now and for the future. The problem is, of course, that no one lives in the United States as a whole: we live in specific communities, and not all those communities have, or will have, enough water.”<sup>2</sup> If the world were to simply continue as is currently stands, most places would be able to get by on the water presently available to them. However, the world will not stand still, and populations continue to migrate to areas that must import water to survive. For as long as there have been shortages of water in certain regions, there have been solutions and agreements in which one area allows water originating in that basin to be sent to another area. There are many reasons for these aptly named “interbasin transfers,” including excessive water consumption in certain areas, the alleviation of water shortages in the receiving basin, and even simply a negation of the effects of deteriorating water systems in jurisdictions.

There are 268 transboundary river basins worldwide, and 250 major rivers are shared by two or more nations.<sup>3</sup> Over 50 rivers are shared by three or more nations; forty percent of the world’s population depends on these shared river basins for water.<sup>4</sup> In the continental United States, 71 rivers are more than 350 miles in length, and only six of these are not shared by two or more states and/or countries.<sup>5</sup> Over 90% of the population in the continental United States depends on waters shared with other states.<sup>6</sup> The need for effective cooperation among riparian

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<sup>2</sup> Royce Hanson, *Water Supply and Distribution: The Next 50 Years*, Ch. 12 in *Cities and Their Vital Systems; Infrastructure: Past, Present, and Future*, Jesse Ausubel & Robert Herman, eds., National Academy Press, Washington, D.C., 1988.

<sup>3</sup> S. Draper, *Introduction to Transboundary Water Sharing*, *Journal of Water Resources Planning & Management*, Vol. 133, Issue 5, ppg. 377-81 (September 2007).

<sup>4</sup> International Network of Basin Organizations, *Constitutive Meeting of the Network of Transboundary Basin Organizations*, Thonon-Les-Bains, France (2002).

<sup>5</sup> S. Draper, *supra* note 3.

<sup>6</sup> S. Draper, *Model water sharing agreements for the 21st century*, American Society of Civil Engineers, Reston, Virginia (2002).

states and countries has greatly increased because of the growing demand for water in various basins and the increasingly harmful effects of activities in upstream basins.

Interbasin transfers involve a transfer of water from one specific basin to another specific basin, and initially developed as a way to alleviate downstream shortages of water. An interbasin transfer, most simply put, involves the taking of water from one river or stream and moving it into a different area, which has its own rivers and streams. These types of water transfers have been a part of human settlement since the dawn of civilization. Both international and domestic<sup>7</sup> interbasin transfers will be discussed in the following sections.

a. International Use

Archaeological evidence indicates that interbasin water transfer was developed as early as 4,500 years ago. A water resource development project was constructed in 2500 B.C. to connect the Tigris and Euphrates rivers.<sup>8</sup> In the Western Hemisphere, ruins in Peru suggest the existence of a canal that carried water from the Andes Mountains nearly 125 miles to the capital.<sup>9</sup> Globally, interbasin transfers have always held importance. China and Russia both have active interbasin transfer programs,<sup>10</sup> and rapid growth in water demand has increased the production of interbasin transfer projects in Great Britain. As worldwide droughts continue,

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<sup>7</sup> As the author is a United States citizen, that country will be the focus of the section on “domestic” use of interbasin transfers.

<sup>8</sup> H. Saggs, The Greatness That Was Babylon, Hawthorn Books, Inc., New York (1962).

<sup>9</sup> G. Clyde, Irrigation in the United States, Transactions of the American Society of Civil Engineers Vol. CT (Centennial Transactions), Paper 2594 (1953).

<sup>10</sup> G. Golubev & A. Biswas, *Large-Scale Water Transfers: Emerging Environmental and Social Issues*, ppg. 1-5 in Large-Scale Water Transfers: Emerging Environmental and Social Experiences, United Nations Environmental Programmes, Water Resources Series, Vol. 7, Tycooly Publishing, Oxford, United Kingdom, G. Golubev & A. Biswas, eds. (1985).

water transfers will no doubt be considered and will play an increasingly important role in social and political expansion.

Because interbasin transfers involve the transfer of water from one area to another, there inevitably arises disagreement. Conflicts over water resources are some of the world's oldest disputes. In fact, the English words "river" and "rival" are derived from the same Latin root word, *rivalis*, meaning "he who uses the same stream."<sup>11</sup> While historically attacks on water infrastructure were common only during military confrontation, recent conflict demonstrates that more and more frequently water is being used as a political and terrorist tool, rather than solely used as a military tool in open conflicts between nations or states.

Today, the majority of interbasin transfers exist in the Middle East. Shared waters exist between Turkey, Iraq, and Syria in the Tigris-Euphrates basin, between Jordan and Israel regarding their opposite bank sharing of the Jordan River, between nations in the Nile River Basin, and between India and Bangladesh over the Ganges River.<sup>12</sup> At least seven active transboundary water disputes currently exist in Africa, six in Europe and Asia, and at least five in the Americas.<sup>13</sup> As this demonstrates, the potential for conflict in regards to interbasin transfers is enormous.<sup>14</sup> International disagreement remains prevalent today, as evidenced by the plan to

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<sup>11</sup> L. Ohlsson, *The Role of Water and the Origins of Conflict*, Hydropolitics: Conflicts Over Water as a Development Constraint, L. Ohlsson, ed., Zed, London (1995). See also, A. Biswas, Management of International Waters: Problems and Perspective, *International Journal of Water Resources Development*, Vol. 9, Issue 22, ppg. 167-188 (1993).

<sup>12</sup> S. Draper, *supra* note 3.

<sup>13</sup> J. Dellapenna, The Customary International Law of Transboundary Fresh Waters, *International Journal of Global Environmental Issues*, Vol. 1(3/4), ppg. 264-395 (2001).

<sup>14</sup> For an excellent and thorough analysis of further water conflict in the Middle East, see Elizabeth Burleson, *Equitable and Reasonable Use of Water in the Euphrates-Tigris River Basin*, 35 Environmental Law Reporter 10041 (2005); Elizabeth Burleson, *Middle Eastern and North African Hydropolitics: From Eddies of Indecision to Emerging International Law*, 18 Geo. Int'l Env'tl. L. Rev. 385 (2006).

transport water from the Great Lakes to other parts of the United States, and the premiers of the adjacent Canadian provinces' blatant refusal to cooperate.

b. Use in the United States

Interbasin transfers also have a long history of use in the United States. From 300 B.C. to 1450 A.D., American Indians in central Arizona constructed over 1,200 miles of canals in what is now the Phoenix area.<sup>15</sup> These canals, as well as aqueducts designed by Spaniards in the southwestern United States during the 1600's and 1700's, might not be considered traditional interbasin transfers, but certainly served an important role in the development of large-scale transfer projects that later occurred in the Southwest.<sup>16</sup> Settlers in the 19<sup>th</sup> century realized that in order to expand in the Great Plains, water from the Rocky Mountains needed to be diverted to the drier plains areas. What followed was the construction of numerous aqueducts and tunnels designed to funnel water from the Rocky Mountains to the drier, arid southwestern and southern states.

California was one of the first states in the United States to develop an interbasin transfer of water to meet regional demands. In 1913, to supply its burgeoning water requirements in the early part of this century, the City of Los Angeles bought much of the agricultural land and accompanying water rights in the Owens Valley east of the Sierra Nevada Mountains.<sup>17</sup> A major aqueduct was constructed to transport this water to Los Angeles. The effect was to virtually

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<sup>15</sup> W. Masse, Prehistoric Irrigation Systems in the Salt River Valley, Arizona, *Science*, Vol. 214, ppg. 408-15 (1981).

<sup>16</sup> C. Warnick, *Historical Background and Philosophical Basis of Regional Water Transfer*, ppg. 340-52 in Arid Lands in Perspective, University of Arizona Press, Tucson, Arizona, Bagley & Smiley, eds. (1969).

<sup>17</sup> Seldom reported is the fact that city officials stealthily purchased these water rights and options for land by pretending to be farmers and ranchers. See Louis Sahagun, "In Owens Valley, Water Again Flows," *Los Angeles Times*, Dec. 7, 2006, at B1.

eliminate what had been a thriving agricultural economy in the Owens Valley. Although Los Angeles paid for the water rights and much of the agricultural land, it did not have to provide any compensation for the other costs associated with the loss of this economy.<sup>18</sup>

As the coastal metropolitan area of California continued to grow, the desirability of obtaining additional water supplies on a centrally organized and large-scale basis was recognized. In 1928, the Metropolitan Water District was organized by the cities in Los Angeles, Orange, and San Bernadino counties to build a 242-mile aqueduct from the Colorado River to the metropolitan area. An expansion program started in 1952 has increased the delivery capacity to more than 1 billion gallons per day, and the delivery system delivers approximately 1.2 million acre-feet per year to the metropolitan coastal area.

Texas has also been active in interbasin transfers; proposals have been made to divert water to the Texas plains from the Mississippi River as well as the Arkansas and White Rivers in Arkansas.<sup>19</sup> A smaller scale interbasin transfer is currently under way in Texas providing water to the Dallas area from Lake Texoma<sup>20</sup> to Lake Lavon<sup>21</sup> via a combination of pipeline and stream channels.

Interbasin transfers in the United States have not been limited to the West. To support the population of New York, water has been diverted from the Delaware River Basin.<sup>22</sup> The

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<sup>18</sup> Full accounts of this interbasin transfer and the resulting devastation to the Owens Valley are provided in R. Nadeau, The Water Seekers (1950), and E. Cooper, Aqueduct Empire (1968).

<sup>19</sup> R. Lacewell & J. Lee, Land and Water Management Issues: Texas High Plains, ppg. 127-167 in Water and Arid Lands of the Western United States, Cambridge University Press, New York, M. El-Ashry & D. Gibbons, eds. (1988).

<sup>20</sup> Located on the Oklahoma-Texas Red River Basin.

<sup>21</sup> Located on the Texas Trinity River Basin.

<sup>22</sup> C. Howe & K. Easter, Interbasin Transfers of Water – Economic Issues and Impacts, Johns Hopkins University Press, Baltimore, Maryland (1971).

present New York City system consists of three upland reservoir systems: the Croton system,<sup>23</sup> the Catskill system,<sup>24</sup> and the Delaware system, yielding approximately 2 million acre-feet of water per year. Similarly, the Southeastern Oklahoma Basin provides the majority of water to the Oklahoma City metropolitan area. Interbasin transfers have also been proposed for Florida, Connecticut, and Virginia. Although distances covered by interbasin transfers in the eastern United States are not as great as those in the West, interbasin transfers have been essential to the urban growth and development along the East Coast.

## **II. Existing Problems Regarding Interbasin Transfers**

“Those who have water now seem to have begun to understand the basic creed of the have-nots: “(1) get it first; (2) get someone else to pay; and (3) if you have to pay, shift as much of the burden as possible away from water users.”<sup>25</sup> As briefly discussed in the introduction, there are significant areas of interbasin transfers that must be improved in order to utilize these transfers at their full potential. Climate change, although only a small part of the overall problem, is a huge factor affecting the efficiency and use of interbasin transfers.

During the mid-1970’s, many leading climate change scientists were warning of the significant problems that might arise from climate change, urging the government to avert disaster.<sup>26</sup> In 1988, in response to these scientific concerns, the World Meteorological Association and the United Nations Environment Programme established the Intergovernmental

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<sup>23</sup> This system was developed by New York City in steps from 1842-1904.

<sup>24</sup> This system was developed by New York City in steps – first drawing from the Ashokan reservoir in 1915, then moving to the Schorarie reservoir in 1924.

<sup>25</sup> J. Miller & D. Underwood, *Distributional Issues in Western Municipal and Industrial Water Supply*, Water Resources Bulletin 18(August):4 (1983).

<sup>26</sup> S. Weart, *The Discovery of Global Warming*, Harvard University Press, Cambridge, Massachusetts (2007).

Panel on Climate Change (IPCC). In 2007, the IPCC issued a trio of working group reports, which were later summarized into the final IPCC Fourth Assessment Report. The Working Group II (WGII) Report presented detailed impacts specifically on water resources systems.<sup>27</sup> The IPCC's WGII Report presented a grim forecast for the future of water resources, finding, in part:

- It is virtually certain there will be warmer and fewer colder days and nights; warmer/more frequent hot days and nights over most land areas. This is expected to have effects on water resources relying on snow melt; and cause increased evapotranspiration rates.
- It is very likely that the frequency of warm spells/heat waves will increase over most land areas. This effect is expected to increase water demand and aggravate water quality problems.
- The increased frequency of heavy precipitation events over most areas is very likely. This will have adverse effects on the quality of surface and groundwater, causing contamination of water supply.
- It is likely that the amount of area affected by drought will increase, causing water stress.
- Increased evidences of extreme high sea level will likely increase, causing decreased freshwater availability due to saltwater intrusion.

It is clear that climate change, and the concurrent problems that accompany it, will affect water sharing in many of the same ways it will affect water that is contained within a specific legal jurisdiction. These effects are mainly seen on an environmental scale, but also present questions that must be answered in order to effectively utilize interbasin transfers in the future. Both of these topics will be addressed in the following sections.

a. Ecological Impact

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<sup>27</sup> Working Group II (WGII), "Climate change 2007: Climate change impacts, adaptation, and vulnerability, summary for policymakers," *IPCC WGII Fourth Assessment Rep.*, (2007).

Since the adoption of the National Environmental Policy Act (NEPA)<sup>28</sup> and its many state “little NEPA’s,” large-scale interbasin transfers have come under sharp attack for their environmental impacts. Removing water from its basin of origin can have devastating environmental consequences. As the National Academy of Sciences has documented, both aquatic and terrestrial environments may be affected. With respect to the former, aquatic degradation includes harm to instream flows, wetlands, water quality, riparian habitat, and aesthetic qualities.<sup>29</sup> As an example, the previously discussed Owens Valley<sup>30</sup> experienced serious environmental degradation as a result of decades of water removal by Los Angeles. The exposed Owens lakebed developed into a source of toxic air pollution, leading one journalist to report, “[t]he lake’s salty, mineral-laced basin has been the largest single source of particulate pollution in the country. It looks so otherworldly that it doubled as a desolate planet in the movie ‘Star Trek V: The Final Frontier’.”<sup>31</sup>

Terrestrial environments also suffer, leading to soil erosion, blowing dust, and tumbleweeds.<sup>32</sup> In the case of interbasin transfers involving groundwater, portions of the earth’s surface often simply give way:

In simple terms: The buoyancy of water underground helps hold up the sand and clay subsurface – a liquid hand pressing upward. When the water is gone, so is a key part of nature’s underpinning, not to mention nature’s glue – the moisture in the ground that holds loose soils together.<sup>33</sup>

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<sup>28</sup> Codified at 42 U.S.C. § 4321 (1970).

<sup>29</sup> National Resource Council, National Academy of Science, “Water Transfers in the West: Efficiency, Equity, and the Environment” 38-39 (1992).

<sup>30</sup> Discussed above in Section I. b.

<sup>31</sup> Sahagun, *supra* note 17.

<sup>32</sup> See National Resource Council, *supra* note 29 at 38-39 (describing impacts of the sale of agricultural water and the concomitant retirement of irrigated lands).

<sup>33</sup> See Robert King, “Grounds for Concern,” St. Petersburg Times, July 21, 2001, at B1.

This process of land loss is known as “subsidence,” and has caused the earth’s surface to drop by nearly thirty feet in some locations.<sup>34</sup>

Perhaps the most obvious potential impact of interbasin transfers is the breakdown of geographic barriers between river basins and the introduction of nonindigenous aquatic organisms. These can include parasites, disease vectors, terrestrial and aquatic plants, plankton, invertebrates, and fish. The ecological impact of the introduction of exotic fish species as a result of interbasin transfers is often difficult to evaluate,<sup>35</sup> as interbasin transfers may impinge upon definitions of exotic species based on political<sup>36</sup> or biological<sup>37</sup> criteria. Although ecological concerns are of the utmost importance, they do not make up the entirety of the negative aspects associated with interbasin transfers.

#### b. Future Use

Interbasin transfers also bring up significant questions regarding the appropriateness of moving water resources. For example, when populations exceed the water supply in a particular region, is it the job of the government to bring water to the people, or to encourage the people to live within the carrying capacity of the land? Almost universally, states have chosen the first option, known as the Utility Concept, and assumed the responsibility to expand the water supply

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<sup>34</sup> See United States Geological Service, “Land Subsidence,” <http://water.usgs.gov/ogw/subsidence.html> (last visited April 20, 2010) (stating that “[m]ore than 80% of the identified subsidence in the Nation is a consequence of our exploitation of underground water”); Katie Carter, “Big Concerns: Subsidence Expert Warns Area Residents of Water Overuse,” *Houston Chronicle*, May 3, 2001, at 1.

<sup>35</sup> L. Laurenson, C. Hocutt, & T. Hecht, *An Evaluation of the Success of Invasive Species of the Great Fish River*, *J. Appl. Ichthyol.* 1(1989):28-34.

<sup>36</sup> P. Shafland & W. Lewis, *Terminology Associated with Introduced Organisms*, *Fisheries* (Bethesda) 9(4):17-18 (1984).

<sup>37</sup> L. Laurenson & C. Hocutt, *Colonisation Theory and Invasive Biota: The Great Fish River, a Case History*, *Environ. Monitor. Assess.* 6:71-90 (1986).

to meet whatever demands the future may pose.<sup>38</sup> Humans have thus far refused to accept the natural distribution of water as a limit upon where people can settle and build communities; rather than moving people to abundant water supplies, we have chosen to instead move water to the people.

Under the traditional riparian doctrine, the use of water was limited to those who owned land contiguous to a natural watercourse.<sup>39</sup> Early natural flow doctrine gave these riparian landowners the right to receive the flow of the stream past their land undiminished in quality or quantity.<sup>40</sup> During the 19th century, the natural flow doctrine began to give way to the more flexible reasonable use doctrine. Under that development, the right to use water remains tied to the ownership of riparian property, but riparian uses may alter the natural stream flow, provided that such uses do not interfere with the correlative rights of other riparians to make reasonable use of the watercourse.<sup>41</sup> Today, many jurisdictions that follow the reasonable use doctrine also invoke the watershed limitation; under this limit, water may be used on nonriparian lands, but

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<sup>38</sup> For an in-depth discussion of the idea that there are increasingly fewer limits to human settlement, see Dan Tarlock, *A Brief Examination of the History of the Persistent Debate About Limits to Western Growth*, 10 Hastings W.-N.W. J. Envtl. L. & Pol'y 155, 157 (2004), in which he states:

Limits to human settlement were an academic subject, but not a subject for serious policy. However, the limits question has now become the subject of serious, respectable debate as the role of government in promoting regional growth recedes at the same time that population growth in many short water areas continues to surge.

<sup>39</sup> Joseph Dellapenna, *The Right to Consume Water Under "Pure" Riparian Rights*, in Waters and Water Rights, § 7.02, Robert Beck, ed. (2001) (stating that the right to use water "pertains to the owner of riparian land, often on the basis . . . [of] protecting the 'natural advantage' which goes with the land.").

<sup>40</sup> *Id.* at § 7.02(c) (Under the natural flow theory, "each riparian owner on a waterbody is entitled to have the water flow across, or lie upon, the land in its natural condition, without alteration by others of the rate of flow, or the quantity or quality of the water.").

<sup>41</sup> *Id.* at § 7.02(d). See also, general class discussion in Water Law this semester.

only if those lands are located within the same watershed as the source from which the water was removed.<sup>42</sup>

Some of the strongest support for the watershed rule comes from western states in hybrid jurisdictions that follow a mix of both riparianism and prior appropriation. These states traditionally try to reduce the land base to which riparianism applies, thus reducing the acreage to which the watershed rule potentially attaches.<sup>43</sup> Today, however, the Restatement (Second) of Torts rejects the watershed limitation.<sup>44</sup> Some states have followed suit. Among common-law riparian states, four allow interbasin transfers under some conditions; similarly, at least 14 states following a statutory version of riparianism also allow interbasin transfers under some conditions.<sup>45</sup>

These rules and practices are far from set in stone, especially when viewed in the context of urban water supply. Common-law riparian states have recognized various exceptions to allow cities to secure water supplies; for example, New York City uses relatively rural upstate basins to supplement its local water supply.<sup>46</sup> In contrast to the riparian states, the western doctrine of prior appropriation not only allowed water to be transported from its source, it went so far as to

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<sup>42</sup> *Id.* at § 7.02(a)(2).

<sup>43</sup> *Id.* (stating “Western courts have embraced the watershed rule strongly because the rule tend to diminish the land to which a riparian right applies.”).

<sup>44</sup> *Restatement (Second) of Torts*, § 43, cmt. d.

<sup>45</sup> American Water Works Association, *Water Rights of the Eastern United States*, at 72, Kenneth R. Wright, ed. (1998) (Of the common-law states, it appears that the following have relaxed, or do not follow, the watershed limitation: New Hampshire, Ohio, Pennsylvania, and Rhode Island. The statutory riparian states following a similar practice include: Arkansas, Connecticut, Delaware, Florida, Georgia, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Mississippi, New Jersey, New York, and Virginia.).

<sup>46</sup> Timothy Weston, et al., *Adequate Water Rights and Enhancing the Supply*, at 72 in Water Rights of the Eastern United States, Kenneth R. Wright, ed., American Water Works Association (1998) (describing “a network of reservoirs, aqueducts, and pipelines, [that transfer] up to 800 [million gallons per day] from the Delaware Basin to the city’s Hudson Basin service area”) (citing *New Jersey v. New York*, 347 U.S. 995, 997 (1954)).

require some sort of diversion or removal to perfect an appropriation. In 1882, for example, the Colorado Supreme Court forcefully rejected the riparian doctrine, noting the “disastrous consequences” that it would bring upon the western states:

The climate is dry, and the soil, when moistened only by the usual rainfall, is arid and unproductive; except in a few favored sections, artificial irrigation for agriculture is an absolute necessity. [We have always encouraged] the diversion and use of water in this country for agriculture; and vast expenditures of time and money have been made in reclaiming and fertilizing by irrigation portions of our unproductive territory. Deny the doctrine of . . . superiority of right by priority of appropriation, and a great part of the value of all this property is at once destroyed.<sup>47</sup>

In fact, several western states made it constitutional to divert water out of natural watercourses for use on distant lands or in distant watersheds.<sup>48</sup>

Under today’s prevalent western doctrine, interbasin transfers are quite common. In 1990, a survey revealed that each of the 17 states following the appropriation doctrine for surface water allocation allowed for the buying and selling of water rights independent of land.<sup>49</sup> The prior appropriation doctrine supports the free movement of water, divorced from its landscape of origin.

As discussed above, interbasin transfers have a significant ecological impact on both the transferring and receiving basins.<sup>50</sup> In some cases, courts have been apologetic for any ecological damage they were facilitating through a grant of an interbasin transfer. For example, the 8<sup>th</sup> Circuit in *Empire Water & Power Co. v. Cascade Town Co.* held that the owner of a

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<sup>47</sup> *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 446 (1882).

<sup>48</sup> Christine A. Klein, *The Constitutional Mythology of Western Water Law*, 14 Va. Env’tl. L.J. 343, 344 (1995).

<sup>49</sup> American Water Works Association, *Water Rights of the Fifty States and Territories* 32-33, Kenneth R. Wright, ed. (1990) (In contrast, only 15 of the 28 states allocating surface water rights under the riparian doctrine allowed for the purchase and sale of water rights.) *See also*, Natural Resources Center, *Transferring Water Rights in the Western States – A Comparison of Policies and Procedures* 53-62 (1989).

<sup>50</sup> *See generally* Section II. a. of this paper.

tourist resort was “not entitled to a continuance of [certain waterfalls] solely for their scenic beauty,” but observed that “if the attention of the lawmakers had been directed to such natural objects of great beauty [it may be that] they would have sought to preserve them, but we think the dominant idea was utility, liberally and not narrowly regarded, and we are constrained to follow it.”<sup>51</sup>

On the other hand, some courts have clearly and unapologetically chosen economic development over ecological integrity. In *United States v. New Mexico*,<sup>52</sup> the United States Supreme Court reviewed a general stream adjudication by the State of New Mexico, through which the state had allocated water rights to users of the Rio Mimbres. The Court noted the competing interests, mainly between ecological and industrial purposes, and considered “what quantity of water, if any, the United States reserved out of the Rio Mimbres when it set aside the Gila National Forest in 1899.”<sup>53</sup> The Court held that aesthetic, environmental, recreational, or wildlife-preservation uses were not among the primary purposes for which forests were established and water rights reserved.<sup>54</sup> The Court therefore rejected the claims that Congress intended in 1899 to reserve sufficient water for wildlife purposes and to maintain a minimum stream flow to preserve fish.<sup>55</sup>

In dissent, Justice Powell stressed the ecological loss that could result if we continue to separate water from the land:

I do not agree . . . that the forests which Congress intended to “improve and protect” are the still, silent, lifeless places envisioned by the Court. In my view,

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<sup>51</sup> 205 F. 123, 129 (8th Cir. 1913).

<sup>52</sup> 438 U.S. 696 (1978).

<sup>53</sup> *Id.* at 698.

<sup>54</sup> *Id.* at 707-08 (The Court mentioned three competing interests in the creation of the Gila National Forest: to conserve water flows, to furnish a continuous supply of timber for the people, and to improve and protect the forest.)

<sup>55</sup> *Id.* at 715-17.

the forests consist of the birds, animals, and fish – the wildlife – that inhabit them, as well as the trees, flowers, shrubs, and grasses. I therefore would hold that the United States is entitled to so much water as is necessary to sustain the wildlife of the forests, as well as the plants.<sup>56</sup>

As we move forward into a future that will certainly include continuing development of interbasin transfers, we must keep in mind Justice Powell’s words of dissent, as well as his hope that the transferring basin be allowed to retain the water necessary to prevent ecological destruction.

There has been significant litigation regarding interbasin transfers since the early cases mentioned above. Several states have enacted legislation aimed at preventing the transfer of water out of state; such laws, however, have serious constitutional defects because of the United States Supreme Court holding in *Sporhase v. Nebraska ex ref. Douglas* that water is an article of commerce and, as such, may be sold and transported across state lines.<sup>57</sup>

States may regulate commerce in water to the extent that their regulations do not conflict with federal laws or unduly interfere with, burden, or affect interstate commerce. The United States Supreme Court narrowly interpreted this language in *Arizona v. California*, in which it held that states may not establish priorities that conflict with federal priorities for the use of water.<sup>58</sup> A recent local example involved the efforts of South Dakota to sell some of its water from the Oahe reservoir to a private company for use in a pipeline that would convey coal slurry from Wyoming to Arkansas. Downstream states successfully opposed this sale on a navigation issue; based on this case, it would appear that a state might be unable to prevent a similar transfer among private parties unless it could demonstrate that there was a compelling state interest in

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<sup>56</sup> *Id.* at 719 (Powell, J., dissenting in part).

<sup>57</sup> 458 U.S. 941 (1982).

<sup>58</sup> 373 U.S. 546 (1963).

preventing the sale. Conceivably, a state could prevent transfers when the cumulative impact of those interbasin transfers on the state's own water needs reaches a critical point.<sup>59</sup>

### *Conclusion*

A study of interbasin transfers shows that such undertakings are certainly not new. The feature which does, however, distinguish current and future proposals from past projects is size – a characteristic which leaps by factors of ten or more between the largest existing interbasin transfers and typical current proposals. In the United States, at least, this difference in size, combined with a steadily improving economy and a population whose attention is turned toward economic growth, implies conflicts over interbasin transfers of an intensity not traditionally encountered.

There are numerous alternative sources from which additional water can be extracted for use in arid regions, including loss reduction, wastewater reclamation, desalination, evaporation retardation, transfers from agriculture to higher-valued uses, and even the development of new water treatment processes.<sup>60</sup> Several of these options promise large additional supplies of water at costs lower than those of large-scale transfers. Especially promising is the proposal for wastewater reclamation. Through the use of wastewater reclamation, the current potential for Southern California is at least 700,000 acre-feet per year, nearly equaling the amount of

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<sup>59</sup> For further analysis of this point, see *Kleppe v. Sierra Club*, 427 U.S. 390 (1976).

<sup>60</sup> For an example of a potential future source of water treatment, see Logan L. Hollers, *The 'Green' Solution; Algae as a Future Energy Source* (2009).

Colorado River water that Southern California may ultimately have to give up other Colorado River users.

Continued reliance upon “new” water or sources may provide a type of water security that is more illusory than real.<sup>61</sup> An appropriate analogy is presented by another supply and demand problem: reducing traffic congestion. Transportation planners generally agree that “we cannot build our way out of congestion.”<sup>62</sup> That is, as new roads are built, more drivers use the new roads until traffic is moving no more quickly than it was before the construction. In addition, new roads attract new development, which in turn attracts more traffic.<sup>63</sup> Likewise, parties involved in interbasin transfers must recognize that they cannot “build” their way out of water shortages simply by developing new infrastructure and new water supplies. In order to effectively utilize interbasin transfers, we must change the default presumption that we are able to move water to the people and support growth at all costs, and encourage communities to rely upon the resources provided by their own watershed.

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<sup>61</sup> See Denise Fort, *Keep Your Money: Let the West Pay for Its Own Water Projects*, 27 Pub. Land & Resources L. Rev. 15, 19 (2006) (arguing that federal subsidies for additional water supplies “lead people to use water as though it were freely available, to move to areas where there isn’t sufficient water, and to plan for future growth, lulled into a false confidence that water supplies are sustainable”); A Dan. Tarlock & Sarah B. Van de Wetering, *Western Growth and Sustainable Water Use: If there are No “Natural Limits,” Should We Worry About Water Supplies?*, 27 Pub. Land & Resources L. Rev. 33, 38-39 (2006) (noting that “water supply has seldom been a factor in local government land use planning,” which “reflects both the longstanding assumption that humans can and should overcome any natural constraints on progress and the availability of large blocks of stored, cheap federal water to buffer cities in time of shortage”).

<sup>62</sup> See, e.g., Testimony on Peak-Hour Traffic Congestion Before the Senate Committee on the Environment and Public Works (Anthony Downs, Senior Fellow, Brookings Institution), May 19, 2002; but see Peter Samuel, *How to ‘Build Our Way Out of Congestion’: Innovative Approaches to Expanding Urban Highway Capacity*, Reason Public Policy Institute (1999) (challenging this conventional wisdom).

<sup>63</sup> Testimony on Peak-Hour Traffic, *supra* note 62.

If our decision-makers are to arrive at rational decisions concerning proposals for interbasin water transfers, which in some instances call for the expenditure of several billions of dollars, a considerable quantity of information is needed. Because questions of interbasin water transfers are obviously multidisciplinary in nature, rational decision-making will require facts to be determined and clearly presented by experts of various disciplines. Hopefully, positive analyses by individuals of relevant disciplines will represent an important ingredient in ascertaining such facts. Current environmental decisions will certainly extend across political boundaries. Therefore, parties to a water sharing agreement must take into account the environmental impacts of interbasin transfers and recognize that the water sharing agreement may need to be adapted, or even significantly altered or replaced, so as to most effectively, efficiently, and equitably serve the needs of both the transferring and receiving basin.