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Prior Appropriation: A Reassessment

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PRIOR APPROPRIATION: A REASSESSMENT

LAWRENCE J. MACDONNELL *

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INTRODUCTION

Thoughtful observers have declared the law of prior appropriation obsolete,¹ no longer relevant,² or even dead.³ On the other hand, others have declared it the best-suited law yet devised to govern human uses of water, especially in water-limited places.⁴ Many writers have criticized at least some aspects of the law of prior appropriation.⁵ As further explored below, the criticisms take many forms. Far less has been written about the virtues of prior appropriation despite the fact that principles originated in the mining districts of nineteenth-century California ended up being adopted by seventeen western states.⁶

Under the prior appropriation system, millions of individual water "rights" have been established that govern human uses of both surface and underground water. Based on these rights, individuals and organizations have built the facilities necessary to divert/withdraw enormous quantities of water from streams and aquifers all around the West. Particularly irrigated agriculture, but also cities, industries, and even whitewater kayak courses, have used this water.⁷ Economies have developed, in important part enabled by these water uses, and the American West has transformed from a largely unsettled landscape to the home of approximately a third of the people living in the United States and the fastest growing region in the nation.⁸ That the basic legal system has "worked" seems evident.

Prior appropriation proponents often point to its invitation, offered to one and all, to find some use for water, in return for which the law grants to, and protects in, the user a perpetual right.⁹ Especially under the original system of self-initiation, prior appropriation is a doctrine that promotes and encourages human efforts to put water to some economically beneficial use; this includes making the sometimes substantial investment of time and money necessary for this purpose.¹⁰ The priority rule enables senior water right holders to count on

1. Alex C. Sienkiewicz, Note, *Instream Values Find Harbor in Bear Lake III, Drown in Prior Appropriation*, 25 PUB. LAND & RESOURCES L. REV. 131, 146 (2004).

2. Reed D. Benson, *Alive but Irrelevant: The Prior Appropriation Doctrine in Today's Western Water Law*, 83 U. COLO. L. REV. 675, 678 (2012).

3. Charles F. Wilkinson, *In Memoriam: Prior Appropriation 1848-1991*, 21 ENVTL. L. v, v (1991).

4. See Frank J. Trelease, *Policies for Water Law: Property Rights, Economic Forces, and Public Regulation*, 5 NAT. RESOURCES J. 1, 48 (1965) [hereinafter Trelease, *Policies for Water Law*]; Frank J. Trelease, *The Model Water Code, the Wise Administrator and the Goddam Bureaucrat*, 14 NAT. RESOURCES J. 207, 228 (1974) [hereinafter Trelease, *Model Water Code*]; see also ROBERT G. DUNBAR, FORGING NEW RIGHTS IN WESTERN WATERS 209-10 (1983).

5. DUNBAR, *supra* note 4, at 209, 215-16; see *infra* text accompanying notes 45-84.

6. See *infra* Part I.C; see also GETCHES, WATER LAW IN A NUTSHELL 7-8 (4th ed. 2009).

7. For a discussion of recreation water rights, see Glenn E. Porzak et al., *Recreation Water Rights: "The Inside Story"*, 10 U. DENV. WATER L. REV. 209, 210 (2007).

8. A now somewhat dated but useful discussion of population growth in the western states is provided in WESTERN WATER POLICY REVIEW ADVISORY COMM'N, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY, at 2-14 to 2-18 (1998).

9. See, e.g., Trelease, *Policies for Water Law*, *supra* note 4, at 7-8.

10. This focus on protecting the time and effort invested by those appropriating water was much on the mind of judges first considering the new doctrine of appropriation. See, e.g., Ir-

getting most or all of the water they originally appropriated, even when flows decline. Seniority, and the assurances it provides, encourages long-term investment in the facilities needed to enable water use. Those more junior water right holders are on notice that, when flows decline, they may have to curtail uses; thus they are likely to invest and operate accordingly. The ability to make changes in the use of a water right allows appropriators to adjust uses as opportunities change, thus enabling water rights to continue to supply changing needs and circumstances. Owners of water rights can readily transfer them to others who are interested in making the changes necessary to allow for new uses. Public supervision of water uses under a well-defined system of priority rights helps to sort out disputes and ensure full use of available water. Limited administrative authority protects private uses and serves as a check on possible arbitrary or unreasonable requirements that would impair private uses.¹¹

Perhaps the most active proponent of prior appropriation has been Dean Frank Trelease, who wrote in a period in which some scholars were promoting reforms of the riparian doctrine that embraced an administratively-supervised permit system.¹² Trelease applied an analysis strongly influenced by economics. Defining the goal of water law as producing the maximum benefits for society from the use of water, Trelease concluded that property rights are necessary for that end, and that prior appropriation, as a user-based system, is preferable to administrative allocation.¹³ He argued that perpetual rights, such as those provided under prior appropriation, are superior to term-limited rights proposed by riparian law reformers because of the certainty they provide.¹⁴ He favored well-defined rights that included a priority rule, as under prior appropriation, for sorting out conflicts:¹⁵

In the West this is usually done by describing the water rights in terms of priority, quantity of diversion, and time of diversion. When senior appropriators had taken all of the dependable flow of the western streams, further development was inaugurated by junior appropriators who stored spring

win v. Phillips, 5 Cal. 140, 146 (1855) (discussing "the rights of those who, by prior appropriation, have taken the waters from their natural beds, and by costly artificial works have conducted them for miles over mountains and ravines, to supply the necessities of gold diggers"); Coffin v. Left Hand Ditch Co., 6 Colo. 443, 446 (1882) ("[V]ast expenditures of time and money have been made in reclaiming and fertilizing by irrigation portions of our unproductive territory. Houses have been built, and permanent improvements made; the soil has been cultivated, and thousands of acres have been rendered immensely valuable, with the understanding that appropriations of water would be protected.").

11. See Frank J. Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 LAND & WATER L. REV. 385, 410-11 (1977).

12. See Trelease, *Model Water Code*, *supra* note 4, at 207; FRANK E. MALONEY ET AL., A MODEL WATER CODE: TEXT AND COMMENTARY 78-79 (1972).

13. See Trelease, *Model Water Code*, *supra* note 4, at 211-12.

14. Trelease, *Policies for Water Law*, *supra* note 4, at 25 ("One advantage of secure water rights over short term or cancelable rights is that the former will aid in the attainment of the major goal of maximum benefits by encouraging investment."). Trelease also argued that "[i]f water rights are given attributes of property, the people owning these property rights will tend to make the best decisions for themselves as to their proper use, and these decisions will on the whole add up to the best development from the state's standpoint." *Id.* at 9-10.

15. *Id.* at 26 ("If a water right is to serve its owner and the public efficiently as a right of property, it is essential that the right be sufficiently definite to identify the property and differentiate it from the property of others.").

floods, built larger dams that stored the supply of good years against future droughts, or brought water from long distances across or through mountain ranges from other basins where the supply exceeded the demand.¹⁶

The maximization principle, according to Trelease, also requires a means of allowing water uses to adjust as changes occur, a process Trelease believed is best accomplished through a market system that also depends on clear, transferable property rights, as with prior appropriation.¹⁷ In Trelease's view, private uses of water that produce benefits meet the public interest standard.¹⁸ However, Trelease acknowledged that a market system does not protect all values, thus requiring some form of public supervision.¹⁹

Professor David Schorr argues that the development of prior appropriation represented "contemporary radical, agrarian ideals of broadly distributed property and antimonopolism."²⁰ Under this analysis, prior appropriation sought not to promote wealth maximization through creation of well-defined transferable rights, but to promote fairness and equity by enabling the widest possible use of water resources.²¹ His evidence for this view is the inclusion in prior appropriation of such "inefficient" elements as declaring water to be property of the state, beneficial use, and forfeiture.²² Schorr's analysis seems primarily a reaction to modern-day property rights advocates who embrace prior appropriation as an important example of the law recognizing the creation of private property rights to the use of a commons.²³

16. *Id.* at 28.

17. *See id.* at 29-34.

18. *Id.* at 37 ("Hence water uses that contribute to such increases in individual, local and national wealth are *prima facie* in the public interest.")

19. *Id.* at 38-42.

20. David B. Schorr, *Appropriation as Agrarianism: Distributive Justice in the Creation of Property Rights*, 32 *ECOLOGY L.Q.* 3, 3 (2005) [hereinafter Schorr, *Appropriation*]. *See also* DAVID B. SCHORR, *THE COLORADO DOCTRINE: WATER RIGHTS, CORPORATIONS, AND DISTRIBUTIVE JUSTICE ON THE AMERICAN FRONTIER* 26 (2012) [hereinafter SCHORR, *COLORADO*].

21. *See* Schorr, *Appropriation*, *supra* note 20, at 7.

22. *Id.* at 10 ("However, this consensus view, which stresses the wealth-maximizing focus of prior appropriation, seems unlikely, as it fails to explain—other than as foreign implants in the pure capture doctrine—the many aspects of the law generally agreed to be inefficient, such as the beneficial use requirement and forfeiture for non-use. It also falls short in accounting for such features of western law as the constitutional or statutory declarations of public or state ownership of waters found in all appropriation states.")

23. *WATER RIGHTS: SCARCE RESOURCE ALLOCATION, BUREAUCRACY, AND THE ENVIRONMENT* (Terry L. Anderson ed., 1983) [hereinafter *WATER RIGHTS*], was described by a reviewer as "a hymn of praise to the doctrine of prior appropriation and to the ideal of water rights as exclusively private property." Paul Herrington, *Book Note*, 94 *ECON. J.* 1013, 1043 (1984). Schorr, *Appropriation*, *supra* note 20, at 8-9 states:

To some, the rule of prior appropriation represents the possibility and promise of efficiency in natural resources law, with the extension of this model to other resources devoutly wished. On this view, the certainty and transferability associated with the creation of private-property rights in a resource benefit society by enhancing efficiency, particularly in comparison with the common-property-like riparian rights doctrine.

He adds that:

A leading defender of prior appropriation, Gregory Hobbs, now a Justice on the Colorado Supreme Court, focused primarily on the intrusions of federal law that, in his view, confounded state intentions respecting uses of water.²⁴ In his critique of a document addressed to the new Clinton administration and produced in 1992 by a group of academics and representatives of non-profits, Hobbs provided this statement of western water law:

Because of scarcity, need, and many competing demands, water in the West is allocated, administered, and surrounded by legal rights, remedies, and restrictions in order to provide stability, security, and flexibility in use of this critical resource. Beneficial use without waste is the operative principle of prior appropriation, a doctrine of sustainability which evolved from local custom. A water right cannot be obtained except in the amount reasonably necessary for beneficial use through a reasonably efficient means of capture, possession, and control. Speculative claims are prohibited. Water rights can be bought, sold, and changed to other uses, so long as injury is not caused to other water rights.²⁵

In his view, western water law has been “remarkably adaptable in recognizing new uses while protecting existing uses.”²⁶

Norman Johnson and Charles Du Mars offered this assessment of prior appropriation:

The doctrine of prior appropriation has evolved to meet changing needs as the West has matured and diversified. Changes have occurred with different emphasis and at different rates from state to state. More modifications will undoubtedly be made. The flexibility of the appropriation doctrine has been proven one of its most important characteristics. It evolved as a method for adapting to change in mining and irrigation practices, and it will flourish if that adaptation process continues.²⁷

Why, then, so many critics? What is prompting so many, including the present writer, to argue for changes? What are the major motivations? One might start by saying the system is, to some degree, a victim of its own success. The ability to establish legally protected rights to divert and use water facilitated a level of development that started to produce its own problems and to generate a backlash. Prior appropriation, with its priority system, inevitably encourages early initiation of appropriations—sometimes well in advance of

Criticisms of the western law from this quarter tend to focus on certain efficiency-impairing aspects of the law, depicting such elements of western water law as public ownership of waters, the requirement of beneficial use and the rules of forfeiture and abandonment as foreign impurities that have seeped into the law.

Id. at 9.

24. Gregory J. Hobbs, Jr., *Priority: The Most Misunderstood Stick in the Bundle*, 32 ENVTL. L. 37, 48-49 (2002) [hereinafter Hobbs, *Priority*].

25. Gregory J. Hobbs, Jr., *Ecological Integrity, New Western Myth: A Critique of the Long's Peak Report*, 24 ENVTL. L. 157, 164-65 (1994) (internal footnotes omitted).

26. *Id.* at 165.

27. Norman K. Johnson & Charles T. DuMars, *A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands*, 29 NAT. RESOURCES J. 347, 387 (1989).

actual need for the water.²⁸ It encourages appropriators to seek control of the largest feasible quantity of water under this early appropriation, an incentive only partially mitigated by having public officials review the basis and need for this quantity.²⁹ Its requirement that the manner of water use only meet local customs works against other incentives to become more efficient, a problem exacerbated by the fact that appropriators fear they will simply lose the right to any undiverted water saved through efficiency.³⁰ Return flows resulting from sometimes excessive irrigation practices soon became built into the water system upon which downstream appropriators relied, potentially constraining those whose more efficient uses might increase consumption and reduce these return flows.³¹ By highlighting the property rights aspects of water rights, judges promoted the view that there could be no impingement of any sort, that a water right ensured the permanent right to continue to divert and use a fixed amount of water that could include every drop of water in the source, and that new users wanting to take water from any particular source had to take what remained without any obligations or limitations on existing appropriators.³² For example, as cities in many western states gained population, especially following World War II, they found that others had already fully appropriated local sources of water, at least during the irrigation season.³³ They also discovered that most irrigators were not interested in selling their water rights since

28. Stephen F. Williams, *The Requirement of Beneficial Use as a Cause of Waste in Water Resource Development*, 23 NAT. RESOURCES J. 7, 8-10 (1983).

29. The duty of water itself bases water requirements on an amount considered necessary to produce the maximum amount of a given crop on an acre of land—a presumed perfect amount of water. See, e.g., *Farmers Highline Canal & Reservoir Co. v. City of Golden*, 272 P.2d 629, 634 (1954) (“that measure of water, which, by careful management and use, without wastage, is reasonably required to be applied to any given tract of land for such period of time as may be adequate to produce therefrom a maximum amount of such crops as ordinarily are grown thereon.”). The focus today is shifting to deficit irrigation, defined as

[A]n optimization strategy in which irrigation is applied during drought-sensitive growth stages of a crop. Outside these periods, irrigation is limited or even unnecessary if rainfall provides a minimum supply of water. Water restriction is limited to drought-tolerant phenological stages, often the vegetative stages and the late ripening period. Total irrigation application is therefore not proportional to irrigation requirements throughout the crop cycle. While this inevitably results in plant drought stress and consequently in production loss, DI maximizes irrigation water productivity, which is the main limiting factor. In other words, DI aims at stabilizing yields and at obtaining maximum crop water productivity rather than maximum yields.

Deficit Irrigation, INT’L. COMM’N ON IRRIGATION AND DRAINAGE (ICID), http://www.icid.org/res_irri_deficit.html (last visited Mar. 14, 2015).

30. Diversion or withdrawal rights can be reduced through partial abandonment or forfeiture actions. See, e.g., V. Lane Jacobson, *Snake River Basin Adjudication Issue 10: Partial Forfeiture for Non-use of a Water Right in Idaho*, 35 IDAHO L. REV. 179, 198-99 (1998).

31. Stephen F. Williams, *Optimizing Water Use: The Return Flow Issue*, 44 U. COLO. L. REV. 301, 302 (1972-1973).

32. See, e.g., *Thomas v. Guiraud*, 6 Colo. 530, 532 (1883) (upholding right to divert all the water in Trout Creek); *Armstrong v. Laramie Cnty. Ditch Co.*, 27 P. 235, 237-38 (Colo. App. 1891) (no sharing of water under prior appropriation); CLESSON S. KINNEY, A TREATISE ON THE LAW OF IRRIGATION AND WATER RIGHTS AND THE ARID REGION DOCTRINE OF APPROPRIATION OF WATERS § 781, at 1357 n.2, 1358 (2d ed. 1912) (citing cases).

33. See John E. Thorson et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams, Part II*, 9 U. DENV. WATER L. REV. 299, 317-20 (2006) [hereinafter Thorson II].

they would no longer be able to farm without those rights.³⁴ Consequently, cities sometimes turned to distant sources of water not yet heavily used, provoking resistance from those living in the so-called area of origin who feared that the loss of this water diminished their future development opportunities.³⁵ Inhabitants of places with unappropriated water still available discovered, however, that prior appropriation placed no limits on transbasin water transfers and, in fact, created some incentives to use transbasin water.³⁶ Finally, individuals whose uses or interests in water were not protected as appropriations or under the prior appropriation system simply had no standing. Traditional prior appropriation had simply not acknowledged such interests.

It is at least arguable that the excesses of federal reclamation policy indirectly led to the wave of criticism of the prior appropriation system during the past forty years.³⁷ Marc Reisner chronicled the politics that produced water projects constructed by the Bureau of Reclamation, which were made possible by subsidies largely supported by hydroelectric power revenues.³⁸ Our extraordinary effectiveness at controlling and using water, even when some of those uses made little economic sense, produced widespread physical and environmental change in western rivers—change on a scale far exceeding that accomplished by the many thousands of appropriators who could only take the water they could afford to divert and use. Coinciding with a period of rapidly growing environmental awareness and a growing interest in outdoor recreation, these changes helped to galvanize the work of people like David Brower, who successfully led the fight against dams in Dinosaur National Monument and Grand Canyon National Park.³⁹ While such efforts produced important new legislation from Congress, including the Wild and Scenic Rivers Act,⁴⁰ states did little or nothing to incorporate these considerations into their water laws.⁴¹

People began asking why states authorize and protect water rights without taking into consideration the effects of the associated water development and use on the recreational and environmental values of the source of water.⁴² They discovered that state law does not account for these values when water

34. *See, e.g.*, LAWRENCE J. MACDONNELL, FROM RECLAMATION TO SUSTAINABILITY 72-74 (1999).

35. For a discussion of area of origin issues, *see* Lawrence J. MacDonnell & Charles W. Howe, *Area-of-Origin Protection in Transbasin Water Diversions: An Evaluation of Alternative Approaches*, 57 U. COLO. L. REV. 527, 527-29 (1986).

36. The law authorizes an importer of water from another basin to make full use of that water without limitation. *See, e.g.*, COLO. REV. STAT. § 37-82-106(1) (2014).

37. "The reclamation marriage [with state water rights] was so successful that it provoked—because of river over-regulation—the paradigm shift Wilkinson and Blumm heralded as ending Prior's era in the early 1990s." Hobbs, *Priority*, *supra* note 24, at 40.

38. MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 139-41 (1986); *see also* RICHARD W. WAHL, MARKETS FOR FEDERAL WATER: SUBSIDIES, PROPERTY RIGHTS, AND THE BUREAU OF RECLAMATION 34-36 (1989).

39. *See* PHILLIP L. FRADKIN, A RIVER NO MORE: THE COLORADO RIVER AND THE WEST 192-95 (1984).

40. 16 U.S.C. §§ 1271-1287 (2012).

41. *See, e.g.*, David H. Getches, *The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the States' Role?*, 20 STAN. ENVTL. L.J. 3, 24-25 (2001) [hereinafter Getches, *Metamorphosis*].

42. *Id.* at 19.

rights are approved, administered, and used. They became aware of the dramatic changes to riverine function and health associated with the construction and operation of dams.⁴³

People learned that prior appropriators not only used dams to store water but also used diversion dams to divert water out of streams, thereby altering stream conditions. They also learned that prior appropriators, a relatively small group, effectively controlled the rivers, managed their flows, diverted much or even all of their water, used most of that water to grow often low-value crops in desert and semi-desert conditions, and had no responsibility whatsoever for the effects of these actions on fisheries or other river-dependent species, on recreational uses of rivers, or on water quality.⁴⁴

Here prior appropriation probably needs to accept some of the blame. Despite the warnings of George Perkins Marsh and the efforts of people like Elwood Mead to insert public considerations into the decision process,⁴⁵ states focused on encouraging development and use of their waters in support of economic growth and resisted consideration of other values until well into the twentieth century. By that time, most rivers had been fully appropriated, and the appropriation of aquifers was not far behind. The law had established private rights to the use of public waters, and those rights now controlled the uses of rivers and aquifers. Seemingly, these rights precluded regulation intended to mitigate their harmful effects, or at least state leaders (and water rights attorneys) claimed so. As we will see, courts have applied only federal laws to require modification of some water uses—usually under vehement opposition from the states.⁴⁶

Still others have pointed to disadvantaged communities such as American Indian tribes that have not received sufficient access to water under state prior appropriation systems.⁴⁷ Relatedly, these critics noted that state law did not always enable federal land management agencies to manage the waters within these lands in ways consistent with federal objectives.⁴⁸ States, concerned with protecting users holding established prior appropriation water rights, have resisted efforts under the reserved rights doctrine to redress the situation.⁴⁹

43. See, e.g., WORLD COMM'N ON DAMS, DAMS AND DEVELOPMENT: A NEW FRAMEWORK FOR DECISION-MAKING 74-84 (2000); MICHAEL COLLIER ET AL., U.S. GEOLOGICAL SURVEY, DAMS AND RIVERS: PRIMER ON THE DOWNSTREAM EFFECTS OF DAMS 3, 7 (1996); SANDRA POSTEL & BRIAN RICHTER, RIVERS FOR LIFE: MANAGING WATER FOR PEOPLE AND NATURE 2-3, 20-21 (2003).

44. For a discussion of how state water law pays little attention to water quality, see DAVID H. GETCHES ET AL., CONTROLLING WATER USE: THE UNFINISHED BUSINESS OF WATER QUALITY PROTECTION 89-92 (1991).

45. ELWOOD MEAD, IRRIGATION INSTITUTIONS: A DISCUSSION OF THE ECONOMIC AND LEGAL QUESTIONS CREATED BY THE GROWTH OF IRRIGATED AGRICULTURE IN THE WEST 347-48 (1903); WILLIAM D. ROWLEY, RECLAMATION: MANAGING WATER IN THE WEST, THE BUREAU OF RECLAMATION: ORIGINS AND GROWTH TO 1945, at 60 (2006).

46. See Getches, *Metamorphosis*, *supra* note 41, at 24.

47. See DAVID M. GILLILAN & THOMAS C. BROWN, INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE 193 (1997); Sally K. Fairfax & A. Dan Tarlock, *No Water For The Woods: A Critical Analysis of United States v. New Mexico*, 15 IDAHO L. REV. 509, 517, 528-29 (1979).

48. GILLILAN & BROWN, *supra* note 47, at 204-05.

49. See, e.g., Michael C. Blumm, *Reversing the Winters Doctrine?: Denying Reserved Water Rights for Idaho Wilderness and its Implications*, 73 U. COLO. L. REV. 173, 174-76 (2002);

While not expressly a problem with prior appropriation law, these examples illustrate interests not accommodated under most existing state laws.

Still another important source of pressure on the traditional water law system emerged from the need to meet continuing new demands for water in a world in which water resources had been almost fully claimed by existing users, and in which there were increasingly few opportunities for additional water development.⁵⁰ With no new large federal water projects forthcoming and with groundwater aquifers beginning to show signs of overuse, those with new water needs started to look at existing uses. The first thing that became evident was the extent to which the West's water resources had been committed to irrigated agriculture—ninety percent of all diversions were for irrigation and eighty percent of all water consumption resulted from such use.⁵¹ This was, of course, exactly what the early proponents of prior appropriation wanted: a stable system of water uses benefiting as much land and as many farms and ranches as possible, protected by their priorities to the continued use of the “duty of water” needed to successfully grow crops. The system worked. Irrigators controlled the use of the water in virtually every stream and river in the West with nearby irrigable land.

Given the often-marginal nature of irrigated agriculture in many parts of the West, irrigators used water as easily and cheaply as they could.⁵² They flooded pasture lands to grow grasses; they diverted water from the streams using brush dams, gravel mounded up into temporary berms using bulldozers, piles of rocks, or old car bodies; they ran water from the stream to the field through ditches dug out of the earth with plows, scrapers, and shovels; and they turned the water onto the fields at upper elevations, counting on gravity to spread the water over the land. Sometimes they dug furrows to help move the water past the roots of the crops. They worried mostly about getting plenty of water to their fields, not really knowing how much their crops required but assuming that more was better than less. They didn't care much what happened to the water once it left their property. No law required them to return unconsumed water to the stream.

Yet, the West was changing, and an increasing number of its people wanted the region's water resources to be used differently—at least to some degree. It seemed the doctrine of prior appropriation and its progeny, water rights, stood in the way of any change. The critics set to work highlighting the beleaguered condition of western rivers and aquifers, the values and interests that were not represented adequately (in their view) under the traditional prior appropriation system, focusing on the enormous quantities of water committed to irrigation using practices that, on average, only consumed half of the water

Lois G. Witte, *Still No Water for the Woods*, ALL-ABA Federal Lands Law Conference, Salt Lake City, Utah 9–14 (Oct. 19, 2001), http://www.stream.fs.fed.us/publications/PDFs/Still_no_water_for_the_woods.pdf.

50. A good overview is provided in NAT'L RESEARCH COUNCIL, *WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY, AND THE ENVIRONMENT* (1992).

51. NAT'L RESEARCH COUNCIL, *A NEW ERA FOR IRRIGATION* 52–56 (1996).

52. A summary of the economic value of crops grown using irrigation in the western states is provided in MARC REISNER & SARAH BATES, *OVERTAPPED OASIS: REFORM OR REVOLUTION FOR WESTERN WATER* 32–34 (1990).

diverted from streams and aquifers.⁵³ While the states have made modest changes in their water laws, most notably in incorporating mechanisms to enable protection of instream flows, the basic system remains substantially intact.⁵⁴

Elwood Mead was an early critic of the self-initiation form of prior appropriation.⁵⁵ In his 1903 classic, *Irrigation Institutions*, he stated:

The whole principle is wrong. It is wrong in principle as well as faulty in procedure. It assumes that the establishment of titles to the snows on the mountains and the rains falling on the public land and the water collected in the lakes and rivers, on the use of which the development of the state in a great measure depends, is a private matter. It ignores public interests in a resource upon which the enduring prosperity of the community must rest. It is like *A* suing *B* for control of property which belongs to *C*. Many able attorneys hold that these decreed rights will in time be held invalid because when they were established the public, the real owner of the property, did not have its day in court.⁵⁶

Colorado attorney Moses Lasky pointed to the strong bias against administrative decision making in the United States during the era in which prior appropriation developed, the preference (and even necessity) for individual assertion of rights under frontier conditions,⁵⁷ and the strong preference among common-law trained lawyers for determination of legal rights by courts in the context of a specific dispute.⁵⁸ Because of the widespread adoption of permitting systems by 1928, Lasky concluded that “[t]oday prior-appropriation is the law nowhere in the West.”⁵⁹

The critic who pronounced prior appropriation dead, Professor Charles Wilkinson, earlier identified four major problems with the law: economic failings, failure to respect interests of other governments, excluded policy objectives, and bad science.⁶⁰ In addition to federal reclamation subsidies and the benefits available through special water districts (neither specifically matters of prior appropriation law), Wilkinson pointed to the absence of consideration of the externalities of water development and use and, most importantly, the fact that appropriators take water without payment to the public.⁶¹ Other governments excluded under prior appropriation, he noted, are tribes and Mexico.⁶² Foremost among excluded policy objectives, in his view, is water conser-

53. The present author was a participant in this process, offering his own prescriptions for changes, most comprehensively in *FROM RECLAMATION TO SUSTAINABILITY*, *supra* note 34, at 39-42, 45, 47, 49-51. He presented his suggestions under four broad headings: reducing the gap between diversions and consumption; allowing rivers to function like rivers; changing uses to meet new demands; and place-based collaboration. *Id.*

54. *See infra* Part I.

55. Mead believed strongly that states should control uses of water, as a common and essential resource, on behalf of their citizens. *See* MEAD, *supra* note 45, at 207.

56. *Id.*

57. *See infra* Part I.A-B (discussion of development of prior appropriation in mining camps of California).

58. Moses Lasky, *From Prior Appropriation to Economic Distribution of Water by the State—via Irrigation Administration*, 1 ROCKY MTN. L. REV. 161, 168 (1928-1929).

59. *Id.* at 170.

60. Charles F. Wilkinson, *Aldo Leopold and Western Water Law: Thinking Perpendicular to the Prior Appropriation Doctrine*, 24 LAND & WATER L. REV. 1, 12-19 (1989).

61. *Id.* at 12-14.

62. *Id.* at 14-15.

vation.⁶³ Also historically excluded was protection of instream flows.⁶⁴ He also points to the absence of planning under prior appropriation.⁶⁵ Under science, he points to the lack of integration of uses of surface water and groundwater, failure to account for water needs of wildlife, and the absence of any consideration of water quality effects of water use.⁶⁶ In an earlier article, Wilkinson focused on the changing values and interests of westerners, which he found differed from those that dominated at the time the prior appropriation doctrine emerged and became institutionalized.⁶⁷

Wilkinson's colleague, David Getches, tended to focus his critiques more broadly on water policy than just prior appropriation, but he found a number of deficiencies in the basic appropriation doctrine as well.⁶⁸ To promote greater water use efficiency, Getches proposed changing the law to enable an appropriator who conserves water to retain the right to its use.⁶⁹ He called for more active application of the beneficial use principle to impose restrictions on diversions of water in excess of amounts required for actual use.⁷⁰ Getches also highlighted the limited consideration given under prior appropriation to public values and suggested the need to incorporate these values into water planning.⁷¹

63. *Id.* at 16 (referring in particular to the substantial amounts of water diverted compared to the amounts actually consumed by crops in irrigation).

64. *Id.*

65. *Id.* at 16-17.

66. *Id.* at 17-18.

67. Charles F. Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317, 317-21 (1985).

The field [of western water law] has been dominated by the themes of appropriation under state law; stable priority for historic uses; concern for private rights over public rights; preference for consumptive, usually commercial, uses; and the provision of subsidized water for irrigators. It goes virtually without saying that this range of nineteenth and early twentieth century priorities is not as broad as the spectrum of considerations that must be accommodated in current water policy.

Id. at 321.

68. These two scholars, joined by Sarah Bates and Lawrence MacDonnell, produced SARAH BATES ET AL., *SEARCHING OUT THE HEADWATERS: CHANGE AND REDISCOVERY IN WESTERN WATER POLICY* (1993). This book outlines the four principles they believed should guide the development of western water policy: the principle of conservation; the principle of equity; the principle of ecology; and a water ethic. *Id.* at 178-98.

69. David H. Getches, *Water Use Efficiency: The Value of Water in the West*, 8 PUB. LAND L. REV. 1, 15 (1987) ("California made a major improvement in its law in 1983 by allowing the salvager to sell and reuse salvaged water. The law recognizes conservation as a beneficial use and declares that rights to conserved water are not abandoned when they are unused." (footnote omitted)) [hereinafter Getches, *Water Use Efficiency*].

70. *See id.* at 26-29.

71. *See id.* at 29 ("The most effective way to reflect public values in water decisions may be to integrate them into the considerations that are made during a comprehensive water planning process."). Getches also suggested articulation of standards to guide public interest review. *See* David H. Getches, *Changing the River's Course: Western Water Policy Reform*, 26 ENVTL. L. 157, 168-69 (1996); *see also* David H. Getches, *Water Wrongs: Why Can't We Get It Right the First Time?*, 34 ENVTL. L. 1, 13, 15 (2004); David H. Getches, *Water Planning: Untapped Opportunity for the Western States*, 9 J. ENERGY L. & POL'Y 1, 18, 33 (1988-1989); David H. Getches, *From Askhabad, to Wellton-Mohawk, to Los Angeles: The Drought in Water Policy*, 64 U. COLO. L. REV. 523, 546 (1993) ("We follow the consequences of a commitment of water

In a process Getches helped initiate while he was Director of the Colorado Department of Natural Resources under Governor Richard Lamm, the Western Governors' Association established a "water efficiency working group" in 1986.⁷² A report by scholar-in-residence Bruce Driver emphasized the importance of water transfers, water salvage and conservation, and conjunctive use for improving efficiency of water uses.⁷³ Driver's report embraced water marketing, including from federal Bureau of Reclamation facilities, supported state laws encouraging conservation while noting the challenges associated with not reducing historic return flows, and suggested additional steps to protect instream flows.⁷⁴

Professor John Lesly has called for the development of a progressive national water policy that would entail a number of improvements in existing systems of state water management.⁷⁵

- A. States should have better information and more capacity to manage and regulate water use within their borders;
- B. States should have effective, comprehensive programs to provide enough water flows in their streams to ensure a meaningful level of ecological health;
- C. States should have effective groundwater regulation programs to sustain groundwater-dependent communities over the long term and to protect associated surface waters;
- D. States should make stronger efforts to link regulation of land use and water use;
- E. States should vigorously promote measures to conserve and make more

only so far as the next water user."). Getches recognizes that "governments still have not confronted the root cause of water problems: the absence of a comprehensive water policy," and proposes tools such as new institutions, formulation of long-range goals, and thorough analysis of alternatives and consequences. *Id.* at 549-52; *see generally* Getches, *Metamorphosis*, *supra* note 41 (noting that only limited changes in state laws related to conservation and efficiency, groundwater, instream flow, public interest, planning, and transfers and marketing, have occurred).

72. WESTERN GOVERNORS' ASS'N, WATER EFFICIENCY: OPPORTUNITIES FOR ACTION, A REPORT TO THE WESTERN GOVERNORS FROM THE WESTERN GOVERNORS' ASSOCIATION WATER EFFICIENCY WORKING GROUP, at ii (1987) [hereinafter WATER EFFICIENCY].

73. BRUCE DRIVER, WESTERN GOVERNORS' ASS'N, WESTERN WATER: TUNING THE SYSTEM, at v (1986). The report's first finding was that

Transfers of water, salvage, and conservation of water, conjunctive use of substitutable supplies of water and provision of alternative supplies of water for seniors through exchanges and other measures can help meet western water needs cost-effectively and add new wealth to the region. Western states should redouble their efforts to encourage implementation of these means.

Id.

74. *Id.* at v-ix.

75. John Lesly, *Notes on a Progressive National Water Policy*, 3 HARV. L. & POL'Y REV. 133, 134, 144-45 (2009). Lesly notes that "States have not always been very vigorous about asserting regulatory control and oversight over water management matters." *Id.* at 145. Moreover, Lesly observes that "water policy is stubbornly resistant to sweeping change." *Id.* at 144.

efficient use of water;

F. States should have clear policies and processes for addressing transfers of water rights, particularly from agricultural to municipal, industrial, and ecological uses; and

G. States should more vigorously monitor and, where necessary, regulate the activities of special government districts to serve state policy objectives.⁷⁶

Water law scholar Dan Tarlock has suggested that the role of prior appropriation is increasingly of secondary importance in a changing West.⁷⁷ According to Tarlock,

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 or argued that it should be replaced by non-perpetual permit systems that better value consumptive and instream uses.⁷⁸

Tarlock argues prior appropriation will continue to form the basic structure of western water law, but the importance of that structure will diminish.⁷⁹ Thus, he predicts:

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.⁸⁰

In his view, the best evidence for the reduced importance of classical prior appropriation is what he sees as the diminished importance of the priority rule.⁸¹

Tarlock is clearly right. The prior appropriation doctrine is essentially an allocative mechanism. Its concern is with the formation of use rights. That job is essentially complete. Very little water in the western states remains unallocated for direct human uses. We are in a world of managing our sources of water to meet as many of those allocated uses as we reasonably can. Moreo-

76. *Id.* at 146-51.

77. A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RESOURCES J. 769, 773-75 (2001) [hereinafter Tarlock, *Future*] (noting that "[t]he 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" and that, "the doctrine's importance as a water allocation driver has decreased in the past decades.").

78. *Id.* at 772 (footnote omitted).

79. *See id.* at 775, 786.

80. *Id.* at 775.

81. *Id.* at 780-85.

ver, we are simultaneously attempting to find water in this fully allocated system for the ecological and recreational benefits attendant to it and for the unmet needs on Indian reservations, as well as to enable some existing uses of water to shift to meet new direct human demands. Some important modifications to existing prior appropriation law are needed, but so too are new approaches that move well beyond this regime.⁸²

Perhaps the most visible critic of our misuses of water in recent years has been Professor Robert Glennon.⁸³ In the concluding chapter of *Unquenchable*, he provides the following list of proposed “reforms”:

- encouraging creative conservation
- using price signals
- creating market incentives
- reexamining how we dispose of human waste
- requiring developers to pay their own way
- reconsidering the location of wastewater plants
- separating storm water from sewer water
- creating infrastructure with dual pipes to supply potable and reclaimed water
- abandoning business as usual (more dams, diversions, and wells)
- recognizing the link between water and energy
- appreciating the critical role played by water in the economy
- removing barriers to water transfers while providing for government oversight of them
- creating incentives for homeowners and others to harvest water
- stimulating alternative waste disposal technologies
- metering water use
- securing water for the environment.⁸⁴

These recommendations serve perhaps more as a statement of goals than as prescriptions for reform—but they capture some of the most common refrains: the need for more efficient use of water and for improved environmental protection.

In Part I, this Article looks at prior appropriation’s formative period; examines the process of its early development in California, Nevada, and Colorado; considers its transition into state statutory law; examines its reformation

82. *Id.* at 785–86 (suggesting these additions are likely to focus on ways to accomplish contemporary interests that extend well beyond the allocation function of prior appropriation).

83. See generally ROBERT GLENNON, *WATER FOLLIES: GROUNDWATER PUMPING AND THE FATE OF AMERICA’S FRESH WATER* (2002) [hereinafter GLENNON, *WATER FOLLIES*]; ROBERT GLENNON, *UNQUENCHABLE: AMERICA’S WATER CRISIS AND WHAT TO DO ABOUT IT* (2009) [hereinafter GLENNON, *UNQUENCHABLE*].

84. GLENNON, *UNQUENCHABLE*, *supra* note 83, at 317.

into a publicly-managed system; and assesses its evolution to the present. The Article's principal purpose is to examine the state of prior appropriation today, to consider whether its principles and practices are developing and evolving consistent with the needs and interests it is intended to support. Part II discusses ten fundamental features of prior appropriation that require modification to keep pace with a West that is currently concerned not with matters of allocation of water use rights, but with management of rivers and aquifers to support a wide array of needs and interests.⁸⁵

I. THE DEVELOPMENT OF PRIOR APPROPRIATION LAW AND ADMINISTRATION

A. INTRODUCTION

Use of water played an important role in the settlement of the American West. The rules governing human uses of water emerged during the course of this settlement and reflected many influences, including the customs of Spain and Mexico; the common law riparian doctrine of the eastern United States; the community principles brought by the Mormons to irrigation in what became Utah; and the practices of gold miners on public lands in California, Nevada, and Colorado.⁸⁶ Out of this rich stew emerged the doctrine of prior appropriation, ultimately adopted, at least in part, as the law in at least seventeen western states.⁸⁷

The basic principles of prior appropriation are well known. In its original form, taking possession of (diverting or withdrawing) some portion of water—a rule of capture—initiated the water right, so long as the possession was accompanied by intent to make some productive use of the water.⁸⁸ As refined, the use itself became necessary to vest the right; the use had to be “beneficial.” A still further refinement limited the quantity of water taken from the source to the amount necessary for the beneficial use, not just the quantity of water physically possessed.⁸⁹ Unlike under the common law riparian doctrine, there were no restrictions on the place of use.⁹⁰ In times of shortage, earlier appropriators (seniors) held the better right.⁹¹ Failure to continue to exercise the right, however, potentially resulted in its loss through abandonment.⁹²

As Donald Pisani has noted, there was nothing inevitable about the adoption of prior appropriation.⁹³ Early court decisions justified this approach,

85. These ten elements are: priority, public ownership, beneficial use, conditional rights, abandonment, forfeiture, changes of use, groundwater use, instream flow, and adjudication.

86. See Lasky, *supra* note 58, at 166; see also Getches, *Water Use Efficiency*, *supra* note 69, at 4; Wilkinson, *supra* note 67, at 317-19; John E. Thorson et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams*, 8 U. DENV. WATER L. REV. 355, 389-408 (2005) [hereinafter Thorson II].

87. See GETCHES, *supra* note 6, at 7-8.

88. See *infra* notes 236-42 and accompanying text.

89. See *Archuleta v. Gomez*, 200 P.3d 333, 343 (Colo. 2009).

90. See *id.* at 340.

91. *Id.* at 341; see also COLO. CONST. art. 16, § 6.

92. *Archuleta*, 200 P.3d at 344.

93. DONALD J. PISANI, *TO RECLAIM A DIVIDED WEST: WATER, LAW, AND PUBLIC POLICY 1848-1902*, at 31 (Ray A. Billington et al. eds., 1992).

while simultaneously disregarding the common law of riparianism, on the physical conditions and circumstances of settlement and development in the West—its general aridity, the limited sources of water supply, the unusually large demands for use of water to enable mining and irrigation and, of course, the actions of the users themselves that sometimes reflected a very different view of the role of water and the manner of its use than prevailed under the riparian doctrine.⁹⁴ Less often stated but obviously important was the uncertainty in the law that should apply, for although the United States owned virtually all the lands in its western territories through purchase and treaty and presumably “owned” the associated water, Congress had not expressed its intent respecting uses of water on federal lands.⁹⁵ The new State of California was anxious to encourage mining on federal lands within its territory but was uncertain about its legal authority on those lands.⁹⁶ Some territorial legislatures eventually began to enact laws respecting uses of water within their boundaries, but the effect of those laws on appropriations made on federal public lands within the state was uncertain.⁹⁷

B. ORIGINS OF PRIOR APPROPRIATION

The story is now a familiar one in water law: how prospector-trespassers⁹⁸ on newly acquired federal lands in the even more recently established State of California developed their own rules to govern both the search for gold and the use of water.⁹⁹ The principles of prior appropriation as we know them today did not spawn fully formed from this process. To the contrary, it was a gradual process of development with many different ideas competing for acceptance. The common law existing in the eastern states known as the doctrine of riparianism substantially influenced the process.¹⁰⁰ There was the possibility that state or territorial legislatures would make legislative grants to individuals or corporations to use water. Congress itself might have decided to establish its own rules respecting uses of water on public lands. Instead, the original rules were largely those developed by the users themselves, as interpreted and applied by the courts.

First and foremost, it was the actions of prospectors needing water for mining operations in the remote, unsettled mountains of California that shaped the original rules. Despite the penchant for academics to impose ideological or philosophical labels on the ideas underlying the prospectors' actions, it is perhaps more useful to simply acknowledge the particular nature

94. See, e.g., *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 446, 448 (1882).

95. See, e.g., *Hoffman v. Stone*, 7 Cal. 46, 48 (1857) (“The former decisions of this Court, in cases involving the right of parties to appropriate waters for mining and other purposes, have been based upon the wants of the community and the peculiar condition of things in this State, (for which there is no precedent,) rather than any absolute rule of law governing such cases.”).

96. *Hicks v. Bell*, 3 Cal. 219, 223, 226–27 (1853).

97. See *Willey v. Decker*, 73 P. 210, 214–15 (Wyo. 1903).

98. See *United States v. Gear*, 44 U.S. 120, 120 (1845); see also SAMUEL C. WIEL, 1 WATER RIGHTS IN THE WESTERN UNITED STATES 86–87 (3d. ed. 1911) [hereinafter WIEL, WATER RIGHTS].

99. See, e.g., PISANI, *supra* note 93, at 11–14.

100. See *id.* at 31; Frank J. Trelease, *Coordination of Riparian and Appropriative Rights to the Use of Water*, 33 TEX. L. REV. 24, 31–35 (1954).

of the needs for water that motivated their actions and the circumstances in which they operated. Mining for gold, as it existed during the early years in California, required the use of large quantities of water.¹⁰¹ Streams were relatively numerous but generally small, with wide variability in annual flows common to snowmelt systems. In some cases, the miners were interested in the gravels in and along the streams; in others, they needed large volumes of water under high pressure to blast rock off hillsides.¹⁰² Early on, it became common for companies that were able to make the investment in building the diversion and conveyance systems needed for supply to provide water to miners.¹⁰³

Until 1866 the miners and water users operated on federal lands without permission from Congress;¹⁰⁴ their legal status was therefore unclear. California courts addressed conflicts between competing users and recognized their possessory rights, at least as based on customs applicable in their mining district, while acknowledging their lack of ownership or express right to use the land and water.¹⁰⁵ In a world where possession established claim of right, many miners believed, and the courts eventually agreed, that priority should serve to resolve conflicts between competing claimants—both for land and for water.¹⁰⁶

But water is different than land. It doesn't stay put. One cannot place stakes around water to mark out the area or amount claimed. Possession required physical control—diversion of water from a stream into a ditch. The act of diversion manifested an assertion of claim to the amount of water diverted. The miners needed large volumes to move the gravels and to separate the gold, but the use was largely nonconsumptive. Nevertheless, miners often permanently removed water from its original source and carried it to other locations of need. The consequences of mining included an enormous disruption in the landscape and a widespread rearrangement of the hydrology, according to the constantly changing areas of development and needs of the miners.¹⁰⁷

It was under these conditions that the courts of California sought to define legal principles that would help facilitate mining activities while also managing the conflicts that required judicial resolution. Several decisions noted the unique challenges presented by these new and substantial uses of water, especially due to the lack of legislation or even relevant precedent to apply.¹⁰⁸ In

101. See *Titcomb v. Kirk*, 51 Cal. 289, 289, 292 (1876), for an early California decision providing historical background. See also WIEL, *WATER RIGHTS*, *supra* note 98, at 74.

102. ROBERT L. KELLEY, *GOLD VS. GRAIN: CALIFORNIA'S HYDRAULIC MINING CONTROVERSY, A CHAPTER IN THE DECLINE OF THE CONCEPT OF LAISSEZ FAIRE* 21-56 (1959); RODMAN W. PAUL, *CALIFORNIA GOLD* 147-49, 152-53 (Harvard Univ. Press 1947).

103. PISANI, *supra* note 93, at 16-19.

104. See Act of July 26, 1866, ch. 262, §§ 1, 9, 14 Stat. 251 (repealed by Federal Lands Policy and Management Act of 1976, Pub. L. No. 94-579, § 706(a), 90 Stat. 2744, 2793) [hereinafter *Mining Act of 1866*]; *Basey v. Gallagher*, 87 U.S. 670, 678 (1874).

105. See *infra* cases cited in notes 110-58.

106. See PISANI, *supra* note 93, at 20-31.

107. See *id.* at 15-16, 18-19.

108. Thus, in *Hoffman v. Stone*, 7 Cal. 46, 48 (1857), the court stated: "The absence of legislation on this subject, has devolved on the Courts the necessity of framing rules for the protection of this great interest, and in determining these questions, we have conformed, as nearly as

the words of a treatise writer on the new laws of mining and water in California: "There being no legislation to interpret, the Courts have laid down the rules upon principles deemed proper at the time, and these have gradually become incorporated into the jurisprudence of the State, until they are as firmly established as the principles of law regulating any other species of rights."¹⁰⁹

The first water law case to reach the California Supreme Court, *Eddy v. Simpson*,¹¹⁰ aptly illustrates the new issues the courts faced involving uses of water. In *Eddy*, both parties had initially diverted water from different sources to use for mining. Some of the water originally diverted by the defendants flowed into the source diverted by plaintiffs after defendants used it on their land.¹¹¹ Defendants then constructed a diversion above plaintiffs' source and claimed the right to withdraw the water deposited in plaintiffs' source as a result of these efforts.¹¹² The trial court found for the defendants on the theory that, but for the effort of the defendants, the diverted water would not otherwise have ended up in the plaintiffs' source.¹¹³ The California Supreme Court

possible, to the analogies of the common law." Then, in *Bear River and Auburn Water and Mining Co. v. New York Mining Co.*, 8 Cal. 327, 332 (1857), the court added:

It may be said, with truth, that the judiciary of this State has had thrown upon it responsibilities not incurred by the Courts of any other State in the Union. In addition to those perplexing cases that must arise, in the nature of things, and especially in putting into practical operation, a new constitution and a new code of statutes, we have had a large class of cases unknown in the jurisprudence of our sister States. The mining interest of the State has grown up under the force of new and extraordinary circumstances, and in the absence of any specific and certain legislation to guide us. Left without any direct precedent, as well as without specific legislation, we have been compelled to apply to this anomalous state of things the analogies of the common law, and the more expanded principles of equitable justice. There being no known system existing at the beginning, parties were left without any certain guide, and for that reason, have placed themselves in such conflicting positions that it is impossible to render any decision that will not produce great injury, not only to the parties immediately connected with the suit, but to large bodies of men, who, though no formal parties to the record, must be deeply affected by the decision. No class of cases can arise more difficult of a just solution, or more distressing in practical result. And the present is one of the most difficult of that most perplexing class of cases.

109. GREGORY YALE, *LEGAL TITLES TO MINING CLAIMS AND WATER RIGHTS IN CALIFORNIA UNDER THE MINING LAW OF CONGRESS, OF JULY, 1866*, at 138 (1867).

110. 3 Cal. 249 (1853). Earlier that year the court considered a case involving water, *Ramsey v. Chandler*, 3 Cal. 90 (1853), involving damage to a mining claim caused by overflow of water from a ditch. It was an action in nuisance and did not involve principles of water law. *Id.* at 90.

111. *Eddy*, 3 Cal. at 251-52.

112. *Id.*

113. *Id.* at 250. The instruction to the jury made by the district court, though not accepted in this opinion, provides a clear statement of what became the principles adopted by the California Supreme Court:

As a general principle, the party who first uses the water of a stream, is by virtue of priority of occupation entitled to hold the same. If a company or association of miners construct a ditch, to convey water from a running stream for mining or other purposes, and they are the first to use the water, locate and construct the ditch, they are legally entitled to the same as their property, to the extent of the capacity of the ditch to hold and convey water. For, if it appears that there is more water running in the stream than the ditch of the first party can hold and convey, then any other party may

reversed, holding that defendants had lost their rights to the water when they lost their original possession.¹¹⁴ The court believed it was applying "known principles and well-settled law"¹¹⁵ in reaching this conclusion, but it was the law of a world in which people did not divert water and move it to places outside the watershed. The court recognized the matter involved a "novel question growing out of the peculiar enterprises in which many of the people of this State are embarked,"¹¹⁶ but it wanted to apply what it believed was well settled law. The court noted that the legal right to water under traditional common law is in its use, not its ownership.¹¹⁷ It accepted that both parties claimed their right based on their possession of water in accordance with the custom that had developed in the mining districts on federal land.¹¹⁸

Two years later, in the landmark case *Irwin v. Phillips*, the court considered a dispute between one party claiming a right based on the new custom of "prior occupation" and another party asserting rights under the common law riparian doctrine as the miner of a claim riparian to the stream.¹¹⁹ Noting, however, that the claimant was not the owner of the land, the court determined that riparian principles did not apply.¹²⁰ It went further, however, in affirming its recognition of the local customs that governed rights to hold both land and water on the public domain and stated that "Courts are bound to take notice of the political and social condition of the country, which they judicially rule."¹²¹ This included the legitimacy of occupying federal lands for mineral development and "the rights of those who, by prior appropriation, have taken the waters from their natural beds, and by costly artificial works have conducted them for miles over mountains and ravines, to supply the necessities of gold diggers, and without which the most important interests of the mineral region would remain without development."¹²² Ultimately the court

rightfully take and use the surplus, and it does not matter whether the excess of water be taken from a point above or below the dam of the first party.

Id. (citation omitted).

114. *Id.* at 252-53.

115. *Id.*

116. *Id.*

117. *Id.* at 252. Contrastingly, Yale believed the actual custom of appropriation in California regarded diverted water as property, giving its appropriator full rights to do whatever he wished with the water. Thus, he says in commenting on the *Eddy* decision: "we trace the law of *appropriation* as the rule of right in determining the *ownership* to water as a commodity." YALE, *supra* note 109, at 157 (emphasis in original).

118. *Eddy*, 3 Cal. at 249-50, 252; see WIEL, WATER RIGHTS, *supra* note 98, at 80-81 (discussing recognition of possessory rights developed by miners on federal land).

119. 5 Cal. 140, 145-47 (1855).

120. *Id.* For a very helpful discussion of the continuing legal uncertainties both concerning the status of the common law and the question of legal rights on federal lands faced by both miners and water providers until Congress enacted the 1866 Act, see WIEL, WATER RIGHTS, *supra* note 98, at 80-103.

121. *Irwin*, 5 Cal. at 146.

122. *Id.* As to this, Yale finds what he believes is the true policy of the new principles—encouragement of mining and reward for one's labors:

That this policy may be stated with sufficient definiteness to be the right of individual appropriation, subject to such rules and limitations as may be necessary to give effect to the two leading principles: First, the most productive working of the mines. Sec-

decided the case based on priority, giving the better right to the senior upstream water supplier.¹²³

The numerous cases that followed during the remainder of the decade presented a variety of different conflicts between water users and added some further detail to the basic principles in contention. For example, the following year, in *Conger v. Weaver*, the court determined that the right of appropriation vested from the first steps taken to its diligent accomplishment, not from the time of completion of the facilities or the time of actual use:

[I]n the case of constructing canals, under the license from the State, the survey of the ground, planting stakes along the line, and actually commencing and diligently pursuing the work, is as much possession as the nature of the subject will admit, and forms a series of acts of ownership which must be conclusive of the right.¹²⁴

In that same year, the court explained that “[p]ossession, or actual appropriation, must be the test of priority in all claims to the use of water, whenever such claims are not dependent upon the ownership of the land through which the water flows.”¹²⁵

In 1857, the Court offered this explanation of the law:

ond, the interests, convenience, and profit of the greatest number. But these last principles are subservient to another principle, which is necessary to give effect to these primary principles, and this principle is protection to labor and encouragement of it, which can only be given by allowing to mining claims and *appropriations* a right of property, with its incidents.

YALE, *supra* note 109, at 158–59 (emphasis in original).

123. *Irwin*, 5 Cal. at 146–47. Yale provides this statement of the holding:

The broad doctrine was then announced for the first time in any system of jurisprudence, that the right to the unlimited use of water in a running stream vested in the first appropriator, whether a riparian owner or not, with the correlative right to divert it to any extent, for sale or other use; and that subsequent locators, even for mining purposes, upon the banks of the same stream, as riparian owners, could only acquire an interest in the water for any purpose subordinate to the right of the first appropriator, provided any water was left.

YALE, *supra* note 109, at 137.

124. *Conger v. Weaver*, 6 Cal. 548, 558 (1856). The Court stated:

But, from the nature of these works, it is evident that it requires time to complete them, and from their extent, in some instances, it would require much time; and the question now arises, at what point of time does the right commence, so as to protect the undertaker from the subsequent settlements or enterprises of other persons. If it does not commence until the canal is completed, then the license is valueless, for after nearly the whole work has been done, any one, actuated by malice or self-interest, may prevent its accomplishment; any small squatter settlement might effectually destroy it.

Id.

125. *Kelly v. Natoma Water Co.*, 6 Cal. 105, 108 (1856). The issue concerned whether defendant’s appropriation was senior because of evidence of some intent to divert water prior to the construction of plaintiff’s diversion. The court stated that “[s]uch appropriation cannot be constructive, because there would be no rule to limit or control it, resting, as it must, only in intention.” *Id.*

The fact early manifested itself, that the mines could not be successfully worked without a proprietorship in waters, and it was recognized and maintained. To protect those who, by their energy, industry, and capital, had constructed canals, and races, carrying water for miles into parts of the country which must have otherwise remained unfruitful and undeveloped, it was held that the first appropriator acquired a special property in the waters thus appropriated, and as a necessary consequence of such property, might invoke all legal remedies for its enjoyment or defense. A party appropriating water, has the sole and exclusive right to use the same for the purposes for which it was appropriated, and so long as he is not obstructed in the use thereof, he has no ground of action.¹²⁶

Here the court upheld the ability of an appropriator to recapture and use water it transported to another watershed, considering the bed of the intermittent stream in the watershed comparable to a ditch.¹²⁷

In *Maeris v. Bicknell*,¹²⁸ the California court considered whether a diversion made to shift water out of the channel so that the gravels in the bed could be worked constituted an appropriation of water.¹²⁹ It concluded that a valid appropriation "must be for some useful purpose" and that diverting water to drain the channel did not constitute such a purpose.¹³⁰

126. *Hoffman v. Stone*, 7 Cal. 46, 49 (1857); *sec also* *Butte Canal & Ditch Co. v. Vaughn*, 11 Cal. 143 (1858).

127. *Id.* Thus, the court altered its previous position in *Eddy v. Simpson*. A case decided that same year, *Bear River and Auburn Water and Mining Co. v. New York Mining Co.*, raised the question of the quality of water to which an appropriator was entitled. 8 Cal. 327, 333 (1857). The *Bear River* court noted the common law principle that a riparian is entitled to enjoy the flow undiminished in both quantity and quality, but found these requirements unsuited to conditions in the mining region of California. *Id.* It pointed out that water is commonly diverted not only out of the stream but often out of the watershed, clearly diminishing or even eliminating the natural flow and that:

[t]he water is taken to a locality where it is used; and after being so used, it finds its way to other mining localities, where it is again used. The effect of the diversion is not to diminish the number of times the water may be used. In the majority of cases, it is used as often, and upon the whole, as profitably, as if it had never been diverted, but had continued to flow down its natural channels. The general usefulness of the element is not impaired by the diversion. It may be very safely assumed, that as much good, if not more, is accomplished by the diversion, as could have been attained, had such diversion never occurred. In fact, we must, in reason, presume that the water is taken to richer mining localities, where it is more needed, and, therefore, the diversion of the stream promotes this leading interest of the State.

Id. at 334. Similarly, the court pointed out that upstream mining uses necessarily introduce sediment into streams, thereby diminishing the quality of the water. To require that water quality not be impaired would be to deny the ability to mine. *Id.* at 335-36. It thus concluded that such impairment constituted injury without compensable damage. *Id.* at 336.

128. 7 Cal. 261 (1857).

129. *Id.* at 262.

130. *Id.* at 262-63. *Crandall v. Woods*, another 1857 decision, also determined the rule of priority applied not only to claims of water for mining but for other purposes as well. 8 Cal. 136 (1857). In that case, the parties claiming public land for agriculture resisted appropriation of water originating from springs on the farmed land on the basis that their possession of the land included the right to the use of appurtenant water. *Id.* at 140-41. The court rejected this assertion of riparian rights, stating:

In 1859, *Ortman v. Dixon*¹³¹ raised the question of whether a senior appropriation of water to power a mill could be moved upstream, apparently for different uses, to a ditch above that of the objecting plaintiff. The court reasoned that because the defendant's mill did not require use of all of the flows all of the time, the plaintiff, an upstream junior appropriator, had established rights to the water he had diverted that could not be infringed by the proposed change of use.¹³² In the court's own words, "[t]he measure of the right, as to extent, follows the nature of the appropriation, or the uses for which it is taken."¹³³

In *McDonald v. Bear River & Auburn Water & Mining Co.*,¹³⁴ a case involving a dispute between an upstream diverter for mining and a downstream mill operator, the court made this statement of law:

The ownership of water, as a substantive and valuable property, distinct, sometimes, from the land through which it flows, has been recognized by our Courts; and this ownership, of course, draws to it all the legal remedies for its invasion. The right accrues from appropriation; this appropriation is the intent to take, accompanied by some open, physical demonstration of the intent, and for some valuable use. We have held that there is no difference in respect to this use, or rather purpose, to which the water is to be applied; at least, that an appropriation for the uses of a mill stands on the same footing as an appropriation or the use of the mines. Each of these purposes, indeed, may be equally useful, or even necessary to the miners themselves. But the nature of the use may be important, as denoting the extent of the water appropriated. Water taken for a mill is not taken as an article of merchandise, to be sold in the market; it is merely used as a motive power, and after it passes the mill and subserves its purposes, may be used as an aid to the working of the mines. But this last use must not be inconsistent with the prior right acquired by the mill owner, so far as his necessary use is concerned. This right of water may be transferred like other property.¹³⁵

In *Kidd v. Laird*,¹³⁶ the trial court had instructed the jury that an appropriator could divert the full extent of its appropriation at any point on the stream so long as it caused no harm to other appropriators.¹³⁷ The plaintiff objected,

If he admits, however, that he is not the owner of the soil, and that the fact is established that he acquired his rights subsequent to those of others, then, as both rest alike for their foundation upon appropriation, the subsequent locator must take subject to the rights of the former, and the rule, *qui prior est in tempore, potior est in jure*, must apply.

Id. at 143.

131. 13 Cal. 33, 36 (1859).

132. *Id.* at 39-40.

133. *Id.* at 38.

134. 13 Cal. 220 (1859).

135. *Id.* at 232-33.

136. 15 Cal. 161 (1860).

137. *Id.* at 179 ("The object of this evidence was to show that the defendants were entitled to a certain quantity of water for their Gold Flat ditch, and that they diverted this quantity through their new ditch instead of the other, which it was claimed they had the legal right to do. The evidence having been admitted, the Court instructed the jury in effect, that a person entitled to divert a given quantity of the water of a stream, may take the same at any point on the stream, and may change the point of diversion at pleasure, if the rights of others are not injuriously af-

arguing that the effect was to give appropriators ownership of a certain amount of water.¹³⁸ The court stated that “[a] right may be acquired to its use, which will be regarded and protected as property; but it has been distinctly declared in several cases that this right carries with it no specific property in the water itself,”¹³⁹ but it upheld the trial court’s instruction, stating:

[t]hese authorities show conclusively, that in all cases the effect of the change upon the rights of others is the controlling consideration, and that in the absence of injurious consequences to others, any change which the party chooses to make is legal and proper. It follows that in this case the law was correctly given by the Court.¹⁴⁰

Water litigation reaching the California Supreme Court slowed in the 1860s. The 1863 decision in *McKinney v. Smith*¹⁴¹ involved the claim by parties that had originally diverted water to clear the channel for placer mining so that they could subsequently use this amount for additional purposes in different locations.¹⁴² The court determined the original “appropriation” was for limited purposes that did not include these additional uses.¹⁴³ That same year, in *Phoenix Water Co. v. Fletcher*,¹⁴⁴ the court considered a complaint by a prior appropriator that a subsequent upstream dam and lumber mill was interfering with his use (for mining) because of alteration of flows and deterioration in water quality. Using the language of the riparian common law, the court stated that the rule of law was well established that “the owner of hydraulic works on the stream above, has no right to detain the water unreasonably” and must build and use the water in a manner that persons downstream can “participate in its use and enjoyment without interruption.”¹⁴⁵ Furthermore, according to the court, “[t]he prior appropriator is clearly entitled to protection against acts which materially diminish the quantity of water to which he is entitled, or deteriorate its quality, for the uses to which he wishes to apply it.”¹⁴⁶

In *Wixon v. Bear River & Auburn Water & Mining Co.*,¹⁴⁷ the court rejected an argument based on

the theory that, in the mineral districts of [California], the rights of miners and persons owning ditches constructed for mining purposes are paramount to all other rights and interests of a different character, regardless of the time

fectected by the change.”).

138. *Id.* at 180.

139. *Id.*

140. *Id.* at 181.

141. 21 Cal. 374 (1863).

142. *Id.*

143. *Id.* at 382-83.

144. 23 Cal. 481 (1863).

145. *Id.* at 486.

146. *Id.* at 487. The decision references *Hill v. King*, 8 Cal. 336 (1857), and *Bear River & Auburn Water & Mining Co. v. New York Mining Co.*, 8 Cal. 327 (1857), for the proposition that, “the prior appropriator below was entitled to the water so as to fill his ditch as it existed at the time of subsequent locations above; and that such subsequent locators had no right to so use the water as to diminish the quantity to which the prior appropriator was entitled.” *Phoenix Water Co.*, 23 Cal. at 487.

147. 24 Cal. 367 (1864).

or mode of their acquisition; thus annihilating the doctrine of priority in all cases where the contest is between a miner or ditch owner and one who claims the exercise of any other kind of right or the ownership of any other kind of interest.¹⁴⁸

The court further stated that “[t]o such a doctrine we are unable to subscribe, nor do we think it clothed with a plausibility sufficient to justify us in combating it.”¹⁴⁹

*Hill v. Smith*¹⁵⁰ involved the question of liability for the harmful effects of mining on an existing water supplier. The Court stated

That the defendant’s work caused large quantities of rubbish and sediment to be deposited in plaintiff’s reservoir and ditches, thereby lessening their capacity and entailing upon her additional expense in cleaning them out and maintaining their original capacity, hardly admits of debate. And it is very clear from the evidence that the value of the water for mining purposes, by reason of the mud and sediment mixed with it by the defendant’s mining operations, was diminished by from one-fourth to one-half.¹⁵¹

The court rejected the defendant’s argument that he had conducted the mining activities with ordinary care and that plaintiff’s harm was the consequence of an unavoidable effect of mining. It reasoned that it was immaterial how carefully the defendant had worked, because if his work in fact injured plaintiff he was nonetheless liable.¹⁵² The court considered but rejected the notion that conditions in the mining districts required changes in the common law that might justify the injury here:

[T]he entire charge impliedly if not expressly proceeds upon and sanctions the idea that as between ditch-owners and miners using the water of a stream in the mineral regions of the State for mining purposes, the law tolerates and winks at some uncertain and indeterminate amount of injury by the one to the prior rights of the other. This is due in a great measure doubtless to the notion, which has become quite prevalent, that the rules of the common law touching water rights have been materially modified in this State upon the theory that they were inapplicable to the conditions found to exist here, and therefore inadequate to a just and fair determination of controversies touching such rights. This notion is without any substantial foundation.¹⁵³

The *Hill* decision prompted a sharp rebuke from mining lawyer and treatise writer Gregory Yale, who complained that it “confound[ed]” the principles of appropriation and the common law riparian doctrine.¹⁵⁴ In his view, “[t]he two principles are the opposite of each other.”¹⁵⁵ Yale further noted that,

148. *Id.* at 373.

149. *Id.*

150. 27 Cal. 476 (1865).

151. *Id.* at 480-81.

152. *Id.* at 481.

153. *Id.* at 481-82.

154. YALE, *supra* note 109, at 194.

155. *Id.* at 194-95.

"One admits of equality . . . while the other is based on the priority of time."¹⁵⁶ Since, in his view, the conditions that warranted equality of right did not exist on the public mineral lands of California, its principles no longer applied.¹⁵⁷ The continuing influence of the common law on the thinking of the court became evident later that year when the court applied riparian principles to resolve a dispute between two agricultural users on public lands.¹⁵⁸

The ability to make a change of use of an existing appropriation without loss of priority arose again in *Davis v. Gale*.¹⁵⁹ The Court concluded that

Appropriation, use and nonuse are the tests of his right; and place of use and character of use are not. When he has made his appropriation he becomes entitled to the use of the quantity which he has appropriated at any place where he may choose to convey it, and for any useful and beneficial purpose to which he may choose to apply it.¹⁶⁰

The principles that emerged from these cases were later summarized as follows:

The waters of these streams on the public lands of the United States were all subject to appropriation at any time by any person who proposed to devote the water so taken to a beneficial use. The making of a diversion with such intent and for such purpose would vest in the diverter, at once, the right to use the water. No length of time of such use was essential to the acquisition of the right. The water was treated as property having no owner. The rights of the United States as riparian owner of the abutting lands were completely ignored. With respect to contending appropriators of water from the same stream, he who was first in time was considered superior in right. Such right vested by relation as of the time when the appropriator began the actual work of constructing his diversion works and ditch for that purpose, provided the work was done in such a manner as to be visible and to manifest to others his intent and purpose to prosecute the work to completion, and provided further, that he did so and actually took and used the water. The right so obtained was a right to only so much of the water as was beneficially used. The owner of such right was entitled at any time to change the place of diversion

156. *Id.* at 195.

157. Yale explained:

One admits of equality only, without regard to time, as between all the owners on the stream, above and below, and between whom the maxim of the proper use of the water applies; while the other is based upon the priority of time, admitting an appropriation of the water for all time to come, of a quantity unlimited only by the use for which it is taken, and this use is unrestricted, and may extend to the diversion of the whole stream to distant points, leaving the natural channel below entirely barren of water, and utterly destroying all riparian rights upon the stream below, and qualifying those above.

Id.

158. *Ferrea v. Knipe*, 28 Cal. 340, 344-45 (1865). Ultimately, the California Supreme Court decided riparian principles should apply for uses on private lands. *Lux v. Hagan*, 10 P. 674, 782-83 (1886).

159. 32 Cal. 26 (1867).

160. *Id.* at 34.

or the place of use, if the rights of others were not impaired thereby.¹⁶¹

In 1866 Congress finally ratified the actions of the miners on public lands.¹⁶² Section 9 of the Mining Act of 1866 provided that:

[W]henever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same.¹⁶³

The effect was to ratify existing water uses and to recognize the principle of “priority by possession.” Justice Field, who had served on the California Supreme Court during the development of prior appropriation, authored two opinions in 1874 explaining its meaning. In *Atchison v. Peterson*,¹⁶⁴ he declared:

By the custom which has obtained among miners in the Pacific States and Territories, where mining for the precious metals is had on the public lands of the United States, the first appropriator of mines, whether in placers, veins, or lodes, or of waters in the streams on such lands for mining purposes, is held to have a better right than others to work the mines or use the waters. The first appropriator who subjects the property to use, or takes the necessary steps for that purpose, is regarded, except as against the government, as the source of title in all controversies relating to the property. As respects the use of water for mining purposes, the doctrines of the common law declaratory of the rights of riparian owners were, at an early day, after the discovery of gold, found to be inapplicable or applicable only in a very limited extent to the necessities of miners, and inadequate to their protection.¹⁶⁵

161. Lucien Shaw, *The Development of the Law of Waters in the West*, 10 CAL. L. REV. 443, 451 (1922) (footnote omitted). It is worth noting that this summary omits the water quality protections generally found by the California Supreme Court.

162. See Mining Act of 1866, *supra* note 104. In 1870, Congress expressly declared that patents were subject to rights established by prior appropriation. Act of July 9, 1870, ch. 235, § 17, 16 Stat. 218. In 1877 Congress declared all “surplus” water on the public lands to be available for appropriation. Act of Mar. 3, 1877, ch. 107, 19 Stat. 377 (codified as amended at 43 U.S.C. §§ 321-339 (2012)).

163. Mining Act of 1866, *supra* note 104, § 9.

164. 87 U.S. 507 (1874).

165. *Id.* at 510-11. He explained the rationale:

This equality of right among all the proprietors on the same stream would have been incompatible with any extended diversion of the water by one proprietor, and its conveyance for mining purposes to points from which it could not be restored to the stream. But the government being the sole proprietor of all the public lands, whether bordering on streams or otherwise, there was no occasion for the application of the common-law doctrine of riparian proprietorship with respect to the waters of those streams. The government, by its silent acquiescence, assented to the general occupation of the public lands for mining, and, to encourage their free and unlimited use for that purpose, reserved such lands as were mineral from sale and the acquisition of title by settlement. And he who first connects his own labor with property thus situated and open to general exploration, does, in natural justice, acquire a better right to its use and enjoyment than others who have not given such labor.

Referring to California cases, Justice Field described the law of prior appropriation in the following terms:

The right to water by prior appropriation, thus recognized and established as the law of miners on the mineral lands of the public domain, is limited in every case, in quantity and quality, by the uses for which the appropriation is made. A different use of the water subsequently does not affect the right; that is subject to the same limitations, whatever the use. The appropriation does not confer such an absolute right to the body of the water diverted that the owner can allow it, after its diversion, to run to waste and prevent others from using it for mining or other legitimate purposes; nor does it confer such a right that he can insist upon the flow of the water without deterioration in quality, where such deterioration does not defeat nor impair the uses to which the water is applied.¹⁶⁶

Then, in *Basey v. Gallagher*,¹⁶⁷ Justice Field concluded that prior appropriation also applied to determine rights between two irrigation uses operating on the public lands.¹⁶⁸ Referring to *Atchison v. Peterson*, he stated: “[e]ver since that decision it has been held generally throughout the Pacific States and Territories that the right to water by prior appropriation for any beneficial purpose is entitled to protection.”¹⁶⁹

In its 1872 Civil Code, California spelled out its law of prior appropriation:

Section 1410. The right to the use of running water flowing in a river or stream or down a cañon or ravine may be acquired by appropriation.

Section 1411. The appropriation must be for some useful or beneficial purpose, and when the appropriator or his successor in interest ceases to use it for such a purpose, the right ceases.

Section 1412. The person entitled to the use may change the place of diversion, if others are not injured by such change, and may extend the ditch, flume, pipe,

or aqueduct by which the diversion is made to places beyond that where the first use was made.

Section 1413. The water appropriated may be turned into the channel of another stream and mingled with its water, and then reclaimed; but in reclaiming it the water already appropriated by another must not be diminished.

Section 1414. As between appropriators, the first in time is first in right.

Section 1415. A person desiring to appropriate water must post a notice, in

Id. at 512.

166. *Id.* at 514.

167. 87 U.S. 670 (1874).

168. *Id.*

169. *Id.* at 683.

writing, in a conspicuous place at the point of intended diversion, stating there in:

1. That he claims the water there flowing to the extent of (giving the number) inches, measured under a four-inch pressure;
2. The purposes for which he claims it, and the place of intended use;
3. The means by which he intends to divert it, and the size of the flume, ditch, pipe, or aqueduct in which he intends to divert it;

A copy of the notice must, within ten days after it is posted, be recorded in the office of the Recorder of the county in which it is posted.

Section 1416. Within sixty days after the notice is posted, the claimant must commence the excavation or construction of the works in which he intends to divert the water, and must prosecute the work diligently and uninterruptedly to completion, unless temporarily interrupted by snow or rain.

Section 1417. By “completion” is meant conducting the waters to the place of intended use.

Section 1418. By a compliance with the above rules the claimant’s right to the use of the water relates back to the time the notice was posted.

Section 1419. A failure to comply with such rules deprives the claimants of the right to the use of the water as against a subsequent claimant who complies therewith.¹⁷⁰

The law of prior appropriation developed in California as a means of providing basic rules governing the possession of mining claims and water for mining uses on federal lands. By granting a superior right to an unowned thing on the first possessor, it sought to remedy the absence of authorization by federal law. It adopted the principle of priority as a simple and fair means to sort out conflicts between two competing claimants when there was not enough water for both sides. Further, it required that the appropriation be for a useful or beneficial purpose to obtain the protection of law. It also required diligence in its development and use to maintain the valuable priority right. It allowed the point of diversion and place of use to change without loss of priority so long as the diverter did not injure others thereby. Additionally, the new system included a posting system to provide notice to others and, as codified, required users to record these notices with the county clerk. Finally, the new system abolished the right upon the termination of its use.

C. THE SPREAD OF PRIOR APPROPRIATION

Prior appropriation, especially after its recognition by Congress in 1866, seemed to apply to uses of water on the federal public lands. In 1866, the

170. 1 Cal. Civ. Code §§ 1410-19 (enacted 1872) (Creed Haymond & John C. Burch eds., 1st ed. 1874), available at <http://books.google.com/books?id=loQ0AQAAMAAJ&printsec=frontcover#v=onepage&q&f=false>.

Nevada Supreme Court applied appropriation principles to address a dispute between two competing users of water from the same source for irrigation on public lands.¹⁷¹ Three years later, the same court addressed the issue of who held prior rights between two competing users of water on public lands; after applying the requirement for diligence in completion of facilities, it decided that defendant's claim was junior to plaintiff's claim.¹⁷²

Then, in 1872, the Nevada Supreme Court decided that a party obtaining a patent of federal lands with an appurtenant stream enjoyed riparian rights, even as against a party previously appropriating the water of the stream.¹⁷³ In addition, the Colorado Territorial Legislature enacted a statute in the late 1860s providing that

All persons who claim, own or hold a possessory right or title to any land or parcel of land within the boundary of Colorado territory, as defined in the organic act of said territory, when those claims are on the bank, margin or neighborhood of any stream of water, creek or river, shall be entitled to the use of the water of said stream, creek or river, for the purposes of irrigation, and making said claims available to the full extent of the soil, for agricultural purposes.¹⁷⁴

In the event of insufficient water the law further established a mechanism to "apportion, in a just and equitable proportion, a certain amount of said water upon certain or alternate weekly days to different localities, as they may in their judgment think best for the interest of all parties concerned."¹⁷⁵ Other western territories and states, including Montana, also adopted these provisions.¹⁷⁶ In 1872 the Montana Supreme Court considered what law to apply to a dispute respecting use of a stream between two property owners, both riparian users.¹⁷⁷ While the two justices who wrote opinions both affirmed the district court decision, they expressed sharply contrasting views respecting the law governing uses of water in Montana. Justice Knowles asserted that the common law had been displaced by the actions of settlers in the Territory, such as the plaintiff claiming rights to use water on the basis of appropriation, and that Congress in 1866 had recognized this custom as the basis of establishing rights to water on public lands.¹⁷⁸ Moreover, he interpreted the provision Montana

171. *Lobdell v. Simpson*, 2 Nev. 274, 277-79 (1866) (acknowledging the development of this law in California cases).

172. *Ophir Silver Mining Co. v. Carpenter*, 4 Nev. 534, 546-48 (1869); *see also* *Proctor v. Jennings*, 6 Nev. 83 (1870).

173. *Van Sickle v. Haines*, 7 Nev. 249, 289 (1872). The court stated: "He became the owner of the soil, and as incident thereto had the right to the benefit to be derived from the flow of the water therethrough; and no one could lawfully divert it against his consent." *Id.* at 256. The appropriator used the water on non-riparian lands.

174. The Revised Statutes of Colorado: As Passed at the Seventh Session of the Legislative Assembly, ch. xlv, § 1 (David. C. Collier ed., 1868).

175. *Id.* § 4. Apportionment was to be made by three commissioners appointed by the county probate judge. *Id.*

176. WIEL, WATER RIGHTS, *supra* note 98, at 144 n.28.

177. *Thorpe v. Freed*, 1 Mont. 651 (1872).

178. *Id.* at 655-56; *see also id.* at 660 ("The right to appropriate water for the purposes of irrigation having, in our opinion, been acknowledged and recognized by the customs, laws and decisions of the courts of this Territory, the law of congress comes in and says that whenever, by

had adopted from Colorado as recognizing appropriation for irrigation and rejecting the common law.¹⁷⁹ Chief Justice Wade, in contrast, believed that prior appropriation was ill suited to the circumstances in Montana involving patented land used for agriculture:

And because this principle of "prior in time, prior in right" became thus established in California, as applied to mineral lands of the public domain, an effort has been made in this Territory to apply the same doctrine to agricultural or farming lands, but the principle has never been acquiesced in by the people, and is now in litigation all over the Territory. And it seems to me perfectly clear that the reason for the doctrine as applied to trespassers upon the public domain, utterly fails when applied to actual purchasers from the government of agricultural lands.¹⁸⁰

Chief Justice Wade pointed to the provisions of the Montana statute for sharing of water and concluded its intention was a rejection of prior appropriation.¹⁸¹ He added:

So, then, we say that water for irrigation in this country as naturally belongs to the lands through which the stream passes, in certain proportions as in other countries it belongs to the land to supply the necessities of life. Irrigation in this country is what rain is to other countries, and a monopoly of one would be equally as appropriate as that of the other, and equally sustained by any principle of justice and equity. As in other countries, the rains come to the prior and to the subsequent locators of lands upon a stream in equal proportions, so in this arid country should the waters of any given stream be divided equally among the farmers for the purposes of irrigation.¹⁸²

In his view, the bestowal of absolute property rights in the flow of a stream to the first appropriator gave that appropriator extraordinary control of a limited water supply, potentially akin to a monopoly.¹⁸³ He concluded:

If this decision necessitates the adoption of the common law respecting running water, and the manner in which the same may be used and the rights incident thereto, we can see no objection to it on that account. It may operate

priority of possession, the right to the use of water for this purpose 'have vested and accrued,' 'the possessors and owners of such vested rights shall be maintained and protected in the same.'").

179. *See id.* at 657.

180. *Id.* at 667 (Wade, C.J., concurring).

181. *Id.* at 668 ("[W]e say most unhesitatingly, that the whole purpose of the statute was to utterly abolish and annihilate the doctrine of prior appropriation, and to establish an equal distribution of the waters of any given stream in the agricultural districts of the Territory.").

182. *Id.* at 676.

183. *Id.* He added:

The doctrine of prior appropriation goes to the extent of declaring that he who first appropriates the waters of a stream upon the government lands thereby acquires an absolute property therein, as against all the world, which property is capable of being bought and sold, mortgaged, devised, inherited and transmitted, from generation to generation, like other property.

Id. at 678.

unjustly in certain peculiar cases, but as a general rule it will secure justice and equity. Whenever any old and long established rule or principle of law is to be modified or changed, it should be done with the greatest care and prudence, for such rule or principle generally speaks the wisdom of long experience, much thought and much learning, and should not be inconsiderately trifled with. We believe our Territory should not form an exception to the just operation of the rules and principles that govern and control the rights and remedies incident to running water. We have arrived at this conclusion after much thought and study, having in view solely the interests of our people and the prosperity of the Territory.¹⁸⁴

In language that presaged the message of John Wesley Powell, Chief Justice Wade concluded:

It is well known to any individual who has resided in this Territory for one season, that there is not sufficient available water in the Territory for the purposes of irrigation, and if the doctrine of prior appropriation, as contended for by appellants, is to prevail, long before one-tenth part of the tillable land in the Territory is subjected to cultivation the entire available water of the country will have been monopolized and owned by a few individuals, thereby defeating any advance in the agricultural prosperity of the country, and thereby directly repelling immigration thither.¹⁸⁵

Powell's survey of the arid regions of the American West persuaded him that access to water was the limiting factor in the region's development.¹⁸⁶ His major recommendation was to survey lands in a manner that would provide such access. He did not object to prior appropriation, noting that western development depended on separating water from its natural channel.¹⁸⁷ But he feared that if water rights were transferable they would end up being concentrated in a few hands and suggested two limitations: that the "user right" should attach to the land where used, not the individual or company; and that the right should depend on the diligent development of the facilities necessary to use the water.¹⁸⁸ In effect, he was proposing a hybrid system in which the user could take water from the stream as necessary to make the land productive, but the right stayed permanently with the land.

In its constitution drafted in 1876 in preparation for statehood, Colorado broke new ground by declaring that "[t]he water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided."¹⁸⁹ Colorado added that "[p]riority of appropriation shall give the better right" and stated that "[t]he right to divert the unappropriated waters of any natural stream to

184. *Id.* at 682-83.

185. *Id.* at 686.

186. *See generally* J. W. POWELL, REPORT ON THE LANDS OF THE ARID REGION OF THE UNITED STATES, WITH A MORE DETAILED ACCOUNT OF THE LANDS OF UTAH (2d ed. 1879).

187. *Id.* at 42 ("All of the waters of all of the arid lands will eventually be taken from their natural channels, and they can be utilized only to the extent to which they are thus removed, and water rights must of necessity be severed from the natural channels.")

188. *Id.* at 43. In his draft bills, Powell proposed that if the individual acquiring title to land did not begin irrigating his land within five years, the right would lapse. *Id.* at 32.

189. COLO. CONST. art. XVI, § 5.

beneficial uses shall never be denied."¹⁹⁰ The constitution's declaration that all water was the "property of the public" was an indirect way of saying that it was not the property of riparian landowners—an intention made explicit by the following provision, which rendered unappropriated water available for appropriation.¹⁹¹ In this way, Colorado expressly adopted prior appropriation as the sole means of establishing a private right to use water.

The Colorado Constitution's declaration that the waters within the state were the property of the public also served to deny any federal claim of title to those waters on public lands within the state. The California prior appropriation cases assumed the United States was the owner of the land and water and that, either because of early Congressional inaction or because the 1866 Act served as a grant of the right to use waters to those who had established rights through possession and use, ultimate title to all water on federal lands rested with the United States. The Nevada *Van Sickle*¹⁹² case rested on that premise. Additionally, in *Thorp v. Freed*,¹⁹³ Justice Knowles based his legal conclusions on federal ownership of water. However, in Colorado's constitution the state was rejecting any notions of federal ownership of water and asserting instead the authority of the state to establish rules governing rights to use all waters located within the state.¹⁹⁴ The water belonged to the people of Colorado, the constitution asserted, not the United States.

Not long thereafter, a dispute arose between landowners/irrigators situated along St. Vrain Creek and others who diverted from the south fork of the St. Vrain out of the watershed and into Left Hand Creek to irrigate lands they owned.¹⁹⁵ The downstream riparian users, who had taken up irrigation after the Left Hand users, discovered the existence of the diversion dam during a period of drought and tore it out.¹⁹⁶ The Left Hand users sued for damages, asserting their superior rights as prior appropriators.¹⁹⁷ The downstream users asserted their riparian rights by pointing to the territorial statutes enacted in the 1860s, and by arguing that prior appropriation was not the law of Colorado until the 1876 Constitution and that they had patented their lands and used water before then.¹⁹⁸

The Colorado Supreme Court responded that prior appropriation had

190. *Id.* § 6.

191. The common law had always denied the possibility of "ownership" of "running" water (water flowing in a stream), and made clear the nature of the legal right enjoyed by a riparian landowner was usufructuary—that is, a right of enjoyment without ownership. A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES*, § 3.10, at 3-12 to -14 (2010) [hereinafter *TARLOCK, LAW OF WATER RIGHTS*]. This physical property of water—that it does not stand still in nature, that everyone in the state enjoys it, that it exists as a product of natural processes, that it is essential for all life, and that therefore the court must consider water as available for all to use and enjoy—Roman law had identified. *THE INSTITUTES OF JUSTINIAN* tit. 1, pts. 1-6, 65 (J.A.C. Thomas trans., North-Holland Pub. Co. 1975) (c. 553 CE).

192. 7 Nev. 249 (1872).

193. 1 Mont. 651 (1872).

194. *See* SCHORR, *COLORADO*, *supra* note 20, at 42-43 (stating that the Colorado Constitution prohibited the denial of the right to appropriate in order to prevent the legislature from making exclusive grants to individuals or companies).

195. *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 444 (1882).

196. *Id.*

197. *Id.*

198. *See id.* at 448-49.

always been the law in Colorado.¹⁹⁹ It declared that “imperative necessity” had made it so:

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. Water in the various streams thus acquires a value unknown in moister climates. Instead of being a mere incident to the soil, it rises, when appropriated, to the dignity of a distinct usufructuary estate, or right of property.²⁰⁰

Economic considerations also demanded recognition of this law:

It has always been the policy of the national, as well as the territorial and state governments, to encourage 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. Houses have been built, and permanent improvements made; the soil has been cultivated, and thousands of acres have been rendered immensely valuable, with the understanding that appropriations of water would be protected. Deny the doctrine of priority or superiority of right by priority of appropriation, and a great part of the value of all this property is at once destroyed.²⁰¹

The Court found support in the language of a US Supreme Court decision, *Broder v. Natoma Water & Mining Co.*,²⁰² in which the US Supreme Court stated that congressional action in 1866 was a “voluntary recognition of a pre-existing right of possession, constituting a valid claim to its continued use, [rather] than the establishment of a new one.”²⁰³ The Colorado Supreme Court interpreted the territorial statutes as an expression of appropriation principles, rather than riparian law.²⁰⁴ To the argument that users should not be allowed to use water outside of the original watershed, the Court responded: “the right to water acquired by priority of appropriation thereof is not in any way dependent upon the locus of its application to the beneficial use designed.”²⁰⁵

In 1885, the Nevada Supreme Court determined that local customs should govern rights to use water on lands within the state.²⁰⁶ The court found support in the actions of Congress, and overruled *Van Sickle*.²⁰⁷ The court,

199. *Id.* at 446.

200. *Id.*

201. *Id.*

202. *Id.* at 447; *Broder v. Natoma Water & Mining Co.*, 101 U.S. 274 (1879).

203. *Broder*, 101 U.S. at 276 (emphasis in original).

204. *Collin*, 6 Colo. at 447-48.

205. *Id.* at 449. The court added:

The doctrine of priority of right by priority of appropriation for agriculture is evoked . . . by the imperative necessity for artificial irrigation of the soil. And it would be an ungenerous and inequitable rule that would deprive one of its benefit simply because he has, by large expenditure of time and money, carried the water from one stream over an intervening watershed and cultivated land in the valley of another.

Id.

206. *Jones v. Adams*, 6 P. 442, 447 (Nev. 1885).

207. *Id.* at 445, 447.

speaking through Chief Justice Hawley, stated:

[T]he ninth section of the act of congress confirmed to the owners of water-rights on the public lands of the United States the same rights which they held under the local customs, laws, and decisions of the courts prior to its enactment; that the act of congress did not introduce, and was not intended to introduce, any new system, or to evince any new or different policy upon the part of the general government; that it recognized, sanctioned, protected, and confirmed the system already established by the customs, laws, and decisions of courts, and provided for its continuance.²⁰⁸

In 1889, the Nevada Supreme Court followed *Coffin* by determining that the common law could not apply in Nevada because of the different physical conditions in that state:

Its inapplicability to the Pacific states, as shown in *Atchison v. Peterson* . . . applies forcibly to the state of Nevada. Here the soil is arid, and unfit for cultivation unless irrigated by the waters of running streams. The general surface of the state is table land, traversed by parallel mountain ranges. The great plains of the state afford natural advantages for conducting water, and lands otherwise waste and valueless become productive by artificial irrigation. The condition of the country, and the necessities of the situation, impelled settlers upon the public lands to resort to the diversion and use of waters. This fact of itself is a striking illustration, and conclusive evidence of the inapplicability of the common-law rule.²⁰⁹

Wyoming also moved affirmatively to establish prior appropriation as the rule governing uses of all water in the state. Wyoming's Constitution, adopted at statehood in 1890,²¹⁰ expressly adopted prior appropriation: "Priority of appropriation for beneficial uses shall give the better right."²¹¹ The constitution also asserted state control of water: "The water of all natural streams, springs, lakes or other collections of still water, within the boundaries of the state, are hereby declared to be the property of the state."²¹² In *Moyer v. Preston*, the Wyoming Supreme Court concluded that riparian principles never applied in Wyoming.²¹³ The court, citing to *Coffin*, noted that the arid conditions prevailing in the state required the diversion of water for irrigation use and that there was a much greater area of irrigable land not riparian to streams.²¹⁴ In a subsequent case involving a dispute between water users in Montana and Wyoming,

208. *Id.* at 446.

209. *Reno Smelting, Milling & Reduction Works v. Stevenson*, 21 P. 317, 321 (Nev. 1889).

210. WYO. CONST. Ratification.

211. *Id.* art. VIII, § 3.

212. *Id.* art. VIII, § 1; *see also* 1886 WYO. SESS. LAWS 294, 299 ("The water of every natural stream not heretofore appropriated within this Territory, is hereby declared to be the property of the public, and the same is dedicated to the use of the people, subject to appropriation as herein provided.").

213. 44 P. 845, 847 (Wyo. 1896) ("The common-law doctrine relating to the rights of a riparian proprietor in the water of a natural stream, and the use thereof, is unsuited to our requirements and necessities, and never obtained in Wyoming.").

214. *Id.* ("A different principle, better adapted to the material conditions of this region, has been recognized. That principle, briefly stated, is that the right to the use of water for beneficial purposes depends upon a prior appropriation.").

Willey v. Decker, Justice Potter of the Wyoming Supreme Court provided an extensive discussion of the adoption of prior appropriation in western states.²¹⁵ He stated that—along with Colorado and Wyoming—Arizona, Nevada, and Utah had fully embraced prior appropriation.²¹⁶ Montana, he noted, had followed California in only recognizing prior appropriation when practiced on public lands within the state.²¹⁷ Nebraska had decided to allow both appropriation and riparian principles to co-exist in that state.²¹⁸

In the landmark case of *Lux v. Haggin*, the California Supreme Court upheld the superiority of common law riparian rights over prior appropriation on private lands in the state.²¹⁹ The court examined the presumed policy reasons favoring adoption of prior appropriation and asked “whether the recognition of a doctrine of appropriation . . . would secure the greatest good to the greatest number.”²²⁰ The court noted that the appropriator “by his appropriation makes the running water his own, subject only to the trust that he shall employ it for some useful purpose.”²²¹ It added:

[I]t does not require a prophetic vision to anticipate that the adoption of the rule, so-called, of “appropriation,” would result, in time, in a monopoly of all the waters of the state by comparatively few individuals, or combinations of individuals, controlling aggregated capital, who could either apply the water to purposes useful to themselves, or sell it to those *from whom they had taken it away*, as well as to others.²²²

California still recognizes riparian rights to use water for private lands located on watercourses.²²³ Those states that initially established a so-called hybrid system authorizing uses of water either on the basis of appropriation or riparian principles now have shifted to prior appropriation only.²²⁴ Yet, as we shall see, the influence of some riparian principles such as reasonable use continues to shape the development of prior appropriation today.²²⁵

D. THE EVOLUTION OF PRIOR APPROPRIATION

While uses of water for mining in the mountains of California drove the early development of prior appropriation, uses of water for irrigated agriculture in the arid and semi-arid regions of the West motivated the evolution of prior appropriation—especially concerning needs for public administration of

215. 73 P. 210, 213-23 (Wyo. 1903).

216. *Id.* at 215-16 (citing cases from Arizona, Nevada, and Utah).

217. *Id.* at 214.

218. *Id.* at 217 (citing *Crawford Cnty. v. Hathaway*, 93 N.W. 781 (Neb. 1903)).

219. 10 P. 674 (Cal. 1886).

220. *Id.* at 702.

221. *Id.* at 703.

222. *Id.* (emphasis in original).

223. Other western states where riparian rights may still exist are Nebraska and Oklahoma. TARLOCK, *LAW OF WATER RIGHTS*, *supra* note 191, §§ 5.11, 5.13, at 5-19 to -21.

224. In general, these states authorized the transformation of riparian rights that people had placed into actual use into prior appropriation rights. *Id.* § 5.11; see also Frank J. Trelease, *Coordination of Riparian and Appropriative Rights to the Use of Water*, 33 TEX. L. REV. 24, 40-41 (1954).

225. See *infra* note 401 and accompanying text.

uses. In many respects, the basic principles of prior appropriation have changed very little from those established in the 1850s and 1860s. Perhaps the most important fundamental development occurred early as irrigation uses took center stage and water uses became more tied to particular lands. Unlike the fast moving world of gold mining where water uses (generally made possible by companies established specifically as water suppliers) moved from location to location as needs arose, irrigated agriculture required the long-term supply of water to particular lands. Irrigators, as landowners either individually or collectively, took charge of supplying their own water. While some private, for-profit companies entered into the water supply business for irrigation, they were almost entirely unsuccessful.²²⁶ Accordingly, the law shifted from favoring the interests of water suppliers under which it gave them almost total control of the water they diverted and delivered to favoring the interests of the users of the water—the irrigators.

Samuel Wiel has characterized this shift as moving from an assumption of rights based on possession of water to rights based on water's use.²²⁷ The real value of the water right was to enable the permanent settlement of lands based on irrigated agriculture. Just as it had been important in California to protect the investment of the water companies in facilities necessary to provide water for mining, now it was important for the settler/landowner to control the water right to protect his efforts to improve the land. States extended prior appropriation to emphasize the importance of use.²²⁸ While early prior appropriation recognized the requirement of use, the doctrine evolved to make use (more accurately, beneficial use) its central element.²²⁹ Simultaneously, the courts began to emphasize the legal rights of the user, even in situations in which a separate entity that had constructed the diversion and primary delivery facilities provided water.²³⁰

The emergence of use as the central feature of prior appropriation also brought attention to the nature and extent of the right. A use-based right restored the usufructuary status understood to be the nature of the right under the riparian doctrine.²³¹ It erased any notions that might have arisen in the California gold fields that the appropriator was in fact the owner of the water it-

226. See PISANI, *supra* note 93, at 85–98. Opposition to for-profit water supply companies was intense in Colorado in the 1880s. See DUNBAR, *supra* note 4, at 209–10; see also David B. Schorr, *The First Water-Privatization Debate: Colorado Water Corporations in the Gilded Age*, 33 *ECOLOGY L.Q.* 313, 322–28 (2006). Most of these ventures failed as a matter of economics. Irrigators simply could not afford to pay the full costs of the water and opposed the idea of a company making a profit from delivery of water.

227. See WIEL, *WATER RIGHTS*, *supra* note 98, § 139, at 214–15. States also adopted possession as the basis of the right on the public domain because only the United States owned land. See *supra* notes 120–25 and accompanying text.

228. Confusion continued, however, as many assumed their right resulted from the “appropriation” of water—that is, its diversion and possession—and regarded their possession as establishing ownership of the amount of water possessed and giving them the right to do whatever they wished with the water. See *infra* notes 270–71 and accompanying text.

229. See WIEL, *WATER RIGHTS*, *supra* note 98, at 214–15.

230. See, e.g., *Wheeler v. N. Colo. Irrigating Co.*, 17 P. 487 (Colo. 1888) (discussing the status of a company supplying water).

231. See WIEL, *WATER RIGHTS*, *supra* note 98, at 216–17; see also Samuel C. Wiel, *Running Water*, 22 *HARV. L. REV.* 190, 199–202 (1909).

self.²³² Combined with state declarations of ownership of water, adherence to the usufructuary concept underlined the responsibility of the user to make careful use of the resource. Moreover, adherence to the usufructuary concept highlighted the essential shared nature of water uses—that the commitment of water to any given use may limit or preclude other valuable uses. As we shall see, people like Elwood Mead picked up this concept and applied it as a basis for extending public supervision over all human uses of water.²³³

Basey v. Gallagher contains an important early statement reflecting this emerging awareness, in which Justice Field stated:

[T]he right to water by prior appropriation for any beneficial purpose is entitled to protection. Water is diverted to propel machinery in flour-mills and saw-mills, and to irrigate land for cultivation, as well as to enable miners to work their mining claims; and in all such cases the right of the first appropriator, exercised within reasonable limits, is respected and enforced. We say within reasonable limits, for this right to water, like the right by prior occupancy to mining ground or agricultural land, is not unrestricted. It must be exercised with reference to the general condition of the country and the necessities of the people, and not so as to deprive a whole neighborhood or community of its use and vest an absolute monopoly in a single individual.²³⁴

Similarly, Chief Justice Hawley (then of the Nevada Supreme Court) noted:

In a dry and arid country like Nevada, where the rains are insufficient to moisten the earth, and irrigation becomes necessary for the successful raising of crops, the rights of prior appropriators must be confined to a reasonable and necessary use. The agricultural resources of the State cannot be developed and our valley-lands cannot be cultivated without the use of water from the streams, to cause the earth to bring forth its precious fruits. No person can by virtue of a prior appropriation claim or hold any more water than is necessary for the purpose of the appropriation. Reason is the life of the law, and it would be unreasonable and unjust for any person to appropriate all the waters of a creek when it was not necessary to use the same for the purposes of his appropriation. The law which recognizes the vested rights of prior appropriators has always confined such rights within reasonable limits.²³⁵

Correspondingly, courts moved away from holding that the amount of water appropriated equaled the capacity of the ditch in favor of a rule that the quantity of water appropriated could be no more than the amount reasonably necessary to accomplish the purpose of the appropriation.²³⁶ They began us-

232. See *supra* note 117 and accompanying text (appropriation provided ownership of diverted water).

233. See *infra* Part I.E.

234. *Bascy v. Gallagher*, 87 U.S. 670, 683 (1874).

235. *Barnes v. Sabron*, 10 Nev. 217, 243-44 (1875).

236. See, e.g., *id.* at 244 ("If the capacity of his ditches is greater than is necessary to irrigate his farming land, he must be restricted to the quantity needed for the purposes of irrigation, for watering his stock and for domestic purposes."); *Hough v. Porter*, 98 P. 1083, 1102-03 (Or. 1909) (citations omitted) ("The result is that the law has become well settled that beneficial use and needs of the appropriator, and not the capacity of the ditches or quantity first applied, is the measure and limit of the right of such appropriators.")

ing the term “beneficial use” to refer to the amount of water that users may appropriate (not as a type of use) and to make clear that diversion in excess of this amount constituted waste to which no legal right pertained.²³⁷ Thus, in *Union Mill & Mining Co. v. Ferris*, the United States District Court for the District of Nevada remanded the case back to a master to make findings:

[W]hether the defendant has adopted the mode which causes least waste in taking the water from the river, and if not, what mode consistent with the fair and beneficial use of the water by him can be adopted; what means are employed to return the water to its natural channel, and are they the means best calculated to prevent waste, if not or if none have been employed, what method will best effect that object; what amount of water per acre is needed during the irrigating season to irrigate defendant’s land; some standard of measurement of the water, and the quantity measured by such standard, flowing in the river and in defendant’s ditch at the time mentioned in the bill.²³⁸

As already mentioned, Chief Judge Hawley recognized that the limited supply of water available in most parts of the West meant users had to restrict their diversions to their reasonable needs.²³⁹ In *Combs v. Agricultural Ditch Co.*, the Colorado Supreme Court stated: “An excessive diversion of water cannot be regarded as a diversion to beneficial use, within the meaning of the constitution. Water, in this country, is too scarce, and consequently too precious, to admit of waste.”²⁴⁰ In *Power v. Switzer*, the Montana Supreme Court noted: “The intention of the claimant is therefore a most important factor in determining the validity of an appropriation of water. When that is ascertained, limitations as to the quantity of water necessary to effectuate his intent can be applied according to the acts, diligence, and needs of the appropriator.”²⁴¹ In the 1902 Reclamation Act, Congress declared, “beneficial use shall be the basis, the measure, and the limit of the right.”²⁴²

While the courts continued to use language emphasizing the importance of economical use of water, there also emerged the view that it was better to

237. See KINNEY, *supra* note 32, § 911, at 1612-13 (footnotes omitted) (“But as an appropriator acquires no title to the *corpus*, or very body of water, and only acquires a right to the use of such quantity of water within the extent of his appropriation as he can use economically and without waste, he cannot lawfully acquire a right to an excessive amount of water for the purpose for which he appropriates it, nor can he acquire a right to use the water in a wasteful manner and thereby deprive others from its use.”).

238. *Union Mill & Mining Co. v. Ferris*, 24 F. Cas. 594, 603 (D. Nev. 1872) (No. 14371).

239. *Barnes*, 10 Nev. at 233 (citations omitted) (“It logically follows from the legal principles we have announced that the plaintiff, as the first appropriator of the waters of Currant Creek, has the right to insist that the water flowing therein shall, during the irrigating season, be subject to his reasonable use and enjoyment to the full extent of his original appropriation and beneficial use. To this extent his rights go, but no further; for in subordination to such rights the defendants, in the order and to the extent of their original appropriation and use, had the unquestionable right to appropriate the remainder of the water running in said stream.”).

240. *Combs v. Agric. Ditch Co.*, 28 P. 966, 968 (Colo. 1892).

241. *Power v. Switzer*, 55 P. 32, 35 (Mont. 1898).

242. Reclamation Act of 1902, ch. 1093, § 8, 32 Stat. 390 (now codified at 43 U.S.C. § 372 (2012)); see also N.M. CONST. art. XVI, § 3; 48 NEV. REV. STAT. § 533.035 (2014); N.D. CENT. CODE § 61-04-01.2 (2013); OKLA. STAT. tit. 82, § 105.10 (2014); OR. REV. STAT. § 540.610(1) (2014); UTAH CODE ANN. § 73-1-3 (West 2014); WYO. STAT. ANN. § 41-3-101 (2014).

have the full amount of water needed to produce the maximum amount of crops than to have a larger number of farms but all with inadequate water supplies.²⁴³ This view emphasized the importance of priority in ensuring the senior user obtained the full amount of his appropriation. Thus, Kinney argued:

[O]wing to the great scarcity of water in this part of the country, compared with the amount which might be used if every one got what he wanted, or needed, the rule of priority of right is the only one which could have been adopted, and at the same time have the water do the greatest good to the greatest number. In a strictly agricultural country, it is better that one man who was first in appropriating the water of a certain stream should have a well irrigated farm from which he can raise plentiful crops than that a hundred families who have settled near the stream have barely enough water for domestic purposes.²⁴⁴

In contrast, at about that same time Wiel suggested the idea of "reasonable priority," under which "the exclusiveness of a prior right should be recognized only to a certain degree, and that priorities should not be enforced when to do so would be 'unreasonable' to water users upon the same stream, though subsequent in time of use."²⁴⁵ He explained:

To-day the lands have been far more fully settled, the water users on many streams are beginning to crowd each other, and the "exclusiveness" rule of priority comes more and more in conflict with the community idea. Justice is coming more and more to demand an equitable co-relation of the users for the common good, and these changed conditions have caused here and there revivals of the idea that the priority must be reasonable, all things and evidence being considered, or it will not be fully enforced.²⁴⁶

Despite Wiel's forecast that the concept of reasonable priority would be a "growing doctrine," the rule of absolute priority largely triumphed in the twentieth century.²⁴⁷

Consider this classic 1897 summary of the principles of prior appropriation by then US District Court Judge Hawley:

Under the principles of prior appropriation, the law is well settled that the right to water flowing in the public streams may be acquired by an actual appropriation of the water for a beneficial use; that, if it is used for irrigation, the appropriator is only entitled to the amount of water that is necessary to irrigate his land, by making a reasonable use of the water; that the object had in view at the time of the appropriation and diversion of the water is to be considered in connection with the extent and right of appropriation; that, if the capacity of the flume, ditch, canal, or other aqueduct, by means of which

243. See, e.g., Frank J. Trelease, *Law, Water and People: The Role of Water Law in Conserving and Developing Natural Resources in the West*, 18 WYO. L.J. 3, 9-10 (1963-1964).

244. KINNEY, *supra* note 32, § 780, at 1355.

245. Samuel C. Wiel, "Priority" in *Western Water Law*, 18 YALE L.J. 189, 190 (1909).

246. *Id.* at 194; see also WIEL, WATER RIGHTS, *supra* note 98, §§ 310-14, at 329-39.

247. See A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881 (2000) [hereinafter Tarlock, *Prior Appropriation*], for a more contemporary critique of the priority rule.

the water is conducted, is of greater capacity than is necessary to irrigate the lands of the appropriator, he will be restricted to the quantity of water needed for the purposes of irrigation, for watering his stock, and for domestic use; that the same rule applies to an appropriation made for any other beneficial use or purpose; that no person can, by virtue of his appropriation, acquire a right to any more water than is necessary for the purpose of his appropriation.²⁴⁸

He defines beneficial use in terms of the amount of water necessary for the use and makes clear the size of the ditch does not determine the amount of water legally appropriated.²⁴⁹

Judge Hawley continued:

[T]he intention of the appropriator, his object and purpose in making the appropriation, his acts and conduct in regard thereto, the quantity and character of land owned by him, his necessities, ability, and surroundings, must be considered by the courts, in connection with the extent of his actual appropriation and use, in determining and defining his rights.²⁵⁰

The considerations here identified suggest an active role for the reviewer of a proposed appropriation in what states and courts came to call the “duty of water.”²⁵¹

Judge Hawley’s opinion went on:

[T]he mere act of commencing the construction of a ditch with the avowed intention of appropriating a given quantity of water from a stream gives no right to the water unless this purpose and intention are carried out by the reasonable, diligent, and effectual prosecution of the work to the final completion of the ditch, and diversion of the water to some beneficial use.²⁵²

Here he is restating the principle of relation back with the added requirement that not only must the water user complete the ditch diligently, but also the user must in fact divert the water through the ditch for a beneficial use.

Judge Hawley then states:

[T]he rights acquired by the appropriator must be exercised with reference to the general condition of the country and the necessities of the community, and measured in its extent by the actual needs of the particular purpose for which the appropriation is made, and not for the purpose of obtaining a mo-

248. *Union Mill & Mining Co. v. Dangberg*, 81 F. 73, 94 (C.C.D. Nev. 1897).

249. *Id.* (“[I]f the water is used for the purpose of irrigating lands owned by the appropriator, the right is not confined to the amount of water used at the time the appropriation is made; that the appropriator is entitled, not only to his needs and necessities at that time, but to such other and further amount of water, within the capacity of his ditch, as would be required for the future improvement and extended cultivation of his lands, if the right is otherwise kept up.”). This view that an irrigation appropriation may expand (presumably with the same priority) along with future needs seems inconsistent and only makes sense if the irrigator always intended to irrigate additional lands that the courts have identified in the original appropriation. *See, e.g., Laramie Rivers Co. v. Le Vasseur*, 202 P.2d 680, 684 (Wyo. 1949).

250. *Union Mill & Mining Co.*, 81 F. at 94–95.

251. *See infra* Part II.E.

252. *Union Mill & Mining Co.*, 81 F. at 95.

nopoly of the water, so as to prevent its use for a beneficial purpose by other persons.²⁵³

This statement highlights the concern about uses that unjustifiably interfere with or prevent other valuable uses, but it limits the standard to evaluate use compared to use generally exercised by similar users in the same community.²⁵⁴

Judge Hawley's statement of principles next adds "that the diversion of the water ripens into a valid appropriation only where it is utilized by the appropriator for a beneficial use."²⁵⁵ Thus actual beneficial had become the touchstone of the legal right.

And finally, Judge Hawley states:

[T]he surplus or waste water of a stream may be appropriated, subject to the rights of prior appropriators, and such an appropriator is entitled to use all such waters; that, in controversies between prior and subsequent appropriators of water, the question generally is whether the use and enjoyment of the water for the purposes to which the water is applied by the prior appropriator have been in any manner impaired by the acts of the subsequent appropriator.²⁵⁶

Others may use unappropriated water, but only so long as they do not impair the senior's "use and enjoyment."

The only general principle missing from this summary is the ability to make a change of use so long as it does not cause injury to other appropriators. Otherwise, even today it represents a generally correct statement of the doctrine of prior appropriation. The shift to a use-based right and the evolution of beneficial use to establish the amount of water appropriated were the last major doctrinal changes in prior appropriation until the introduction of instream flow laws, primarily beginning in the 1970s. This development is discussed in Part I.G, below. The next major development in prior appropriation was the inclusion of state supervision.

E. THE EMERGENCE OF PUBLIC SUPERVISION

The original version of prior appropriation that developed in the California mining regions worked well in part because little public supervision was needed. Courts addressed disputes as they arose. In general, the rules were simple and easily understood. With the development of more permanent, irrigation-based settlement requiring regular use of large quantities of water during the summer irrigation season, the need for supervision arose.

Colorado was the first state to respond to this need. In 1879 its legislature enacted a law establishing water administration units called irrigation districts, each with a water commissioner appointed by the Governor.²⁵⁷ Water com-

253. *Id.*

254. *See infra* Part II.E.2, concerning local custom.

255. *Union Mill & Mining Co.*, 81 F. at 95.

256. *Id.*

257. 1879 Colo. Sess. Laws 94, 98-99.

missioners were empowered to apportion water among the various ditches according to the priorities of their water rights and to close the headgates of those out of priority.²⁵⁸ In 1881, the legislature provided for a judicial proceeding by which the priority dates of all water uses from the same source could be determined.²⁵⁹ Another law established the office of the State Engineer with the responsibility to measure stream flows and the authority to determine ditch capacity upon request.²⁶⁰ That law also required ditch owners to construct and maintain measuring devices.²⁶¹

Initially, Wyoming followed Colorado's lead, but in 1888 Wyoming started to add features and took a major leap forward when it adopted its constitution in 1889 and new statutory provisions in 1890.²⁶² The position of territorial engineer, established in 1888, mostly followed Colorado's approach but also directed the engineer to make recommendations for changes in law.²⁶³ Wyoming became the first territory or state to adopt a statute stating that nonuse for a specified period (here two years) resulted in "abandonment" of the right.²⁶⁴ Elwood Mead became the first Wyoming territorial engineer in 1888, bringing with him from Colorado both his own research about other water law systems as well as direct experience working for the Colorado State Engineer.²⁶⁵ He was familiar, for example, with William Hammond Hall's scholarly review of irrigation laws in France, Italy, and Spain.²⁶⁶ He knew George Perkins Marsh's writings.²⁶⁷ He had read John Wesley Powell's Report on the Arid Lands.²⁶⁸ From these readings he became convinced that public supervision of human water use was essential to ensure that society enjoyed the greatest possible benefits from its water.²⁶⁹ Mead believed that assertion of govern-

258. *Id.* at 99; DUNBAR, *supra* note 4, at 88-93. (stating that motivation for the use of water commissioners resulted from the well-known dispute between the water users in the Greeley water colony and subsequent upstream irrigators in the vicinity of Fort Collins).

259. 1881 Colo. Sess. Laws 142, 142-61. Upon a petition to a district court to request adjudication of priorities within an irrigation district (water district) prompted the judge to appoint a referee to take evidence and prepare a decree, and following adjudication, the clerk was to issue a certificate to each claimant. *Id.*

260. 1881 Colo. Sess. Laws 119, 119-21.

261. *Id.* at 121-23.

262. See WYO. CONST. art. VIII, §§ 1-5; 1890 Wyo. Sess. Laws 91, 91-104; LAWRENCE J. MACDONNELL, TREATISE ON WYOMING WATER LAW 8-16 (2014) [hereinafter WYOMING WATER LAW].

263. 1888 Wyo. Sess. Laws 116, 116-17.

264. *Id.* at 121. The Wyoming statute uses the word "abandonment," but this is actually a forfeiture statute because nonuse alone for the statutory period provides the basis for loss of the water right.

265. JAMES R. KLUGER, TURNING ON WATER WITH A SHOVEL 8-12 (1992); DUNBAR, *supra* note 4, at 93.

266. See STATE ENG'R OF WYOMING, THIRD BIENNIAL REPORT 57-61 (1896) [hereinafter THIRD BIENNIAL REPORT]; see generally WILLIAM HAMMOND HALL, IRRIGATION DEVELOPMENT: HISTORY, CUSTOMS, LAWS, AND ADMINISTRATIVE SYSTEMS RELATING TO IRRIGATION, WATER-COURSES, AND WATERS IN FRANCE, ITALY, AND SPAIN (1886).

267. See generally GEORGE PERKINS MARSH, THE EARTH AS MODIFIED BY HUMAN ACTION: MAN AND NATURE (1874).

268. See generally POWELL, *supra* note 186.

269. KLUGER, *supra* note 265, at 12. In language probably drafted by Mead, the Wyoming Constitution provides that, "Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved." WYO. CONST. art. I, § 31.

mental ownership of water was necessary for this purpose.²⁷⁰ Because he thought of water as part of the common heritage, he strongly opposed allowing individuals or corporations to gain control of the resource independent of the use to which it was being placed.²⁷¹ He believed there was an overriding public interest concerning uses of water that needed to be considered when approving new uses.²⁷² He resisted the ordinary application of principles of property to water use rights, preferring to view individual control of a portion of water for use as a privilege conditionally granted by the public.²⁷³ As Mead saw it,

270. For example, the Wyoming State Engineer's Second Biennial Report stated:

It was based on the belief that water being one of the gifts of nature the title thereto should forever remain in the public; that such public ownership was recognized by the people of this State prior to the adoption of our State Constitution and prior to the enactment of any specific law on this subject, and that in the adoption our State Constitution such public ownership was made a part of the fundamental law of this State; that such public ownership is not only in accord with our laws but that the greatest prosperity of our citizens will be secured by maintaining the limitations above stated.

STATE ENG'R OF WYOMING, SECOND BIENNIAL REPORT 35 (1894) [hereinafter SECOND BIENNIAL REPORT]. Mead added:

If state ownership is to be anything but a delusion, if it is to be more than nominal, there must be the same authority and control over streams and over diversion of water as is now exercised by the general government over the occupation and settlement of public lands. No diversion or appropriation should be permitted, therefore, until the sanction of the territory, through its constituted authorities has been obtained, and the beneficial character of the proposed use established. Such oversight and precaution is necessary for the proper protection of public interest (public water supply being of greater agricultural value than public lands) and in order that controversies growing out of extravagant and injurious claims may be avoided.

TERRITORIAL ENG'R, SECOND ANNUAL REPORT 97 (1890) [hereinafter SECOND ANNUAL REPORT].

271. In the Second Biennial Report, Mead stated:

[N]o right to the water of our streams exists except the right of use; that this right is restricted not only to the use by which acquired but to the place where acquired, and that it cannot be separated therefrom; that to recognize the right to sell water is to recognize a property right in water not contemplated by the laws of this State, and that its recognition would work untold injury to the material interests of the State.

SECOND BIENNIAL REPORT, *supra* note 270, at 34.

272. The Third Biennial Report stated:

It will also show that the rights of the public in streams have to some extent been disregarded, and that the liberality, which permits an appropriator to take and use this public property without cost, has not been appreciated, but on the contrary it has been perverted to mean an entire surrender of public interest therein, so that the individual who has acquired a right to use water to irrigate a field has come to believe that he owns that quantity of water whether he irrigates the field or not.

THIRD BIENNIAL REPORT, *supra* note 266, at 39-40.

273. The Second Biennial Report stated:

The surrender by the public to the individual of this right of use and the protection by the public of the individual in its enjoyment is a free grant from the public, the on-

the public is offering the perpetual use of its water because that use produces benefits to society. But the offer is a highly circumscribed one: it is only of the amount reasonably needed for the use; it is only for the specified use; it is permanently tied to that use; and it is only for so long as that use continues. Use of water is not to enrich an individual or corporation but to benefit the public.²⁷¹ To enable the widest possible array of beneficial uses, each user is obligated to exercise care with the public's water—taking only what is needed and using that amount with prudence.²⁷² If the authorized use ceases, the water returns to the public for redistribution in accordance with needs and interests at that time.

The fundamental requirement of beneficial use is unchanged with public supervision, but the premise of prior appropriation is different.²⁷⁶ A use of water is no longer a matter determined solely by the individual or entity building a diversion and conveyance works. Now, before any steps are taken to gain control of water, an application for a permit is necessary. The application has to specify the point along the stream at which the water will be diverted or controlled, the amount of water (i.e., rate of flow) to be taken, the purpose for which the water is to be used, and the intended place of use.²⁷⁷ Under Mead's system, a representative of the public must review the application, determine the sufficiency of the information provided, ensure the potential viability and utility of the proposal, and determine if there is unappropriated water in time

ly consideration being the public benefit to be derived therefrom. So long as this protection is afforded it furnishes an adequate incentive to the outlay which may be made in the construction of ditches or in preparing land to use the water, and this is as far as the surrender by the public ought to go.

SECOND BIENNIAL REPORT, *supra* note 270, at 41

274. *Id.*

275. The Territorial Engineer's Second Annual Report stated:

The theory has apparently been that whoever first laid claim to the waters of a stream acquired therein unrestricted ownership. This is shown in the absence of any supervision or approval being required when filing claims, in the extravagant character of many of those recorded and in the views of citizens who are familiar with the law.

SECOND ANNUAL REPORT, *supra* note 270, at 96

276. Mead believed the move to public supervision eliminated the doctrine of prior appropriation:

As the demands upon the water-supply have grown, necessity has led to a gradual decrease in the freedom of the appropriator and an increase in the control exercised by the public authorities. This change has been so gradual that the legislatures of Wyoming and Nebraska have in effect abandoned the doctrine of appropriation, although retaining the word in their statutes. The person wishing to use water must secure a permit from a board of State officials, and the right acquired is not governed by the appropriator's claim, but by the license for the diversion issued by the State authorities. This tendency toward public supervision is manifest in the other arid States, and it seems only a question of time when the doctrine of appropriation will give way to complete public supervision.

ELWOOD MEAD, IRRIGATION INSTITUTIONS 82 (1910); *see also* Moses Lasky, *supra* note 58, at 39-40.

277. Lasky, *supra* note 58, at 38.

and amount for the stated purpose.²⁷⁸ In this way, not only would good records about uses be developed, but also there would be a check to ensure that the use would in fact benefit not only the appropriator but also the public. Assuming the reviewer was satisfied on these accounts, then and only then would the appropriator be free to move ahead. Importantly, however, the reviewer held the authority to deny the permit.²⁷⁹

Public supervision did not end here. Rather, the permit established the period of time within which the facilities had to be completed to ensure the would-be appropriator pursued actual water development in a diligent fashion. The common law relation-back doctrine still applied so that if the appropriator completed the facilities in a timely fashion and then applied the water to beneficial use, the law would protect the original priority date. The Wyoming statute allowed for extensions of time for good cause shown, but it provided oversight and the means of administratively eliminating claims not actually diligently pursued.

Mead's system added another major innovation: administrative adjudication. Mead had witnessed the ineffectiveness of courts evaluating water rights claims, relying heavily or exclusively on testimony of claimants who often were themselves unable to accurately quantify their actual uses and were perhaps

278. WYO. ENGR'S OFFICE & WYO. WATER ASS'N, SELECTED WRITINGS OF ELWOOD MEAD ON WATER ADMINISTRATION IN WYOMING AND THE WEST 13 (2000) [hereinafter SELECTED WRITINGS]. According to Mead,

The most unfortunate feature, however, is the fact that the location and manner of construction of ditches has been left entirely to the inclination or financial resources of the settler. There has been no preliminary control of the streams and the waters have been diverted in a haphazard fashion, rather than in pursuance of a definite policy, having for its end their full utilization and economical distribution. As a result, while we have many works of an excellent character, leaving in their admirable design and substantial construction nothing to be desired, considered as a whole the result is far from satisfactory. In many instances defective works make the proper supervision and control by the state extremely difficult and expensive. These evils will in time undoubtedly disappear but they could almost wholly have been obviated by the exercise on the part of the territory of an intelligent preliminary supervision over the location and construction of all irrigation works.

Id. at 11-12.

279. Mead stated:

The policy of the territory refusing permission under any circumstances to divert the public water has been seriously questioned, but a brief acquaintance with the evils growing out of over appropriation will dispel that objection. Every ditch built in excess of the capacity of a stream means one of two things, either it will be a useless and losing investment or those entitled to water will be robbed thereby, and as a rule it results, to a certain extent in both. Nor should ditches be permitted to carry water where the diversion is against the public welfare, as is the case with some ditches now constructed. A large part of the productive wealth of this territory is in our grazing lands and the water supply which makes them available should be as carefully protected and permanently secured to these lands as to lands reclaimed by irrigation; if not done their abandonment must follow. I believe, therefore, that the ultimate benefits to be derived from the use of our public waters will as largely depend on restraining injudicious diversion as in permitting appropriations which are beneficial, and that the duty of the government is as much involved in one as in the other.

more often inclined to inflate their claims in the hopes of future benefits.²⁸⁰ His solution was to place this responsibility in a board of engineers with the technical knowledge necessary to determine the actual extent of use that warranted recognition under law.²⁸¹ The Wyoming Supreme Court, in a thoughtful and well-reasoned opinion, upheld this procedure in the face of an attack arguing that only courts could make such determinations.²⁸²

Yet, as Mead later remembered, “[t]he idea of a public control which would operate was not readily accepted.”²⁸³ He added:

In fact, it was generally objected to, outside of those whose water supply had been interfered with by diversions above, and this mental attitude was due to the fact that these early irrigators had built their ditches and diverted water without having to ask the consent of anyone. They had taken and used streams just as they used the grass on the public range, and they fought control of the stream just as they fought all leasing laws for governing the range. They looked on their water right as they did on a homestead filing, and they thought the claim which they had recorded gave them a Title to the amount of water stated in the claim, just as their homestead filing gave them a title to 160 acres of land. The idea of absolute right to the water claimed went even further. They looked on the stream as they did on the air, as something to be enjoyed without any limitation from a public authority, and to be taken just as they shot game or caught fish.²⁸⁴

While first Nebraska and then other states adopted some form of the Wyoming system over the next three decades, many were reluctant to fully em-

280. See *id.* at 71–88.

281. STATE ENG’R OF WYOMING, FIRST BIENNIAL REPORT 66–67 (1892). Mead noted that

The evils which extravagant grants would in the end entail, would not at once be manifest. Few persons have an accurate knowledge of the volume of water they have been using, and few would, at first, appreciate the possibilities of an extravagant allowance. It is probable that the making of large appropriations would, for the present, have been a popular proceeding for the Board, because it would have more nearly coincided with the ideas of the great majority of claimants. Those who believed themselves to be the owners of 20, 50 or 100 cubic feet of water felt somewhat aggrieved at an order which only gave two or three cubic feet, and it was only a partial satisfaction to be assured that this volume covered all the water that had ever been used, and was ample for all their present requirements.

Id. The role of public supervision, in Mead’s view, was to enable the fullest possible benefits from use of water to all:

It is also necessary that in our administration of water laws we give as careful consideration to the right of the last appropriator as is generally given to that of the first. Where all the water of a stream is used, anything which augments earlier rights robs later ones. A careful study of the laws of many States and of the decisions of their courts will show that this fact has not been properly considered, but that the tendency has been to augment the importance and unjustly extend the control of early priorities.

THIRD BIENNIAL REPORT, *supra* note 266, at 39.

282. *Farm Inv. Co. v. Carpenter*, 61 P. 258, 267 (Wyo. 1900).

283. SELECTED WRITINGS, *supra* note 278, at 9 (discussing Mead’s Recollections of Irrigation Legislation in Wyoming).

284. *Id.*

brace Mead's approach.²⁸⁵ Nevertheless, the states generally adopted the notion of public or state ownership of water, the requirement that anyone wishing to use water first file an application with a state entity, and the caveat that an application could be denied under appropriate circumstances.²⁸⁶ The states established agencies responsible for authorizing use of water and for administering uses in times of shortages.²⁸⁷ Several adopted statutory measures of the maximum amount of water that could be appropriated.²⁸⁸ Many adopted statutory forfeiture provisions under which a water right might be lost if it went unused for some specified period of time.²⁸⁹ Several states authorized administrative tribunals to determine priorities, but others continued to use courts for this purpose.²⁹⁰

Only Colorado (and Montana until 1973) continued to embrace the California mining camps' version of prior appropriation, under which any person was free to divert and use water without state permission.²⁹¹ In practice, however, would-be appropriators in Colorado apply for judicial recognition of their conditional claims shortly after taking the steps of intent and notice necessary to initiate the appropriation.²⁹² The information required in this application is similar to that required for permit applications in other states.²⁹³ While the water court cannot reject an application on public interest grounds, it must find all the other necessary elements, including that there is unappropriated water available and that other water rights will not be impaired.²⁹⁴ In Colorado, the primary difference is that these are specialized legal proceedings in which a judge, trained as a lawyer, is simply determining whether the applicant's materials meet the minimum legal requirements.²⁹⁵ Other parties with water rights from the same source actively monitor all new applications to protect their interests, and they often file statements of opposition to enable them to participate in the proceeding and potentially affect the court's decision.²⁹⁶ Without an independent means of evaluating information included in the application for decrees, the courts depend primarily on the adversary sys-

285. DUNBAR, *supra* note 4, at 113-32.

286. *Id.*

287. *Id.*

288. *See, e.g.*, WYO. STAT. ANN. § 41-4-317 (2014); IDAHO CODE ANN. § 42-202(3) (2014).

289. KINNEY, *supra* note 32, § 1119, at 2022-25. Kinney, in his 1912 treatise, identified eight states other than Wyoming that had enacted statutory forfeiture provisions. *Id.*

290. *Id.* at 2842, 2883.

291. TARLOCK, LAW OF WATER RIGHTS, *supra* note 191, § 5:44, at 5-77; MONT. DEP'T OF NATURAL RES. AND CONSERVATION, WATER RIGHTS IN MONTANA 2-3 (2012), available at <http://leg.mt.gov/content/Publications/Environmental/2012-water-rights-handbook.pdf>.

292. A. DAN TARLOCK ET AL., WATER RESOURCE MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY 304 (6th ed. 2009); *see also* GEORGE VRANESH, VRANESH'S COLORADO WATER LAW 100-03 (James N. Corbridge, Jr. & Teresa A. Rice eds., rev. ed. 1999).

293. *See* COLO. REV. STAT. § 37-92-302(1)(a) (2014); *see also* COLO. JUDICIAL DEP'T, APPLICATION FOR WATER RIGHTS (SURFACE) AND CERTIFICATE OF NOTICE, JDF 296W (2013), available at <http://www.courts.state.co.us/Forms/renderForm1.cfm?Form=175>.

294. COLO. REV. STAT. § 37-92-305(1); *Lionelle v. Se. Colo. Water Conservancy Dist.*, 676 P.2d 1162, 1166 (Colo. 1984).

295. COLO. REV. STAT. § 37-92-303(1) (providing that applications are first referred to a water referee who is to make any necessary investigations and then rule on the application); VRANESH, *supra* note 292, at 147-48, 166-67.

296. VRANESH, *supra* note 292, at 146-47.

tem to raise issues.²⁹⁷

Colorado notwithstanding, the major developments in western water law between the 1880s and 1920s concerned the emergence of a strong state role supervising the issuance of new water rights and developing records reflecting the priority, purpose, and quantity of rights from the same source of supply.²⁹⁸ Water right records improved dramatically and, with improved understanding of irrigation, appropriations of water more nearly matched actual needs. Priority remained the basis for resolving conflicts regarding use of water when supplies became scarce. Otherwise there was remarkably little change in law or administration for use of surface water until the rise of environmental concerns in the 1960s and 1970s.²⁹⁹

F. PRIOR APPROPRIATION AND GROUNDWATER

The law governing uses of groundwater developed more slowly than for surface water. Early American decisions assumed the owner of land had the right to access and use the groundwater underlying his property.³⁰⁰ Indeed, some courts suggested that groundwater was an inherent part of the land, in the same manner as the soil.³⁰¹ Courts were reluctant to consider whether uses of groundwater by one landowner might unduly interfere with the ability of an adjacent landowner to access and use groundwater underlying his property, often noting the lack of understanding of groundwater and its underground movements.³⁰² From these decisions grew the doctrine of absolute ownership, under which a landowner's right to extract and use groundwater found underneath his land was essentially unlimited.³⁰³ Eventually some courts began to put limits on groundwater use occurring off the property, subjecting such uses to the test of reasonability in which harm to adjacent landowners could be considered.³⁰⁴ Courts began distinguishing landowners' rights to capture un-

297. See COLO. REV. STAT. § 37-92-302(1)(b) (authorizing the State Engineer to participate as an objector). In addition, the referee is authorized to make "investigations as are necessary to determine whether or not the statements in the application and statements of opposition are true and to become fully advised with respect to the subject matter of the applications and statements of opposition." § 37-92-302(4). The referee is to consult with the state or division engineer who is to write a report. *Id.* In some water divisions, the judge acts as the referee. *Id.*

298. Lasky, *supra* note 58, at 35-45; see also DUNBAR, *supra* note 4, at 209-11.

299. See *infra* Part II.C.

300. See, e.g., Roath v. Driscoll, 20 Conn. 533, 534 (1850).

301. *Id.* at 541.

302. *Id.* at 537.

303. TARLOCK, LAW OF WATER RIGHTS, *supra* note 191, § 4:6, at 4-6. Interestingly, there was an assertion in court decisions during this period (and later) that underground water flowing through "subterranean channels" would be treated in the same manner as surface water. Ball v. United States, 1 Cl. Ct. 180, 184 (1982) ("Waters flowing in a defined and known subterranean stream or channel are, however, generally governed by the same rules of law applicable to natural watercourses or surface streams."); Higday v. Nickolaus, 469 S.W.2d 859, 869 (Mo. Ct. App. 1971) ("Subterranean and percolating waters are governed by the rules applying to natural watercourses on the surface."); Huelsmann v. State, 381 N.E.2d 950, 953 (Ohio Ct. App. 1977) ("However, as stated, when dealing with subterranean waters, it is only where underground streams of water flow in well defined and well known channels which can be traced that rights of ownership arise to the same extent as exists between riparian owners of surface water.").

304. See, e.g., Martin v. City of Linden, 667 So. 2d 732, 734 (Ala. 1995); Meeker v. City of E. Orange, 74 A. 379, 384 (N.J. 1909); Forbell v. City of New York, 58 N.E. 644, 645 (N.Y. 1900).

derlying water from ownership of the water itself.³⁰⁵ In any event, the law closely linked the right to use groundwater to ownership of the overlying land in a manner analogous to the riparian law principle tying rights to use adjacent watercourses to ownership of riparian land.

Early court decisions in western states tended to follow the same principles, associating ownership of land with either ownership of groundwater or the right to its use.³⁰⁶ California courts developed a somewhat different approach, however, under which overlying landowners hold correlative rights to the underlying groundwater in common with all others' owning land overlying a common supply and must share the resource reasonably.³⁰⁷ In the event of shortage, rights are allocated in proportion to the surface area they own overlying the groundwater supply.³⁰⁸

The application of prior appropriation principles to groundwater developed gradually in the West, first formalized by statute in the 1920s and 1930s by Nevada, New Mexico, Oregon, and Utah.³⁰⁹ Groundwater use in the American West burgeoned following World War Two,³¹⁰ prompting the need for development of better laws and administration governing these uses. Today most western states follow some version of prior appropriation for allocating and administering uses of groundwater.³¹¹ Rights are based on possession (withdrawal) and actual application of groundwater to beneficial use.³¹² Overlying land ownership is relevant only to the matter of access and right of surface use, not as the basis of the right to use the water. The extent of the right, as with surface water, is based on the reasonable needs to accomplish the purpose of the use.³¹³ Priority remains an element of the right, but its application has been modified in some important respects to account for the physical nature of the groundwater resource.³¹⁴ Groundwater rights are subject to the rules of abandonment and forfeiture.³¹⁵

There are attributes of groundwater that raise special concerns for rules governing its use—attributes not necessarily shared by surface water resources. Most obviously, we cannot directly see groundwater, so our understanding of its presence, volume, movement, rates of recharge and discharge, and response to human uses is imperfect.³¹⁶ In most areas of the western states, well

305. *See, e.g.*, *Schenk v. City of Ann Arbor*, 163 N.W. 109, 112 (Mich. 1917).

306. *See* WELLS A. HUTCHINS, U.S. DEP'T OF AGRIC., MISC. PUB. NO. 418, *SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST* 155-61 (1942).

307. *Katz v. Walkinshaw*, 74 P. 766, 769-73 (Cal. 1902); *Tehachapi-Cummings Cnty. Water Dist. v. Armstrong*, 122 Cal. Rptr. 918, 1001 (Cal. Ct. App. 1975).

308. *Burr v. Maclay Rancho Water Co.*, 98 P. 260, 263 (Cal. 1908).

309. HUTCHINS, *supra* note 306, at 157, 255.

310. KENNETH D. FREDERICK & ROGER A. SEDJO, *AMERICA'S RENEWABLE RESOURCES: HISTORICAL TRENDS AND CURRENT CHALLENGES* 45 (3d ed. 2011).

311. TARLOCK, *LAW OF WATER RIGHTS*, *supra* note 191, § 6:4, at 6-4 to 6-6.

312. JOSEPH L. SAX ET AL., *LEGAL CONTROL OF WATER RESOURCES* 439 (4th ed. 2006).

313. *Id.*

314. *Id.*

315. *Id.*

316. Helpful introductions to groundwater science include E.C. PIELOU, *FRESH WATER* (1998); RALPH C. HEATH, U.S. GEOLOGICAL SURVEY, *WATER SUPPLY PAPER 2220, BASIC GROUND-WATER HYDROLOGY* (1987), available at <http://water.usgs.gov/pubs/wsp/wsp2220>; R. ALLAN FREEZE & JOHN A. CHERRY, *GROUNDWATER* (1979).

pumping and natural discharges may well exceed the limited annual recharge of aquifers, meaning our uses cause a decline in water storage. States wrestled with the question of managing this mining of groundwater, an issue that is not present with renewable surface water sources. Even if depletion of an aquifer is not an immediate concern, the decline in an aquifer's water table or hydrostatic pressure affects existing users and raises questions about protecting existing uses from new or expanded withdrawals that further reduce water or pressure levels.³¹⁷ In addition, many groundwater aquifers are closely linked to surface waters, providing their base flow in winter months and adding additional water (and sometimes diminishing flows) along the surface water's course.³¹⁸ Pumping groundwater from linked aquifers can diminish stream flows, and putting large quantities of water on land surfaces (such as in irrigation) can recharge underlying aquifers that then add water back to the stream.³¹⁹ These considerations have required recognition in associated water laws.

The concept of priority assumes the most senior user is fully protected to the full extent of the appropriation if required for beneficial use as against all those whose appropriations are junior.³²⁰ This concept has not worked well as applied to groundwater uses.³²¹ The effect of fully protecting the most senior groundwater pumper can limit or exclude additional water users from that aquifer if those uses impair the senior's right.³²² Thus in *Noh v. Stoner*, the Idaho Supreme Court limited pumping from wells determined to reduce water levels below the bottom of the senior appropriator's well, requiring the junior pumpers to pay the costs of deepening the senior's well and installing a more powerful pump.³²³ The Utah Supreme Court initially followed this approach.³²⁴ Then the Colorado Supreme Court decided that all well pumpers have an obligation to maintain a "reasonable means of effectuating [their] diversion[s]," which may require them to deepen their wells if it is within their economic reach.³²⁵ In consequence, senior groundwater appropriators are not protected as to any particular groundwater level or pressure. While they have a legally recognized right to use some portion of the groundwater, they may need to take the additional steps necessary to maintain their access to that water.³²⁶

Similarly, the concept of priority would seem to require limiting the number of appropriators withdrawing water from an aquifer substantially in excess

317. See, e.g., *City of Colo. Springs v. Bender*, 366 P.2d 552, 556 (Colo. 1961); *Mathers v. Texaco, Inc.* 421 P.2d 771, 776 (N.M. 1966); *Current Creek Irrigation Co. v. Andrews*, 344 P.2d 528, 531 (Utah 1959).

318. THOMAS C. WINTER ET AL., U.S. GEOLOGICAL SURVEY, CIRCULAR 1139, GROUND WATER AND SURFACE WATER: A SINGLE RESOURCE 10-11 (1998), available at <http://pubs.usgs.gov/circ/circ1139/pdf/circ1139.pdf>.

319. *Id.*

320. See, e.g., *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139, 1148 (Colo. 2001).

321. See, e.g., *Fellhauer v. People*, 447 P.2d 986, 994 (Colo. 1968); *Baker v. Ore-Ida Foods, Inc.*, 513 P.2d 627, 634 (Idaho 1973).

322. See, e.g., *Noh v. Stoner*, 26 P.2d 1112, 1113-14 (Idaho 1933).

323. *Id.*

324. *Current Creek Irrigation Co. v. Andrews*, 344 P.2d 528, 530-31 (Utah 1959).

325. *City of Colo. Springs v. Bender*, 366 P.2d 552, 555 (Colo. 1961).

326. *Id.* at 556.

of its recharge. In fact, many states do just that for heavily used aquifers by establishing some kind of special management regime that may limit or preclude the issuance of new or expanded permits and even regulate the rate of withdrawals and the manner in which the water is used.³²⁷ By comparison, New Mexico allowed a new appropriation of groundwater from a supply whose economic life for irrigation use had been determined to be forty years.³²⁸

The problem of integrating uses of tributary groundwater with uses of surface waters is, in some respects, made easier when prior appropriation applies to both types of uses. The leading example is Colorado, which began the work of integrating these uses in 1969 by applying the rule of priority.³²⁹ Junior users of tributary groundwater can be curtailed if their uses interfere with or harm the uses of senior surface water appropriators.³³⁰ If groundwater users are able to replace their depletions to the stream in quantity and timing, however, they are allowed to continue their pumping.³³¹ Idaho has recently instituted a similar program.³³² Priority remains the basic rule determining superiority of right when water is insufficient to meet all uses, but a replacement mechanism is provided to enable out-of-priority groundwater use so long as there is no harm to senior rights.³³³

While the general principles of prior appropriation now are applied to groundwater uses in most western states, they have been modified to meet the particular problems associated with use of this source of water. We turn next to the most recent change in western water law—protecting instream flows.

G. PROTECTING INSTREAM FLOWS

The emergence of interest in maintaining stream flows for environmental and recreational purposes ran headlong into the traditional view that diversion of water out of a stream was an essential element of an appropriation. How then could there be legal protection under prior appropriation for maintaining flows of water instream? Moreover, could leaving water instream constitute a beneficial use as traditionally understood? Finally, if there were to be legal protections, who could seek and hold such protection and for what purposes? It is perhaps instructive to note that the framework applied in many western states to protect what are essentially public values of water was that initiated to establish private rights—appropriation.

The states have proceeded to answer these questions in their own ways and in their own time, but the trend is clear: flows needed to protect in-place

327. See Susan Batty Peterson, *Designation and Protection of Critical Groundwater Areas*, 1991 BYU L. REV. 1393, 1417-18 (1991).

328. *Mathers v. Texaco, Inc.*, 421 P.2d 771, 774 (N.M. 1966).

329. COLO. REV. STAT. § 37-92-102(1)(a)-(b) (2014) (adding the consideration of maximum utilization, reflecting the state's authorization of augmentation plans to replace water depletions from groundwater pumping).

330. See *id.* § 37-92-301(3).

331. See *id.* § 37-92-103(9) (defining augmentation and stipulating that replacement occurs under a plan for augmentation).

332. See IDAHO ADMIN. CODE r. 37.03.11.000-.010 (2014).

333. See Lawrence J. MacDonnell, *Out-of-Priority Water Use: Adding Flexibility to the Water Appropriation System*, 83 NEB. L. REV. 485, 486-97, 529-31 (2004).

values such as fisheries may be protected under state law from future appropriation, but generally only by a designated state agency and for the minimum amount of flow necessary to accomplish the intended purpose.³³¹ For those states applying the appropriation doctrine to protect instream flows, it became necessary to eliminate the traditional diversion requirement and to declare flow maintenance for specified purposes to be a beneficial use of water.³³⁵ A few states have simply exercised their broad authority respecting uses of water, either by withdrawing certain portions of watercourses from additional appropriation or by reserving some specified portion of the remaining unappropriated flows for instream purposes.³³⁶

This recognition of environmental instream values of water represented a significant shift in thinking about water. It reflected the changing values of many people living in the American West, their increasing interest in using rivers for recreational purposes, and their interest in protecting the remaining environmental functions and values of their hydrologic systems. From a doctrinal perspective the changes were modest. It had long been recognized that a diversion might not be necessary to accomplish the intended water use.³³⁷ And courts have acknowledged that the concept of beneficial use is dynamic, changing with changing values and interests.³³⁸ In general, states have imposed

334. There is a growing literature on the law of instream flow protection. *See, e.g.*, Steven J. Shupe & Lawrence J. MacDonnell, *Recognizing the Value of In-Place Uses of Water in the West: An Introduction to the Laws, Strategies, and Issues*, in *INSTREAM FLOW PROTECTION IN THE WEST*, at 1-6 (Lawrence J. MacDonnell, Teresa A. Rice & Steven J. Shupe, eds. 1993). This state-by-state summary was followed by a more topical discussion of instream flow policy. DAVID M. GILLILAN & THOMAS C. BROWN, *INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE* (1997). A series of law review articles followed. *See, e.g.*, Cynthia F. Covell, *A Survey of State Instream Flow Programs in the Western United States*, 1 U. DENV. WATER L. REV. 177 (1998); *see also* Adell Louise Amos, *The Use of State Instream Flow Laws for Federal Lands: Respecting State Control While Meeting Federal Purposes*, 36 ENVTL. L. 1237, 1239-40 (2006); Charlton H. Bonham, *Perspectives from the Field: A Review of Western Instream Flow Issues and Recommendations for a New Water Future*, 36 ENVTL. L. 1205 (2006); Jesse A. Boyd, Note, *Hip Deep: A Survey of State Instream Flow Law from the Rocky Mountains to the Pacific Ocean*, 43 NAT. RESOURCES J. 1151, 1152 (2003). The Colorado Water Conservation Board supported a comprehensive analysis of instream flow programs in western states. *See generally* SASHA CHARNEY, COLO. WATER CONSERVATION BD., *DECADES DOWN THE ROAD: AN ANALYSIS OF INSTREAM FLOW PROGRAMS IN COLORADO AND THE WESTERN UNITED STATES* (2005). Trout Unlimited commissioned a report focusing on the transactional aspects of shifting existing water uses to environmental flows. STEVEN MALLOCH, TROUT UNLIMITED, *LIQUID ASSETS: PROTECTING AND RESTORING THE WEST'S RIVERS AND WETLANDS THROUGH ENVIRONMENTAL WATER TRANSACTIONS* 17 (2005), available at <http://www.tu.org/atf/cf/%7BED0023C4-EA23-4396-9371-8509DC5B4953%7D/Malloch.LiquidAssets.2005.pdf>. For a discussion of relevant laws in all states as well as the Canadian provinces, *see* Lawrence J. MacDonnell, *Return to the River: Environmental Flow Policy in the United States and Canada*, 45 J. AM. WATER RES. ASS'N 1087 (2009).

335. *See, e.g.*, *In re Adjudication of Existing Rights to the Use of All the Water, Both Surface and Underground, Within the Missouri River Drainage (Bean Lake III)*, 55 P.3d 396, 401-02 (Mont. 2002).

336. *See, e.g.*, Lawrence J. MacDonnell, *Environmental Flows in the Rocky Mountain West: A Progress Report*, 9 WYO. L. REV. 335, 359-61 (2009) [hereinafter *Environmental Flows*] (discussing the Montana program).

337. *See, e.g.*, *Thomas v. Guiraud*, 6 Colo. 530, 532-33 (1883).

338. *See, e.g.*, *Bean Lake III*, 55 P.3d at 400-01; *Idaho Dep't of Parks v. Idaho Dep't of Water Admin. (In re Permit Application No. 37-7108)*, 530 P.2d 924, 926-31 (Idaho 1974); *In re All Rights to Use Water in the Big Horn River System*, 835 P.2d 273, 279 (Wyo. 1992).

strict limits on setting aside such flows because of continuing concerns about the need for additional consumptive uses of water.³³⁹ Nevertheless, instream flow protection is now an accepted use of water in virtually all prior appropriation states.³⁴⁰

We turn now to a discussion of the existing law of prior appropriation and proposed changes to that law.

II. A CRITICAL ASSESSMENT OF PRIOR APPROPRIATION TODAY

A. INTRODUCTION

The following assessment is intended to be a substantially comprehensive consideration of how effectively the major elements of prior appropriation in their present form are meeting today's needs. It begins with a reconsideration of the principle of priority, examines the legal significance of public ownership, turns to the constitutionally-protected property in a prior appropriation water right, then moves to a suggested reframing of the beneficial use concept. It then takes up the matter of conditional rights, addresses changes of use, examines forfeiture and abandonment, considers instream flow protection, and concludes with a discussion of adjudication. In each topic area, the existing law is recapitulated, its perceived shortcomings identified, and suggestions for improvements are made. Proposals are reasonably specific and are tied directly to the existing law so that the proposed changes are evident. While these changes are proposed in the belief that they would be beneficial, no pretense is made that they alone would resolve the many issues facing western states respecting uses of water.³⁴¹ In a few cases, policy suggestions are made that go beyond revision of prior appropriation, but the focus of this paper is this existing body of law and ways for its improvement. This examination begins with the principle of priority.

B. PRIORITY

Assigning superiority of right on the basis of priority took root as a custom in the frontier world of mining, in which it provided a simple and easily understood basis for sorting out disputes. It comported as well with a fundamental sense of fairness, captured in the maxim "first in time is first in right." The need to protect the investments companies made to build the substantial facilities needed to control and deliver water to ever changing places of use was a compelling rationale. That rationale remained, though perhaps in less-

339. *See, e.g.*, *Swinomish Indian Tribal Cmty. v. Wash. State Dep't of Ecology*, 311 P.3d 6, 8 (Wash. 2013).

340. Covell, *supra* note 334, at 180-90.

341. Management and use of water in the American West is heavily influenced by federal law and policy—a matter largely unaddressed in this paper, but an important one in making a full consideration of how law affects uses of rivers, aquifers, and their water. *See generally* Getches, *Metamorphosis*, *supra* note 41, at 53-55. Moreover, the more fundamental legal changes that are necessary go beyond the framework of prior appropriation and are foreshadowed by the changes presently underway in Australia. *See, e.g.*, Robert David Pilz, *Lessons in Water Policy Innovation from the World's Driest Inhabited Continent: Using Water Allocation Plans and Water Markets to Manage Water Scarcity*, 14 U. DENV. WATER L. REV. 97, 120-21 (2010).

compelling form, as the predominant uses of water shifted to irrigation and water users more often developed their own water and generally opposed private companies providing water. Under these circumstances, the rationale appeared to shift to ensuring that at least some irrigators—those first to settle in a given watershed—could secure a reliable supply of water year after year.³⁴² This preference for those first in time, however, ran contrary to the competing interest in enabling widespread settlement of the land, supported in important part by irrigation, and with the value of sharing in the use of water as a gift of nature.³⁴³ These competing impulses caused some courts to search for ways to moderate the harshness of absolute priority and to introduce considerations such as reasonable use to take into account the actual needs associated with a senior's use.³⁴⁴

The treatise-writer Samuel Wiel proposed the concept of "reasonable priority" in a 1909 law review article.³⁴⁵ In his view, "[j]ustice is coming more and more to demand an equitable co-relation of the users for the common good, and these changed conditions have caused here and there revivals of the idea that the priority must be reasonable, all things and evidence being considered, or it will not be fully enforced."³⁴⁶ More recently, Professor Tarlock suggested that priority no longer mattered in practice.³⁴⁷ Rather, he asserted, "[p]riority's modern significance lies in the threat of enforcement rather than the actual enforcement because it encourages water users to cooperate either to reduce the risk of enforcement to as close to zero as possible or to share more equitably the burdens of shortages."³⁴⁸ In response to this rather optimistic view, Justice Hobbs argued that priority, "the most misunderstood stick in the bundle of a water right," remained an essential element of a functioning system of water rights and that priority-based administration is necessary so that appropriators can enjoy their legal rights.³⁴⁹

Priority remains the basis of water rights administration across the western prior appropriation states. On streams where uses exceed supplies, junior rights are regularly curtailed so that senior users can divert their legally-authorized water. These junior users typically totally cease diversions so that the senior users can enjoy "the full extent" of their right.³⁵⁰ No considera-

342. See, e.g., KINNEY, *supra* note 32, § 780, at 1355 ("In a strictly agricultural country, it is better that one man who was first in appropriating the water of a certain stream should have a well irrigated farm from which he can raise plentiful crops than that a hundred families who have settled near the stream have barely enough water for domestic purposes.").

343. SCHORR, *supra* note 20, at 68.

344. See *supra* notes 236-42 and accompanying text.

345. Wiel, *supra* note 231, at 194.

346. *Id.*

347. Tarlock, *Prior Appropriation*, *supra* note 247, at 883.

348. *Id.*

349. Hobbs, *Priority*, *supra* note 24, at 44 ("To function effectively, priority must be employed in determining if and how much unappropriated water remains for appropriation by new users, taking into account actual river conditions in the operation of perfected water rights. To function effectively, priorities must also be enforced in times of short supply. If not, distribution of water is capricious and water user self-help occurs to the detriment of senior rights." (footnote omitted)).

350. See, e.g., *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139, 1148-49 (Colo. 2001) (providing a useful discussion of priority enforcement).

tion is given to the relative economic value of these uses; uses are made strictly according to the time in which they first were made.³⁵¹ Since the most senior rights are held by the owner of the lands first settled within a watershed, these rights most often go to support the agricultural uses of these lands. Yet today irrigation uses of water in most parts of the West generate only a modest economic return from that use.³⁵²

The effect of priority administration on a watercourse is determined in part by the degree to which diversions and withdrawals have been authorized and are sought to be made in excess of the reliably available supply.³⁵³ In such "over-appropriated" water sources, priority administration is likely to happen regularly. It is not unreasonable to point out that those obtaining junior rights from a fully- or over-appropriated source should be on notice that their uses are likely to be restricted or curtailed. Presumably they went ahead with the appropriation with this understanding and determined that the appropriation nevertheless made sense. Unfortunately, it may not be entirely accurate to assume that these appropriators in fact understood that their uses would be regularly shut down. Records of actual water use are notoriously unreliable. Uses under previously permitted rights vary, especially in irrigation, and may legally increase if crop prices improve.³⁵⁴ Flows may have been gauged in a period of above-average precipitation, such as with the Colorado River in the early 1900s, leading people to believe such supplies were in fact reliably available long-term.³⁵⁵ Apparent flows may include significant amounts of imported water that can and will be increasingly consumed as water becomes more valu-

351. Charles W. Howe, *Water Law and Economics: An Assessment of River Calls and the South Platte Well Shut-down*, 12 U. DENV. WATER L. REV. 181, 186 (2008) ("The underlying priority-efficiency conflict occurs because there is a low correlation between water right priorities and the values (net incomes) those rights generate."). The economic inefficiencies potentially inherent under this system are illustrated in Howe's analysis of the effect of the priority system on water uses in the South Platte basin during the serious drought of 2006. *Id.* at 183-187.

352. See ELIZABETH SCHUSTER ET AL., UNDERSTANDING THE VALUE OF WATER IN AGRICULTURE: TOOLS FOR NEGOTIATING WATER TRANSFERS 5-7 (2011), for a helpful introduction to determining the economic value of irrigated agriculture. See generally ROBERT A. YOUNG, DETERMINING THE ECONOMIC VALUE OF WATER: CONCEPTS AND METHODS (2005), for a more theoretical treatment.

353. For many years, Colorado courts decreed rights to appropriate water so long as there was evidence that water might be available, based on the misguided view that Colorado's constitution prohibited denial of an appropriation. *Cf. Humphreys Tunnel & Mining Co. v. Frank*, 105 P. 1093, 1096 (Colo. 1909). Fortunately, the courts came to accept the idea that they were not denying the right to appropriate water if there was no unappropriated water available. *Lionelle v. Se. Colo. Water Conservancy Dist.*, 676 P.2d 1162, 1166 (Colo. 1984); *Se. Colo. Water Conservancy Dist. v. City of Florence*, 688 P.2d 715, 717-18 (Colo. 1984). The effect is that there are decreed rights to divert and use water on streams running east out of the Rocky Mountains that far exceed the available water supply.

354. See, e.g., *McDonald v. State*, 722 P.2d 598, 602 (Mont. 1986) ("We can also accept as true their contention that the volume of water used by irrigators up to or within the limit of their appropriation rights would vary greatly from year to year depending upon circumstances not within the control of the irrigators, such as climatic conditions from year to year, subsoil types, lengths of the ditches, porosity, permeability, dry years, wet years and so on.")

355. See, e.g., John U. Carlson & Alan E. Boles, Jr., *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins*, 32 ROCKY MTN. MIN. L. INST. §§ 21.01, 21.05[1][b][i] (1986); David H. Geches, *Competing Demands for the Colorado River*, 56 U. COLO. L. REV. 413, 425-26 (1985).

able.³⁵⁶ We have learned that even the longer-term historical record cannot be considered a reliable guide to future water availability in a warming world.³⁵⁷

In some respects this discussion is moot because so many streams are already fully- or over-appropriated. The water rights already exist. Few new, large water appropriations are still possible. Still it seems worth mentioning that states should at this point be conservative when considering any new appropriations. A more significant concern is with the enormous number of conditional rights/unused permits outstanding that may become absolute—that is, may be placed to actual beneficial use.³⁵⁸ As we will discuss, many of these conditional claims are potentially senior to existing uses. In an increasingly flow-limited world, these senior conditionals will displace some already existing uses.³⁵⁹

The Colorado Supreme Court experimented with a concept it called “maximum utilization” when faced with the dilemma of potentially having to curtail all junior tributary wells along the lower Arkansas River that were depleting surface flows used by senior rights holders.³⁶⁰ The court explained:

It is implicit in these constitutional provisions that, along with *vested rights*, there shall be *maximum utilization* of the water of this state. As administration of water approaches its second century the curtain is opening upon the new drama of *maximum utilization* and how constitutionally that doctrine can be integrated into the law of *vested rights*. We have known for a long time that the doctrine was lurking in the backstage shadows as a result of the accepted, though oft violated, principle that the right to water does not give the right to waste it.³⁶¹

The court soon found it had opened a problematic door, with people attempting to obtain water rights through removal of phreatophytes growing on the banks of streams,³⁶² by cutting down trees and claiming the saved evapotranspiration,³⁶³ and by paving land surfaces.³⁶⁴ On the other hand, this doctrine has been cited in support of allowing out-of-priority groundwater use under a plan

356. See Lawrence J. MacDonnell, *Colorado's Law of "Underground Water": A Look at the South Platte Basin and Beyond*, 59 U. COLO. L. REV. 579 (1988), for a discussion on imported water in South Platte River masking the effects of groundwater pumping.

357. BUREAU OF RECLAMATION, DEP'T OF THE INTERIOR, COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND COORDINATED OPERATIONS FOR LAKES POWELL AND MEAD FINAL ENVIRONMENTAL IMPACT STATEMENT, APPENDIX U: CLIMATE TECHNICAL WORK GROUP REPORT, at U-1 (2007), available at <http://www.usbr.gov/lc/region/programs/strategies/FEIS/AppU.pdf>.

358. See *infra* Part II.F.

359. For an example involving conditional water rights for oil shale see LAWRENCE J. MACDONNELL, WESTERN RES. ADVOCATES, WATER ON THE ROCKS: OIL SHALE WATER RIGHTS IN COLORADO vi (2009), available at <http://www.westernresourceadvocates.org/media/pdf/waterontherocks.pdf>.

360. *Fellhauer v. People*, 447 P.2d 986, 994 (Colo. 1968).

361. *Id.* at 994 (emphasis in original).

362. *Sc. Colo. Water Conservancy Dist. v. Shelton Farms, Inc.*, 529 P.2d 1321, 1327 (Colo. 1974).

363. *Giffen v. State*, 690 P.2d 1244, 1246-48 (Colo. 1984); See also *R.J.A, Inc. v. Water Users Ass'n of Dist. No. 6*, 690 P.2d 823, 824 (Colo. 1984).

364. See COLO. REV. STAT. § 37-92-103(9) (2014).

for augmentation that avoids injury to senior rights.³⁶⁵ In a subsequent opinion, the Court changed “maximum” to “optimum,” explaining that

the policy of maximum utilization does not require a single-minded endeavor to squeeze every drop of water from the valley’s aquifers. Section 37-92-501(2)(e) makes clear that the objective of ‘maximum use’ administration is ‘optimum use.’ Optimum use can only be achieved with proper regard for all significant factors, including environmental and economic concerns.³⁶⁶

As refined, the doctrine seems intended to soften the sharp edges of priority, encouraging decision makers to support legitimate efforts to better utilize our water supply.³⁶⁷

Professor Tarlock concluded the purpose of priority today can better be achieved through what he calls “alternative risk allocation mechanisms.”³⁶⁸ In general, such mechanisms appear to depend on voluntary, cooperative water management approaches.³⁶⁹ While there are indeed examples of such approaches, they are not common—probably because of the difficulties of obtaining the necessary agreement of all the affected parties.³⁷⁰ More commonly, mechanisms have developed to allow “out-of-priority” water uses so long as they can occur without injury to senior rights.³⁷¹ These include so-called “physical solutions,” in which the junior user improves the senior’s use so that the junior’s use can occur without impairment to the senior,³⁷² or in which the junior provides a replacement source of water to the senior.³⁷³

A recent dramatic illustration of the potential consequences of strict water rights priority administration occurred in Idaho where a trout farm with a right to use water from a spring placed a call on all junior rights using water from the Eastern Snake Basin aquifer, which is the source of the spring’s water.³⁷⁴ According to one account, “[t]he order would have affected more than 2,300

365. Cache LaPoudre Water Users Ass’n v. Glacier View Meadows, 550 P.2d 288, 294 (Colo. 1976).

366. Alamosa-La Jara Water Users Prot. Ass’n v. Gould (*In re* Rules and Regulations Governing the Use, Control, and Protection of Water Rights for Both Surface and Underground Water Located in the Rio Grande and Conejos River Basins and their Tributaries), 674 P.2d 914, 935 (Colo. 1983); *see also* COLO. REV. STAT. § 37-92-501(2)(e) (stating that the State Engineer’s rules and regulations “shall have as their objective the optimum use of water consistent with preservation of the priority system of water rights”); Simpson v. Cotton Creek Circles, LLC., 181 P.3d 252, 259 (Colo. 2008) (“an optimum or maximum use must be sustainable.”).

367. On the other hand, it may be viewed as a rationale for increasing consumptive use of water. We return to this matter in the discussion of public ownership of water. *See infra* Part II.C.

368. Tarlock, *Prior Appropriation*, *supra* note 247, at 884.

369. *Id.* at 883–84.

370. Rotation of water available under a water right, for example, requires agreement among all the parties that hold an interest in that right. A user is not required to rotate water against his will. *See, e.g.*, Strole v. Guymon, 37 P.3d 529, 532–33 (Colo. App. 2001).

371. MacDonnell, *supra* note 333, at 507–08.

372. Harrison C. Dunning, *The “Physical Solution” in Western Water Law*, 57 U. COLO. L. REV. 445, 448 (1986).

373. Replacement water can be provided under an exchange or, in Colorado, under a plan for augmentation. *See* COLO. REV. STAT. §§ 37-83-104, 37-92-103(9) (2014).

374. Distribution of Water to Water Right Nos. 36-02551 and 36-07694 (Rangen, Inc.), No. CM-DC-2011-004, at 1–2 (Idaho Dep’t of Water Resources Jan. 24, 2014) (final order).

water-rights holders, including 14 cities, five school districts, irrigators, dairies, Jerome Cheese Co. and Glanbia. It would have shut off 3,000 cubic feet per second of water to push a mere 9 cfs to Rangen's spring.³⁷⁵ Shortly thereafter, the Idaho Department of Water Resources Director stayed his order for users who were members of an organization offering to mitigate the adverse effects of their pumping.³⁷⁶ Idaho has adopted procedures under which junior appropriators can continue to use water out-of-priority so long as they can implement an acceptable mitigation plan.³⁷⁷

Still another recent case, involving use of groundwater for domestic wells, wrestled with how the role of priority relates to water rights administration. Plaintiff Bounds brought an action against the New Mexico State Engineer for issuing permits for domestic wells located in a fully appropriated water basin as required under New Mexico statute.³⁷⁸ Bounds argued the allowance of such additional water use effected an unconstitutional taking of his 1869 surface water right.³⁷⁹ The New Mexico Court of Appeals determined that "the priority doctrine is not a system of administration. It does not dictate any particular manner of administration of appropriation and use of water or how senior water rights are to be protected from junior users in time of water shortages."³⁸⁰ The Legislature was therefore free to authorize issuance of domestic well permits independent of the priority system "as long as senior water rights are not in fact impaired or subject to impending impairment because of water shortages requiring priority administration to protect those rights."³⁸¹ The New Mexico Supreme Court also found the statute constitutional in denying Bounds's claims, but it followed a different rationale.³⁸² Because, in its view, the statute only prescribed a means of permitting, it did not violate what the Court held was the constitutional requirement for state protection of senior users.³⁸³ In the absence of evidence that Bounds's water rights had in fact been impaired by use of water from domestic wells, the Court decided there had been no deprivation of property.³⁸⁴

Perhaps the most direct means of dealing with the effect of priority is to purchase or lease the senior rights. New water users in locations without unappropriated water have few other options. Yet, the process of making changes in use of existing water rights is expensive and time consuming, and there is

375. Brian Smith, *State Delays Rangen Curtailment Order*, MAGICVALLEY.COM (Feb. 25, 2014), http://magicvalley.com/news/local/state-delays-rangen-curtailment-order/article_29b7a968-1571-5b7a-9954-711227f0d912.html.

376. *Distribution of Water to Water Right Nos. 36-02551 and 36-07694 (Rangen, Inc.)*, No. CM-DC-2011-004, at 3, 5 (Idaho Dep't of Water Resources Feb. 21, 2014) (order granting petition to stay curtailment).

377. See IDAHO ADMIN. CODE r. 37.03.11.000 (2014); see also *2014 Curtailment Notices and Orders*, IDAHO DEP'T OF WATER RESOURCES, <http://www.idwr.idaho.gov/news/curtailment/Curtailment.htm#rngn> (last visited Mar. 14, 2015); see also MacDonnell, *supra* note 333, at 502.

378. *Bounds v. State*, 252 P.3d 708, 709 (N.M. Ct. App. 2010).

379. *Id.* at 710.

380. *Id.* at 721.

381. *Id.*

382. See *Bounds v. State ex rel. D'Antonio*, 306 P.3d 457, 468 (N.M. 2013).

383. *Id.*

384. *Id.* at 470.

considerable resistance in the agricultural community to these voluntary transactions.³⁸⁵ This issue will be discussed in the section on changes of use.³⁸⁶

Priority is a defining attribute of a water use under the prior appropriation doctrine and is deeply embedded in the legal rights and expectations of those holding valid water rights.³⁸⁷ Yet it is worth reexamining its meaning. It is most certainly not, as was originally viewed, a guaranteed right to some fixed flow rate of water.³⁸⁸ At best, it is the ability to divert up to the maximum authorized amount of water as actually required for beneficial use at that period of time, ahead of others taking water from the same source with junior priorities. In today's world, the amount of water required for beneficial use has changed considerably from the time in which senior rights were originally permitted and adjudicated.³⁸⁹ Continued enforcement of priorities should be adjusted to reflect those changing realities, as discussed below.³⁹⁰

Given our increasingly sophisticated ability to model and manage hydrologic systems, states should consider ways to better manage water uses in high-conflict areas to facilitate more effective use of available water.³⁹¹ While priority administration would necessarily be the starting point, such management would seek to meet the full array of valuable uses. It would require seniors placing a call to verify their actual need for the water. It would also search for opportunities to meet actual needs in ways that do not necessarily require all junior appropriators to curtail their diversions.³⁹² In settings where uses unreasonably diminish the public values of the water source, additional steps should be taken to reduce unnecessary diversions and to retain needed flows in-stream.³⁹³

A useful illustration of the problem is provided in the South Platte Basin

385. See Charles W. Howe et al., *The Economic Impacts of Agriculture-to-Urban Water Transfers on the Area of Origin: A Case Study of the Arkansas River Valley in Colorado*, 72 AM. J. OF AGRIC. ECON. 1200, 1202-03 (1990); Peter D. Nichols & Douglas S. Kenney, *Watering Growth in Colorado: Swept Along by the Current or Choosing a Better Lane?*, 6 U. DENV. WATER L. REV. 411, 420-21 (2003).

386. See *infra* Part II.H.

387. *Navajo Dev. Co. v. Sanderson*, 655 P.2d 1374, 1378 (Colo. 1982) (emphasizing priority the most important attribute of a water right).

388. In the gold fields of California where the ditches often provided water to users, the view prevailed that an appropriation established a claim to some certain amount of water. See, e.g., *Smith v. O'Hara*, 43 Cal. 371, 373 (1872). As the concept of beneficial use came to be applied as a measure of water necessary to accomplish a use, the courts began describing appropriations in more dynamic terms that limited the quantity of water based on actual needs. See, e.g., *Nichols v. McIntosh*, 34 P. 278, 281 (Colo. 1893) ("[N]o one is entitled to have a priority adjudged for more water than he was actually appropriated, nor for more than he actually needs.").

389. As Kinney noted in his 1912 treatise, neither users nor courts understood how much water actually was required to grow crops in the early days of appropriation. KINNEY, *supra* note 32, §§ 875-76, at 1541-45.

390. See *supra* Part II.B.

391. For many years states have been using such special management areas to address conflicts among groundwater users. See, e.g., Stephen E. White & David E. Kromm, *Local Groundwater Management Effectiveness in the Colorado and Kansas Ogallala Region*, 35 NAT. RESOURCES J. 275, 278 (1995).

392. Or it would allow junior appropriators to bid for water from a pool or bank that would enable annual and multi-year decisions respecting uses of water.

393. See *infra* Part II.C.

of Colorado. Here, during the record drought of 2002 around five thousand junior wells, many of them large-capacity irrigation wells, were shut down because they did not have sufficient replacement water to offset their depletions.³⁹⁴ The Legislature commissioned a study to examine ways in which water supplies in the South Platte might be more effectively used so that juniors wanting to continue using water might be able to do so.³⁹⁵ The study recommended creation of a basin-wide water management authority that would develop the tools and mechanisms necessary to more effectively use basin water supplies.³⁹⁶ It seems very likely that sooner or later, states will put in place institutional mechanisms of this sort (as they have done in areas of intensive groundwater development) in heavily used water systems—a point to which we will return later.³⁹⁷

C. PUBLIC OWNERSHIP OF WATER, PUBLIC INTEREST, AND THE PUBLIC VALUES OF WATER AND WATERCOURSES

Beginning in 1876 with the Colorado Constitution, all western states have claimed public or state ownership of the water resources within their boundaries.³⁹⁸ These claims represent the assertion of the sovereign right to determine uses of a common resource made available through natural processes.³⁹⁹ Whatever the original motivations for these assertions, the result is that states shoulder the responsibility on behalf of their citizens to act in a manner that seeks to manage these water resources and to serve the best interests of these citizens.⁴⁰⁰ State courts and legislatures determined that appropriation of water

394. REAGAN M. WASKOM, COLO. WATER INST., REPORT TO THE COLORADO LEGISLATURE CONCERNING: HB12-1278 STUDY OF THE SOUTH PLATTE RIVER ALLUVIAL AQUIFER 27 (2013).

395. *Id.* at 1.

396. *Id.* at 12 (“The HB1278 study leads us to the conclusion that the best institutional mechanism for attaining sustainable conjunctive use of surface and groundwater in the S. Platte basin is the formation of a basin-wide authority with the ability to work with all water management organizations, using comprehensive data and the best available science for the good of the entire basin.”).

397. *See infra* notes 521–26 and accompanying text.

398. *See* GETCHES, *supra* note 6, at 84–86.

399. *See, e.g.*, *Geer v. Connecticut*, 161 U.S. 519, 534 (1896) (“It is, perhaps, accurate to say that the ownership of the sovereign authority is in trust for all the people of the state; and hence, by implication, it is the duty of the legislature to enact such laws as will best preserve the subject of the trust, and secure its beneficial use in the future to the people of the state. But, in any view, the question of individual enjoyment is one of public policy, and not of private right.” (internal quotation marks omitted)) (quoting *Magner v. People*, 97 Ill. 320, 334 (1881)); *see also* *Douglas v. Seacoast Prods., Inc.*, 431 U.S. 265, 284–85 (1977) (“The ‘ownership’ language of cases such as those cited by appellant must be understood as no more than a 19th-century legal fiction expressing ‘the importance to its people that a State have power to preserve and regulate the exploitation of an important resource.’”) (quoting *Toomer v. Witsell*, 334 U.S. 385, 402 (1948)) (citing also *Takahashi v. Fish & Game Comm’n*, 334 U.S. 410, 420–21 (1948)); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 656 (1986) (“Notions of ‘sovereign ownership’ of certain natural resources and the ‘duties of the sovereign as trustee’ to natural resources are simply judicially created shorthand methods to justify treating differently governmental transactions that involve those resources.”).

400. *See, e.g.*, *Nat’l Audubon Soc’y v. Superior Court of Alpine Cnty.*, 658 P.2d 709, 726–27 (Cal. 1983); *Parks v. Cooper*, 676 N.W.2d 823, 841 (S.D. 2004); *J.J.N.P. Co. v. State ex rel. Div. of Wildlife Res.*, 655 P.2d 1133, 1136 (Utah 1982) (“Public ownership is founded on the

to serve direct human uses was in the best interest of the state and its citizens. They made that determination in an era of frontier settlement that depended in significant part on taking water out of streams and aquifers and using that water to make living on the land possible. While that need still exists, the West is a different place and the public's interest in its water resources has evolved. Yet the states hold on to the view that appropriation and use of water, often in ways and for purposes little changed from those initiated a century or more ago, still fully serve the interests of their citizens. In fact, the gulf between the broader public values of water and the private interests served by prior appropriation is wide and getting wider with each new appropriation of water.

Most western states include a provision authorizing the permit decision maker to consider the public interest associated with a proposed use of water.⁴⁰¹ Some states also authorize consideration of the public interest in a change of use proceeding.⁴⁰² Very few provide any statutory guidance to the decision maker regarding factors to be considered in the public interest review.⁴⁰³ Not surprisingly, there has been little use of this authority.

Yet the original proponent of this review criterion, Elwood Mead, appears to have anticipated a more substantive role for the reviewer.⁴⁰⁴ Because he viewed water as a gift of nature for the benefit of all, he believed in the need for public supervision of water use to help ensure the greatest possible benefits to the public.⁴⁰⁵ Mead's belief that the state had the responsibility to consider the public interest when making decisions about uses of water reflected his concern that private interest is not always consistent with the broader interests of society. He succeeded in getting a provision inserted into Article 1 of the new state constitution—the article setting forth Wyoming's commitment to other such fundamental values as equality, due process of law, trial by jury, and freedom of speech—as follows:

principle that water, a scarce and essential resource in this area of the country, is indispensable to the welfare of all the people; and the State must therefore assume the responsibility of allocating the use of water for the benefit and welfare of the people of the State as a whole.”)

401. Johnson & DuMars, *supra* note 27, at 356.

402. *Id.* at 373; *see also* GETCHES, *supra* note 6, at 176–77.

403. Douglas L. Grant, *Public Interest Review of Water Right Allocation and Transfer in the West: Recognition of Public Values*, 19 ARIZ. ST. L.J. 681, 688 (1987) [hereinafter Grant, *Public Interest*].

404. The legislation he helped draft contained this provision: “if, in the judgment of the state engineer, such appropriation is detrimental to public interests, the state engineer shall refuse such appropriation.” 1890 WYO. SESS. LAWS 91, 101.

405. According to the State Engineer's Second Biennial Report:

It was based on the belief that water being one of the gifts of nature the title thereto should forever remain in the public; that such public ownership was recognized by the people of this State prior to the adoption of our State Constitution and prior to the enactment of any specific law on this subject, and that in the adoption our State Constitution such public ownership was made a part of the fundamental law of this State; that such public ownership is not only in accord with our laws but that the greatest prosperity of our citizens will be secured by maintaining the limitations above stated.

Article 1, Section 31. Control of water.

Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved.⁴⁰⁶

His belief that it was the state's responsibility to "guard" all interests in water led directly to the inclusion of a public interest review provision.

Inclusion of public interest considerations is recognition of the resource's nature and its many functions and values that extend far beyond the concerns of a party diverting water for an individual use.⁴⁰⁷ Its earliest recorded use receiving appellate review was to enable the New Mexico state engineer to reject an earlier water use application in favor of a subsequent application to use the same water for a more beneficial use.⁴⁰⁸ More recently, the public interest has been applied to consider the potential adverse environmental effects associated with proposed water uses.⁴⁰⁹ Consideration of the public interest appears to be a duty in some, but not all, states.⁴¹⁰

The limited administrative use of the public interest authority may explain in part the active interest, at least in the academic community, in promoting judicial use of the public trust doctrine to take account of the broader consequences of water diversion and use.⁴¹¹ This doctrine asserts a continuing duty to protect the public trust interests associated with uses of navigable watercourses.⁴¹² Though the public's interests were initially considered to be com-

406. WYO. CONST. art. I, § 31; see also Kluger, *supra* note 265, at 18.

407. Grant, *Public Interest*, *supra* note 403, at 702; Douglas L. Grant, *Two Models of Public Interest Review of Water Allocation in the West*, 9 U. DENV. WATER L. REV. 485, 488-90 (2006).

408. *Young v. Hinderlider*, 110 P. 1045, 1050 (N.M. 1910). Indeed, it appears such choices among applications were the predominant use of this authority, a use that caused charges of favoritism and abuse of administrative authority. See Grant, *Public Interest*, *supra* note 403, at 685-86.

409. *Shokal v. Dunn*, 707 P.2d 441, 449 (Idaho 1985); see also Application for Permit No. 13-7697 in the Name of Twin Lakes Canal Co., at 5 (Idaho Dep't of Water Resources Oct. 18, 2012) (final order). As Zimmerman explains, "the [Idaho Department of Water Resources] denied an application for storage on Bear River (Oneida Narrows) for hydroelectric and irrigation purposes where the benefits of those uses were outweighed by the scenic, recreational, and habitat values of the river." John R. Zimmerman, *Environmental Requirements of Allocating Water in the Western U.S.*, 59 ROCKY MTN. MIN. L. INST. §§ 8.01, 8.03[2] (2013).

410. *People v. Shirokow*, 605 P.2d 859, 865 (Cal. 1980); *Shokal*, 707 P.2d at 448; *Tanner v. Bacon*, 136 P.2d 957, 962 (Utah 1943); but see *William F. West Ranch, LLC v. Tyrrell*, 206 P.3d 722, 732-33 (Wyo. 2009).

411. *Nat'l Audubon Soc'y v. Superior Court of Alpine Cnty.*, 658 P.2d 709, 725, 728 (Cal. 1983); see also *In re Water Use Permit Applications*, 9 P.3d 409, 455 (Haw. 2000); Harrison C. Dunning, *The Public Trust: A Fundamental Doctrine of American Property Law*, 19 ENVTL. L. 515, 517 (1989); Ralph W. Johnson, *Public Trust Protection for Stream Flows and Lake Levels*, 14 U.C. DAVIS L. REV. 233, 233-34 (1980); Charles F. Wilkinson, *The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine*, 19 ENVTL. L. 425, 468-69 (1989). Note, however, that public interest review applies only at the time of allocation while the public trust doctrine purports to enable review and regulation of existing uses that are found inconsistent with public trust values. Compare *Nat'l Audubon Soc'y*, 658 P.2d at 728, with *William F. West Ranch, LLC*, 206 P.3d at 733.

412. See Robin Kundis Craig, *A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 ECOLOGY L.Q. 53, 59-61 (2010).

merce, navigation, and fishing, these interests have evolved in some states to more broadly encompass the functions and values of the water itself, including its importance in maintaining water-based ecosystems.⁴¹³ At least in California, the public trust doctrine is said to limit the grant of use made in a state water right as necessary to protect and maintain public trust values.⁴¹⁴ While potentially helping to fill a void in state water law, the public trust doctrine is a judicial doctrine that lacks definition and can only be applied on a case-by-case basis.⁴¹⁵

The instream flow right is prior appropriation law's primary adaptation to concerns about environmental uses and, to a lesser degree, recreational uses of water. Most western states now acknowledge the value of leaving at least some unappropriated water in streams and lakes to support fish or for other purposes.⁴¹⁶ These adaptations have provided a mechanism under state law to address non-private interests in water. Instream flow law is discussed in Section II.I below.

In practice, some aspects of the non-private interests in water are now addressed under federal environmental laws.⁴¹⁷ Water quality is managed primarily under the Clean Water Act.⁴¹⁸ Wetlands also get protection under provisions of this law.⁴¹⁹ Protections under the Endangered Species Act have perhaps motivated the biggest changes in water use management, because historical dam and diversion practices so dramatically altered the ability of watercourses to sustain native species of fish and other aquatic-dependent life.⁴²⁰ It is a striking illustration of state water politics that federal requirements are needed to ensure that states consider the non-private values of water and watercourses.

Public interest review applies only during public consideration of the creation of new water rights or perhaps the change of use of an existing right. It is necessarily piecemeal and ad hoc. Nevertheless, the law of prior appropriation would be improved by putting in place more comprehensive require-

413. See, e.g., *Marks v. Whitney*, 491 P.2d 374, 380 (Cal. 1971); *Nat'l Audubon Soc'y*, 658 P.2d at 719.

414. *Nat'l Audubon Soc'y*, 658 P.2d at 721.

415. Russell M. McGlothlin & Scott S. Slater, *No Fictions Required: Assessing the Public Trust Doctrine in Pursuit of Balanced Water Management*, 17 U. DENV. WATER L. REV. 53, 56, 90, 97 (2013).

416. For a survey of state statutes, see Cynthia F. Covell, *A Survey of State Instream Flow Programs in the Western United States*, 1 U. DENV. WATER L. REV. 177, 180-90 (1998).

417. Getches, *Metamorphosis*, *supra* note 41, at 53.

418. See 33 U.S.C. § 1251 (2011). States have given very limited consideration to the water quality effects of water uses. GETCHES ET AL., *supra* note 44, at 13-15. States have attempted to separate the administration of the Clean Water Act from use of water rights. Gregory J. Hobbs, Jr. & Bennett W. Raley, *Water Rights Protection in Water Quality Law*, 60 U. COLO. L. REV. 841, 856-57 (1989).

419. 33 U.S.C. § 1344.

420. See, e.g., Reed D. Benson, *Avoiding Jeopardy, Without the Questions: Recovery Implementation Programs for Endangered Species in Western River Basins*, 2 MICH. J. ENVTL. & ADMIN. L. 473, 484, 498 (2013); Cori S. Parobek, *Of Farmers' Takes and Fishes' Takings: Fifth Amendment Compensation Claims When the Endangered Species Act and Western Water Rights Collide*, 27 HARV. ENVTL. L. REV. 177, 193 (2003); Melissa K. Estes, Comment, *The Effect of the Federal Endangered Species Act on State Water Rights*, 22 ENVTL. L. 1027, 1039, 1050 (1992).

ments for such considerations and for all states to include such considerations in reviewing changes of use. To be effective, state laws need to give clear direction to decision makers respecting the public values to be considered.⁴²¹ In addition, these laws need to establish standards to be maintained that can translate into objective criteria so that decision makers are not faced with making subjective judgments more than necessary. The exercise of making express what these values are and how they should be protected and maintained would be challenging but potentially enormously helpful as we move beyond the era of water allocation and development and into an era of water management.

Restoring the public values of water and its sources requires a programmatic effort that extends well beyond simple changes in law. It will necessitate an assessment of the health of our rivers and aquifers, a determination respecting the potential restorability of lost important functions, and a coordinated effort to find ways to meet established private water use interests while benefiting the desired public values.⁴²²

D. THE PROPERTY RIGHT

Prior appropriation emerged in a setting in which there was no clear law authorizing the use of water on the federally owned lands in California. Courts worked around this problem by focusing on creating a law that concerned only who had the better right as between two competing users, using the rule of first possession to resolve such disputes. Courts spoke in property rights terms, following the custom of that era, but recognized that, as with mining claims, the property interest only protected the first possessor as against other subsequent claimants and did not vest rights as against the actual owner of the land or the water, the United States.⁴²³ As the states began to assert ownership of water, with at least some support from Congress, they developed statutory systems under which persons intending to use water had to proceed. In so doing, they began to reshape not only the procedure by which a use must be established but also the nature of the right itself. While retaining the priority rule to resolve conflicts between two competing claimants, states asserted the existence of multiple interests in the way water is used and directed

421. See, e.g., Michelle Bryan Mudd, *Hitching Our Wagon to a Dim Star: Why Outmoded Water Codes and "Public Interest" Review Cannot Protect the Public Trust in Western Water Law*, 32 STAN. ENVTL. L.J. 283, 329 (2013); Amber L. Weeks, Note, *Defining the Public Interest: Administrative Narrowing and Broadening of the Public Interest in Response to the Statutory Silence of Water Codes*, 50 NAT. RESOURCESJ. 255, 257 (2010).

422. The Draft Colorado Water Plan expressly recognizes the importance of restoring and maintaining watershed health as a State policy. COLO. WATER CONSERVATION BD., COLORADO'S WATER PLAN (FIRST DRAFT) 212 (December 10, 2014) [hereinafter WATER PLAN]. Unfortunately, the Draft Plan does not provide much guidance respecting how this policy will be implemented. See LAWRENCE J. MACDONNELL & COLO. WATER WORKING GRP., GETCHES-WILKINSON CTR. FOR NATURAL RESOURCES, ENERGY AND THE ENV'T, NAVIGATING A PATHWAY TOWARD COLORADO'S WATER FUTURE: A REVIEW OF AND RECOMMENDATIONS ON COLORADO'S DRAFT WATER PLAN (April 30, 2015).

423. In mining law, the courts have recognized the doctrine of *pedis possessio* that protects the rights of possession of a claim established and maintained while diligently searching for a valuable mineral deposit. See, e.g., *Union Oil Co. v. Smith*, 249 U.S. 337, 346-48 (1919). Upon discovery of a valuable mineral deposit, the possessory right transforms into a vested property right even as against the title owner, the United States. *Id.*

state agencies to consider those interests.⁴²⁴ People like Elwood Mead, responsible now for ensuring that water serve not only the interests of the individual user but also the interests of the state, saw the water right more in contract or license terms—that is, the state authorizing private use of public water because it believes the state will benefit.⁴²⁵ Thus Mead said: “The surrender by the public to the individual of this right of use and the protection by the public of the individual in its enjoyment is a free grant from the public, the only consideration being the public benefit to be derived therefrom.”⁴²⁶ Mead believed all authorized uses attached permanently to the appropriation itself, not the individual making the use.⁴²⁷ In short, individual uses of water represented a means to a larger end—the development of a prosperous society. Mead’s larger social vision of prior appropriation ultimately prevailed, resulting in a narrowly circumscribed right of use subject to ongoing public supervision to guard all the interests in water.

An appropriative water right enables the control and use of some portion of water, in priority, reasonably necessary to accomplish the authorized purpose of use. The holder of the right has entered into an agreement with the state under which the holder is authorized to use public water for the holder’s benefit so long as the holder follows state rules and procedures governing that use. Thus, Wyoming’s law provides: “A water right is a right to use the water of the state, when such use has been acquired by the beneficial application of water under the laws of the state relating thereto, and in conformity with the rules and regulations dependent thereon.”⁴²⁸ The property interest is the conditioned right of use. While courts have struggled with how best to describe this property interest in traditional property law terms, it is clearly a highly circumscribed property interest.⁴²⁹ First, it is a property interest that can be lost

424. *See, e.g.*, WYO. CONST. art. 1, § 31 (“Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved.”).

425. For a contemporary analysis favoring the use of contract principles for water uses, see generally Shelley Ross Saxer, *The Fluid Nature of Property Rights in Water*, 21 DUKE ENVTL. L. & POL’Y F. 49 (2010).

426. SECOND BIENNIAL REPORT, *supra* note 270, at 41.

427. Mead stated:

Under the rulings of the Board of Control the conditions which govern the acquirement of a perpetual right to the use of water must limit its subsequent exercise. In other words such a right is simply a perpetual license to take and use this water for a certain specific purpose in a certain definite place. Under these rulings water appropriated to run a mill is restricted both to that purpose and to that mill. The owner of the right cannot use it to run another mill, nor divert it to the irrigation of land. No transfers of appropriations to other locations or other purposes have been recognized, but, on the contrary, it has been held that rights to water for irrigation belong neither to the canal builder nor the land owner, but attach to the land reclaimed and are inseparable therefrom.

SELECTED WRITINGS, *supra* note 278, at 20.

428. WYO. STAT. ANN. § 41-3-101 (2014).

429. Kinney noted the conditional nature of the right in his 1912 treatise. KINNEY, *supra* note 32, § 762, at 1317. More recently, Professor Sax examined the nature of an appropriative water right and concluded:

through nonuse. Second, it is narrowly defined in terms of specifying a point of diversion, a maximum rate of diversion, a particular purpose of use, and a particular place of use. The property interest cannot be used in any other fashion without going through a formal change of use proceeding. Third, it authorizes use only of an amount of water reasonably necessary to accomplish its purpose. This is a maximum but not a fixed rate or volume of water, one that may change over time as conditions change. Thus, if the quantity of water required to irrigate an acre of land decreases because the landowner installs more efficient sprinklers, then the diversion right presumably adjusts to this lesser volume of water. In many states, water rights are regarded as appurtenant to the land on which they are used.⁴³⁰ Separating the water rights from the land requires some kind of formal legal proceeding.⁴³¹

The essential interest in a water right is the opportunity to divert and beneficially use water available in priority at the point of diversion in accordance with the terms established under the right and under state law. There can be no guaranteed quantity of water since the amount physically and legally available is determined by hydrology and priority.

The courts have been mixed on applying takings law to governmental regulation that reduces the quantity of water historically available under a water right.⁴³² Under ordinary regulatory takings law, the exercise of legislatively-authorized regulatory authority that only incidentally affects the exercise of water rights should not run afoul of the Fifth and Fourteenth Amendment limitation on governmental takings of private property, as now outlined by the US Supreme Court.⁴³³ Law and regulation regularly affect the uses of property. So long as the exercise of regulatory authority does not totally eliminate use of

[W]ater rights have *less* protection than most other property rights for several reasons that will be described in this paper: (a) because their exercise may intrude on a public common, they are subject to several original public prior claims, such as the navigation servitude and the public trust, and to laws protecting commons, such as water pollution laws; (b) their original definition, limited to beneficial and non-wasteful uses, imposes limits beyond those that constrain most property rights; (c) insofar as water rights (unlike most other property rights) are granted by permit, they are subject to constraints articulated in the permits.

Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. COLO. L. REV. 257, 260 (1990) (emphasis in original).

430. See, e.g., WYO. STAT. ANN. § 41-3-101 (2014) ("Water always being the property of the state, rights to its use shall attach to the land for irrigation.").

431. Arizona law, for example, provides for a "sever and transfer" process. ARIZ. REV. STAT. ANN. § 45-172(A) (2014).

432. Several articles discuss the application of "takings" law to water rights. See, e.g., James H. Davenport & Craig Bell, *Governmental Interference with the Use of Water: When Do Unconstitutional "Takings" Occur?*, 9 U. DENV. WATER L. REV. 1, 23-55 (2005); John D. Echeverria, *The Public Trust Doctrine as a Background Principles Defense in Takings Litigation*, 45 U.C. DAVIS L. REV. 931 (2012); John D. Echeverria, *Is Regulation of Water a Constitutional Taking?*, 11 VT. J. ENVTL. L. 579 (2010); Douglas L. Grant, *ESA Reductions in Reclamation of Water Contract Deliveries: A Fifth Amendment Taking of Property?*, 36 ENVTL. L. 1331, 1361-71 (2006); Brian E. Gray, *The Property Right in Water*, 9 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 1 (2002); John D. Leshy, *A Conversation about Takings and Water Rights*, 83 TEX. L. REV. 1985 (2005); Josh Patashnik, *Physical Takings, Regulatory Takings, and Water Rights*, 51 SANTA CLARA L. REV. 365 (2011).

433. The Court's regulatory taking analysis is most completely presented in *Penn Cent. Trans. Co. v. City of New York*, 438 U.S. 104, 123-28 (1978).

the property, the courts have not been inclined to find the exercise of governmental legal authority to constitute a regulatory taking.⁴³⁴ Some courts, however, have apparently followed the other prong of this analysis under which physical taking of some discrete portion of property for some public purpose without compensation is determined to constitute a taking.⁴³⁵ This approach misconstrues the nature of a water right and assumes the holder of the right has some property right in the water itself.⁴³⁶ In fact, a water right only authorizes diversion and use of water in compliance with law. To the degree new legal regulations place limitations on the historical manner in which the water right has been used, including amounts of water that have been diverted, the use must adjust accordingly. State authority in this area seems especially evident since states are regarded as the legal owners of the water resources within their boundaries.

Consequently, states have authority to enact laws regulating the manner in which water rights are used. To date, states have been remarkably unwilling to exercise this authority. The recommendations offered here are among the things that states might consider to bring their prior appropriation laws up to date.

E. BENEFICIAL USE

The original purpose for including the beneficial use requirement was to distinguish between diversions from streambeds to enable access for mining and diversions with the purpose of putting that water to some use.⁴³⁷ It evolved into the touchstone for finalizing the right—the concept that the vesting of the right as against other would-be users of the same water did not occur until diverted water had been placed to actual use. According to the most common definition of beneficial use, such use is the “basis” of the right.⁴³⁸ The concept has grown to encompass the notion that states can determine what types of uses are considered beneficial and thus can constitute the basis of an appropriation.⁴³⁹ Perhaps more importantly, it evolved into a means of objectively establishing a maximum quantity of water that may be appropriated, and as a test to determine whether ongoing uses are reasonably efficient.⁴⁴⁰ This quantitative

434. See Robert Meltz, *Takings Law Today: A Primer for the Perplexed*, 34 *ECOLOGY L.Q.* 307, 328–32 (2007).

435. These cases follow *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 441 (1982). A useful summary of decisions applying takings law to regulation of water use is provided in Patashnik, *supra* note 432, at 374–79.

436. Patashnik, *supra* note 432, at 387.

437. See *supra* note 130 and accompanying text.

438. See, e.g., WYO. STAT. ANN. § 41-3-101 (2014) (“Beneficial use shall be the basis, the measure and limit of the right to use water at all times.”)

439. See, e.g., Frank J. Trelease, *The Concept of Reasonable Beneficial Use in the Source of Surface Streams*, 12 WYO. L.J. 1, 6–7 (1957). The Wyoming State Engineer’s Office has compiled an extensive list of beneficial uses. *Recognized Beneficial Uses*, WYOMING STATE ENG’R’S OFFICE (Sep. 24, 2012), <https://sites.google.com/a/wyo.gov/sco/home> (under “Home,” click “Recognized Beneficial Uses”). Inevitably, new purposes for water use will arise that will qualify as beneficial. An example is the arising concern whether maintenance of stream flows for instream benefits could constitute a beneficial use. See, e.g., *Idaho Dep’t of Parks v. Idaho Dep’t of Water Admin.*, 530 P.2d 924, 926 (Idaho 1974).

440. For a comprehensive discussion, see Janet C. Neuman, *Beneficial Use, Waste, and For-*

aspect of beneficial use is captured in that portion of its standard definition that it is “the measure and limit” of the right.⁴⁴¹ In this capacity, the beneficial use requirement helped to put objective boundaries around asserted claims to water and to give appropriators better information about how much water is, in fact, necessary to achieve an intended use.⁴⁴² In the context of irrigation, the duty of water emerged as a guide.⁴⁴³ A few states even statutorily or administratively established a maximum duty of water that became the standard allocation used in authorizing an irrigation water use.⁴⁴⁴ In a few cases, courts have determined that an existing water use did not meet the beneficial use standard because of unreasonably inefficient methods of diversion or unreasonably wasteful diversions and uses of water.⁴⁴⁵ Thus the beneficial use requirement has served as an outer boundary on water uses, intended to ensure some standard of useful purpose and reasonably efficient practice in the legally protected uses of water. Here we consider what changes, if any, should be made to the existing beneficial use requirement. We look first at its use in the process of establishing new appropriations and then consider its application to ongoing uses.

lecture: The Inefficient Search for Efficiency in Western Water Use, 28 ENVTL. L. 919 (1998).

441. *Id.* at 920.

442. Elwood Mead in 1889 took the then unprecedented step of investigating the water requirements in irrigated agriculture that he then used to establish a duty of water. SECOND ANNUAL REPORT, *supra* note 270, at 25–32. The Wyoming legislature incorporated his recommendations into its initial 1890 statute, establishing a limitation of one cubic feet per second (“cfs”) per seventy acres of irrigated land. 1890 WYO. SESS. LAWS 91, 98; WYO. STAT. ANN. § 41-4-317 (2014). Under Mead’s direction, the US Department of Agriculture produced several studies in the first decade of the 1900s, providing guidance respecting the duty of water in irrigation. See Samuel C. Wiel, *What is Beneficial Use of Water?* 2 CAL. L. REV. 460, 463 n.15 (1915) [hereinafter Wiel, *Beneficial Use*]. Subsequently some western states, usually through their land grant colleges, generated more state-specific analyses. See, e.g., Bear River Basin Planning Team, *Wyoming State Water Plan, Bear River Basin Water Plan Technical Memoranda, Appendix G: Crop Consumptive Use*, WYOMING STATE WATER PLAN, <http://waterplan.state.wy.us/plan/bear/techmemos/cropcu.html> (last visited May 22, 2014); see also ROBERT W. HILL, UTAH AGRIC. EXPERIMENT STATION, CONSUMPTIVE USE OF IRRIGATED CROPS IN UTAH, RESEARCH REPORT 145 (1994); see also Neuman, *supra* note 440, at 959 (“in Washington, estimates of the amount of water needed for irrigating crops at various points around the state were developed by the Washington State University Agricultural Research Center in 1982. This study is used by the State Department of Ecology as a guideline in quantifying and issuing new agricultural water rights.”).

443. Wiel, *Beneficial Use*, *supra* note 442, at 462.

444. The 1913 edition of Wiel’s treatise provides citations to the statutory duties existing at that time. See WIEL, WATER RIGHTS, *supra* note 98, § 487, at 522–25. A statutory maximum duty of water for irrigation still remains in place in Wyoming. WYO. STAT. ANN. § 41-4-317 (2014). According to Janet C. Neuman,

Idaho also applies a standard water duty for new irrigation applications: one cfs per fifty acres, which translates to 0.02 cfs per acre. Oregon applies a range of duties for agricultural applications, some as high as six acre feet per acre. Utah duties range from two acre feet per acre to six acre feet per acre, depending on where in the state the use is.

Neuman, *supra* note 440, at 960 (footnotes omitted).

445. See, e.g., *In re Water Rights of Deschutes River and Tributaries*, 286 P. 563, 573–74, 577, 587 (Or. 1930), *modified*, 294 P. 1049; *Nichols v. Hufford*, 133 P. 1084, 1085 (Wyo. 1913); see also, Neuman, *supra* note 440, at 933–46.

1. New Appropriations

In a world of increasingly limited supplies of unappropriated water it seems worth considering whether states might want to develop more express standards of water use efficiency that would be applied to evaluate proposals for new appropriations. While some cities now impose such standards on new development, states have not chosen to develop standards that must be met in the permitting process for new appropriations. Instead, a few states now impose requirements on urban water use intended to promote efficiency in existing uses.⁴⁴⁶ Nevertheless, states might want to consider incorporating a general requirement that all new water appropriations be used efficiently. They could implement this requirement by requiring new appropriators to periodically submit reports verifying the manner of compliance. More aggressively, states could establish best practices and require compliance with such practices.

States might also encourage efficiency by imposing a use fee on new water appropriations. At present, appropriators pay nothing to the state for their use of public water. Proposals to impose such charges date back at least to the 1890s.⁴⁴⁷ Simplest would be a charge imposed per unit of water diverted or withdrawn. An alternative would be a charge based on the quantity of water consumed or the net depletion to the water source—intended to compensate the public for loss of this amount of water from the source. The extent of an appropriation's consumption or net depletion best measures the appropriation's effect on the water source. It is time appropriations are more carefully defined so that, in addition to limits on the rate of diversion, they also include limits on the total allowable quantity of water diverted and, importantly, on the maximum consumptive use authorized under the appropriation.⁴⁴⁸ States

446. California has been the most active in this area, passing legislation calling for a twenty percent reduction in urban per capita water use by the end of 2020. CAL. WATER CODE § 10608.42(a) (2015). The State of Washington also has water use efficiency requirements established in statute for urban uses. WASH. REV. CODE § 70.119A.180(1)-(2) (2014).

447. Elwood Mead made the following statement in his Third Biennial Report as Wyoming State Engineer:

There is another provision, found in European irrigation laws, which is worthy of careful consideration by our legislators. Under these laws there is no such thing as a free appropriation. Every user of water must pay the state a rental therefor. These rentals are, in most cases, very small, being only intended to pay the expenses of supervision and to prevent the salaries of Water Commissioners and Superintendents becoming a burden to the general tax-payer. The great value of the system is its influence in promoting economy. The man who pays for what he gets will not be wasteful. It also places the doctrine of public ownership in a form to be comprehended by all, something not true of our method of free grants in perpetuity.

It is probably too early to seriously consider its adoption. That it will come, however, when increased use and augmented value make systematic distribution a more important consideration than it is at present, is confidently expected.

THIRD BIENNIAL REPORT, *supra* note 266, at 59-60.

448. As Mead long ago recognized, people's use of water is influenced by its cost. *See id.* A fee imposed on diversion has the benefit of encouraging ways to take only that amount of water necessary for the purpose. A fee imposed on depletion would have the benefit of highlighting the most important physical effect a given water use has on the source of supply.

should consider incorporating seasonal limitations on diversions/withdrawals that better reflect actual water availability and the ability of water sources to sustain such diversions.

State laws also should be clarified to ensure that the beneficial use consideration for proposed new appropriations takes into account public benefits as well as benefits to the appropriator. In theory, the public interest requirement should accomplish this result but, in practice, it rarely does.⁴⁴⁹ Some states already include the concept of reasonability in their prior appropriation water law.⁴⁵⁰ In 1957 Dean Trelease talked about merging the concepts of reasonable and beneficial use.⁴⁵¹ The result was, he said, a rule "that a particular use must not only be embraced within the general class of uses held to be beneficial, or must not only be of benefit to the appropriator but it must also be a reasonable and economic use of the water in view of other present and future demands upon the source of supply."⁴⁵² The significant difference from the original beneficial use standard is its consideration not just of the benefit of the use itself but its reasonability in view of other existing and potential uses of the water source. As with riparian water uses,⁴⁵³ is it reasonable in relation to the amount of water available, to existing and desired human, biological, and physical uses of the water, and to any associated adverse effects? Does it require a disproportionate amount of water in relation to the benefits it produces? Does it require alteration or modification of the water source in a manner that unacceptably impairs other functions and values? Incorporation of reasonability enables consideration of ways in which existing uses might be adjusted to better serve contemporary needs. It puts water users on notice that historic practices are not necessarily sufficient for new uses, that water is indeed a public resource intended to serve the full array of interests and not just those of the appropriator, and that protection of vested rights (including priority) means using those rights in a manner consistent with the ever changing needs of society.

2. Existing Uses

Courts have been clear that beneficial use is a continuing requirement of an appropriation.⁴⁵⁴ Nevertheless, they have been reluctant to find that the manner of use under an existing appropriation is wasteful and thus is not beneficial.⁴⁵⁵ Many writers have called for courts to apply the beneficial use requirement in a more active manner, carefully scrutinizing water uses in con-

449. See *supra* Part II.C.

450. California incorporated the standard of reasonable use through constitutional amendment. CAL. CONST. art. X, § 2.

451. Trelease, *supra* note 439, at 16; See also Frank E. Maloney et al., *Florida's "Reasonable Beneficial" Water Use Standard: Have East and West Met?*, 31 U. FLA. L. REV. 253, 254 (1979).

452. Trelease, *supra* note 439, at 16.

453. See RESTATEMENT (SECOND) OF TORTS § 850 (1979).

454. See, e.g., *Hofeldt v. Eyre*, 849 P.2d 1295, 1298 (Wyo. 1993); *Basin Elec. Power Coop. v. State Bd. of Control*, 578 P.2d 557, 563 (Wyo. 1978) ("Beneficial use is not a concept which is considered only at the time an appropriation is obtained. The concept represents a continuing obligation which must be satisfied in order for the appropriation to remain viable.").

455. See Patashnik, *supra* note 432, at 412-13.

trover and requiring those uses to meet some higher standards of efficiency.⁴⁵⁶ Thus, for example, instead of applying the traditional “consistent with local customs” standard for evaluating uses, these writers would rather have the court require uses to meet something like a “best practices” standard.⁴⁵⁷ So far, no court has accepted this invitation, nor has any state legislature chosen to require improvements in existing use efficiencies.⁴⁵⁸

Courts, presumably, are reluctant to take up this issue because of its somewhat technical nature—water use practices are not an area of normal legal expertise. But why have legislatures not sought to require more efficient water uses? One possible explanation is an unwillingness to impose the improvement costs on its major user—the agricultural community—based perhaps on a fear that many would not be able to afford such costs.⁴⁵⁹ Another may be the fear that changes in long-standing water use practices would alter flow patterns and disrupt established water supplies.⁴⁶⁰ Still another explanation is that no clear case has been made for why such changes should be made and such costs imposed. What is the policy purpose for requiring improved efficiency in existing water uses? Without such a clear objective in mind, it would seem that improving irrigation efficiency would primarily benefit junior appropriators who would see more water available in the stream than before.

The strongest case for requiring more efficiency in existing uses, in my view, is to help restore river health and regain some of water’s lost public values. The purpose of efficiency, then, would be to achieve the existing authorized water uses with less water and thereby improve stream flows and either maintain or reduce declines in groundwater levels.⁴⁶¹ There are many possible

456. See, e.g., George W. Pring & Karen A. Tomb, *License to Waste: Legal Barriers to Conservation and Efficient Use of Water in the West*, 25 ROCKY Mtn. MIN. L. INST. 25-1, at 25-44 to -47 (1979).

457. See, e.g., Neuman, *supra* note 440, at 982 (suggesting a “best practicable conservation technology” standard).

458. *Id.* Nevertheless, there is evidence that water uses are in fact becoming more efficient. Increasingly widespread use of sprinklers for irrigation appears to be one important factor affecting this trend. See, e.g., *Irrigation & Water Use: Background*, U.S. DEP’T. OF AGRIC. ECON. RESEARCH SERV., <http://www.ers.usda.gov/topics/farm-practices-management/irrigation-water-use/background.aspx#.U398CShaag0> (last updated June 7, 2013) (showing increase in pressure sprinkler use efficiency and overall reduction in water use).

459. See, e.g., Neuman, *supra* note 440, at 988-89.

460. But in practice, these uses that are clearly inefficient from today’s perspective have existed for decades. The excess water diverted from streams has returned back to the hydrologic system and become a source of supply for other appropriations. Reducing these return flows by improving efficiency almost always will also reduce water historically available to these other appropriators. Many in the irrigation community oppose efficiency changes for just this reason. The US Supreme Court decision in *Montana v. Wyoming* suggests that irrigation water rights contemplate more efficient use of water; thus any effects on other appropriators resulting from such efficiency improvements, including reductions in historical return flows, are not compensable injury. *Montana v. Wyoming*, 131 S. Ct. 1765, 1768 (2011).

461. From an appropriator’s perspective, the purpose of efficiency can be to reduce the labor associated with traditional methods of irrigation (say, by installing sprinklers in place of furrow irrigation). It may increase the amount of water physically available at the point of use (eliminating leaks, reducing seepage and evaporation) and enable increased use for the purpose (e.g., more water available to the plants). From a public perspective, it might help reduce the need to develop new or increased supplies of water—using the conserved water to meet increasing demands instead. In short, we need to think about the objectives of improved efficiency and what measures are appropriate to accomplish these objectives.

approaches, ranging from prescription of practices, to imposing an across-the-board reduction in authorized diversions/withdrawals, to charging for diversions/withdrawals. Whatever the means chosen, it must be backed up with a limitation on additional diversions/withdrawals by juniors or on new appropriations so the water stays in the source to help provide public benefits.

F. CONDITIONAL RIGHTS

In recognition that there can be legitimate reasons for a gap in time between an appropriation's initiation and actual beneficial use of water, prior appropriation law early adopted the concept of relation back.⁴⁶² Relation back allows an appropriator to enjoy the priority of the date on which he initiated the appropriation rather than the date on which he actually placed water to beneficial use, so long as he pursued the development and water use under the appropriation in a diligent manner.⁴⁶³ Permitting states incorporated conditions that require the permittee to complete construction of the necessary facilities within a certain time and then apply water to beneficial use within an additional specified time thereafter.⁴⁶⁴ While the state permitting authority can extend these time periods for good cause,⁴⁶⁵ the specified periods were expected to ensure that would-be appropriators actively pursued the development and water use in a timely manner.

In practice, it appears that states have allowed initial appropriation claims to remain in active status despite many years passing and little diligent development. For example, in *Green River Development Co. v. FMC Corp.*, decided in 1983, the Wyoming Supreme Court considered a proposed change in the place and purpose of water use under permits issued in 1908, 1910, 1920, and 1921 but not yet put to beneficial use.⁴⁶⁶ This situation does not appear to be especially unusual. A study completed in 1967 found 260,000 acres of land in the Wyoming's North Platte Basin covered by permits in good standing on which there had never been any actual irrigation.⁴⁶⁷ The problem is by no means restricted to Wyoming. A recent water rights records study in Colorado found outstanding conditional water right claims for 157 million acre-feet (maf) of water annually, compared to 258 maf for perfected rights.⁴⁶⁸ Moreover, ninety-two percent of the conditional rights were older than six

462. See, e.g., *Union Mill & Mining Co. v. Dangberg*, 81 F. 73, 95 (C.C.D Nev. 1897).

463. *Id.*

464. See, e.g., WYO. STAT. ANN. § 41-4-506 (2014) (requiring construction to be completed within five years, and proof of beneficial use within five years after construction completion).

465. *Id.*

466. *Green River Dev. Co. v. FMC Corp.*, 660 P.2d 339, 340-41 (Wyo. 1983).

467. Michael V. McIntire, *The Disparity Between State Water Rights Records and Actual Water Use Patterns*, 5 LAND & WATER L. REV. 23, 30 (1970) ("In the North Platte River Basin, in which the acreage having adjudicated water rights already exceeds the actual irrigated acreage by over 220,000 acres, there are an additional 260,605 acres of land covered by such conditional permits still in good standing.") (citing Richard T. Clark, *Water Uses in the North Platte River Basin of Wyoming*, 4 UNIV. OF WYO. AGRIC. EXPERIMENT STATION RES. J. 23 (1967)); see also Jackson B. Battle, *Paper Clouds Over the Waters: Shelf Filings and Hyperextended Permits in Wyoming*, 22 LAND & WATER L. REV. 673, 674-75 (1987).

468. Charles J.P. Podolak & Martin Doyle, *Conditional Water Rights in the Western United States: Introducing Uncertainty to Prior Appropriation?*, 51 J. AM. WATER RES. ASS'N 14, 25 (2015).

years and 23 percent were older than thirty years.⁴⁶⁹

The original purpose of a conditional right was to protect the priority date of valid appropriators while they diligently moved ahead with the actions necessary to be able to divert and use water.⁴⁷⁰ While this purpose may continue to be a legitimate concern for large-scale water projects that require many years to plan, finance, and build, it seems to have been subverted instead to become a means of claiming an early place in line while determining whether there is in fact sufficient water demand to warrant constructing the necessary facilities. This approach has charitably been labeled a "planning" approach, but others have labeled it speculation.⁴⁷¹ No doubt there are legitimate reasons why proposed water projects may require years to construct, but the extent and nature of many conditional claims suggest the need to require more stringent review of the continuing validity of such claims. In a world of heavily appropriated water sources and increasingly uncertain future water supplies, not only do such inchoate claims pose considerable uncertainty for those now seeking an appropriation, they would, if finally developed, move ahead of existing but junior development in priority status. The threat of such displacement likely places a chill on legitimate new water development.

In theory, there are checks on such ongoing claims—procedures by which their continued validity is reviewed. However, in practice, states have been generally unwilling to invalidate conditional senior claims. For example, the Colorado Supreme Court upheld the continuing validity of conditional claims established as much as fifty years earlier for the purpose of oil shale development.⁴⁷² The court relied on the oil company's ongoing efforts to find an economic means for developing oil shale as the basis for finding diligence for the associated water development.⁴⁷³ In the unlikely event that oil shale ever becomes economically viable, the water uses associated with that development would have senior priorities to years of actual water development and use for demands both on Colorado's growing western slope and for the Front Range.⁴⁷⁴

The burden placed on conditional claimholders to maintain these claims should increase with time. After an initial period determined to be necessary for the diligent development of the facilities necessary to put water to beneficial use, the claimant should be required to satisfy strict standards to maintain the claim. Failure to meet these standards should result in a court invalidating the claims.

G. FORFEITURE/ABANDONMENT

Appropriators must continue to beneficially use their vested water rights for the rights to remain valid. Early courts applied the common law doctrine

469. *Id.* at 27.

470. *Union Mill & Mining Co. v. Dangberg*, 81 F. 73, 95 (C.C.D Nev. 1897).

471. *See Podolak & Doyle*, *supra* note 468, at 17.

472. *Mun. Subdist., N. Colo. Water Conservancy Dist. v. OXY USA, Inc.*, 990 P.2d 701, 705, 708 (Colo. 1999).

473. *Id.* at 708.

474. *MACDONNELL*, *supra* note 359, at 33.

of abandonment to invalidate unused water rights.⁴⁷⁵ The need to demonstrate intent to abandon, however, limited the court's application of this doctrine.⁴⁷⁶ In the 1880s, states began to establish statutory requirements under which rights could be lost based on a specified period of nonuse, without regard to intent.⁴⁷⁷ Nevertheless, courts in particular as well as state administrators have been reluctant to apply these use requirements. Citing the maxim that the law "abhors" abandonment of property rights, courts have often avoided determining loss of water rights even in the face of decades of nonuse.⁴⁷⁸ Moreover, courts have sometimes overruled administrative determinations of forfeiture despite clear evidence of extended periods of nonuse where the courts could find some extenuating circumstance or technicality.⁴⁷⁹ For example, courts developed the theory that a party did not have standing to bring a forfeiture action unless it could demonstrate that it would directly benefit.⁴⁸⁰ The result is that there are large numbers of established water rights that, despite not being used, continue to be considered valid claims to divert and use water.⁴⁸¹

Once again, each state already has legal mechanisms for eliminating unused rights, but they are not used or, when they are, courts have tended to resist their application. It appears that state legislatures need to act to make their intent clear to eliminate unused water rights from existing state records. To this end, such legislation should establish as state policy the objective of eliminating all unused claims and direct both the courts and administrators to use their authorities as necessary to achieve this end. In addition, legislation should direct state administrators to establish annual use records and, if there is no use during the statutory period of time (say, five years), to send a notice to the holder requiring evidence submission within a specified time (say, three months) that establishes a permissible basis for the nonuse. Failure to provide a permissible justification would result in proceedings to invalidate the claim.

There is a view that the so-called "use it or lose it" aspect of abandonment/forfeiture law causes appropriators to divert the fully authorized extent of the appropriation even when there is no actual need for the water.⁴⁸² This has caused calls to eliminate this requirement.⁴⁸³ Legislatures should consider ways to assure appropriators that there is no benefit to diverting or withdrawing water that is not beneficially used. Kansas, for example, recently changed

475. See KINNEY, *supra* note 32, § 1100, at 1978-79.

476. *Id.* § 1101, at 1979-83.

477. See, e.g., 1888 Wyo. Sess. Laws 115, 121; see also KINNEY, *supra* note 32, § 1119, at 2022-23.

478. See, e.g., WYOMING WATER LAW, *supra* note 262, at 156 n.842 (providing a list of cases); see, e.g., *Mun. Subdist., N. Colo. Water Conservancy Dist. v. OXY USA, Inc.*, 990 P.2d 701, 705, 708 (Colo. 1999).

479. See, e.g., *Snider v. Kirchhefer*, 115 P.3d 1, 5-6, 8 (Wyo. 2005); *Horse Creek Conservation Dist. v. Lincoln Land Co.*, 92 P.2d 572, 574, 578, 581 (Wyo. 1939).

480. See, e.g., *Snider*, 115 P.3d at 8; *Hagic v. Lincoln Land Co.*, 18 F. Supp. 637, 639-40 (D. Wyo. 1937).

481. We are referring here to rights that have been placed to use initially, but for whatever reason, are no longer in use. Thus, this group of rights is different from the conditional claims discussed in the previous section that have never been placed to beneficial use.

482. See, e.g., *Pring & Tomb*, *supra* note 456, at 25-20 to -22.

483. *Id.* at 25-65; Arlene J. Kwasiak, *Water Scarcity and Aquatic Sustainability: Moving Beyond Policy Limitations*, 13 U. DENV. WATER L. REV. 321, 332-334 (2010).

its laws governing groundwater use to make clear that nonuse of water from an aquifer that has been closed to new appropriation is not a basis to apply the state's forfeiture requirement.⁴⁸⁴

H. TRANSFERS/CHANGES OF USE

While all western states now authorize a water rights holder to make certain changes in the originally authorized use without losing priority, all limit such changes by a "no injury" standard.⁴⁸⁵ To demonstrate an absence of injury, the change proponent generally must demonstrate that water legally available to other appropriators from the same source will be unchanged in quantity and timing from before the change is made; the analysis necessary to demonstrate this condition can be complex and expensive to make.⁴⁸⁶ Many factors complicate the analysis and can be challenged by those seeking to prevent or limit the change. The goal of requiring no discernible change in the hydrologic system benefits all existing users while substantially burdening the party seeking change. There is a need to facilitate the changes in a manner that avoids unnecessary interference with existing uses.

It is worth pausing on the matter of what is meant by the no-injury standard. A strong property-rights proponent might ask why this standard should limit a property right holder's ability to change uses.⁴⁸⁷ Why should a senior appropriator be required to protect junior appropriators? It appears to be an application of the longstanding limitation that one's use of his property cannot unreasonably interfere with another's use of his property, in the context of rights to the use of a shared resource.⁴⁸⁸ But note that this nuisance law limitation does not require no-injury whatsoever; it only precludes significant harm.⁴⁸⁹ A standard that limits changes to those not unreasonably interfering with other uses would help moderate the degree of proof that the change proponent is obligated to put forward. Thus, as with new uses under the riparian system,⁴⁹⁰ a change of an appropriative right should be permitted so long as the effects on other users are not unreasonable.

Prospectively, all new direct flow appropriations and changed water rights should be quantified volumetrically.⁴⁹¹ Thus, in addition to having an authorized maximum diversion rate, the right would be defined in terms of a maximum water volume over some specified time period. In theory, the duty of

484. H.B. 2451, 84th Leg., Reg. Sess. (Kan. 2012) (amending KAN. STAT. ANN. § 82a-718 (2011)). Nonuse of water rights enrolled in the conservation reserve program also does not trigger the abandonment statute. KAN. STAT. ANN. § 82a-718 (2014).

485. See Hobbs, *supra* note 24, at 165; see also *supra* Part I.D.

486. Nichols & Kenney, *supra* note 385, at 420-22; see also David C. Taussig, *The Devolution of the No-Injury Standard in Changes of Water Rights*, 18 U. DENV. WATER L. REV. 116, 146-47 (2014).

487. L. M. HARTMANN & DON SEASTONE, *WATER TRANSFERS: ECONOMIC EFFICIENCY AND ALTERNATIVE INSTITUTIONS* 7-10 (1970) (explaining that limiting water transfers is economically inefficient).

488. See, e.g., RESTATEMENT (SECOND) OF TORTS § 821D cmt. a (1979) (discussing private nuisance).

489. *Id.* § 821F cmt. c (explaining "significant harm").

490. TARLOCK, *LAW OF WATER RIGHTS*, *supra* note 191, at § 3:60.

491. See *supra* notes 280-82 and accompanying text.

water serves this purpose, but in practice direct flow water rights are limited only by a maximum diversion rate. In addition, at least with water rights changes, the courts or agencies should specify the consumptive use portion of the changed right. It is common to limit consumption to the historical consumption under the right as a means of meeting the no-injury rule.⁴⁹² Specifying the authorized maximum total consumption of a changed right both serves to make more explicit the actual claim to deplete water held under the right and to facilitate future use changes. States should consider quantifying water rights on the basis of consumptive use units that can be readily transferred to new uses without the need for detailed hydrologic analysis.⁴⁹³

More broadly, there is a growing interest in enabling more flexible water uses, both annually and over time. Traditionally, changes from irrigation to urban use have followed purchase of agricultural water rights (and usually the irrigated land as well) and total cessation of agricultural activity (so-called “buy and dry”).⁴⁹⁴ Concern about agriculture loss, especially in rural areas with few other economic alternatives, prompted increasing interest in what are now called “alternative transfer methods,” intended to enable transfers of water without necessarily transferring ownership of the associated water rights.⁴⁹⁵ According to the Colorado Water Conservation Board,

[c]onceived transfer methods include, but are not limited to: 1) interruptible water supply agreements; 2) long-term agricultural land fallowing; 3) water banks; 4) reduced consumptive use through efficiency, deficit irrigation cropping changes while maintaining historic return flows; and 5) purchase by end users with leaseback under defined conditions.⁴⁹⁶

Many people see such approaches as a means of shifting some water from agriculture to other uses without unreasonably impairing the associated agricultural economy. Some legal changes will be necessary to enable such approaches, but the primary challenges are economic and administrative, not legal.⁴⁹⁷

492. See, e.g., *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46, 53 (Colo. 1999); see also Taussig, *supra* note 486, at 132–37.

493. Lawrence J. MacDonnell, *Public Water-Private Water: Anti-Speculation, Water Reallocation, and High Plains A&M, LLC v. Southeastern Colorado Water Conservancy District*, 10 U. DENV. WATER L. REV. 1, 15–19 (2006).

494. For an early example that generated litigation, see *Strickler v. City of Colo. Springs*, 26 P. 313, 314 (Colo. 1891); see also Lawrence J. MacDonnell & Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, 2 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 27, 28 (1994).

495. See, e.g., COLO. WATER CONSERVATION BD., ALTERNATIVE AGRICULTURAL WATER TRANSFER METHODS CRITERIA AND GUIDELINES FOR THE COMPETITIVE GRANT PROGRAM (Sept. 16, 2010), available at <http://cwcb.state.co.us/LoansGrants/alternative-agricultural-water-transfer-methods-grants/Documents/AltAgGrantProgramCriteriaGuidelines.pdf>. The Draft Colorado Water Plan strongly discourages transfers based on dry up of irrigated land and encourages use of alternative mechanisms that would not involve the sale of the water right. WATER PLAN, *supra* note 422, at 193.

496. *Id.*

497. Colorado already authorizes interruptible supply agreements. COLO. REV. STAT. § 37-92-309 (2014). Colorado also made an ill-fated attempt to establish a water bank in the Arkansas River. See ADAM SCHEMPF, ENVTL. L. INST., WESTERN WATER IN THE 21ST CENTURY, 27–28 (2009).

I. INSTREAM FLOWS

To address the growing demand to protect some remaining unappropriated water flows for fishery maintenance and other purposes, most prior appropriation states now have adopted some mechanism for this purpose. The effect of these mechanisms is to keep a specified water flow between two designated places on a stream, free from future appropriation and diversion. Coming as they did more than one hundred years after the creation of thousands of diversionary prior appropriation rights, these instream flow protections can only apply in places where flows still remain. But they require the continuing availability of this water in this location, thus potentially limiting future upstream appropriations and requiring protection during change of use proceedings.⁴⁹⁸ Western states still hesitate to dedicate stream flows permanently to maintain instream values—fearing that out-of-stream human needs might be unduly restricted.⁴⁹⁹ Protection mechanisms are generally limited to designated state agencies, which operate under carefully defined limits for maintaining instream flows.⁵⁰⁰ While some point to state recognition of instream flows as evidence of the prior appropriation system's adaptability, it is fair to note the constraints placed on such appropriations are not applicable to other appropriations.⁵⁰¹

Three modest changes would substantially improve use of instream flow laws. First would be to allow leasing of diversionary or storage appropriations and their temporary change to instream flow use.⁵⁰² Any interested party should be allowed to do this, not just a state agency.⁵⁰³ The consumptive use calculation for the leased right should be tolled during the leased period to remove a disincentive for such leases.⁵⁰⁴ Injury issues are essentially nonexistent.

498. *See, e.g.*, Colo. Water Conservation Bd. v. City of Central, 125 P.3d 424, 439 (Colo. 2005).

499. *See, e.g.*, MONT. CODE ANN. § 85-2-316(11) (2014). According to Montana statute:

Except as provided in 85-20-1401, the department may modify an existing or future order originally adopted to reserve water for the purpose of maintaining minimum flow, level, or quality of water, so as to reallocate the state water reservation or portion of the reservation to an applicant who is a qualified reservant under this section. Reallocation of water reserved pursuant to a state water reservation may be made by the department following notice and hearing if the department finds that all or part of the reservation is not required for its purpose and that the need for the reallocation has been shown by the applicant to outweigh the need shown by the original reservant. Reallocation of reserved water may not adversely affect the priority date of the reservation, and the reservation retains its priority date despite reallocation to a different entity for a different use. The department may not reallocate water reserved under this section on any stream or river more frequently than once every 5 years.

Id.

500. John D. Leshy, *Instream Flow Rights: The Private and Public Roles*, C616 ALI-ABA 163, 165 (1991).

501. *See, e.g.*, Covell, *supra* note 334, at 191–95 (surveying statutory provisions regarding limits on who may appropriate, the purposes of instream flows, and water quantity amounts).

502. *See Environmental Flows, supra* note 336, at 340–41 (providing a more extensive discussion).

503. There is no new appropriation of water, only a change of use of an existing right.

504. Colorado has adopted this safeguard. COLO. REV. STAT. § 37-92-102(3) (2014) (revised by 2008 Colo. Sess. Laws 587 (enacting H.B. 1280, 66th Gen. Assemb., 2d Reg. Sess. (Colo.

ent since more water would be available in the stream. Second, diversionary or storage water rights owners should themselves be permitted to change their use to instream flow purposes.⁵⁰⁵ The water right has been placed to beneficial use and a portion of the diverted water has been consumed in the use. The right holder seeks only to return that portion historically consumed to the stream, a choice the holder should have. Third, direct flow appropriators should be allowed to reduce their historical diversions to improve flows between their headgate and the point at which return flows from the diversions would have otherwise reentered the stream.⁵⁰⁶ Such a change would, if anything, increase downstream flows thereby eliminating the need for traditional no injury analysis.⁵⁰⁷ It would also provide a disincentive for appropriators to divert water simply to avoid concerns about the “use it or lose it” requirement, ultimately enhancing flows in specific river reaches.

While these modest changes would potentially facilitate some flow restoration, the work of restoring water-based systems to desired conditions goes well beyond changes in law. It requires a more comprehensive effort by states to assess the existing health of their water-based systems, to set restoration and protection goals, and to begin a long-term effort to accomplish those goals.⁵⁰⁸ Reducing diversions/withdrawals under existing appropriations would provide the primary means of achieving these goals.

J. GROUNDWATER RIGHTS

Prior appropriation groundwater law, developing as it did later than, and separate from, surface water law, is still somewhat rudimentary. Important physical differences in the nature of aquifers compared to surface water systems have created some problems. Inadequate knowledge about available groundwater supplies, recharge rates, aquifer permeability and porosity, connectivity between aquifers and between aquifers and surface water sources, and water quality affects our ability to make good decisions about groundwater uses. As our understanding of individual aquifers improves, so too will our decision making respecting their use.

Perhaps the most pressing legal problem related to groundwater in most states is the need to integrate uses of so-called tributary aquifers with interrelated surface water source uses.⁵⁰⁹ Conflicts between users from these related

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505. Water rights holders are otherwise free to make a change of use so long as no harm will result to other appropriators.

506. A bill to this effect passed the Colorado General Assembly in 2014 but was vetoed by the Governor. *See* S.B. 14-23, 69th Gen. Assemb., 2d Reg Sess. § 2 (Colo. 2014); *Gov. Hickenlooper vetoes bill over unresolved concern for water rights, supports pilot program to keep more water in streams* (June 5, 2014), <http://www.colorado.gov/cs/Satellite?c=Page&childpagename=GovHickenlooper%2FCBONLayout&cid=1251653748188&pagename=CBONWrapper>.

507. *See Environmental Flows*, *supra* note 336, at 381-82.

508. *See id.* at 385.

509. The need for such integration has long been recognized. *See, e.g.,* Samuel C. Wiel, *Need of Unified Law for Surface and Underground Water*, 2 S. CAL. L. REV. 358, 364-65 (1929). The process has been slow, seemingly occurring only when enough conflicts between surface and groundwater users arise in a state. The state struggling with this issue most prominently now is Idaho, where, despite several years of effort to develop procedures to integrate

sources are increasing.⁵¹⁰ Applying a strict priority rule is likely to result in curtailment of more recent groundwater uses to protect longer-standing surface water uses. States are taking steps to develop at least some rules respecting the management of conflicting uses.⁵¹¹

The first step is simply to acknowledge that many aquifers are physically connected to surface water sources and to make that express in law. Wyoming, for example, has identified this possibility with its recognition that sources found to be closely interrelated should be treated as a single source of supply.⁵¹² The more difficult challenge is to decide how to manage conflicting uses from these connected sources. Colorado has taken a very broad view of what constitutes tributary groundwater, beginning with an assumption that all groundwater is tributary.⁵¹³ In addition, Colorado allows for augmentation plans whereby junior tributary groundwater users can pump water out of priority if they also account for and replace all depletions to surface water flows.⁵¹⁴ Other states have taken a more narrow view of which tributary groundwater uses must be regulated to protect surface water sources.⁵¹⁵ Once again, this issue is complicated by a general lack of knowledge respecting the actual degree of connection and the amount and timing of depletions to surface water sources associated with groundwater pumping. Despite increasing efforts to model these connections and the effects of pumping, considerable uncertainty remains.⁵¹⁶

Ultimately, it seems less important to seek certainty respecting the precise degree to which pumping from any particular groundwater well affects surface water availability. Rather, a generalized formula for attributing responsibility should be developed under which groundwater pumpers would be assessed depletion fees based on the annual quantity of water pumped. These funds should be used by an entity established for this purpose to take steps necessary to offset depletions. This entity would use the depletion funds to build groundwater recharge facilities and to acquire storage and groundwater rights that can be released as necessary to ensure that surface water users receive the water they require to continue to meet their actual needs.

A second area of uncertainty concerns the rules governing conflicts among users from the same aquifer. The strict rule of priority that applies to surface

uses, conflicts continue. See Jeffrey C. Fereday & Michael C. Creamer, *The Maximum Use Doctrine and Its Relevance to Water Rights Administration in Idaho's Lower Boise River Basin*, 47 IDAHO L. REV. 67, 68-70 (2010).

510. See GLENNON, WATER FOLLIES, *supra* note 83, at 222.

511. See, e.g., Rules for Conjunctive Management of Surface and Ground Water Resources, IDAHO ADMIN. CODE r. 37.03.11.000 (2014).

512. See WYO. STAT. ANN. § 41-3-916 (2014).

513. The Colorado Supreme Court recognized this presumption in *Safranek v. Town of Limon*, 228 P.2d 975, 977 (Colo. 1951) (citation omitted). The Colorado Supreme Court has also held that proposed pumping from wells to be located thirteen miles from the nearest river would affect the flows of surface water. *Hall v. Kuiper*, 510 P.2d 329, 330 (Colo. 1973).

514. See COLO. REV. STAT. § 37-92-305(8)(c) (2014).

515. Wyoming, for example, does not assume that groundwater is tributary to surface sources. WYOMING WATER LAW, *supra* note 262, at 151. Nebraska struggled with this issue for many years because laws governing groundwater uses existed entirely separately from those governing surface water use. *Spear T Ranch, Inc. v. Knaub*, 691 N.W.2d 116, 125 (Neb. 2005).

516. See GLENNON, WATER FOLLIES, *supra* note 83, at 75.

water users, under which new appropriations are not permitted if they interfere with existing rights, would preclude additional groundwater use. Thus, most states do not protect groundwater appropriators from any particular drops in water elevations or aquifer pressure levels.⁵¹⁷ In some cases, states have adopted limitations on groundwater withdrawals that reduce elevations below “reasonable pumping levels.”⁵¹⁸ Such levels are typically based on the cost of pumping water and the expected value of its use.⁵¹⁹ Above that level, all pumpers are expected to take whatever actions are necessary to continue to be able to pump their allocated water. Most states allow mining of groundwater with only modest efforts, if any, to regulate the rate at which that mining occurs.⁵²⁰

States need to take a more active role in making decisions regarding groundwater use, especially in areas with high levels of development. The use of special management districts is one mechanism states employ that can help.⁵²¹ Often, the creation of such areas makes it possible for the state or a designated management authority to limit or cease issuing new permits.⁵²² Usually there are procedures for establishing more managed use of the aquifer or aquifers within the district, including well spacing requirements, rotation agreements, limits on pumping, and even efficiency requirements for continued use.⁵²³ In practice, states have been reluctant to impose active management in such areas and have attempted to encourage groundwater users to develop agreement on any management regimes.⁵²⁴ While a commendable bow to local control, these efforts are generally fated to failure because few users are likely to volunteer themselves for reduced uses.⁵²⁵ Rather, this is a problem that requires strong state management, based on the best possible understanding of the long-term water supply potentially achievable from the aquifer. It is in the state’s interest to maintain viable aquifers that can support urban and rural economies today and into the future.⁵²⁶ The states need to exercise stronger control of these aquifers with special management needs.

A third problem is the growing number of so-called “exempt” wells that support new exurban development across the West.⁵²⁷ First, the ready availa-

517. *See, e.g.*, WYO. STAT. ANN. § 41-3-933 (2014).

518. *See, e.g.*, Douglas L. Grant, *Reasonable Groundwater Pumping Levels Under the Appropriation Doctrine: The Law and Underlying Economic Goals*, 21 NAT. RESOURCES J. 1, 1 (1981) [hereinafter Grant, *Economic Goals*]; *see also* Douglas L. Grant, *Reasonable Groundwater Pumping Levels Under the Appropriation Doctrine: Underlying Social Goals*, 23 NAT. RESOURCES J. 53, 53-54 (1983).

519. Grant, *Economic Goals*, *supra* note 518, at 14.

520. For a discussion on Arizona’s ongoing efforts to reduce groundwater mining, see Rita Pearson Maguire, *Patching the Holes in the Bucket: Safe Yield and the Future of Water Management in Arizona*, 49 ARIZ. L. REV. 361, 362-63 (2007).

521. *See generally* White & Kromm, *supra* note 391.

522. *See, e.g.*, WYO. STAT. ANN. § 41-3-912(g) (2014).

523. *See, e.g., id.* § 41-3-915(a)(ii)-(v).

524. *See* White & Kromm, *supra* note 391, at 304-06.

525. *Id.* at 306; *see also* JULENE BAIR, *THE OGALLALA ROAD: A MEMOIR OF LOVE AND RECKONING* 186-87 (2014).

526. The move by Kansas to eliminate the concern about “use it or lose it” as a threat to the maintenance of a groundwater right in aquifers closed to new appropriations is a common sense step other states should consider. *See* H.B. 2451, 84th Leg., Reg. Sess. (Kan. 2012).

527. Nathan Bracken, *Exempt Well Issues in the West*, 40 ENVTL. L. 141, 145 (2010).

bility of permits for such wells encourages an unfortunate spread of development into areas with little or no services that are often not well-suited to residential use.⁵²⁸ While counties typically control the actual land use decision, the state determines whether permission should be given to use underlying groundwater as the development's water supply source.⁵²⁹ Second, the exemption of these wells from regulation provides no means to resolve the growing number of conflicts between exempt well users and other groundwater users.⁵³⁰ States should eliminate the "exempt" well category. They should require a stronger state role in determining the type of water supply that is necessary for new development in rural areas, promoting where possible the use of renewable surface water supplies. States should also place the use of water from such wells under state supervision, enabling state administrators to resolve conflicts resulting from their use.

K. ADJUDICATIONS

While the states long ago developed relatively efficient permitting systems for managing the initiation of new appropriations, they have struggled with archaic, unnecessarily legalistic processes for validating that these appropriations have been completed and that the permitted use has been achieved.⁵³¹ Because of notions that only courts can determine the existence of property rights, states have continued to rely on cumbersome court procedures called general adjudications that are regarded as necessary to legally determine the priority date of all water appropriations from the same source.⁵³² Even in a state like Wyoming where the 1890 legislature gave the authority to an administrative board to make both general and individual adjudications, courts were used to perform a general adjudication of all uses in the Big Horn River basin—a process begun in 1977 and finished in 2014.⁵³³

With the modern development of due process procedures in administrative processes, there is no legal reason why state administrative boards cannot make the necessary determinations respecting water rights, with the ordinary recourse of appeal to the court system if needed.⁵³⁴ As the Wyoming Supreme Court noted in 1900, knowledgeable state administrators are far better suited

528. A. Dan Tarlock & Sarah B. Van de Wetering, *Growth Management and Western Water Law: From Urban Oases to Archipelagos*, 5 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 163, 165-66 (1999).

529. *Id.* at 174.

530. Bracken, *supra* note 527, at 199-200.

531. A. Dan Tarlock, *The Illusion of Finality in General Water Rights Adjudications*, 25 IDAHO L. REV. 271, 272-73 (1988); Thorson I, *supra* note 86, at 358-59; Thorson II, *supra* note 33, at 304-05. For a critical examination of general stream adjudications, see Lawrence J. MacDonnell, *Rethinking the Use of General Stream Adjudications*, 15 WYO. L. REV. (forthcoming 2015).

532. Thorson I, *supra* note 86, at 358, 409.

533. The statute establishing the Big Horn adjudication is found at WYO. STAT. ANN. § 1-37-106 (2014). For a website providing history and major decisions, see BIG HORN RIVER ADJUDICATION, <http://bhrac.courts.state.wy.us/> (last visited Feb. 16, 2015). For a thorough discussion of this adjudication process, see Jason A. Robison, *Wyoming's Big Horn General Stream Adjudication, 1977-2014*, 15 WYO. L. REV. (forthcoming 2015).

534. See generally Lon L. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 365, 368-69, 400 (1978).

to make these kinds of determinations than judges.⁵³⁵ Moreover, the property interest is the ability to use a state resource. Since the state is acting as the legal water owner, the legislature has authority to establish the procedures it deems appropriate for establishing its use, including use of an administrative process.

Adjudications are used initially for verifying that the proposed use authorized under a permit has in fact been accomplished. They serve as a record of the nature and extent of the use as finally achieved and represents the best record title to the legal right.⁵³⁶ Colorado's water court system is considered a continuing general adjudication so that each newly decreed right is directly incorporated into the state's official water rights tabulation.⁵³⁷ Its monthly resume system is regarded as adequate notice to all existing appropriators so that a special general adjudication process is not required.⁵³⁸ While this process operates through a court system in Colorado, other states could initiate a comparable process for its administrative proceedings. As with Colorado, it should be required that all permitted appropriators file notice of actual beneficial use with the state and obtain a certificate verifying the vesting of the water right.⁵³⁹

States have initiated general adjudications primarily to force the federal government and Indian tribes to adjudicate their reserved water rights claims.⁵⁴⁰ Because the McCarran Amendment only waives federal sovereign immunity in the context of a general adjudication, states are obligated to go through a process that must review and determine the priority of every claim to water within a basin, not just federal claims.⁵⁴¹ Typically there are thousands of such claims that must be determined in a process that requires review of each appropriation, each priority date, and each authorized right of diversion or storage; this is likely to provoke controversy respecting the continuing validity and extent of at least some of these claims, and—at the end—does little more than update state records.⁵⁴² There are more efficient ways to improve state water right records.

The real purpose of these general adjudications is to force the federal government and tribes to submit claims for reserved water rights to state

535. *Farm Inv. Co. v. Carpenter*, 61 P. 258, 266–67 (Wyo. 1900).

536. *Thorson I*, *supra* note 86, at 424–25.

537. *See* COLO. REV. STAT. § 37-92-306 (2014). Known as the “postponement doctrine,” the result is that “no decree may be awarded with a priority date earlier than the most junior decree awarded in the previous calendar year.” *TARLOCK ET AL.*, *supra* note 292, at 304.

538. COLO. REV. STAT. § 37-92-302(3)(a); *Pueblo W. Metro. Dist. v. Se. Colo. Water Conservancy Dist.*, 689 P.2d 594, 601–02 (Colo. 1984).

539. Wyoming, for example, provides for obtaining a certificate of appropriation. WYO. STAT. ANN. § 41-4-511 (2014). The Wyoming Supreme Court, however, decided that failure to obtain a certificate did not affect the validity of the right. *Laramie Rivers Co. v. LeVasseur*, 202 P.2d 680, 684 (Wyo. 1949). States should consider adopting a policy that failure to file wouldn't cause loss of right but would shift priority date to date of actual use.

540. *See Tarlock*, *supra* note 531, at 272.

541. *See id.*

542. *TARLOCK ET AL.*, *supra* note 292, at 305; *see also Adjudication*, IDAHO DEP'T OF WATER RES., <http://www.idwr.idaho.gov/WaterManagement/AdjudicationBureau/default.htm> (last visited Feb. 16, 2015) (describing the Snake River Adjudication: “The SRBA was an administrative and legal process that began in 1987 to determine the water rights in the Snake River Basin drainage.”).

courts. While state courts are required to apply federal law in determining the existence of such rights, experience to date demonstrates that state courts may well interpret federal law differently.⁵⁴³ The result is that reserved rights are determined differently from state to state and often in ways that seek to limit these rights in order to protect state interests.⁵⁴⁴ It is unrealistic to expect the US Supreme Court to bring uniformity to these decisions. While this is an issue that reaches beyond prior appropriation, it is a matter that requires congressional attention as we seek to improve water decision making in the West.⁵⁴⁵

A better way to keep up to date on state water right and water use records is to establish annual reporting requirements for all water users under state water rights. With online filing, the burden on water users would not be undue.⁵⁴⁶ Failure to report for some specified period would create a presumption of forfeiture that would be subjected to review at periodic intervals. Conversely, reported uses would be presumptively correct and would help develop better information that could be used to help improve water decision making and management. Individual disputes about actual water use would be heard through state administrative processes. Water ownership and use records are woefully inadequate in the western states.⁵⁴⁷ While considerable care is applied in issuing the initial right, little is done thereafter to keep track of ownership, actual use, or changes of use under this right. Many states are now creating online systems that enable access to state records regarding existing rights.⁵⁴⁸ Unfortunately, these records are often incomplete and do not provide an accurate reflection of actual water use. It is time for states to take the next step in providing a more up-to-date and accurate record of water use and ownership under state water rights.⁵⁴⁹

543. Justin Huber & Sandra Zellmer, *The Shallows Where Federal Reserved Water Rights Founder: State Court Derogation of the Winters Doctrine*, 16 U. DENV. WATER L. REV. 261, 262, 289 (2013); see also Lawrence J. MacDonnell, *General Stream Adjudications, the McCarran Amendment, and Reserved Water Rights*, 15 WYO. L. REV. (forthcoming 2015).

544. *Id.* at 275-76.

545. Congress should shift review of federal reserved rights to the federal court within the state. Once adjudicated, there should be a process for their integration with state water rights.

546. Users would need to have appropriate measuring devices.

547. McIntire, *supra* note 467, at 23-24.

548. See, e.g., *cWRIMS - Electronic Water Rights Information Management System*, STATE WATER RES. CONTROL BD., CALIFORNIA ENVTL. PROT. AGENCY, http://www.waterboards.ca.gov/waterrights/water_issues/programs/cwrims/index.shtml (last updated Oct. 8, 2014); *Water Rights*, COLORADO'S DECISION SUPPORT SYSTEMS, <http://cdss.state.co.us/onlineTools/Pages/WaterRights.aspx> (last visited Feb. 17, 2015); *Searching Water Right Records*, UTAH DIV. OF WATER RIGHTS, <http://www.waterrights.utah.gov/wrinfo/query.asp> (last updated Mar. 26, 2004).

549. Colorado attempted to require all water rights holders to simply register their ownership with the State Engineer's Office, an effort that was successfully resisted by the water user community. Consequently, ownership information is not available on the state's decision support system. See generally *Water Rights*, COLORADO'S DECISION SUPPORT SYSTEMS, <http://cdss.state.co.us/onlineTools/Pages/WaterRights.aspx> (last visited Feb. 17, 2015). It is difficult to understand why those holding the valuable privilege of use of a state resource should not be required to provide requested information to the state, including making an annual report of uses.

III. SUMMING UP: A TWENTY-FIRST CENTURY STATE WATER LAW AND MANAGEMENT SYSTEM

The task of water appropriation to establish use rights is essentially complete. The work now is to rationalize the millions of existing appropriations to better address contemporary and future needs. As part of this transition, states should consider updating their basic water laws along the lines suggested here.⁵⁵⁰ The basic framework of valid and active water rights would remain, but the large number of conditional claims would probably diminish substantially. There would be few new appropriations—only those that could meet vigorous beneficial use requirements and protect a more robust set of public values as well as private rights. Through a mix of incentives and requirements, existing uses would continue to become more efficient to reduce diversions and improve stream flows. Water use charges would motivate more efficient use. Reporting on actual water use would aid water management and would help clear state records of unused claims to water. New institutions and mechanisms would emerge to help meet changing water demands requiring consumptive water use, and to improve local water management. Tributary groundwater uses would be fully integrated into the systems governing surface water uses. Continued special attention to water sources with high ecological or recreational values would result in improved conditions to support and maintain those values. These objectives are all achievable, but not with existing law. It is time for some changes.

550. The pressures potentially motivating such changes seem to be growing. Perhaps foremost is the inescapable reality that a fully appropriated water supply faces an ever-growing population with a changing set of demands. To the degree these new and changing demands are either not being met, or not met quickly enough, there will be pressure for legislative change. Uncertainties associated with climate change exacerbate this situation. Competing demands for an increasingly constrained water supply are likely to produce new kinds of conflicts that will prompt courts to look for ways to gradually modify existing law to favor new interests. New direction from legislatures and courts will cause water administrators to more actively and creatively administer water rights and manage water. Change will likely be slow, but it will come.