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NatAgLaw@uark.edu • (479) 575-7646

An Agricultural Law Research Article

**The Future of Prior Appropriation  
in the New West**

by

A. Dan Tarlock

Originally published in NATURAL RESOURCES JOURNAL  
41 NAT. RESOURCES J. 769 (2001)

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A. DAN TARLOCK\*

# The Future of Prior Appropriation in the New West

*We water guys never confront the hard issues....We find a temporary fix and hope we're retired before we have an answer for it. Then if our kids are attorneys, they can make a living sorting it out.<sup>1</sup>*

*Basic twentieth century New Mexico water law was built on two bedrock principles, beneficial use and prior appropriation....State Engineer Steve Reynolds believed in the first principle and disliked the second so much that he disregarded it....Priority of appropriation struck Reynolds as a silly way of apportioning short supplies in New Mexico.<sup>2</sup>*

## I. INTRODUCTION: THE OLD VERSUS THE NEW WEST

### A. The Old West and Prior Appropriation

It is a truism to say that water has always been central to the development of the West from the earliest recorded Indian settlements to the present. The persistent fear that there will not be adequate, reliable supplies to support existing and future demand distinguishes the West from other regions of the country. Historically, institutions that control access to water have played a central role in the politics and culture of the West. Prior appropriation has been the primary institution for the development and use of western water, but it is an institution under stress. Thus, it is legitimate to ask, what is the future of prior appropriation? I believe that the more appropriate question, however, is, how will the doctrine continue to evolve?

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\* Professor of Law, Chicago-Kent College of Law. A.B. 1962, LL.B. 1965 Stanford University. Research for this essay was funded by a grant from the Chicago-Kent Law School's Marshall Ewell Fund and the law school's support is gratefully acknowledged. This essay is an expanded version of the first annual Albert E. Utton Memorial Water Lecture, sponsored by the New Mexico Water Resources Research Institute, New Mexico State University. This lecture was delivered at the 46th Annual New Mexico Water Conference in Santa Fe, New Mexico, December 6, 2001. I would like to thank the efficient Institute staff for making my trip to Santa Fe so pleasant and Professor Em Hall for organizing the lecture and for his many insightful editorial suggestions. The late Al Utton was a water and international law scholar of uncommon breadth and humanity, and I am privileged to play a small part in perpetuating his legacy. All errors of fact and judgment, of course, remain mine.

The distinguishing feature of prior appropriation is its continual evolution in response to a changing West. Because prior appropriation is grounded in both abstract principles of justice and hard experience, it has constantly had to adapt to changed conditions. The doctrine is conventionally traced to the gold mining camps of California and Colorado and the early Colorado irrigation settlements.<sup>3</sup> It originally functioned as a simple, judicially enforced, system to divide small streams for a region sustained by mining, livestock grazing, and eventually irrigation. It did so by creating private rights in a historic public resource, running water,<sup>4</sup> and by imposing minimal sharing rules through the beneficial use doctrine, providing at least the illusion of a clear allocation rule in times of shortage.<sup>5</sup>

Prior appropriation's basic principles, priority and beneficial use, have remained constant, but the doctrine's function and application began to change as the region grew. By the early twentieth century, prior appropriation had evolved into an administrative system to allocate unused waters on entire stream systems, to protect the rights of third parties potentially injured by new appropriations or transfers, and to assert a public interest in how increasingly scarce waters were allocated.<sup>6</sup> Prior appropriation was so entrenched in the West by the end of the nineteenth century that it allowed western states to limit the federal government's role for most of the twentieth century to that of a water provider to state water right holders at subsidized rates.<sup>7</sup>

The evolution from a simple set of judicially created rules to a statutory permit system reflected the transition of the West from a livestock grazing, mining, and dry farming economy to an increasingly large-scale irrigation society with urban oases supported by aqueducts and multi-purpose dams providing carry-over storage and hydroelectric power. Prior appropriation, especially as it was incorporated into the law of equitable apportionment, permitted the storage of water in progressively larger carry-over storage reservoirs and thus allowed the western states to buffer (armor, actually) themselves against both chronic aridity and the cycles of rain and drought that plague other parts of the region. The state's interest in water allocation increased as the West grew, but the legal impact of this evolution was muted during most of the twentieth century. If one were to simply read the cases, prior appropriation's progress would merely be from an underdeveloped to a mature body of law as reflected in the great early twentieth century Kinney and Wiel treatises.<sup>8</sup> But, the focus on the formal law ignores the significant changes in its function.

One of the ironic features of prior appropriation is that in each era the doctrine has led to developments that ultimately undermined it. The first engine of fundamental change was the Reclamation Era, which lasted roughly from the 1890s to the mid-1970s. Initially, the goal of federal policy was to settle the West with irrigated family farms. To this end, support for irrigated agriculture became a national priority. The Reclamation Program

constructed dams to provide wide margins of safety for recurring periods of drought and highly variable rainfall patterns and thus permitted farmers to extend the irrigation season. The drafters of the Reclamation Act initially assumed that federal support would be limited to the necessary loans to construct project facilities that would be managed for and by the benefit of farmers<sup>9</sup> with minimal federal involvement. Massive federal subsidies were necessary, however, to sustain the program. Large multiple-purpose carry-over facilities were constructed in all western states to firm up western water rights.<sup>10</sup>

These carry-over storage facilities substantially reduced but did not eliminate the risks of shortages, but, more importantly, the switch from a direct diversion to a storage water allocation system has had a profound impact on the doctrine of prior appropriation.<sup>11</sup> The carry-over storage reservoirs, which backstop water rights, not the law, are the main reason that water rights are relatively firm regardless of the water year. Dams made it increasingly unnecessary to enforce water rights in the rigorous manner that the doctrine suggests and helped produce the culture of non-enforcement of the beneficial use doctrine.<sup>12</sup> The threat of priority enforcement decreased substantially. Water rights became more of a general water entitlement to use water rather than the right to a specific quantity used in a non-wasteful manner as specified by the formal doctrine. As a result, prior appropriation became more and more of a shadow doctrine. Increasingly, the federal government became the water master on large rivers such as the Colorado, Missouri, and Columbia.<sup>13</sup> Federal and state contracts often became the real allocation rules, and because of this, water users were finding out their rights were often less secure than previously assumed.<sup>14</sup>

## **B. The New West and Prior Appropriation**

There is now a substantial gap between the formal and the actual practice of prior appropriation. By the end of the twentieth century, the doctrine had evolved from a simple allocation instrument into a mature mixed administrative-property regime. At the same time, the West had completed the transition from an eastern United States and European colony to a powerful economic region fully integrated into the global economy. This transition also roughly coincided with the environmental movement, which focused attention on the ecological costs of a decade of dams and diversions. The previously heretical, wasteful riparian idea that some of a stream's flow should be left in place began to garner considerable scientific and lay support.<sup>15</sup>

Leaving water "in place" would have been incomprehensible to almost all nineteenth-century westerners because it represented the waste of a valuable resource, but students of Western water policy have identified

aquatic ecosystem restoration as a key future challenge.<sup>16</sup> There is a similar widespread realization that the dams and diversions made possible by prior appropriation are the cause of the degradation.<sup>17</sup> As the West has changed from a raw commodity production colony to an urban region fully integrated into the global economy, prior appropriation has been increasingly criticized. The principal criticisms are that perpetual “use it or lose it rights” lock too much water into marginal agriculture and generally encourage inefficient off-stream consumptive uses to the detriment of aquatic ecosystem values and the needs of growing urban areas. Critics have either pronounced the doctrine dysfunctional or dead<sup>18</sup> or argued that it should be replaced by non-perpetual permit systems that better value consumptive and instream uses.

One of the reasons for the gap between form and practice is that the state stewards of the doctrine have been slow to respond to a changing West. The West is the most highly urbanized region of the country in contrast to the mythical rural frontier. States have fallen behind the curve in environmental protection and the inevitable economic rationalization of irrigated agriculture.<sup>19</sup> The federal government has taken up some of the slack. The federal interest in water allocation has progressed beyond the protection of Indian reserved water rights and the misguided attempt to enforce a 160-acre limitation, mandated by federal Reclamation Law and including pollution abatement and the conservation of endangered species. These programs give the federal government the power to assert regulatory water rights. These rights arise because the duty to comply with federal environmental mandates trumps the exercise of state water rights.<sup>20</sup> The assertion of new federal regulatory waters threatens to displace partially the law of prior appropriation. Public and private stakeholders have recently begun to cooperate to find ad hoc, “out of the box” solutions to specific river basin problems<sup>21</sup> in order to avoid the draconian application of the Endangered Species Act that finally occurred in the Klamath Basin in the drought summer of 2001.<sup>22</sup>

The flow of water from rural to urban areas has further widened the gap between the form and reality of prior appropriation. At its core, prior appropriation is a law of irrigation rights, but irrigated agriculture’s future is one of stable or declining acreage. As growing urban areas and environmental interests scrambled for new and temporary supplies, water markets emerged as a major allocation force, using appropriative rights as a measure of compensation. To the dismay of many irrigators, property rights became a dual-edged sword. Irrigators venerated the security that their water rights provided but were dismayed when another equally entrenched characteristic of a property right, alienability, became the instrument of change.<sup>23</sup>

Water markets are the logical consequence of the West’s faith in the benefits of unlimited growth. The combination of prior appropriation and

federal and state water project construction allowed the once lightly populated West to court successfully unlimited growth to induce permanent and economically sustainable settlement in an inhospitable and resources-constrained region.<sup>24</sup> The Reclamation Era, characterized by large-scale water resources development projects in the name of regional equity, has ended, but the population growth that it helped induce is accelerating. With the exception of much of the Great Plains, which is now reverting to frontier status, most of the fastest growing states and counties are in the West.

The "new" West is economically and socially different from the "old" West, and these differences have important implications for the future direction of water policy. The old West, with the exception of the Pacific Coast states, was an eastern and European colony that struggled to sustain itself with a partially federally-subsidized economy based primarily on raw commodity production: timber and minerals, irrigated agriculture (and dry farming), and livestock. Growth had to be induced to settle what remained a sparsely populated area except for the urban oases that developed to support the economy.

The new West is characterized by a series of population centers that now include Boise, Salt Lake City, Spokane, Denver, Colorado Springs, Las Vegas, Sacramento, Eugene, El Paso, Dallas, Houston, Albuquerque, Tucson, Phoenix, and Missoula. In the new West there is no need to induce growth; it is happening.<sup>25</sup> The new West is growing for the very reasons people were originally deterred from settlement of the region—its harsh climate and rugged, often bleak, non-European landscape.

The new West's "commodities" have similarly changed to include its climate, mountain and desert wilderness areas, scenery, free-flowing rivers, and open space, combined with the public and private transportation, educational, and medical infrastructure to support what millions perceive as a high quality of life.<sup>26</sup> For my purpose, the most important point about the new West is that it is *relatively* less dependent on irrigated agriculture and raw commodity production generally. Irrigated agriculture remains especially important in California, Idaho, Washington State, and the western High Plains, but acreages are likely to stabilize or decline throughout much of the West.<sup>27</sup>

The new West will inevitably produce changes in prior appropriation, but the changes will be more subtle because they will be more ones of practice than of form. Prior appropriation remains deeply entrenched in the states and in the courts. In fact, as federal and state water policy becomes increasingly decentralized and directionless, the strict enforcement of water rights assumes an even greater importance.<sup>28</sup> For example, to the surprise of many, the California Supreme Court recently actually applied the doctrine to a groundwater dispute with more vigor than it had in decades.<sup>29</sup> As many students of western water policy have

observed, however, the doctrine's importance as a water allocation driver has decreased in the past decades.<sup>30</sup> Both the traditional state and federal roles in water allocation have diminished as the Reclamation Era has come to an end. Water politics are no longer the two-party federal-state negotiation so ably practiced by the late Stephen Reynolds.<sup>31</sup> More and more the states and federal government are likely to be one of a number of stakeholders participating in ad hoc, basin-wide re-allocations.

The new West's rapid growth and transition to a post-modern economy would be a sufficient stress for any nineteenth century institution, but the hydrological foundations of the doctrine—variable climate and severe but ultimately time-limited droughts—may be further undermined by the uncertainties of the regional and watershed impacts of global climate change. There is a growing scientific consensus that the earth's climate is warming and that this warming can distort "normal water allocation" patterns. The precise impacts on specific water resources are difficult to predict because the climate change models suggest that the impacts of climate change will vary greatly among the earth's regions. Any watershed or river basin prediction must deal with high levels of hydrologic, economic, and political uncertainty; however, the general risks that arid areas face can be stated with some confidence. A recent IPCC assessment concluded that "warmer temperatures will lead to a more vigorous hydrologic cycle...." A 2001 report of the United States National Academy of Sciences/National Research Council predicts that the most severe impacts will be "drier than average conditions...."<sup>32</sup>

It is difficult to formulate a response because both the amount and timing of rainfall may change but the geographic and temporal scale of the change is uncertain. Some regions may experience decreased precipitation and more extended droughts. Areas with present abundant supplies may face new conflicts because of the combination of population pressure and decreased annual runoff. Other regions will see increased precipitation and more frequent and more severe floods. Increased precipitation is not necessarily a blessing because it may not translate into more available water supplies in all regions. In water-short areas with historically variable rainfall patterns, increased precipitation may actually exacerbate efforts to provide reliable water supplies. More precipitation may fall as winter rain rather than snow, and thus the snowpacks may melt earlier as warmer average temperatures mean that spring runoffs will come earlier and evaporate faster. In addition, states and regions may have to adapt to ecosystem changes and these must be factored into any adaptation strategy. This will be difficult at the present time because the state of climate change research does not permit managers to go from large-scale models to specific watersheds and from watershed models to regional predictions. Prior appropriation is a potential adaptation strategy because

it is a risk allocation and reallocation system but the ability of the system to respond to a radically altered climate has never been tested.

### C. The Future of Prior Appropriation: Real or Shadow Doctrine

The net result of these stresses will be to solve water allocation problems at a larger geographic scale, at either a basin or watershed level. It will be necessary to deal simultaneously with both private and public claims in ways other than through the simple determination and enforcement of prior rights. The question naturally arises, is prior appropriation well suited to the solution of large, multi-state holder allocation disputes that will characterize the new West? The argument that prior appropriation locks too much water into inefficient agricultural uses<sup>33</sup> and does not make enough water available for growing cities and ecosystem restoration<sup>34</sup> is a powerful one, but, in the end, it does not support the abolition or even substantial modification of the doctrine. The beauty of prior appropriation is that it can function in both regulatory and market environments and in conditions of stability as well as flux. There is a powerful argument that the system has created such strong expectations that its future evolution will be limited to the strict delineation and enforcement of prior rights, be it state-created or federal substitutes; however, I do not think that this scenario is sustainable in the long run.

In my opinion, the doctrine of prior appropriation will continue to change because the underlying economic and social changes occurring in the West are too powerful to lock it into place. Instead, the gap between the form of the doctrine and the actual allocation of water will continue to grow. During the Reclamation Era, federal subsidies and state law shielded water users from the full force of the market. In the new West, at least for the foreseeable future, markets and basin-specific institutions rather than state and federal policy will be the major allocation drivers. Prior appropriation will continue to function as the formal allocation rules for water, but the carefully constructed scheme of preferences and allocation rules will neither be an accurate reflection of actual allocation patterns nor of many of the new entitlements.

In the future, prior appropriation will function primarily as (1) a default rule to resolve small-scale conflicts, (2) a worst case enforcement scenario in complex allocation negotiations to encourage parties to find creative ways to avoid its actual application through cooperative management regimes and other sharing arrangements that accommodate a wide range of competing demands, and (3) a rule of compensation when water is voluntarily transferred or to inform the constitutional analysis when water is involuntarily reallocated.<sup>35</sup>

Most of these functions can be accommodated within the existing doctrine, but some changes in the doctrine may be necessary to support the



transition to the new West. Specifically, to support out of the box solutions, more explicit risk elements must be incorporated into water rights. All water rights are subject not only to the fixed risks of established rules such as priority but also to additional risks created by new demands on the system. In the future, the focus should be on the actual expectations that lie behind a use, rather than the perpetual enforcement of the entitlement, so that alternative ways of satisfying those expectations in ways that accommodate new uses can be found. To support my thesis, I first examine the reasons that I think that prior appropriation will endure in form and then set forth my argument that the substance of prior appropriation will be different from the original system.

## II. THE ENDURING STRENGTHS OF PRIOR APPROPRIATION

As with the Eternal, if prior appropriation did not exist, the West would have to invent something some thing close to it. Thus, many of the past strengths of the doctrine will endure. Any water allocation regime requires a set of reasonably predictable property rules. For this reason alone, prior appropriation is likely to be part of the western landscape for the foreseeable future. The doctrine's primary strengths are that it is the law of water allocation in most of the West; the law is deeply imbedded in history, at least the received history and culture of the West; it is somewhat flexible; and the alternatives are not appealing. Thus, the prospect of wholesale change is unlikely. The political costs of such change would be very high and the potential benefits uncertain at best. Change will come by plowing around the doctrine rather than plowing it under.

### A. It Is the Law

Prior appropriation remains the primary water law of the western states and is likely to remain so for the foreseeable future. There is no strong, organized constituency advocating its replacement. Prior appropriation sustains itself because it is both a law of rules and a law of standards and it has a limited capacity to adapt to changed conditions. Prior appropriation was initially developed as a fair and efficient risk distribution scheme for a regime of many small-scale irrigators in arid and semi-arid areas. The federal government was never able to develop a land and water policy suited to the West, but the western states ultimately developed a system to allocate the region's variable supplies to promote investment in agriculture and urban development. As the late Frank J. Trelease observed, "[t]he rule of priority does guarantee a firm supply for all for whom the source is sufficient, and the senior irrigators can build a stable agriculture unmatched in humid states."<sup>36</sup>

Prior appropriation continues to allow courts to resolve relatively simple disputes with minimum judicial discretion. The importance of rules, as well as their cost, is illustrated by a recent case that limited the power of the federal government to distribute the water of a Reclamation project out of priority even though the Bureau of Reclamation had done so for a long time. The court held that the Warren Act,<sup>37</sup> which allows the sale of surplus water from Bureau of Reclamation reservoirs, precludes the Bureau of Reclamation from making a pro rata or equal distribution between prior right holders and Warren Act contractors different from that spelled out in a Bureau-District contract.<sup>38</sup> The fact that users have previously consented to the altered enforcement regime was found to be a basis for demanding strict adherence to priority. In the court's opinion, a contrary result would discourage short-term sharing agreements premised on the right to insist on strict enforcement of priorities in the future.

## B. It Is Somewhat Flexible

At the same time, prior appropriation can function as a flexible doctrine that allows the creation of new rights and allows courts to temper its harsh edges to facilitate new uses in situations where priority does not work well.<sup>39</sup> The doctrine has endured in part because it is able to accommodate new users and to adapt to the increasing scale of use. For example, when hydroelectric power generation developed in the twentieth century, the industry was able to use the water in the higher elevations before it spilled into the agricultural valleys. Special rights for cities,<sup>40</sup> groundwater mining, and fish (instream flow rights),<sup>41</sup> which were not part of the original irrigation economy, have been created.

The long-standing practice of not enforcing groundwater priorities is a prime example of the doctrine's flexibility. Priority enforcement is often not used when the economic costs would be unacceptably high. Groundwater priorities are seldom enforced in groundwater basins because strict enforcement would virtually preclude new wells and severely limit agricultural development and present intractable enforcement problems.<sup>42</sup> While the justice of this practice is questionable, prior appropriation's greatest flexibility, water marketing, is less so.

Water rights, despite their usufructuary character, have always been treated as transferable property rights. Transfers are not always easy because of the original vision of the West as a land of small, irrigated farms. Courts and administrative agencies sometimes impose costly restrictions on water transfers.<sup>43</sup> The merits of water marketing, however, are now well established throughout the West, even though they are not occurring at the rate that economists and other enthusiasts would like.<sup>44</sup> A major study of water transfers in six states concludes that—with the exception of lawyer-

dominated Colorado<sup>45</sup>—the current transaction costs of water transfers are not excessive.<sup>46</sup> The real barriers are political, not legal.<sup>47</sup>

Flexibility can undermine security, but the paradox is resolved when one recognizes that prior appropriation, backed by carry-over storage, creates a sufficient illusion of security to stimulate investment. One of the hidden virtues of prior appropriation is that priority exists more as a threat than an actual enforcement practice.<sup>48</sup> Water rights exist within a community of users who can tolerate equitable adjustments, and thus the case for a narrow, fixed rule is less compelling than has traditionally been assumed.<sup>49</sup>

Scattered empirical evidence confirms this assertion. Watermasters who report to the Oregon Department of Water Resources regulated 265 streams in 1998 and reported 7,663 regulatory actions.<sup>50</sup> However, only six violation notices were sent to users, eight formal enforcement orders were issued, and no cases were referred to Salem for formal enforcement. The Department offers two reasons for this low level of conflict. First, there is a 98 percent voluntary compliance rate in the state that is achieved "not without a substantial investment of time by field regulatory staff." Second, "[w]atermasters spend a lot of time during regulation negotiating voluntary reductions, rotations or compliance schedules with water users. Often senior right holders volunteer to use less than their entitlement so that junior users are not completely shut off."<sup>51</sup>

Oregon's experiment illustrates that in most water use communities, the costs of enforcing prior rights are often likely to be unacceptably high,<sup>52</sup> unfair, and disruptive of established uses—the very goal that priority seeks to achieve.<sup>53</sup> This has long been the case in California, which is famous for solving water allocation problems by constructing a massive water infrastructure and allocating water by large blocks, rather than by adjudicating and enforcing priorities. Even in litigious Colorado, however, priorities have been "softened" by the creative use of the beneficial use doctrine to allow new uses that increase the risk of shortage for existing right holders. Colorado, in contrast to states such as Texas<sup>54</sup> and Nevada,<sup>55</sup> does not determine whether unappropriated water is available by simply examining paper records but allows new appropriations on formally over-appropriated streams because the claimed or paper entitlement may not represent the amount of water actually put to beneficial use.<sup>56</sup>

### C. Consider the Alternatives

Prior appropriation also flourishes by default because the alternatives to priority are not appealing. There is, of course, little ethical or empirical basis for a rule that subsequent in time is prior in right.<sup>57</sup> The two principal alternatives are time-limited permit systems subject to public

interest conditions<sup>58</sup> or the ad hoc judicial adjustment of existing water rights to incorporate changed conditions, primarily instream flow demands. Opponents of prior appropriation have long argued that more flexible permit systems are necessary to balance public and private uses. Many humid states have moved to a weak form of regulated riparianism that overlays a permit system on the incoherent common law. To date, these systems have not created a property rights system that comes close to that created by prior appropriation and I do not think that the system delivered sufficient, if any, compensating benefits. Nor is there a strong case for a system that allows administrative, ad hoc, case-by-case equity or efficiency modification of permits in times of shortage.<sup>59</sup>

The limited experience with eastern permit systems, which allow an administrator the discretion to displace existing permits or to refuse to grant new ones, suggests that most states will follow a de facto priority system.<sup>60</sup> The most plausible alternatives are rules of equal use or public ownership and distribution. The first is perhaps the rule of riparian rights, which has been rejected in both the far West and increasingly in the humid east because any fairness benefits are outweighed by the extreme uncertainty of the rule. As the late Jacob Beuscher demonstrated years ago,<sup>61</sup> a close study of riparian rights cases reveals that courts generally find that the prior use is the reasonable use. The late Frank J. Trelease, long time dean of western water lawyers, managed, over vigorous objection, to make priority an element in the *Restatement of Torts (Second)* test of reasonableness.<sup>62</sup> Section 850A of the *Restatement of Torts (Second)* makes "the protection of existing values of water uses, land, investments and enterprises" one of the nine relevant factors to consider in determining the reasonableness of a use.

Ad hoc judicial intervention to reallocate water is not a satisfactory alternative to prior appropriation. The most well known alternative to a priority regime is use of the public trust doctrine to subordinate prior rights to subsequent public uses. California has invoked the doctrine to reduce vested rights when the exercise causes serious ecosystem damage.<sup>63</sup> Hawai'i has used the doctrine to instruct the state water resources agency to take its duty to protect instream flows more seriously when abandoned water uses are reallocated.<sup>64</sup>

The public trust doctrine reminds us that there has long been a public interest component to state water allocation and that state duties should extend beyond policing the distribution of private rights, but it suffers from two limitations that preclude reliance on it as a viable substitute for prior appropriation. First, the legitimacy of the trust remains in doubt. This is largely a function of the debate over the source of the doctrine and the failure of courts to articulate a coherent justification.<sup>65</sup> The uncertainty over the source may explain why, outside of California and

Hawai'i, states have refused to apply public trust principles to water allocation.

Additionally, the doctrine is too open-ended, uncertain, and potentially unfair to serve as an alternative basis for water allocation. "Blockbuster" decisions such as *National Audubon* or *In the Matter of Permit Applications* are useful to break political deadlocks and to jumpstart the process of finding creative compromises,<sup>66</sup> but resorting to public trust litigation exposes a deficiency in the state's water allocation policy that will ultimately have to be cured by a more comprehensive solution than a court can impose.

### III. WHY THERE IS LITTLE PRIORITY IN PRIOR APPROPRIATION

In this section, I examine one of the primary causes for prior appropriation's diminishing role as the primary driver of western water allocation. Classic prior appropriation has been gradually undermined by water users, especially large ones, who have had to confront the inefficiencies and inequities of the doctrine. I argue that the culture of non-enforcement is widely practiced, although less acknowledged for obvious reasons, and contributes to two inter-related consequences that diminish prior appropriation's historic allocation "primacy." First, the problems that water users have encountered in trying to solve watershed or basin-wide problems have led to more ad hoc solutions that modify prior appropriation. Second, prior appropriation has been diminished by federal laws that do not directly supplant the regime but impose additional constraints on the exercise of state water rights.<sup>67</sup>

#### A. Strict Enforcement May Be Unfair or Impracticable

Strict enforcement of priorities can be both inefficient and unfair. The strict enforcement of priorities tends to lead to inefficient use practices because the cushion of a senior right combined with the "use or lose it" rules, abandonment and forfeiture, create powerful incentives to use the maximum entitlement and to forego investments in water conservation infrastructure. Larry MacDonnell's study of two adjacent irrigation districts in the Yakima Valley of Washington State illustrates how inefficient it can be to protect firmly senior water rights. One district, the Sunnyside Division of the Yakima Project, has senior rights that go back to pre-Reclamation Act diversions; these rights are primarily non-pro-ratable and thus water is delivered according to pre-project priorities. The other, the Roza Irrigation District, has a contract with the Bureau of Reclamation that is pro-ratable among project beneficiaries. The Roza Division receives much less water compared to the Sunnyside Division in dry years and "has invested heavily in improvements in its water delivery and use systems in

order to take best advantage of the water supply available to it."<sup>68</sup> Similar situations exist throughout the West.<sup>69</sup>

Holders of instream flow appropriations may also find the rules of prior appropriation apply only to them, a manifestly unfair result. In Oregon, the Oregon Water Trust has been purchasing senior agricultural water rights for instream flow maintenance and reports that they are subject to much more rigorous change-of-use proceedings compared to non-instream use transfers. The simple reason is opposition to instream flow protection by the Oregon Farm Bureau and Cattleman's Association.<sup>70</sup> In short, there is full prior appropriation for fish, but not for irrigation.<sup>71</sup>

Fish also may suffer from other alleged and unfair non-enforcement practices such as water spreading. In the Pacific Northwest, there may be substantial deliveries of Reclamation Project water to non-project beneficiaries to the detriment of endangered salmon. In 1994, allegations of "water spreading," the delivery of water to ineligible or non-project lands, surfaced and the Clinton Administration formed a task force to eliminate the practice and recover past illegal benefits. In 1995, the Task Force was terminated and the problem was turned back to the regions, which is a prescription for inaction.<sup>72</sup> In the meantime, irrigators face neither priority enforcement nor serious implementation of the beneficial use principle.

The increasing inefficiency of strict priority enforcement of rights is well illustrated by the evolution of general stream adjudications. Beginning in the 1970s, many western states invested heavily in general stream adjudications to confirm existing appropriative rights, to quantify federal reserved Indian and non-Indian rights, and to improve the state's water information base. No one knows how many millions of dollars have been spent to accomplish these three objectives, but there is an emerging consensus that general stream adjudications are not necessary to accomplish any of these objectives. As John Thorson, the former Special Master in the Arizona Gila River General Stream Adjudication and keen student of the west-wide general adjudication experience, has observed, "[m]any western adjudications have gradually slid into obsolescence....Adjudications have not been able to stay ahead of the West's problems....[and] [w]ater users and public officials gradually realized they needed to work around the adjudications."<sup>73</sup>

## **B. Prior Appropriation Does Not Strictly Apply to Cities**

Cities have long been able to modify the aspects of prior appropriation that retard manifest destiny. They have been at the forefront of perfecting strategies to buffer themselves in times of shortages and thus minimize the possibility of priority enforcement. Urban centers were initially able to live on the water not needed for irrigation, and when this

was not enough, as was the case in the Owens Valley, ways were found to move the water to areas of demand. Over time, cities obtained a super-preference based both on law and superior resources. The strict enforcement of priorities is not likely to be applied against municipalities when push comes to shove. Equity and efficiency aside, it is unlikely that it will be politically acceptable to reduce substantially water deliveries to large cities based on the strict enforcement of priorities. In addition, cities have power and the financial capability and the legal authority to acquire large reserves to buffer them. For example, municipal appropriations are subject to lighter anti-speculative control compared to other appropriations. The "progressive growth" doctrine allows a city to perfect a water right based on its anticipated need for the water not in actual use.<sup>74</sup>

Cities also have a much greater capacity to adjust to short and long-term droughts through temporary quasi-voluntary rationing and demand management.<sup>75</sup> Some cities are facing potential shortfalls, but municipal capacity to sustain rapid population water growth is illustrated by the growing number of western cities that have, of necessity, begun to add water supply elements to their growth management plans. These elements do not depart substantially from traditional manifest destiny policies; they basically consist of growth accommodation rather than growth limitation policies.<sup>76</sup> For example, San Diego, California, faces the double problem of limited natural surface and groundwater supplies and a low priority Colorado River entitlement. The city has linked water supply and growth as part of its ongoing growth management program and has outlined a five-part strategy. In the future, San Diego will increasingly rely on a combination of (1) more efficient use of existing supplies, (2) demand management, (3) the reallocation of existing supplies through water marketing, (4) more limited new storage and distribution facilities, and (5) greater conjunctive ground and surface water use.<sup>77</sup>

The most extreme example of water planning and conservation as a strategy for unlimited growth accommodation is Arizona's 100-year assured water supply policy. This law builds off the traditional municipal super-preference and puts all other water users on notice that water markets will play an important role in meeting future urban demands.<sup>78</sup> The state's Groundwater Management Act<sup>79</sup> imposes a duty on all new developments, and thus on their municipal suppliers, to establish that there will be "sufficient water which will be physically available to satisfy the applicant's 100 year projected water demand."<sup>80</sup> The rules are structured to eliminate reliance on continued groundwater mining to establish an assured water supply. Initially, the rules set off a scramble to acquire agricultural water rights in remote counties, but more recently municipal suppliers have faced the inevitable and agreed to pay the high Central Arizona Project rates for Arizona's underused Colorado River entitlement. As Phoenix and Tucson have used more surface (CAP) water, municipal

water use has started to decline in part because of a wetter than average cycle, groundwater conservation, and increasing reliance on gray water for turf irrigation. In 2001, California followed Arizona's example and enacted legislation that requires that all new developments over 500 homes have a "sufficient water supply" consistent with 20-year projections contained in urban water-management plans.<sup>81</sup> Other cities are slouching toward the more radical step: marginal, rather than average, cost pricing to limit water use. El Paso, Texas, estimates the recoverable groundwater in its share of the Hueco Bolson, which it fought so hard to take from New Mexico,<sup>82</sup> will be depleted by 2025, but the cities of El Paso and Ciudad Juárez will grow to five million people. El Paso has implemented an aggressive conservation strategy including a seasonable excess-use rate structure. This inverted rate structure charges based on the customer's percentage use above their average winter consumption.

### C. The Larger the Allocation, the More Difficult It Is to Enforce Priorities

Continued western municipal growth illustrates another reason for the continued decline of the doctrine of appropriation. Prior appropriation applies to large as well as small amounts of water, but the larger the block, the less important priorities will be. There are many reasons for this assertion. First, large blocks of water come from carry-over storage reservoirs, and it takes a prolonged drought to produce shortages. Second, larger block holders will have the political clout to resist enforcement. Third, the larger the block, the easier it is for entitlement holders to absorb proportionate cutbacks.

The low risk of priority enforcement among large block holders is nicely illustrated by California's long success in diverting the Colorado River in excess of its priority. In 1922, the seven Colorado River basin states allocated the Colorado River between the two basins. Each basin was given 7.5 million acre-feet, and the lower basin states, Arizona, California, and Nevada, were given an additional 1 million acre-feet. In 1928, Congress passed the Boulder Canyon Project Act to authorize the construction of Hoover Dam. The three lower basin states could not agree on an allocation because California had already put over 5 million acre-feet to use. The Act resolved the conflict by allocating 4.4 million acre-feet to California, 3 million to Arizona, and 300,000 to Nevada. Three years later, the major California water users agreed to an internal priority schedule that applied to the almost 5.4 million acre-feet of water the state was actually diverting. To complicate matters, under the seven-party agreement, the four major California irrigation districts adjacent to the River enjoy a superior priority over the Metropolitan Water District, which serves much of urban Southern California.<sup>83</sup> Subsequently, *Arizona v. California* construed the Act as a



congressional apportionment of the lower basin flow among the three basin states and therefore confirmed the 1928 congressional apportionment, which in effect subordinated California's customary use priority to Arizona's equities.

The law and politics of the Colorado River have long been driven primarily by the efforts of all the basin states, except California, to prevent California's actual use from ripening into a permanent right.<sup>84</sup> Arizona technically succeeded in curtailing this use when the Supreme Court ruled that the Boulder Canyon Project Act limited California to 4.4 million acre-feet and that the Secretary of the Interior had the power to apportion both surpluses and shortages. California, however, has long been able to ignore Arizona's entitlements for legal and hydrological reasons. First, Arizona had to convince the federal government to authorize the Central Arizona Project (CAP) to put her share of the River to use in the state's populous interior. California was able to force Arizona to subordinate her CAP priority to California's compact allocation as the price of congressional authorization of the project. Second, the long delay in constructing the CAP transformed it from an agricultural to an urban supply project and allowed California to continue to use its 700,000 acre-feet of surplus water throughout the entire twentieth century, even as central Arizona and Las Vegas grew into major urban agglomerations.<sup>85</sup>

California's excess diversion is now ending. Exponential urban growth in Arizona and Nevada, along with Indian entitlements and compliance with the Endangered Species Act, raises the very real possibility that California must now live with its 4.4 million acre-feet allocation. The three lower basin states and the Department of the Interior agreed to a curtailment plan that would never pass muster as a substance abuse treatment program.<sup>86</sup> There will be no cold turkey or paid withdrawal for California. California will have at least 15 years to reduce its diversions from 5.2 to 4.4 million acre-feet.

Many will read the success of the Department of the Interior and the Basin states in forcing California to live within its Compact allocation as the triumph of the strength of prior appropriation. A priority was enforced. This is a legitimate reading, but it ignores the larger lessons. First, enforcement was used as a threat to force a voluntary cutback on very favorable terms to the "bad" actor. Second, California was able to agree to live with its 4.4 million acre-feet allocation because the larger urban suppliers will be able to use the irrigation districts along the Colorado as a source of water supply through bribes and purchases.

In California, superior political clout allowed the state merely to avoid priority enforcement for decades, but inter-regional power politics can sometimes virtually eliminate priorities. The Missouri River is a case in point. In 1944, Congress authorized the Pick-Sloan Plan,<sup>87</sup> which turned the Upper Missouri into a series of flood control reservoirs that primarily

benefit the Lower Basin states. The grand compromise of Pick-Sloan was that the Upper Basin states and Indian tribes would give up a great deal of land for the mainstream reservoirs, which would provide immediate flood control and navigation enhancement for the Lower Basin in return for future irrigation projects. As the price for the dams, Senators O'Mahoney and Millikan, of Wyoming, succeeded in enacting an amendment that gives irrigation and other upstream consumptive uses priority over navigation,<sup>88</sup> but the Amendment is of no use to the Upper Basin states because the irrigation component of the plan never materialized as originally contemplated and is highly unlikely to do so in the future. The net result is that the lower basin states have obtained a de facto priority for navigation and flood control.

#### IV. CONCLUSION

The law of prior appropriation will increasingly evolve into a shadow or framework allocation rule. This will not rob it of its core function, the settlement of user disputes, but it will change its influence on western water allocation. Courts will continue to perform their traditional function of applying existing laws and settled precedent to concrete water disputes, but the law will have an increasingly indirect rather than direct impact as more water moves to urban and environmental users. Markets and negotiated large-scale settlements rather than state and federal water policy will become the primary force shaping the allocation of western water. The law will continue to define the rights traded or adjusted through a negotiated settlement but the formal doctrine will decline in its importance.

Early in the last century, Samuel Wiel floated the idea that unreasonable assertions of priority should not be recognized.<sup>89</sup> The idea proved too radical for courts to adopt in theory, but his suggestion reflects a great deal of western practice. More importantly, Wiel's proposed reform reflects the broader idea that the law of western water rights, in contrast to land law, has always been a *risk allocation* scheme rather than a system of relatively absolute property rights. The focus should be more on protecting the actual expectations of water users<sup>90</sup> rather than on the formal entitlements. Water right holders will reject this distinction because the formal entitlement is the basis for a reasonable expectation. This argument overlooks the fact that risk allocation has been submerged but not eliminated from the doctrine. Carry-over storage successfully minimized the risks inherent in prior appropriation and appropriative rights have never been risk free; they have always contained a fixed risk allocation scheme that prefers senior to junior water right holders in low water years. The law presently assumes that short-term shortages represent the maximum risk that right holders must assume, but the beneficial-use

limitation in all water rights makes it clear that short-term shortages are not confined to such shortfalls.

Three consequences follow from the explicit characterization of appropriative water rights as risk allocation mechanisms. First, water users must simultaneously plan for the reductions dictated by the strict enforcement of priorities and for alternative reduction scenarios. In general, priorities are likely to be enforced in the short but not the long run. A serious shortage from a "natural" or "global climate change-induced" drought will strain existing allocation schemes and induce different adaptation patterns. Second, as the West tries to incorporate ecosystem restoration into existing consumptive entitlements, new, often ad hoc risk-sharing schemes will emerge. These will not displace prior appropriation; they will be overlain on existing entitlements, but these schemes have the potential to alter existing entitlements, and they must be recognized as a legitimate element in the evolution of western water law. They will be generally imposed through consensus processes and thus have the potential to fairly distribute the readjustment burdens, although the ongoing California Bay-Delta process illustrates how difficult these adjustments will be.<sup>91</sup> The third consequence is a revitalized beneficial use doctrine. Reformers have "called" for the aggressive enforcement of the beneficial use doctrine for decades,<sup>92</sup> but, as commentators and studies have pointed out, the call has been futile and the doctrine remains underutilized, under-enforced, and under-developed. As dormant as the doctrine is, it reinforces the idea that appropriative water rights have always been less firm and more subject to adjustment than their characterization of absolute property rights assumes.

The new West will continue to experience rapid, unequally distributed, population growth supported by the plumbing installed in the last century. Some new infrastructure will be necessary to meet new demands for water supply and flood control, but the primary task of state governments will be to manage the existing infrastructure to make it more productive, to manage the reallocation of existing supplies to new demands, and to adapt to natural disasters exacerbated by global climate change to the increased use of nonstructural alternatives. Prior appropriation will continue to be part of the new West, but the carefully constructed scheme of preferences and allocation rules will become less and less an accurate reflection of either actual allocation patterns or of many of the new and modified entitlements.

## ENDNOTES

1. Mort Rosenbaum, *America's Water Supplies Are Drying Up*, SALT LAKE TRIB., May 14, 2001 (quotation of Tom Levy, General Manager of Coachella Irrigation District).

2. EMLÉN HALL, *HIGH AND DRY: THE TEXAS NEW MEXICO STRUGGLE FOR THE PECOS RIVER* 138 (forthcoming 2002).

3. The leading contemporary historian of western water policy has questioned the received wisdom and argues that prior appropriation has its roots in early nineteenth century eastern cases dealing with conflicts between mill owners. See DONALD J. PISANI, *WATER, LAND, AND LAW IN THE WEST: THE LIMITS OF PUBLIC POLICY 1850–1920*, at 10 (1996). Pisani's argument challenges Walter Prescott Webb's geographically deterministic thesis. Compare WALTER PRESCOTT WEBB, *THE GREAT PLAINS* 385–452 (1931). Professor Webb argued that the West's arid climate created prior appropriation. Legal scholars have long observed that early English and New England water cases gave considerable weight to priority. See Carol M. Rose, *Energy and Efficiency in the Realignment of Common-Law Water Rights*, 19 J. LEGAL STUD. 261 (1990). But it seems clear that western courts and legislatures made the principle of priority explicit and tied the right to the continual application to beneficial use, thus creating the rules and procedures that characterize modern water law. Moreover, it seems that courts did so with a clear appreciation of the merits of the rules in a water-short climate. See *Irwin v. Phillips*, 5 Cal. 140 (1956); *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443 (1882).

4. SARAH F. BATES ET AL., *SEARCHING OUT THE HEADWATERS: CHANGE AND REDISCOVERY IN WESTERN WATER POLICY* 136–39 (1993).

5. The need to correct the problems that have resulted from the creation of semi-exclusive private rights in water has been a major theme in western water law reform. However, the late nineteenth century preference for private rights was consistent with the prevailing belief in the merits of individual initiative. As Donald J. Pisani put it, “[e]nterprise triumphed over equity.” PISANI, *supra* note 3, at 21.

6. See Moses Lasky, *From Prior Appropriation to Economic Distribution of Water*, 1 ROCKY MTN. L. REV. 161, 248 (1929); 2 ROCKY MTN. L. REV. 35 (1929).

7. The legal basis for this was Justice Sutherland's flawed opinion in *California Oregon Power Co. v. Portland Beaver Cement Co.*, 295 U.S. 142 (1935), which confused the consistent policy of protecting prior vested rights with the issue of total abdication of federal power over western waters arising on or running through public lands.

8. CLAUSEN KINNEY, *A TREATISE ON THE LAW OF IRRIGATION AND WATER RIGHTS* (2d ed. 1912); SAMUEL WIEL, *WATER RIGHTS IN THE WESTERN STATES* (3d ed. 1911).

9. See Joseph L. Sax, *Federal Reclamation Law, WATER AND WATER RIGHTS* (1967).

10. J.R. MCNEIL, *AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD: SOMETHING NEW UNDER THE SUN* 119–91 (2000) (placing the Reclamation Era in the context of a world-wide enthusiasm for large-scale water resources development).

11. See MARK FERGE, *IRRIGATED EDEN: THE MAKING OF AN AGRICULTURAL LANDSCAPE IN THE AMERICAN WEST 1920–1996* (1999) for an account of how the damming of the Snake River—in the name of prior appropriation—undermined the usefulness of priority as an allocation rule.

12. See Janet C. Newman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919 (1998).

13. *Arizona v. California*, 373 U.S. 546 (1963) (Boulder Canyon Project Act gives the Secretary of the Interior the power to apportion Colorado River water in times of shortage); *ETSI v. Missouri*, 484 U.S. 495 (1988) (U.S. Army Corps of Engineers built Missouri mainstem dams and therefore has the exclusive right to market surplus water from them).

14. E.g., *Madera Irrigation Dist. v. Hancock*, 985 F.2d 1297 (9th Cir. 1993) (Reclamation contract renewal with higher rates to recoup prior subsidies not a taking); *O'Neill v. United States*, 50 F.3d 677 (9th Cir. 1995) (contractual provision immunizing the government for shortages caused by drought and “any other causes” includes mandated fish and wildlife releases). See also *Natural Res. Def. Council v. Houston*, 146 F.3d 1118 (9th Cir. 1998). But see *Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 313 (Fed. Cl. 2001) (reduced water deliveries to meet ESA obligations constitute a physical taking). The case is further discussed at note 88, *infra*.

15. NATURAL RESOURCES LAW CENTER, UNIVERSITY OF COLORADO, *INSTREAM FLOW PROTECTION IN THE WEST* (Lawrence J. MacDonnell & Teresa A. Rice eds., 2d ed. 1993).

16. E.g., WESTERN WATER POLICY REVIEW ADVISORY COMMISSION, *WATER FOR THE WEST: FUTURE CHALLENGES FOR THE NEXT CENTURY* 3-51 to 3-52 (1998); LAWRENCE J. MACDONNELL, *FROM RECLAMATION TO SUSTAINABILITY: WATER, AGRICULTURE, AND THE ENVIRONMENT IN THE AMERICAN WEST* 232-38 (1999).

17. E.g., NATIONAL RESEARCH COUNCIL, *THE MISSOURI RIVER ECOSYSTEM* (forthcoming 2002); WORLD COMMISSION ON DAMS, *DAMS AND DEVELOPMENT: A NEW FRAMEWORK FOR DECISIONMAKING* (2000).

18. Prior appropriation's most persistent critic is Professor Charles Wilkinson of the University of Colorado School of Law. E.g., Charles Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317 (1985). In 1991, he pronounced the doctrine dead. See Charles Wilkinson, *Prior Appropriation 1848-1991*, 21 ENVTL. L. v (1991). But like Mark Twain, the reports of its death were greatly exaggerated. See Justice Gregory Hobbs, Jr., *Priority: The Most Misunderstood Stick in the Bundle*, \_\_\_ ENVTL. L. \_\_\_ (forthcoming 2002). See also John D. Leskey, *The Prior Appropriation Doctrine of Water Law in the West: Emperor With Few Clothes*. 29 J. WEST 5 (1990).

19. NATIONAL RESEARCH COUNCIL, *A NEW ERA FOR IRRIGATION* (1996) (examines the future of irrigated agriculture but pulls back from a thorough analysis of its future, characterizing western irrigation as both an industry and a cultural practice).

20. E.g., *United States v. Glenn-Coulsa Irrigation Dist.*, 788 F. Supp. 1126 (E. D. Cal. 1992); *Klamath Water Users Protective Association v. Patterson*, 191 F.3d 115 (9th Cir. 1999).

21. See David H. Getches, *The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the State's Role?*, 20 STAN. ENVTL. L. J. 3 (2001).

22. Studies of the events of 2001 and their long-term implications are cascading forth from consulting firms and universities. E.g., ANNE FIELD & ED WHITELAW, *COPING WITH COMPETITION FOR WATER: IRRIGATION, ECONOMIC GROWTH, AND THE ECOSYSTEM IN THE UPPER KLAMATH BASIN* (EcoNorthwest, November 2001); UNIV. OF CAL. & OR. STATE UNIV., *WATER ALLOCATION IN THE KLAMATH BASIN: AN ASSESSMENT OF NATURAL RESOURCE ECONOMIC, SOCIAL AND INSTITUTIONAL ISSUES* (Draft Report, December 2001) available at <http://eesc.orst.edu/klamath>.

23. See Karl Hess, Jr., *John Wesley Powell and the Unmaking of the West*, in *THE NEXT WEST: PUBLIC LANDS, COMMUNITY, AND ECONOMY IN THE AMERICAN WEST* 151 (John A. Baden & Donald Snow eds., 1999).

24. See A. Dan Tarlock & Sarah B. Van de Wetering, *Growth Management and Western Water Law: From Urban Bases to Archipelagos*, 5 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 163 (1999) for an examination of the relationship between historic patterns of water allocations and the new urban and subdivided rural west.

25. PETER D. NICHOLSET AL., *WATER AND GROWTH IN COLORADO: A REVIEW OF LEGAL AND POLICY ISSUES* 4 (Natural Resources Law Center, University of Colorado School of Law, 2001).

26. The transition is painful for many of those who depend on raw commodity production. Not all westerners will take comfort in the conclusions of a recent analysis of the "New West's" economy. We believe that the relatively low earnings in the Mountain West exist because of, and are compensated for by, substantial public, environmental, and social amenities. Mountain West residents earn less than the national average because they live in smaller cities, towns, and rural areas. In fact, when westerners are compared with other Americans living in communities of similar size, the difference in earnings disappears entirely. People living in small communities accept lower earnings because by doing so they can enjoy amenities not available in the country's larger metropolitan areas. THOMAS MICHAEL POWER & RICHARD N. BARRETT, *POST-COWBOY ECONOMICS: PAY AND PROSPERITY IN THE NEW WEST* 113 (2001). See generally Jan C. Laitos & Thomas A. Carr, *The Transformation on Public Lands*, 26 *ECOLOGY L.Q.* 140 (1999) for a comprehensive discussion of how these trends are changing the law and politics of public land management.

27. Irrigation withdrawals increased up to 1980 and then declined; 1995 withdrawals were two percent less than 1985 and 1990 withdrawals. Western irrigated acreage decreased between 1980–1995, but increases in the eastern United States accounted for a net one percent rise in irrigated acreage between 1990 and 1995. WAYNE B. SOLLEY, ET AL., U.S. GEOLOGICAL CIRCULAR 1200, ESTIMATED USE OF WATER IN THE UNITED STATES IN 1995, at 62-63 (1998).

28. See Janet C. Newman, *Federal Water Policy: An Idea Whose Time Will (Finally) Come*, 20 VA. ENVTL. L.J. 107,114-16 (2001) for a brief analysis of why it is not possible to develop a coherent federal water policy in an era of minimalist, fractured politics.

29. *City of Barstow v. Mojave Water Agency*, 5 P.3d 853 (Cal. 2001).

30. For an excellent analysis of the reasons for the doctrine's declining importance see Getches, *supra* note 21.

31. See WESTERN WATER POLICY REVIEW ADVISORY COMMISSION, *supra* note 16, at 3-38 to 3-41.

32. NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 1 (2001).

33. "To the extent that senior rights correspond to high-valued uses for which security of supply is crucial and junior rights correspond to low-valued uses for which security is not crucial, the priority system may be an efficient method of allocating scarce supplies. However, such a relationship does not necessarily exist. For example Westlands Water District is a low priority district [for the distribution of Central Valley Project Water], but it is a high productivity district." Janis M. Carey & David Sunding, *Emerging Markets in Water: A Comparative Analysis of the Central Valley and Colorado-Big Thompson Projects*, 41 NAT. RESOURCES J. 283, 301 (2001).

34. BATES ET AL., *supra* note 4, at 184.

35. See Joseph L. Sax, *The Constitution, Property Rights, and the Future of Water Law*, 61 U. COLO. L. REV. 257 (1990).

36. Frank J. Trelease, *Climate Change and Water Law*, in CLIMATE, CLIMATE CHANGE AND WATER SUPPLY 70 (Wallis ed., 1977).

37. 43 U.S.C. § 523 (1994).

38. *Goshen Irrigation Dist. v. Pathfinder Irrigation Dist.*, 62 F. Supp. 2d 1218, 1251 (D. Wyo. 1999).

39. One of the persistent themes in the late Frank J. Trelease's writing is the need for a balance between security and adaptation to the future conditions. See Frank J. Trelease, *Policies for Water Law: Property Rights, Economic Forces, and the Public Interest*, 5 NAT. RESOURCES J. 1 (1965). In his posthumously published article, *Interstate Use of Water—"Sporhase v. El Paso, Pike v. Vermejo"*, 22 LAND & WATER L. REV. 315, 331 (1987), he stated, "I pump the organ for 'prior appropriation' as a system of water law—but always 'modern prior appropriation'—not the pioneer doctrine that gave full play to individual action uncontrolled by the state."

40. E.g., *City and County of Denver v. Sheriff*, 105 Colo. 193, 96 P.2d 836 (1936).

41. E.g., *State v. Morros*, 766 P.2d 263 (Nev. 1988).

42. In the summer of 2001, the IDAHO FALLS POST-REGISTER, at [www.headwatersnews.org/pr.snakewater.html](http://www.headwatersnews.org/pr.snakewater.html), reported that the director of the Idaho Ground Water Appropriators, Inc. objected to an editorial in the paper examining the plight of surface users in the Snake River Plain who had to limit their irrigation while wells continued to pump at the usual rate. It argued that prior appropriation should be applied to all of the state's water users but the Director suggested instead that equal enforcement would result in a bitter war between surface and groundwater users.

43. See Olen Paul Matthews et al., *Marketing Western Water: Can a Process Based Geographic Information System Improve Reallocation Decisions?*, 41 NAT. RESOURCES J. 329 (2001).

44. Carey & Sunding, *supra* note 33, at 283.

45. E.g., *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46 (Colo. 1999) (holding that transfer applicant must prove historical beneficial use despite uncontested use from 1966–1997). For a critical analysis of the historical use doctrine see James N. Corbridge, *Historical Use Water Law and the Protection of Vested Rights; A Challenge to Colorado Water Law*, 69 U. COLO. L. REV. 503 (1998).

46. LARRY J. MACDONNELL, *THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING DEMANDS* (1990).

47. See Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 671 (1993).

48. This section is a revised and expanded version of material that appeared in A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881 (2001).

49. This argument is developed at length in Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577 (1986). Rose points out that fixed rules, crystals, are more appropriate to dealings with strangers than within a community of similarly situated entitlement holders. She also notes, however, that the fixed rules promote needed community stability, and thus, in a geologically inapt metaphor, in the end “crystals and mud dissolve into each other.” *Id.* at 610.

50. Memorandum from Barry Norris, Administrator Field and Technical Services to Water Resources Commission, Internal Report on 1998 Field Regulation and Enforcement 5 (Apr. 30, 1999) (on file with author).

51. *Id.* at 4.

52. Carol M. Rose, *The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129, 136-37 (1998).

53. HALL, *supra* note 2, illustrates this in the context of the consequences of New Mexico and Texas taking a dispute to the Supreme Court. In brief, Texas had long argued that New Mexico was not meeting its compact obligations on the Pecos River. Led by its legendary State Engineer, Steve Reynolds, New Mexico opposed Texas at every step. The problem was complicated by a dispute between the Carlsbad Irrigation District (CID) and the Roswell basin. CID was the last New Mexico user on the river but had superior rights to those in the Roswell basin. Hall concludes that “[i]n the mid-1970s the knotted strands of ambiguous laws that had made up the status quo since 1948 unraveled. First, in 1974, Texas took the initial steps toward instituting the compact enforcement suit in the U.S. Supreme Court that New Mexicans had long dreaded. Then, as his last act before retiring as CID director, Francis Tracy Jr. called the priorities on the Pecos River, asking the State Engineer to curtail junior Pecos River water users until Carlsbad received its full supply. At that point all the legal structures that held the River together collapsed ...” *Id.* at 57 [manuscript page].

54. *Lower Colo. River Auth. v. Tex. Dep't of Water Res.*, 689 S.W.2d 873 (Tex. 1984).

55. *State Eng'r v. Morris*, 819 P.2d 203 (Nev. 1991).

56. *Colo. Water Conservancy Dist. v. Rich*, 625 P.2d 977 (Colo. 1981). Subsequent decisions have limited the discretion of water courts to increase the risks to prior users. *Pueblo West Metro Dist. v. Southeastern Colo. Water Conservancy Dist.*, 717 P.2d 955 (Colo. 1986), holds that out-of-priority diversions will not be counted for purposes of calculating consumable water that can be transferred. *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46 (Colo. 1999), further limited *Rich* to changes in diversion point that (1) do not increase applicable water duties, (2) were unopposed, and (3) are where actual historic water use has been established.

57. The sociologist Irving Goffman could only come up with being last in line for the guillotine. See IRVING GOFFMAN, *RELATIONS IN PUBLIC* (1971).

58. The current flexible model is the Regulated Riparian Model Mode. WATER LAW COMM., AMERICAN SOC'Y OF CIVIL ENG'RS, *THE REGULATED RIPARIAN MODEL WATER CODE* (1997).

59. See Frank J. Trelease, *The Model Water Code, the Wise Administrator and the Goddam Bureaucrat*, 14 NAT. RESOURCES J. 207 (1974).

60. A Florida intermediate appellate court held that existing permit holders enjoy "superiority" over new applicants and reduced a new agricultural user's application to protect the pressure of an existing municipal well field. *Harloff v. City of Sarasota*, 575 So.2d 1238 (Fla. App. 1991).

61. J.H. Beuscher, *Appropriation Water Law Elements in Riparian Doctrine States*, 10 BUFFALO L. REV. 448 (1961).

62. Dean Trelease's efforts to bring order to the common law of riparians continue to be unjustly criticized as unsuited to the humid east. See 1 WATERS AND WATER RIGHTS, § 601(c) (Robert Beck ed., 1991).

63. *Nat'l Audubon Soc'y v. Superior Court of Alpine County*, 33 Cal. 3d 419 (1983). See generally Michael Blumm & Thea Schwartz, *Mono Lake and the Evolving Public Trust in Western Water Law*, 37 ARIZ. L. REV. 701 (1995).

64. *In re Water Use Permit Applications*, 94 Haw. 97 (2000).

65. The doctrine has been articulated by the Supreme Court but the Court has never determined whether it is derived from the federal constitution or is a matter of state law. In a concurring opinion, Justice Stevens suggested that the doctrine is grounded in the federal Constitution. See *Idaho v. Coeur d'Alene Tribe*, 521 U.S. 261 (1997). But the Court has never imposed uniform public trust rules on the states.

66. This is a more limited application of Professor Joseph Sax's celebrated defense of the public trust doctrine as a means of forcing legislatures and agencies to revisit resource allocation decisions made without a full consideration of the environmental consequences. Joseph L. Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

67. See Getches, *supra* note 21. The new federal threats to western water allocation are more indirect than the fears that existed from the 1930s through the 1970s that prior appropriation would be replaced or seriously compromised by federal reclamation law and Indian and non-Indian reserved rights. See B. Abbott Goldberg, *Interposition—Wild West Style*, 17 STAN. L. REV. 1 (1965).

68. LAWRENCE J. MACDONNELL, FROM RECLAMATION TO SUSTAINABILITY: WATER, AGRICULTURE, AND THE ENVIRONMENT IN THE AMERICAN WEST 201 (1999).

69. See Carey & Sunding, *supra* note 33.

70. Interview with Professor Janet Newman, Lewis Clark Law School (June 19, 2000).

71. States often further this dichotomy by protecting existing uses through the non-enforcement of the law's restrictions on water use. See Reed Benson, *Maintaining the Status Quo: Protecting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 ENVTL. L. 881 (1998).

72. Interview with Reed Benson, Oregon Waterwatch (July 21, 2000) (prior argument that the practice may be prohibited by the Endangered Species Act).

73. John Thorson, *Clarifying State Water Rights and Adjudications* (June 13, 2001) (unpublished paper, University of Colorado).

74. *E.g.*, *State ex rel. Crider*, 431 P.2d 45 (N.M. 1967); *St. Onge v. Blakeley*, 245 P. 532 (Mont. 1925); *City and County of Denver v. Sheriff*, 96 P.2d 836 (Colo. 1939); *City and County of Denver v. Northern Colorado Water Conservancy Dist.*, 276 P.2d 992 (Colo. 1954); *Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 29-30 (Colo. 1996); *Reynolds v. City of Roswell*, 654 P.2d 537 (1982); *State, Dep't of Ecology v. Theodoratus*, 135 Wash.2d 582, 957 P.2d 1241, 1257-58 (1998) (Sanders, J. dissenting). See Carpenter, *Water for Growing Communities: Refining Tradition in the Pacific Northwest*, 27 ENVTL. L. 127 (1997); Note, *Sometimes There Is Nothing Left to Give: The Justification for Denying Water Service to New Customers to Control Growth*, 44 STAN. L. REV. 429 (1992); Tarlock & Wetering, *supra* note 24, at 163.



75. Steven Clyde reports that in the last major drought in Utah, which occurred in the early 1990s, some agricultural users were curtailed but "no domestic water rights were cut off," although cities were forced to ration and limit landscape irrigation. Interview with Steven Clyde (Sept. 19, 1999).

76. See GABOR ZOVANYI, *GROWTH MANAGEMENT FOR A SUSTAINABLE FUTURE: ECOLOGICALLY SUSTAINABLE AS THE NEW FOCUS FOR THE 21ST CENTURY* 38 (1998) (arguing that growth management strategies are politically acceptable only if they channel, not limit, urban growth).

77. See San Diego County Smart Growth Coalition Water Resources Availability Study Team, at [http://www.co.san-diego.ca.us/sgc/water/june\\_note.html](http://www.co.san-diego.ca.us/sgc/water/june_note.html) (last visited Nov. 1, 2001).

78. Rural areas and existing users will fight rear guard actions, some of which will be successful, against aggressive reallocation strategies. The law initially set off a race among Phoenix suburbs to acquire water ranches, and the Arizona legislature eventually provided limited compensation for impacted areas of origin. See NATIONAL RESEARCH COUNCIL, *WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY AND THE ENVIRONMENT* 194-212 (1992).

79. ARIZ. REV. STAT. §§ 45-401 to 45-655 (1994).

80. ARIZ. ADMIN. CODE R12-15-703(b) (1995).

81. Cal. S.B. 221 (2001).

82. See A. Dan Tarlock & Darcy Alan Frownfelter, *State Groundwater Sovereignty after Sporhase: The Case of the Hueco Bolson*, 43 OKLA. L. REV. 27 (1990).

83. The four districts running from north to south are Palo Verde, Imperial, Coachella, and the California division of the Yuma project. These priorities were set in the 1931 Seven Parties Agreement that the four districts, the Metropolitan Water District of southern California, and the cities of Los Angeles and San Diego signed to receive their Boulder Canyon Project water deliveries from the Secretary of the Interior. See Jerome Muys, *Innovations in Water Management: New Responses to Municipal Demands in the Lower Colorado River, U.S.A.*, 25 INT'L WATER 526 (2000) for an analysis of how this agreement shapes the current, protracted reallocation process to move water from the four districts to greater Los Angeles and San Diego.

84. The best histories are NORRIS HUNDLEY, *CALIFORNIANS AND WATER* (Revised ed. 2001) and THE GREAT THIRST: COLORADO RIVER COMPACT AND THE POLITICS OF WATER IN THE WEST (1975).

85. California had an additional advantage of being able to borrow in dry years and pay back in a wet year, but in wet years, when water was spilled because of a surplus, the payback obligation was in effect canceled. Interview with Joe Sax (Sept. 1, 1999).

86. California and Las Vegas will still be able to tap into Arizona's surplus, if any. The Department of Interior has issued a final rule that allows authorized state entities in the three lower Colorado River Basin states to store unused Colorado River entitlements water in off-stream reservoirs and aquifers. After unused surplus entitlements have been offered to entitlement holders in the storing states, the Secretary of the Interior may release the water pursuant to a voluntary Interstate Release Agreement for use in another Lower Basin state. 43 C.F.R. § 414 (1999). The rule is explained at 64 Fed. Reg. 58,986 (Nov. 1, 1999).

87. See JOHN R. FERRELL, *BIG DAM ERA: A LEGISLATIVE AND INSTITUTIONAL HISTORY OF THE PICK-SLOAN MISSOURI BASIN PROGRAM* (1993).

88. John P. Guhin, *The Law of the Missouri*, 30 S.D. L. REV., 346 (1985).

89. 1 SAMUEL WIEL, *WATER RIGHTS IN THE WESTERN STATES* 329-30 (3d ed. 1911).

90. Risk allocation can be characterized as a background principle of state law under *Lucas v. S.C. Coastal Council*, 505 U.S. 1003 (1992). Water rights holders have long been on notice that rights can be curtailed to meet competing demands because they are correlative. The notice rationale does not immunize the state from its constitutional obligation to compensate when it severely restricts the exercise of water rights, but it does limit the

compensation due. This seems to be the lesson of *Palazzolo v. Rhode Island*, 121 S. Ct. 2448 (2001). Plaintiff purchased wetland property after the state began to restrict filling but claimed the full value of the property as filled when the state denied a development request. Justice Kennedy, writing for a five-to-four majority, held that the Rhode Island Supreme Court erred in holding that notice absolutely barred a takings claim: "The State may not put so potent a Hobbesian stick into the Lockian bundle....Were we to accept the State's rule, the post-enactment transfer of title would absolve the state of its obligation to defend any action restricting land use, no matter how extreme or unreasonable." The Court affirmed, however, that state Supreme Court's holding that the petitioner had not proved a total deprivation of all economic value and remanded for further proceedings. Justice O'Connor concurred and emphasized that the timing of the enactment of regulations was relevant to the *Penn Central* balancing test, specifically whether the regulation interfered with investment-backed expectations. She defined the term to include both the state of regulatory affairs at the time of acquisition and the nature and extent of permitted development under the regulatory regime. *But see* *Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 513 (2001) (United States is liable for reduced deliveries of Reclamation project water ordered to meet Endangered Species Act obligations). The court applied the *per se* physical invasion test, but the *Penn Central* balancing test would have been more appropriate. *See* *Penn Cent. Transp. Co. v. City of New York*, 438 U.S. Fed. Cl. 104 (1978). The relevant issue is the extent of the proven frustration of investment-backed expectations.

91. *See* A. DAN TARLOCK ET AL., *WATER RESOURCE MANAGEMENT* (5th ed. 2002) for a history of the process to mid-2001. There has been much process but all the forthcoming hard water-allocation decisions have yet to be made.

92. *See* Newman, *supra* note 12, for a history of the largely unsuccessful efforts to reform the doctrine from one that adopted a lowest common denominator standard of waste to one that imposes greater duties to use water more effectively.