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Prior Appropriation and the Commons

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ABOUT THE AUTHOR

Professor of Law, Florida A & M University College of Law. The author would like to thank all those who have read or commented on drafts of this article. The author also would like to thank Lauren Robertson, a member of the 2020 class at the College of Law for her research assistance with this article. This Article was originally prepared for a Symposium held at the Georgetown University School of Law celebrating the 50th Anniversary of the publication of Garrett Hardin’s famous article, *Tragedy of the Commons*. Garrett Hardin, *Tragedy of the Commons*, 162 SCIENCE 1243 (1968). All views expressed herein (and whatever errors there may be) are those of the author.

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INTRODUCTION

It has been a full half century since biologist Garrett Hardin published the seminal article, *The Tragedy of the Commons*.¹ Sometimes forgotten in subsequent discussions is Hardin’s thesis centered on what he termed the

1. Garrett Hardin, *Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

“population problem.” The population problem, as Hardin framed it, is the attempt to use finite material resources to sustain the needs of the world’s population, which grows without limit absent a change in values or morals.² What Hardin argues is that the population problem is one member of the class of problems for which there is no “technical solution, which is a solution that can be had by changing the techniques of science alone, without a need to change values or morals.”³

A key aspect of *Tragedy of the Commons* is the attack and effort to “exorcize” reliance on Adam Smith’s “invisible hand,”⁴ whereby the individual who “intends only his own gain will also promote the public interest,” as a viable response to the population problem. Particularly in the environmental and natural resource arena, Hardin’s article is renowned for its demonstration that when finite resources are matched against unchecked human behavior, the result is the destructive overuse of common pool resources. As Hardin puts it, when the carrying capacity of a commons is reached and exploitation of the commons is not limited, “the inherent logic of the commons remorselessly generates tragedy.”⁵

The focus of this Article is to consider several of Hardin’s observations and conclusions regarding management of the commons and apply them in the context of a classic common pool resource: water. Watercourses, in the absence of constraining laws limiting their use, are a quintessential common pool resource. Writing in 1968, prior to the passage of the Clean Water Act when most legal remedies for water pollution were failing to prevent widespread degradation of the resource, Hardin cited destructive water pollution as a commons problem where “[t]he law, always behind the times, requires elaborate stitching and fitting to adapt it to this newly perceived aspect of the commons.”⁶

As a parallel, this Article is concerned with water quantity allocation in the American West under the doctrine of prior appropriation, deeming it an equally vital commons problem where the law lags and has been “stitched and fitted” to address the problem with unsatisfactory results. The Article explores how the initial adoption of prior appropriation can be understood as a legal response to one form of destructive behavior that attends an unregulated commons. Prior appropriation allocates quantified amounts of the limited water resources amongst the water users on the basis of priority in time. This response

2. *Id.* Hardin defines “technical solution” as “one that requires a change only in the techniques of the natural sciences, demanding.” The “population problem” for Hardin is how to use finite resources to meet the needs of a world population that is increasing without limits.

3. *Id.*

4. Adam Smith, *The Wealth of Nations*, 423 (Modern Library edition, 1937).

5. Hardin, *supra* note 1, at 1244.

6. *Id.* at 1245.

to the tragedy of the commons⁷ problem is, essentially, a form of privatization of the resource that averts the commons problem that arises from free-for-all competition. By assigning hierarchical water rights to water users (prioritized by their seniority in time), seniors can enforce those rights to prevent interference by later-in-time users who could otherwise supplant the rights holder's uses and negate the value of their previous investment made in reliance on use of the water. Prior appropriation largely has done its job in eliminating the free-for-all commons problem of the West's available water resources by prohibiting self-help redistributions of the water by those who would otherwise treat it as a commons. For example, with prior appropriation in place, a downstream senior-in-time water user has a legally enforceable remedy against an upstream junior-in-time water user whose diversion and use of the water interferes with or frustrates the right of the downstream senior.⁸

The greatest failing of the prior appropriation doctrine has been its inability to foresee and respond to the second central commons problem, destructive overutilization of water. Centrally, for this Article, prior appropriation creates strong incentives for rapid development of water-dependent and excessive uses designed to obtain the right to use as much water as possible in perpetuity.⁹ On this front, the checks included in the prior appropriation system have failed to do their job. The doctrines that should curb wasteful and excessive use are almost universally unenforced or underenforced, and the doctrines intended to limit speculative water holdings have a checkered record of success.

These failures of prior appropriation have led to stream dewatering and the loss of vital riparian habitat and ecosystem services. In fact, efforts to forestall speculation and monopolization have impeded protection of instream flows. In the past few decades, changes in the law of prior appropriation evince clear recognition that the older way of thinking—that any water left in a stream was wasted—has outlived its time and waned. Here, prior appropriation doctrine provides a striking example of another great maxim in *Tragedy of the Commons*: “the morality of an act is a function of the state of the system at the time it is performed.”¹⁰ Recent trends in prior appropriation law include some

7. *Id.* Analogously, Hardin states in reference to overuse of commons sources of food, such as fisheries, “[t]he tragedy of the commons as a food basket is averted by private property, or something formally like it.”

8. There are nuanced situations in which later-in-time self-help actions can thwart claims of seniors. See, e.g., *Montana v. Wyoming*, No. 137 Orig., First Report of the Special Master 66–78 (2010) (discussing a variety of situations in which upstream changes in use to thwart full enjoyment of downstream senior rights). These issues are not material to this Article.

9. A second example is water pollution. Although appropriators' rights have a water quality component, these requirements are rarely enforced with sufficient rigor to avoid the need for complementary water quality protection provided by the Clean Water Act and through nuisance actions. See A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES*, § 5.92 (2018).

10. Hardin, *supra* note 1, at 1245 (emphasis in the original).

doctrines that begin to protect living streams. Even the Colorado Supreme Court, a champion of strict application of prior appropriation doctrine, now recognizes that “full utilization” of water does not call for dewatering streams. Many states have added public interest criteria to the calculus for evaluating applications for new and changed water uses, and those public interest criteria include ecosystem maintenance values.

Contemporary situations are forcing courts and legislatures to address a constellation of issues that touch upon protecting water flows and levels. A case playing out in Nevada’s Walker River and its terminus, Walker Lake,¹¹ reprises the famous *National Audubon* (Mono Lake) case¹² seeking to establish water level protection under the public trust doctrine. Similarly, Washington State’s legislature is now attempting to chart a path around the roadblock to development created by the state supreme court’s rulings¹³ enforcing MFLs, even when doing so barred regional development.

The changing attitudes toward dewatering of streams already has given rise to legal approaches intended to limit or avoid that overuse of the commons. In practice, however, the add-ons to prior appropriation law are proving to be insufficient to ensure adequate stream flows. The more direct and aggressive approach for combatting dewatering, though still in its fledgling stages in most states, is to mimic the addition of separate laws to combat water pollution. This independent legal approach to the dewatering problem that has not been redressed internally by prior appropriation law is scientifically grounded establishment of minimum flows and levels (MFLs) *and* their steady enforcement. The last portions of this Article address issues that arise when rigorously implementing MFLs.

To a degree, the problem remains one of public attitude. While the desire for live streams is widely shared, there remains resistance to taking MFLs seriously. The keenest resistance comes from the self-interested water users whose current and anticipated future entitlements might be diminished or eliminated. Rigorously set and enforced MFLs limit water-dependent growth. In some settings, MFLs require displacement of existing uses, including uses established before science and social attitudes would have deemed those withdrawals of water from the streams unwise or no longer morally supportable. Reducing or eliminating any established usufructuary rights based on prior appropriation potentially can be argued by affected rights holders to be a taking of property requiring compensation. If those takings claims prove successful, the cost of averting the tragedy of the commons issues may be out of economic reach in

11. See *Mineral Cty. v. Walker River Irr. Dist.*, 900 F.3d 1027 (9th Cir. 2018) (certifying question to the Nevada Supreme Court: “Does the public trust doctrine apply to rights already adjudicated and settled under the doctrine of prior appropriation and, if so, to what extent?”). See *infra* notes 197–199 and accompanying text.

12. *Nat’l Audubon Soc’y v. Superior Court*, 658 P.2d 709, 712 (Cal. 1983).

13. See *infra* notes 197–99 and accompanying text.

many locales. This Article will argue that MFLs can be imposed and enforced without creating takings liability.

Considerable sophistication now surrounds the types of coercive measures used to limit or reduce the tragedy of the commons in many fields. For stream dewatering, MFLs provide a direct and potentially effective protection. As Hardin demonstrated, under changed conditions, it is necessary to place new restrictions on users of the commons whose acts were permitted by the law and morality at the time the uses were initiated, in order to protect the commons from tragedy.

I. SELECTED KEY IDEAS IN HARDIN'S "TRAGEDY OF THE COMMONS"

This Part will describe those aspects of *The Tragedy of the Commons* that bear on the commons problems addressed in this Article.

The principal manifestation of "tragedy" as seen by Hardin is overuse of the commons. His initial example of this is of multiple herders grazing livestock on a finite-sized commons. So long as the number of animals is small enough, the commons has enough grass to support them all. The individual incentive facing each herder is to add another member to his herd to increase the individual herder's utility obtained from exploitation of the commons. Even when the commons becomes sufficiently congested and overgrazing occurs due to the increased number of animals, the utility calculus facing each herder continues to call for adding to their herd. As Hardin explains, the negative utility component due to the marginal decrease in the wellbeing of the herder's currently grazing animals is outweighed by the positive utility of having one more animal.¹⁴ Thus, the inherent incentives of the commons prompt the addition of animals until the commons collapses in tragedy, unable to support any of the animals. Among the other examples of the inexorable progression to destructive overuse of common resources Hardin describes are National Parks and ocean fisheries, as well as water pollution, which occurs when too much of something is put into the commons, rather than taken out.¹⁵

With regard to pollution, Hardin, using the example of a frontiersman using a river to dispose of waste, raises explicitly the recognition that the need for protection of the commons changes situationally. The change occurs as use of the commons moves from a state in which the capacity of the commons can sustain all the uses being made, to a more congested state in which the actions of one user create negative externalities for others. From that he moves to a key point:

Analysis of the pollution problem as a function of population density uncovers a not generally recognized principle of morality, namely: *the morality of an act is a function of the state of the system at the time it is performed*. Using the commons as a cesspool does not harm the general public

14. Hardin, *supra* note 1, at 1244.

15. *Id.* at 1245.

under frontier conditions, because there is no public, the same behavior in a metropolis is unbearable. A hundred and fifty years ago a plainsman could kill an American bison, cut out only the tongue for his dinner, and discard the rest of the animal. He was not in any important sense being wasteful. Today, with only a few thousand bison left, we would be appalled at such behavior.¹⁶

Near the end of his article, Hardin posits the example of the need for laws against bank robbing to ensure that banks are not treated as a commons by robbers. Hardin uses bank robbing as a self-evident example of limiting the individual freedom of some to treat resources as a commons (i.e., the would-be bank robbers) is necessary for the protection of other users of the resource.¹⁷ Hardin's heading for this section is "Mutual Coercion Mutually Agreed Upon"¹⁸ and his thrust is aimed at the need to use coercive legal structures to temper destructive use of the commons. This parallels both the initial need for enclosing the western water commons using prior appropriation, and the call of this Article for additional coercive laws in the form of MFLs to avert a tragedy of the commons that the law of prior appropriation alone is not addressing, tempering the overuse of water that results in dewatering western streams.

There is a degree of irony here. As noted in the Introduction, one of the cardinal purposes of the law of prior appropriation was to ameliorate the aspect of the tragedy of the commons suggested by the bank robbing example. Treating the West's scarce surface water resources as a commons open to all, including later in time entrants, frequently would deprive the earlier entrants of the benefit of their investment and use of the water, and undermine the incentive to invest in water dependent activities. Hardin also observed, however, the law frequently runs behind the times in relation to "newly perceived aspect[s] of the commons."¹⁹ In the context of the finite and irregular availability of stream water in the West, prior appropriation is failing to protect water resources, the commons, from destructive dewatering, both in the present and the predicted future in which the already finite supplies decline due to climate change. A more direct restriction on use of the commons is required, one that incorporates changed attitudes that now value living streams more highly by curtailing longstanding water use practices.

Hardin addresses takings of property only peripherally by noting, "[e]very new enclosure of the commons involves the infringement of somebody's personal liberty."²⁰ He continues:

16. *Id.* at 1245 (footnote omitted).

17. *Id.* at 1247. In Hardin's words, "[t]he man who takes money from a bank acts as if the bank were a commons."

18. *Id.*

19. *Id.* at 1245.

20. *Id.* at 1248.

Infringements made in the distant past are accepted because no contemporary complains of a loss. It is the newly proposed infringements that we vigorously oppose; cries of “rights” and “freedom” fill the air.²¹

Effectively, restrictions protecting MFLs, which are advocated for in this Article, can be thought of as slight adjustments to the previous, far more sweeping coercive act of enclosing the commons by establishing prior appropriation. With the passage of time and the changed circumstances in regard to overuse of the commons, the right holders’ claims that their interests are sacrosanct ring hollow.²²

II. WATER ALLOCATION BY PRIOR APPROPRIATION: TRADING ONE TRAGEDY OF THE COMMONS PROBLEM FOR OTHERS²³

The use of watercourses in the United States is subject to three distinct common pool problems. Prior appropriation averts one of those potential tragedies by creating security of right in uses so that quantitatively, the commons is sufficiently privatized and is no longer free for use by all. What the allocation of usufructuary rights does not do, however, is prevent destructive overuse of the commons by the now-limited user classes;²⁴ these classes of users can still overburden the commons with pollution and can withdraw enough to dewater the stream and cause ecological destruction. It is not that prior appropriation has no doctrinal options addressing those forms of overuse, rather, as heretofore implemented in practice, prior appropriation has failed to do so effectively. Here, again, Hardin seems to be prescient and spot-on about how the law lags “behind the times.”

Other than Hardin’s cows on the green, almost no commons paradigm leaps to mind as quickly as a water body or stream system ruined by biological waste or other pollution. Hardin touches upon that potential tragedy of the commons with a fleeting mention of a streamside factory’s effluent and a frontiersman using water for waste disposal. The reader needs no further explanation to understand that in regard to pollution, water bodies are a commons susceptible to tragic overuse. Writing in 1968, still several years before Congress passed the amendments now known as the Clean Water Act

21. *Id.*

22. See *infra* notes 197–99 and accompanying text.

23. A variant of this idea has appeared previously. See A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N. D. L. REV. 881, 886–87 (2000) (“Prior appropriation does not solve the tragedy of environmental degradation; to the contrary, it is one of the primary causes.”).

24. One limited class is anyone whose activities cause pollution to enter the watercourse. That class consists of riparians discharging pollution via typical outfall pipes, and nonpoint source dischargers, many of whom are agricultural appropriators introducing polluted return flows to the stream. The other limited class responsible for dewatering is prior appropriators who have the right to divert and use water in ways that return far less than all water to its source.

(CWA),²⁵ the “stitching and fitting” Hardin saw in the laws governing pollution aptly described the inadequate statutory pollution control regimes enacted by the states prior to that Act’s passage.²⁶ The law’s other stitchings and fittings, including limits on pollution imposed by property law, be it prior appropriation or riparianism, and by tort law, similarly failed to protect water quality.²⁷ Focusing on prior appropriation, its doctrine includes an express protection against pollution, which was both vague and never sedulously enforced.²⁸ Although far from perfect, and still lagging in regard to nonpoint source pollution and new per- and polyfluoroalkyl substances (PFAS) and pharmacological pollution threats, the CWA, as a direct response to water pollution, was a major improvement on earlier efforts to cobble together a legal regime capable of combatting water pollution. In regard to the destructive overuse of the commons resulting in dewatering of streams, the same is true. Prior appropriation has doctrinal elements that might have been developed to prevent the problem and avert the tragic impact of dewatering on the commons, but those doctrinal options have failed to be used for that purpose in the implementation of prior appropriation thus far. Therefore, what is needed is a more targeted complementary legal tool, establishing and enforcing MFLs, which explicitly address dewatering.

A. *Solving the Security of Right Problem via Prior Appropriation in the Arid West*

Many decades before the law perceived and addressed widespread water pollution in a systematic way, the potential destructiveness of treating water as a commons in the United States had arisen with sufficient import to require an extensive legal response. The context was allocation of rights to use water in settings where there was not enough water to meet all needs, and in which later-in-time users could vitiate the investments of those already using the resource.

25. Prior to the enactment of the Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92–500, 86 Stat. 816 (1972), which were later codified as and renamed the Clean Water Act, 33 U.S.C.A. §§ 1251–1387 (West 2018), water pollution was addressed in a variety of ways by the states, both legislatively and through the common law of nuisance. The federal involvement, up to that point, had merely pushed the states into the early stages of an ambient standards based approach through the designation of uses and water quality standards needed to support those uses. See WILLIAM H. RODGERS, JR. & ELIZABETH BURLESON, *RODGERS ENVIRONMENTAL LAW* § 13.1 (2d ed. 2018).

26. See, e.g., ZYGMUNT PLATER, ET AL., *ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY* 181–88 (5th ed. 2016) (case study of failure of pre-CWA state law controls on water pollution).

27. *Id.*

28. See Ryan Jarvis, *Prior Appropriation and Water Quality: The Water Court’s Authority to Protect an Appropriator’s Right to Clean Water*, 16 U. DENV. WATER L. REV. 295 (2013); see also Gregory J. Hobbs & Bennett W. Raley, *Water Quality Versus Water Quantity: A Delicate Balance*, *PROCEEDINGS OF THE 34TH ANNUAL ROCKY MT. MIN. L. INST.* (1988), <https://www.rmmlf.org/publications/digital-library/water-quality-versus-water-quantity-a-delicate-balance> [<https://perma.cc/B7CM-F4PE>].

Very much like the overuse of the commons problem typified by Hardin's cows and grass example, there is usually no security of right problem until a commons becomes sufficiently congested to create a shortage of the commodity (grass, fish, etc.). The nature of water as a resource that flows in a gravity- and topography-determined pattern can give rise to security of right problems even before the water is in short supply. Here, the commons problem becomes that of providing security of right vis-à-vis those who, like Hardin's bank robber,²⁹ treat the commons as available for the taking. The problem can be localized rather than commons-wide. Prior to westward expansion, the population in water-scarce areas of the United States was sparse and the well-watered humid climate east of the Mississippi River supported farming without need for irrigation. Pre-1850 water law disputes were largely of the small, local variety and were among millers trying to harness the power of smaller streams.³⁰ Otherwise, there was almost always enough water for all uses to continue simultaneously without undue harm to any one of them. Riparianism—with its emphasis on adjusting rights to allow all to make reasonable use in light of the correlative rights of others on the stream—was adequate to redress those sorts of minor disputes.³¹

As the American West was settled, its different topography and climate required a different water law. The comparatively short supply of water had to be allocated in a manner that would protect established users against those having a superior physical position. Otherwise, earlier entrants would perpetually be at risk of losing investments they made that were dependent on having that water. This is a classic example of Hardin's "mutual coercion, mutually agreed upon,"³² taking the form of legal rules (sufficiently obeyed and enforced to deter rampant flouting) that privatized the common pool resource to provide security of right. The somewhat apocryphal story of this particular transformation of water law traces the origins of the prior appropriation doctrine to mining camps during the California Gold Rush.³³

The then-existing governmentally recognized water law did nothing to protect miners' use of water. Before early miners' agreement to utilize prior appropriation as their customary law, the governing law was riparianism,³⁴

29. Hardin, *supra* note 1, at 1247.

30. See, e.g., *Martin v. Bigelow*, 2 Aik. 184 (Vt. 1827) (upper miller's interference with use of a downstream mill).

31. See, e.g., *Mason v. Hoyle*, 14 A. 786, 790 (Conn. 1888) (disruptive change of use by one miller enjoined to ensure fair distribution of the use of the stream among several mills).

32. Hardin, *supra* note 1, at 1247–48.

33. See TARLOCK, *supra* note 9, at § 5.3. A more complete rendering of the roots of prior appropriation law traces the concepts back to the Spanish role in the regional history with its influences tracing back centuries to the Moors in Spain and North Africa. See, e.g., Michael C. Meyer, *Water in the Hispanic Southwest: A Social and Legal History 1550–1850*, 148–49 (1984). For present purposes, the true genesis of prior appropriation in the American West is not material, only its role in avoiding a tragedy of the commons.

34. Some states that follow the "Colorado doctrine" assert that riparianism was

which accorded legal water rights to those owning property that abutted or underlay the watercourse. The miners were trespassers on the public domain and, therefore, had no water rights. What they needed was a system of water resource governance that offered sufficient security of right to work their claims. The threat to each water user was the fact that someone else could divert the water before it reached them and thereby destroy their ability to sluice the ore they had dug, remove other materials, and leave heavier gold nuggets behind. The miners opted for a simple rule of priority, the same rule used with regard to claims to those tracts from which they dug the ore: the first person to use the water, like the first person to stake a claim, had the superior right. It was a pragmatic and workable frontier system because it provided security of right to those who had invested their labor in mining ore and diverting water. Simultaneously, this system provided patent physical notice to later entrants of what water remained available for their use. It privatized the common pool resource sufficiently to permit a vital and lucrative industry to emerge.

In fact, the water scarcity conditions in the American West required a far more generalized application of legal principles to protect security of right in the use of the common pool water resource. Mining was not alone in needing water use security—most permanent settlement across vast parts of the West³⁵ shared the same imperative. Unlike the well-watered East, where crops in most locales could be grown using rainfall alone, and where domestic needs were readily met from nearby streams, shallow groundwater aquifers, or cisterns, large expanses of the West lacked regular water supplies. What came to be known as the Great Plains was the Great American Desert on maps of an earlier era. Water was a necessity for settlement, and water law based on riparian principles was inadequate to meet the settlers' needs. Unless most of the West was to remain barren except along the banks of its widely separated streams and rivers, the right to use water had to be divorced from ownership of riparian parcels. Prior appropriation did just that: it wholly separated the right to use water from ownership of riparian parcels at a period in history when riparianism still adhered to on-tract and in-basin water usage limitations.³⁶

Riparianism's flaws for meeting the needs of the West did not stop there. The allocative rule of riparianism, as noted above, was a rule of sharing best suited to an abundant commons. In riparianism, rights of use are correlative, allowing all other riparians on the same watercourse to also make reasonable use of the water. Potential new entrants (i.e., co-riparians who had not previously used the water or who increase their use of the water) are omnipresent along the stream, and their uses "dilute" the reliably available amount of water

never recognized in their states. See, e.g., David B. Schorr, *Appropriation as Agrarianism: Distributive Justice in the Creation of Property Rights*, 32 *ECOLOGY L.Q.* 3 (2005).

35. There are some areas of the West, particularly the Pacific coastal region from San Francisco north that had frequent rainfall and abundant freshwater streams.

36. See, e.g., *Stratton v. Mt. Hermon Boys' School*, 103 N.E. 87, 88 (Mass. 1913).

for those who were already present. In the East, where water was abundant, few significant user conflicts arose.³⁷ In the West, courts were pragmatic in the face of necessity. Sacrosanct barriers, such as the inviolability of exclusive possession of land, gave way to private condemnation of rights of way to bring water to nonstreamside parcels. As one court put it:

In a dry and thirsty land it is necessary to divert the waters of streams from their natural channels, in order to obtain the fruits of the soil, and this necessity is so universal and imperious that it claims recognition of the law. The value and usefulness of agricultural lands, in this territory, depend upon the supply of water for irrigation, and this can only be obtained by constructing artificial channels through which it may flow over adjacent lands.³⁸

Similarly, the prior appropriation doctrine fit the arid physical realities of the frontier West. The doctrine also addressed Hardin's bank robber commons problem by privatizing the commons and providing a basis for enforcing protection for the usufructuary rights thereby created.³⁹

B. *Prior Appropriation's Attempts to Limit Overuse and Monopolization*

There are multiple nuances to prior appropriation law. Several of those nuances affect monopolization and overuse of the western water use commons, while others are important to visualizing how the appropriative rights operate in tandem with one another as water flows down a stream. Prior appropriation's solution to the security of right problem creates strong incentives for each actor to privatize as much water as possible as quickly as possible. Those incentives are part and parcel of a system in which a use, once initiated, is protected against almost all later-initiated uses. The legal right is near absolute in the sense that it runs in perpetuity and is to be completely satisfied against any

37. See Robert H. Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93, 121 (1989). See also, T.E. Lauer, *Reflections on Riparianism*, 35 MO. L. REV. 1, 3 fn.4 (1970).

38. *Yunker v. Nichols*, 1 Colo. 551, 553–54. (1872) (The opinion continues, “These artificial channels are often of great length, and rarely within the lands of a single proprietor. A riparian owner must usually get his supply of water from some point on the stream above his own land, and he is compelled to enter upon the lands of others in order to obtain it. Irrigating ditches cannot be made available at or near the head or point of divergence from the stream, and, while a riparian owner may be able to construct a ditch upon his own territory, which shall overflow a portion of his land, he can never make it serviceable to the entire tract. Of course, lands situated at a distance from a stream cannot be irrigated without passing over intermediate lands, and thus all tilled lands, wherever situated, are subject to the same necessity. In other lands, where the rain falls upon the just and the unjust, this necessity is unknown, and is not recognized by the law. But here the law has made provision for this necessity, by withholding from the land-owner the absolute dominion of his estate, which would enable him to deny the right of others to enter upon it for the purpose of obtaining needed supplies of water.”).

39. A similar analysis has been suggested in previous articles. See Tarlock, *supra* note 23 at 886–87; see also Amy Sinden, *The Tragedy of Commons and the Myth of Private Property Solution*, 78 U. COLO. L. REV. 533, 577–79 (2007).

junior right holder whose actions might prevent the senior from obtaining that full amount.⁴⁰ The more water that is used, the larger the right. The sooner the right is obtained, the more senior it is, and the fewer the number of senior right holders whose actions might displace the use.

With incentives that reward being first and using a larger quantity of water, prior appropriation promotes a race to use as much water as possible as soon as possible. Unless the checks on overuse are robust, early users will monopolize the resource rather than follow the more communitarian option of leaving as much water as possible free to meet the needs of later-in-time users. Appropriative rights can be transferred,⁴¹ giving them a market value in addition to their use value. Later entrants with deep pockets, such as growing cities in water short areas, rely on transfers to obtain appropriative rights that are sufficiently senior to provide a secure source of municipal supply. Such purchases simultaneously bestow a potentially large windfall on early users who, in essence, profit from the sale of what is universally viewed as a public resource.⁴²

40. The adjectival limitation to “legal” right recognizes that the holder may forego strict enforcement. Professor Tarlock has argued that strict priority is seldom enforced. See Tarlock, *supra* note 23, at 896–99. The qualifying language, “near-absolute” relates to the (unlikely) elimination of the right by forfeiture or abandonment, the avoidance of which is fully within the right holder’s control. There also are unusual cases in which juniors can be served first pursuant to the futile call doctrine. That doctrine can be applied when curtailing the junior would not make any water available to the unsatisfied senior. To give a concrete example, imagine a losing stream, one that has a porous bottom such that water not used by the upstream junior is unlikely to reach the downstream senior. See generally *San Luis & Delta-Mendota Water Auth. v. Jewell*, 969 F.Supp.2d 1211 (E.D. Cal. 2013). Finally, there are limitations on actions that change the right, including change in the place of use (with or without change in ownership) or material change in the manner of use. See *supra* note 8.

41. Transfers of appropriative water rights are complicated by the interdependence of water uses that utilize return flows from other uses. To protect reliance on those return flows, prior appropriation has adopted the “no injury” rule that protects return flow using juniors from harm caused by transfer of senior rights that would deprive them of the senior’s return flow. See, e.g., BARTON H. THOMPSON, JR. ET AL, *LEGAL CONTROL OF WATER RESOURCES* 310–15 (6th ed. 2018). For example, imagine that there is a senior who is diverting an entire stream and a junior a short distance downstream who diverts water made available by the senior’s return flow. If the senior were to transfer the right to divert the full quantity of water to a location downstream of the junior, the junior would be harmed unless some limit on the transfer was made. Now imagine the full impact of changes in the place of use on a stream with thousands of users making uses as the river flows downstream and the potential transaction costs of enforcing the no harm on transfer rule is apparent.

42. The sale of senior rights raises issues of equity that attends the wealth effects of transfers. As the subsequent text explains, the water is a public resource. Transfers of the old senior rights are necessary if the new uses are to go forward, allowing change from low value agricultural production to new high value uses such as municipal and industrial use without which, the lack of secure water rights would inhibit the new uses. The sellers of the senior rights (seniority being essential to support cities and industries against being denied water in low flow years) can capitalize the difference of the value of the water in the two uses, which often approaches two orders of magnitude. See, e.g., Clay Landry et al., *Water Rights Trading*, 183 WATER REP. 1 (2019) (describing recent trends in water transfers and prices). As

The economic and developmental benefit of preserving the availability of unappropriated water for later initiated uses counsels states to take advantage of the doctrinal checks offered by prior appropriation law that can be used to avoid rapid overuse of water. That impulse to maximize the benefit of the limited water is reinforced by the public resource character of the water. Water itself is universally regarded by the western states as a public resource owned by the state,⁴³ and the state is charged with ensuring the resource is managed for the benefit of all of its citizens.⁴⁴ Thus, it is unsurprising that the prior appropriation doctrine itself attempts to stave off, or at least delay, the onset of predictable, inefficient or inequitable overuse of the commons. Despite this laudable goal, the doctrinal checks on excessive appropriation have not been particularly effective.

In the American West of the nineteenth century, common law prior appropriation had four elements: (1) diversion (2) to a beneficial use (3) of unappropriated water (4) of a natural stream.⁴⁵ Among those, the principal bulwark against excessive use was the diversion requirement, aided to some degree by the beneficial use requirement. In a frontier society with no mechanized earth moving equipment and comparatively scarce capital, most of the early diversions of water were initiated by individuals or small groups that dug canals by hand with shovels, typically for use in farming to support settlement.⁴⁶

a matter of equity, it is not self-evident that persons who already have enjoyed free use of the public resource for a number of generations should receive a windfall on transfer of the public resource that often exceeds the entire value of their farm and its operations.

43. See, e.g., Frank J. Trelease, *Government Ownership and Trusteeship of Water*, 45 CAL. L. REV. 638, 642 n.16 (1957) (“In Wyoming, Montana, Idaho, North Dakota, and Texas the water is declared to be the property of the State.”) (citing WYO. CONST. art. 8, § 1; MONT. CONST. art. III § 15; IDAHO CODE ANN. § 42–101 (1948); N.D. CONST. § 210; TEX. REV. CIV. STAT. art. 7467 (1948)).

44. A number of Western state constitutions expressly recognize water as a public trust resource. See TARLOCK, *supra* note 9, § 5.56 (“All western states declare that some or all water is owned in trust for the public.”). This paper will consider the public trust doctrine and its application in mediating between public and private uses of water. See *infra* text accompanying notes 185–98. At this juncture, however, the stewardship role of the government is being raised to explain the antimonopoly and antispeculation policies surrounding the development of prior appropriation doctrine.

45. See, e.g., THOMPSON, JR. ET AL., *supra* note 41, at 216–17.

46. Much, but not all water dependent development in that era occurred near the region's streams. One frequently practiced, yet highly inefficient irrigation technique was flood irrigation wherein a river bank would be breached in order to flood nearby down-gradient lands. This could be a one-time per year spring event, or a gate could be put in that was opened periodically to flood the field. That form of irrigation was feasible only for lands lying in or near the river. Larger areas at a greater distance from the rivers could be reached by digging canals, using gravity flow to transport water substantial distances from a point of diversion that was upstream and up-gradient from all lands to be served. One court upheld an implied-at-law easement across lands intervening with these irrigation systems. *Yunker v. Nicholas*, 1 Colo. 551, 552 (1872). A typical use of this sort would involve digging a “high line” canal to divert water along a ridgeline, from which the high line canal could feed laterals

Although the scope of water diversion projects grew over time,⁴⁷ the difficulty of diverting and controlling unwieldy amounts of water was a check on speculation. Similarly, the law demands water be used immediately for a beneficial purpose once diverted, which makes water monopolization or speculation⁴⁸ even more difficult.⁴⁹ However, strong private incentives to increase the size of the right being created by using or claiming to use more water than needed worked at obvious cross purposes to the societally preferable goal of limiting appropriations to only those amounts truly necessary for a particular use.

In contrast to the pragmatic effectiveness of the diversion requirement as a check on water speculation and overuse,⁵⁰ when the time came to file a claim to the water in a court or other forum,⁵¹ prior appropriation lacked tools to check a different problem—claims that amounts of water being used beneficially were inflated beyond actual usage. Particularly where there was not already significant overuse of the commons to the point where many junior appropriators were not receiving water on a regular basis, it was easy for senior appropriators to claim they were using far larger amounts of water than they actually were, because no other users had a sufficient reason to object. In addition, the court or state agency typically lacked information regarding actual use.⁵² Thus, even though junior right holders were often satisfied, recognized claims to water on many western rivers far exceeded what accurate

that also used gravity to further distribute the water to comparatively large down-gradient areas.

47. For a summary of how project scale increased in the West, see THOMPSON, JR. ET AL., *supra* note 41.

48. Speculation, as used here, refers to the practice of obtaining a water right with no significant value in its present use with the intent to later sell the water right when the competition for water has greatly increased the value of the water right due to its seniority. Speculation does not include diversion for what at the time was valuable agricultural use (including homesteading) and decades later transferring those water rights to a growing city willing to pay amounts vastly exceeding the value of the water in continuing to farm. The latter types of transactions are no less windfalls to the sellers, but the attitude of the law toward the two scenarios is distinctly different.

49. See, e.g., *High Plains A & M, LLC v. Se. Colo. Water Conservancy Dist.*, 120 P.3d 710, 717–18 (Colo. 2005).

50. As discussed *infra* at note 46, the diversion requirement has worked at cross-purposes with efforts to limit dewatering by preventing recognition in many states of appropriative rights to instream flow.

51. At first, judicial proceedings were the principal forum for compiling water rights. See, e.g., THOMPSON, JR. ET AL., *supra* note 41, at 374–75. Beginning in the early twentieth century, starting with Wyoming, states began to have state officials create administrative agencies and tribunals that oversaw the prior appropriation system. See TARLOCK, *supra* note 9, § 76; see also *Farm Inv. Co. v. Carpenter*, 61 P. 258, 264 (Wyo. 1900) (finding statute authorizing state board to adjudicate priority of water rights constitutional).

52. If there were shortages at the time of the proceeding, the adversely affected juniors would have an incentive (if they had the needed resources) to contest the inflated claims of the seniors.

measurements later indicated was the river's entire flow.⁵³ Such inflation of claims resulted in what are pejoratively (yet aptly) termed "paper rights."

Although those paper rights originally made no real-world difference, their existence now serves to raise transaction costs in an era when use of water does exceed supply. The law has made some effort to fix the problem. For example, several states have been aggressive in recognizing paper rights as a reason to limit the preclusive effect of old decrees.⁵⁴ Additionally, it may be possible to prove partial abandonment or forfeiture in cases where paper rights greatly exceed historical use.⁵⁵ But while such post-hoc checks on the acquisitiveness of early appropriators are sometimes effective, prior appropriation doctrine still suffers from old, inefficient, low-value uses that claim large shares of water.

A second potential check on the incentives for overuse is the doctrine of waste, which attempts to address issues arising from rights holders using more water than is necessary to accomplish the appropriation's beneficial use. Waste has long been heralded as a check on inefficient use, but here, similar to Hardin's view of the morality of an act, the wastefulness of an appropriation is too often a function of the state of the system at the time the use was initiated or of the poorest practices at the time waste is asserted.⁵⁶ Older appropriations, when perfected, lacked the technological capacity to be efficient as measured by modern standards. In the nineteenth and early twentieth centuries, lining canals was difficult and expensive, and many canals lost much water in transmission.⁵⁷ Techniques for applying water to land were equally primitive—they were dominated by flood irrigation and furrow irrigation, both of which are highly inefficient compared to modern practices.⁵⁸ Even with affordable

53. See, e.g., C. Carter Ruml, *The Coase Theorem and Western U.S. Appropriative Rights*, 45 NAT. RESOURCES J. 169, 174 (2005).

54. Colorado has been at the forefront in its willingness to reexamine historic use rather than giving preclusive effect to old decrees. Compare, e.g., *City of Boulder v. Boulder & Weld Cty. Ditch Co.*, 367 P.3d 1179 (2016) (refusing to allow transfer of full decreed amount); *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46 (Colo. 1999) (holding undecreed change of use of water right cannot be the basis for calculating the amount of water that can be decreed for change to another use); *with W.S. Ranch Co. v. Kaiser Steel Corp.*, 439 P.2d 714 (N.M. 1968) (decree, not historic use, determines the amount of water that can be transferred). See also TARLOCK, *supra* note 9, § 7.22 (remarking that due process requires that final decrees are presumed not binding against those who were not parties in the adjudication).

55. See THOMPSON, JR. ET AL., *supra* note 41, at 347–48.

56. See, e.g., *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist.*, 45 P.2d 972, 997–98 (Cal. 1935).

57. See, e.g., *Erickson v. Queen Valley Ranch Co.*, 22 Cal. App. 3d 578 (1971). See generally Steven J. Shupe, *Waste in Western Water Law: A Blueprint for Change*, 61 Or. L. Rev. 483 (1982).

58. See, e.g., ROBERT G. EVANS, *Irrigation Technologies Comparisons*, AGRIC. RES. SERV., <https://www.ars.usda.gov/ARSUserFiles/21563/Irrigation%20Technologies%20Comparisons.pdf> [<https://perma.cc/R9QN-F5V7>].

modern irrigation techniques available to appropriators, efforts to avoid waste by *requiring* efficiency improvements have been halting at best. In general, courts look to prevailing community standards to decide what is an acceptable (non-wasteful) use, and tend to require improvement only when almost all similarly situated users are using water more efficiently.⁵⁹ Here, too, even if the West made improved irrigation efficiency a requirement, it would not solve the entire commons problem of overuse,⁶⁰ but merely delay it.

One might wonder why the requirement that there be unappropriated water available in order to perfect an appropriation, which is one of the four common law elements that must be satisfied, does not prevent overappropriation.⁶¹ This required element seems to limit the creation of appropriative rights to a sustainable level that cannot exceed the amount of water present in a stream, but that is not the case. Appropriations that exceed the available amount of water arise in three ways. First, as previously discussed, paper rights can inflate the total amount of appropriated water.⁶² In terms of dewatering streams through overuse, however, the mere existence of paper rights is not a major concern since only the actual amount of the use affects how much water is lost to the stream. Paper rights become problematic if the paper right is fully transferrable and the new user asserts the older priority for a greater amount of water than was used in the past, thereby injuring the reliance of juniors on the actual historic use made by the transferring senior. The remaining two ways streams become over-appropriated are quite different, and have “wet water” (the opposite of paper rights) consequences. Appropriations may be made in years when not all senior users are taking their full amounts (fallowing, etc.), so water can be taken in those years by new juniors without prompting any seniors to make a call that would force juniors to stop diverting. Because, on average, a number of seniors will forego water use every year, this scenario creates only a limited number of cases where there will not be enough water to go around. In contrast, the final scenario where streams become over-appropriated leads to both large scale over-appropriation on paper and the presence of so many claims on the river that destructive overuse by dewatering can and

59. See, e.g., *State ex. rel. Office of State Eng'r v. United States*, 296 P.3d 1217, 1222 (N.M. App. 2012), *cert. denied*, 299 P.3d 862 (N.M. 2013). One case, *Dep't. of Ecology v. Grimes*, 852 P.2d 1044 (Wash. 1993), has appeared to use an objective standard determined by reference to affordable practice in the region, but that case has remained an outlier and is almost never cited by courts.

60. The problem is like that Hardin propounded with population. Trying to use limited resources (here, a stream) to meet needs (the current and future uses of all those desirous of making water from that source) that are not limited.

61. A separate approach is the possibility that states, foreseeing the overuse as an inevitable problem, might set aside some water and forbid appropriation of that water. As addressed *infra*, note 67, the reservation of water, whether for future use or environmental conservation, often is rejected as a violation of the right to appropriate water set forth by many western state constitutions.

62. See THOMPSON, JR. ET AL., *supra* note 41.

frequently does occur. For present purposes, these appropriations are referred to as “high-flow”: they are those appropriations made in wet years when flows will support more than all established uses of the then-senior appropriators.

High-flow appropriations are validly obtained—i.e., they satisfy the four common law elements of prior appropriation. But consider the incentives facing high flow appropriators, as Hardin would do. Such rightsholders know that they will be able to appropriate only because of high flows in the year in which they obtained their rights, and that their high-flow water rights will not be satisfied in lower-flow years. Accordingly, high-flow appropriators must either obtain water in low-flow years by other means, such as pumping groundwater or securing short-term transfers, or cease operations dependent on appropriated stream water in those years. Almost invariably, when stream water is available, high-flow appropriators will utilize their stream water rights because the streamwater will be their least expensive water source. Their investment in a delivery system is a sunk cost after the first year, and no charge is made for the stream water. As a result, using stream water whenever available is cheaper than using other water sources, due to the energy costs of pumping groundwater or the payments made to transferors. Indeed, were high-flow appropriators not aware of that cost advantage, they would not have made the investments needed to appropriate surface water rights in the first place. Thus, the presence of high-flow appropriators, as well as “ordinary flow” juniors, virtually assures that in dry and moderate water availability years the call of valid appropriators on the stream will exceed the amount of water available, thereby dewatering the stream.

C. *Prior Appropriation’s Doctrinal Hindrance of Instream Flow Protection and “Stitching and Fitting” to Avoid Dewatering*

Beyond the previously explored incentives for overuse and dewatering posed by prior appropriation, and the inadequate checks on those incentives, are aspects of prior appropriation that have served to interdict protection of instream flows. These aspects result from the legally entrenched zealotry with which the prior appropriation doctrine has been enforced in some Western states. Two of the foundational aspects of prior appropriation, the diversion requirement and the beneficial use requirement, both function as bulwarks against speculation. Paradoxically, those same requirements, diversion and beneficial use, have spurred over-appropriation and monopolization by impeding protection of instream flows.⁶³

Legally, the problem arises at the most fundamental level—constitutional doctrine. Many states, particularly in the mountain West, adopted prior appropriation as part of their state constitutions. In terms of timing, this makes

63. In recent decades, the stringency with which the diversion requirement is enforced to the detriment of instream flows, as described in the text that follows, has tended to wane a bit. This is traceable to the operation of administrative permit systems. See, e.g., THOMPSON, JR. ET AL., *supra* note 41, at 220–21.

perfect sense. During the principal years of westward movement, those states were still Territories. They achieved statehood only after the perceived imperative of preventing freedom of the commons had been addressed through prior appropriation's privatization of water use rights.⁶⁴ The zealous use of prior appropriation has its roots in the drafting of state constitutions. Colorado's constitution is typical:

§ 5. Water of streams public property. The 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.⁶⁵

§ 6. Diverting unappropriated water—priority preferred uses. The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. Priority of appropriation shall give the better right . . .⁶⁶

The constitutionalization of these provisions, particularly in a form that emphatically proclaims the right to divert and appropriate—“*shall never be denied*”—prevents courts, legislatures, and water administration agencies alike from forbidding further appropriations or from setting aside water and making it unavailable for appropriation. The emphasis that some interpretations have placed on *never* denying the right to divert and appropriate reflects the traditional Western attitude that water allowed to remain in a stream when it could be used was wasted. From that viewpoint, protection of instream flows in any form is a violation of the state constitution.

Over time, numerous limitations and regulations have made inroads on these unfettered rights to divert and appropriate. Toward the end of the 20th Century, the door to protection of instream flows was beginning to be cracked open by state laws that reserved water⁶⁷ from appropriation for environmental

64. Many of the western states that did not adopt prior appropriation initially have amended their state constitutions to do so. *See, e.g.*, OR. CONST. art. XI-D, § 1 (West 2018) (amendment for appropriation of water and water-power sites).

65. COLO. CONST. art. XVI, § 5 (West, Westlaw through Nov. 6, 2018 General Election).

66. *Id.* at § 6. The omitted language of that section creates a limited series of preferences among uses in time of shortage, with domestic at the top and agriculture above manufacturing. *See also* IDAHO CONST. art. 15, § 3 (West, Westlaw through 2018 2d Reg. Sess. of 64th Legis.). It states, “[t]he right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses, shall never be denied . . .”

67. Reservations of water are to be distinguished from conditional water rights that allow an appropriative right to obtain a priority date prior to completion and actual beneficial use. If a major water-dependent project is being contemplated, the availability of conditional rights that obtain a priority date as of the date of the application for an appropriative right allows the water right, when perfected by application of the water to a beneficial use, to relate back to the date of the conditional right for the purposes of priority. Speculation is limited by periodic due diligence proceedings in which the holder of the conditional right must show that it is making reasonable further progress toward completion of the project. *See, e.g.*, COLO. REV. STAT. ANN. § 37-92-103(6) (West 2018); Purgatoire River Water Conservancy Dist. v. Witte, 859 P.2d 825, 831–32 (Colo. 1993).

protection purposes,⁶⁸ and laws that permitted appropriations to be made for *in situ* uses that effectively protected instream flows by using the water in place.

Even those developments, however, have had limited efficacy. Prior to the 1970s, the principal form of instream appropriation, or appropriation without a diversion, was a pragmatic exception for livestock watering, whereby water was treated as “diverted” by livestock wading into a stream.⁶⁹ The pressure to soften the prohibition on instream appropriation most likely owes its genesis to increased awareness of the value of instream flows and unspoiled landscapes, which spawned landmark federal legislation in the form of the Wilderness Act⁷⁰ and the Wild and Scenic Rivers Act⁷¹ in 1964⁷² and 1968,⁷³ respectively. On the state level, this same change in attitude, coupled with the emerging and growing importance of recreation economies in many parts of the West, prompted state legislatures to move in the same direction, which almost always ensured the state, not private parties, would drive the instream appropriation process.⁷⁴ Even that limited incursion on the unfettered right of private parties to appropriate was resisted due to the fear of permitting private instream appropriations for little more than the cost of making the filing would allow organizations such as the Sierra Club or Trout Unlimited to tie up vast amounts of the remaining unappropriated water.⁷⁵

Instream flow appropriations adversely impact potential future appropriators located upstream or along the stream stretch for which instream flow appropriation is granted. Those future water users will be junior to the instream appropriation and will have to let the water pass if their use would reduce the volume in the stream below the flow granted for instream appropriation. The leading case challenging the state’s creation of instream flow appropriations was brought in Idaho by private appropriators who were supported in part by the state agency that administered the water rights system. The suit was against the state agency that was legislatively granted the right to make instream appropriations and had sought to appropriate then-unappropriated instream flows passing through Malad Canyon.⁷⁶ The legislature recognized

68. See TARLOCK, *supra* note 9, § 5.22.

69. *Id.* at § 5.65; *Steptoe Live Stock Co. v. Gulley*, 295 P. 772, 774–75 (Nev. 1931).

70. 16 U.S.C.A. § 1131 (West, Westlaw through P.L. 116–5).

71. 16 U.S.C. §§ 1271-87 et seq. (2012 & Supp. V 2018).

72. Wilderness Act, Pub. L. No. 88–577, 78 Stat. 890 (1964) (codified at 16 U.S.C. §§ 1131–36).

73. Wild and Scenic Rivers Act, Pub. L. No. 90–542, § 1(b), 82 Stat. 906 (1968) (codified at 16 U.S.C. §§ 1271-87).

74. See, e.g., COLO REV. STAT. § 37-92-103(7) (2018).

75. See generally A. Dan Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on “New” Public Western Water Rights*, UTAH L. REV. 211 (1978).

76. *State of Idaho, Dep’t of Parks v. Idaho Dep’t of Water Admin.*, 530 P.2d 924 (Idaho 1974). Similar weakening of the diversion requirement was occurring in other states as well. Compare *Town of Genoa v. Westfall*, 349 P.2d 370 (Colo. 1960), with *Lamont v. Riverside Irrigation Dist.*, 498 P.2d 1150 (Colo. 1972).

the extraordinary nature of the waters involved and the physical setting when it expressly authorized protecting instream flows via state appropriation without diversion of the water.⁷⁷ Attacking the legislative authorization of instream appropriations, water users claimed the legislation was unconstitutional on three grounds, two of which are salient here: (1) the use of water for scenic, aesthetic, and recreation purposes was not a beneficial use; and (2) the state constitution required physical diversion in order to appropriate water.⁷⁸ By a three to two majority, the Idaho Supreme Court allowed the Department of Parks to appropriate water without a physical diversion.

In theory, four of the five justices agreed that diversion, per se, was not constitutionally required. The two dissenters each wrote opinions, one hewing to the diversion requirement,⁷⁹ and one that joined the majority in concluding that diversion was not necessary for there to be an appropriation, but effectively subordinating instream appropriations to later-in-time off stream appropriations:

[W]ater held by the state in its sovereign capacity—even though being beneficially used by the general public—is subject to being appropriated for specific private (or proprietary) beneficial uses. Thus, in-stream public use of unappropriated water for recreational purposes and for scenic beauty is subject to diminution by the exercise of the constitutional right to appropriate water for private (or proprietary) beneficial uses.⁸⁰

In support of their dim view of instream appropriation, the *Idaho Parks* dissenters quoted one of the era's leading water law commentators, Dean Frank Trelease:

In Oregon * * * many streams that form beautiful falls or that are famous fishing waters have been reserved from appropriation. In Idaho the governor is authorized to appropriate the water of certain lakes in trust for the people, and the preservation of the lakes for scenic beauty, health, and recreation purposes is declared to be a beneficial use of the water (citing Idaho Code §§ 67-4301, 4304), although *in reality this is not an appropriation, but*

77. The Idaho Supreme Court described it thusly: "In 1971 the Idaho Legislature enacted I[daho] C[ode] § 67-4307. In essence the statute directs the Department of Parks of the State of Idaho to appropriate in trust for the people of Idaho certain unappropriated natural waters of the Malad Canyon in Gooding County, Idaho. Additionally, it declares (1) that the preservation of the waters for scenic beauty and recreation uses is a beneficial use of water; (2) that the public use of those waters is of greater priority than any other use save domestic consumption, and (3) that the unappropriated state land located between the highwater marks on either bank of these waters is to be used and preserved in its present condition as a recreational site for the people of Idaho." *State Dep't of Parks*, 530 P.2d at 925 (footnote omitted).

78. Of the three grounds raised, the state agency joined in only the diversion requirement argument, which had been the express basis for denying the appropriation to the Department of Parks. *See id.* at 928.

79. *Id.* at 934 (McQuade, J., dissenting).

80. *Id.* at 937 (McFadden, J., dissenting, joined by McQuade, J.).

*like the Oregon laws a reservation of the water to prevent its being appropriated for more mundane purposes.*⁸¹

Even two of the three justices in the majority were less than full-throated in their assessment of the benefits of appropriations for instream flows. Those justices concurred in the result on narrower grounds, agreeing that *as applied at the time of decision*, the use of water for instream flow through Malad Canyon was beneficial.⁸² The concurring opinion of Justice Bakes, joined by Justice Donaldson, echoed Hardin's assertion that the state of the system at the time of the action matters and framed any legal conclusion that instream flow represents a beneficial use of water as situationally determined in a way that could in the future undercut protection of instream flows:

What we have decided in this case is that the use now before us, although not specifically listed in Article 15, § 3, of the [Idaho] Constitution, is beneficial because, considering today's circumstances, the legislative classification is reasonable based on the record. I would restrict today's holding to the narrow proposition that the use before us is beneficial so long as, and only so long as, the circumstances of water use in the state have not changed to the extent that it is no longer reasonable to continue this use at the expense of more desirable uses for more urgent needs.⁸³

In essence, though an instream flow right was created, three members of the five member court expressly found that right, unlike traditional private appropriative rights, to be defeasible by a legislative change of heart⁸⁴ (unconstrained by the expense of paying compensation to the right holder, because the right holder is the State of Idaho itself) or by a claim of changed conditions that earns the court's approval. As aridity increases, this "stitching and fitting" form of instream flow protection is not a firm legal bulwark against dewatering. Such halting recognition of instream protection as beneficial has been roundly criticized by Professor Eric Freyfogle:

Beneficial use, as it stands today, is an affront to attentive citizens who know stupidity when they see it; who know, for instance, that no public benefit arises when a river is fully drained so that its waters might flow

81. *Id.* (quoting Frank Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, 12 Wyo. L.J. 1, 12 (1956) (emphasis added by the court)).

82. *Id.* at 929 (Bakes, J., concurring, joined by Donaldson, J.).

83. *Id.* at 932.

84. For example, Colorado has a state Water Conservation Board that has the exclusive authority to obtain instream appropriations. *See* COLO. REV. STAT. § 37-92-102(3) (2018). Exercising that authority, the Board obtained an instream appropriation for Snowmass Creek, but later decided to abandon that right to make the water available for appropriation in furtherance of expansion of a local ski resort. A judicial challenge to the Board's action succeeded. *See* Aspen Wilderness Workshop, Inc. v. Colo. Water Conservation Bd., 901 P.2d 1251, 1261 (Colo. 1995). The legislature then stepped in to allow the Board to decrease its appropriation. *See* COLO. REV. STAT. § 37-92-102(4)(a) (2018).

luxuriously through unlined, open ditches onto desert soil to grow surplus cotton and pollute the water severely.⁸⁵

True to Hardin's observation regarding law and the commons, in relation to the value of protecting live streams and instream flows, the law of prior appropriation lags behind the science regarding the major ecosystem harms of stream dewatering. Other doctrinal developments are also worth mentioning. Roughly coterminous with the halting acceptance of instream appropriations, several prior appropriation states added the public interest as a factor to consider in granting new and changed water rights. Similarly, Colorado legislatively required that environmental outcomes be considered as a factor in adjudicating water rights.⁸⁶ The Colorado Supreme Court, in an en banc opinion written by Justice Gregory Hobbs, an ardent advocate of traditional prior appropriation, accepted that a balance must be struck between maximum utilization and environmental conservation, and that appropriations could be refused to prevent total dewatering:

Colorado's system of public ownership of water, combined with the creation of public and private use rights therein by appropriation, circumscribes monopolist pitfalls. When the beneficial use requirement was put into practice in the nineteenth century, its fundamental purpose was to establish the means for making the public's water resource available to those who had the actual need for water, in order to curb speculative hoarding The public's water resource is subject to maximum utilization, a doctrine intended to make water available for as many decreed uses as there is available supply. Within the priority system, maximum utilization spreads the benefit of the public's water resources to as many uses as possible, within the limits of the physically available water supply, the constraints of interstate water compacts, and the requirements of United States Supreme Court equitable apportionment decrees.

In turn, the objective of maximum use administration, under the prior appropriation system, is to achieve "optimum use" in every appropriator's utilization of the water. ("[A]ll rules and regulations shall have as their objective the optimum use of water consistent with preservation of the priority system of water rights."). Maximum utilization does not mean that every ounce of Colorado's natural stream water ought to be appropriated; optimum use can be achieved only through proper regard for all significant factors, including environmental and economic concerns. (Case and statutory citations omitted.)⁸⁷

85. Eric Freyfogle, *Water Rights and the Common Wealth*, 26 ENVTL. L. 27, 42 (1996). Just as *State Dep't of Parks*, 530 P.2d 924, is not the only case to wrestle with the diversion requirement as a potential obstacle to instream flow protection, it is not the only case to take a narrow or somewhat conditional view of beneficial use as applied to instream flow appropriations. See, e.g., *Empire Water & Power Co. v. Cascade Town Co.*, 205 F.123 (8th Cir. 1913).

86. COLO. REV. STAT. § 37-92-310 (2018).

87. *Pagosa Area Water & Sanitation Dist. v. Trout Unlimited*, 170 P.3d 307, 313-14 (Colo. 2007) (citing COLO. REV. STAT. § 37-92-102(1)(a), § 37-97-501(2)(e) (2007)).

How the balance between maximization of off-stream uses and environmental considerations will be struck remains to be determined, and those determinations will occur on a case-by-case basis.

Unlike Colorado, which relies on a specialized water court system, other western states place authority for granting appropriative water rights in state agencies, which operate pursuant to legislatively directed standards. Several states now require their agencies to consider the public interest in evaluating new and changed use applications,⁸⁸ under laws that define the public interest broadly.⁸⁹ These statutes frequently provide several factors (usually without a hierarchy) for the state agency to consider in adjudicating water rights applications.⁹⁰ Environmental considerations, including the harms of dewatering and the protection of riparian ecosystems, are deemed to be part of the public interest.

The Alaska statute, which was one of the earliest to be adopted with a public interest provision, is quite typical:

Criteria for issuance of permit

The commissioner shall issue a permit if the commissioner finds that . . .

. . .

- (4) the proposed appropriation is in the public interest.
- (b) In determining the public interest, the commissioner shall consider
 - (1) the benefit to the applicant resulting from the proposed appropriation;
 - (2) the effect of the economic activity resulting from the proposed appropriation;
 - (3) the effect on fish and game resources and on public recreational opportunities;
 - (4) the effect on public health;
 - (5) the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation;
 - (6) harm to other persons resulting from the proposed appropriation;
 - (7) the intent and ability of the applicant to complete the appropriation; and
 - (8) the effect upon access to navigable or public water.⁹¹

Other statutes more explicitly make streamflow a public interest criterion. For example, Idaho, in addition to having a local public interest requirement as part of its permitting program,⁹² addressed minimum flows and even declared them a beneficial use:

88. See TARLOCK, *supra* note 9, § 5.52. Professor Tarlock lists fourteen states that have public interest statutes affecting appropriations.

89. See, e.g., CAL. WATER CODE § 1253 (West) (“The board shall allow the appropriation for beneficial purposes of unappropriated water under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated.”).

90. See, e.g., N.D. CENT. CODE ANN. § 61-04-06(4) (West 2018).

91. ALASKA STAT. ANN. § 46.15.080 (West, through Sept. 1, 2018 of the 2018 Second Reg. Sess. of the 30th Legis.). The statute was adopted in 1966 Alaska Sess. Laws of 1966, ch. 50, § 1.

92. IDAHO CODE ANN. § 42-203A(5)(e) (West 2018).

Legislative purpose—Minimum stream flow declared beneficial use

The legislature of the state of Idaho hereby declares that the public health, safety and welfare require that the streams of this state and their environments be protected against loss of water supply to preserve the minimum stream flows required for the protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, transportation and navigation values, and water quality. The preservation of the water of the streams of this state for such purposes when made pursuant to this act is necessary and desirable for all the inhabitants of this state, is in the public interest and is hereby declared to be a beneficial use of such water. The legislature further declares that minimum stream flow is a beneficial use of water of the streams of this state for the purpose of protecting such waters from interstate diversion to other states or by the federal government for use outside the boundaries of the state of Idaho. Minimum stream flows as established hereunder shall be prior in right to any claims asserted by any other state, government agency, or person for out of state diversion. . . .⁹³

These public interest elements have had little success, however, in ensuring protection of minimum flows and levels. Despite its strong language establishing instream flows to be in the public interest,⁹⁴ the Idaho statute has been cited in only two reported cases. The more prominent of these is *Shokal v. Dunn*.⁹⁵ In *Shokal*, the Idaho Supreme Court linked the minimum stream flow statute to the state's local public interest provision and reviewed the way the stream flow statute had been applied. The case was not about total dewatering but rather involved a fish farm that sought a permit to appropriate water. The farm's proposal would reduce flow substantially for a 700-foot stretch of the source stream, cutting the flow from 125 to 25 cubic feet per second. More importantly for this context, though, the public interest alleged in *Shokal* was preventing a potential health hazard by ensuring adequate dilution of the effluents to be discharged by the applicant's use of the water rather than protecting instream flow. Although the Idaho Supreme Court corrected a statement in the lower court's opinion that "fail[ed] to account for . . . the public's legitimate

93. IDAHO CODE ANN. § 42-1501. The statute was adopted in 1978. See 1978 Idaho Sess. Laws ch. 345, § 11.

94. *Id.* The instream flow-favorable language in section 42-1501 establishes that maintenance of instream flows is in the public interest, but the latter portions of that provision hedge that protection of instream flows when the competing use for which the water is sought is an ordinary offstream use that is to be made in Idaho. Instream appropriations are a beneficial use when their purpose is to prevent interstate exports of water or federal transfer of the water out of state. There is no guarantee that instream flow appropriations are to be considered a beneficial use when the complaining party is a would-be state law appropriator with a plausible need for the water. Note further, the last sentence of the excerpted portion of the statute, by unmistakable implication, deprives instream appropriations of their seniority in competition with typical in-state uses.

95. 707 P.2d 441 (Idaho 1985); see also *Hardy v. Higginson*, 849 P.2d 946 (Idaho 1993). A third case, *Collins Bros. v. Dunn (In re Permit No. 47-7680)*, 759 P.2d 891, 898 (Idaho 1988), applied the public interest standard to geothermally valuable groundwater, upholding denial of a permit for use of the water that did not take advantage of its energy content.

interests in the stream environment, wildlife, aesthetics, recreation, and alternative uses,⁹⁶ it nonetheless upheld a finding that the Department of Water Resources had adequately protected the public interest despite allowing an 80 percent reduction in flow. The court upheld the trial court's permit grant based on its finding that the low flow "will not allow Billingsley Creek to become a nuisance or a health hazard."⁹⁷ The decision applied the statute and recognized its purposes, but the low bar that had to be met to avoid having the appropriation rejected—avoiding an affirmative nuisance or a threat to public health—is not very encouraging when considering the full scope of the public interest in streamflow. Rulings from other states do not provide more reassuring precedent.⁹⁸

Just like the public interest standard cannot prevent a tragedy of the commons with respect to streamflows, the other devices noted in this Part will not likely offer more robust streamflow protection. For example, although Colorado recognized the value of instream flow as an element of optimum utilization, the state reduced streamflow protection in Snowmass Creek to permit water that had been appropriated for instream flow to instead be appropriated by a ski resort for snowmaking.⁹⁹ Perhaps even more problematic for environmental protection is the fact that the American West is in the midst of an era of climate instability, with predicted reductions in water supply on an almost regionwide basis, which will further increase pressure to prevent dislocations caused by denying water to established uses.¹⁰⁰ Moreover, as explained previously,¹⁰¹ low flow and drought conditions on heavily appropriated streams that have little remaining flow in normal or wet years will cause dewatering of those streams, possibly for extended periods of time.

In a drier and more drought-prone West, balancing the public interest factors might auger for more, rather than less, dewatering. The decisionmakers are expressly tasked with promoting uses that are crucial for regional stability and economic wellbeing. Even in good times it takes a strong-willed agency to stand up to prodevelopmental pressure, so how the balance will be struck in the face of extreme shortage is even less promising for the environment.

96. See *Shokal*, 707 P.2d at 450–51.

97. *Id.* The reason that health was a concern was pollution from the fish farm and the possibility that the lowered flow might result in water quality poor enough to pose a potential health hazard. The state water agency included a permit condition requiring maintenance of water quality that met the applicable standards.

98. TARLOCK, *supra* note 9, §§ 5.52–5.59. In the cited sections, the Tarlock treatise describes many cases decided under state public interest laws. Tellingly, none of them show the public interest standard being used to prevent stream dewatering due to over appropriation.

99. See *Aspen Wilderness Workshop v. Colo. Water Conservation Bd.*, 901 P.2d 1251 (Colo. 1995).

100. See Robert Haskell Abrams, *Water and Property Rights in an Era of Hydroclimate Instability*, 7 BRIGHAM-KANNER PROP. RTS CONF. J. 129, 133 (2018).

101. See *supra*, text accompanying note 38.

If widely shared, as may be the case among the politically powerful appropriative rights holders, the reasoning of Justice Bakes' concurrence in *Idaho Parks*, which granted only conditional assent to instream appropriations based on assessment of the prevailing streamflow conditions, renders it uncertain that live rivers will be preserved in the face of water shortage.

More fundamentally, protecting instream flows via the various options internal to prior appropriation is an area in which the law, echoing Hardin, is "behind the times." Protections such as the public interest criteria have emerged too late to be of much practical effect in combatting dewatering in river systems that have long been heavily appropriated. On those streams, the doctrines discussed thus far do nothing to reduce currently held water rights even if they are used to deny new appropriations. As a result, on over-appropriated streams, there will be dewatering in all but normal to wet years.¹⁰² More dauntingly, studies of water availability that cover almost all of the American West predict major reductions in annual precipitation and increased frequency and depth of droughts.¹⁰³ In many basins, those lower streamflows are already fully appropriated, leaving no water to be allocated with the environment in mind.

III. THE DIRECT APPROACH: MINIMUM FLOWS AND LEVELS

Some states have stepped outside of prior appropriation law in ways other than MFLs that might be characterized as "direct approaches" to prevent dewatering. Principal among these direct approaches are designations at the state level similar to federal government designations made under the Wild and Scenic River Act.¹⁰⁴ This approach is significantly underinclusive as it typically pertains only to those few waterways that have exceptional resource values. The language of the California statute could hardly be plainer on that point, protecting "certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values [which] shall be preserved in their free-flowing state, together with their immediate environments . . ." ¹⁰⁵ Instead, a broader approach that reaches all of a state's waters involves

102. Recall that appropriations have been made at times of high flow knowing that the water right will not be satisfied in every year. See *supra* note 47, at 347–48 and accompanying text.

103. See Robinson Meyer, *A Mega-Drought is Coming to America's Southwest*, THE ATLANTIC (October 11, 2016), <https://www.theatlantic.com/science/archive/2016/10/megadroughts-arizona-new-mexico/503531>. [<https://perma.cc/9SH4-TFSW>]. See generally U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT (2014), available at <https://www.globalchange.gov/browse/reports/climate-change-impacts-united-states-third-national-climate-assessment-0> [<https://perma.cc/J5P7-75PV>].

104. 16 U.S.C. §§1271-1278 (2018).

105. CAL. PUB. RES. CODE ANN. § 5093.50 (West, Westlaw through urgency legislation Ch. 269 of 2018 Reg. Sess.).

establishing minimum flows and levels (MFLs) and forbidding actions that deplete streamflows below those levels.

A. *Minimum Flows and Levels in Action*

Before offering MFLs as a panacea that will eliminate stream dewatering in prior appropriation states, realism commands caution. Just as some aspects of prior appropriation held promise as a means of avoiding destructive dewatering but failed due to an unwillingness to enforce them aggressively, having MFLs on the statute books without resources and a commitment to enforcement will be equally unavailing. MFL legislation can be undermined by pressures similar to the ones discussed earlier in the Snowmass Creek example, where economic and developmental pressure led to a significant rollback of an established resource-protective instream appropriation.¹⁰⁶ The possible forms of slippage can vary from a failure to set MFLs (despite having the authority to do so), to a failure to set MFLs at a sufficiently resource-protective level, to a failure to curtail juniors when MFLs are not being met, to a failure to prevent exempt activities from depleting streamflows below the level set by the MFL.

One example of how delaying the implementation of MFLs can undermine their objectives comes from Florida, a nonprior appropriation state. In 1973, Florida replaced common law riparianism with what is now termed regulated riparianism.¹⁰⁷ Regulated riparianism strongly resembles prior appropriation in its management of the commons, by restricting water use to permitted users whose permits specify the details of their use in much the same way prior appropriation rights are defined. Permits specify the quantity of water to be used, the situs of use, and the activity for which the use is permitted.¹⁰⁸ Unlike prior appropriation, the permits are for a limited number of years, after which renewal may be sought in competition with others seeking permits. Under a model regulated riparianism law, having much in common with Florida's enactment, the relevant state agency ensures the total amount of permits issued never exceeds an ecologically sustainable amount, by refusing to grant new permits that interfere with sustainable use of the resource and inserting conditions in all permits that allow curtailment of use during declared water shortage events.¹⁰⁹

In Florida, at the time the Water Resources Act was enacted, the excessive permitting problem was addressed in two ways.¹¹⁰ First, and somewhat

106. Aspen Wilderness Workshop, 901 P.2d at 1254–55.

107. See FLA. STAT. ANN. § 373.013 (West 2018).

108. TARLOCK, *supra* note 9, § 5.51.

109. See, e.g., AM. SOC'Y OF CIVIL ENG'RS, REGULATED RIPARIAN MODEL WATER CODE §§ 7R-1-01(l) and 7R-3-01 (2004). For a similar model code, see, FRANK MALONEY ET AL., A MODEL WATER CODE 88 (1972); See generally, Joseph W. Dellapenna, *The Evolution of Riparianism in the United States*, 96 MARQ. L. REV. 53, 54–55 (2011).

110. In addition to the two ways described in the text, Florida also allows state agencies to reserve water and permit it to be used. See FLA. STAT. § 373.223(4) (2018).

similarly to prior appropriation's beneficial use and public interest provisions, the standards for issuing consumptive use permits¹¹¹ require the water to be used for a "reasonable-beneficial use" and the use to be "consistent with the public interest."¹¹² The term "reasonable-beneficial" is statutorily defined as, "the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest."¹¹³ "Public interest" is not defined in the statute,¹¹⁴ but the administrative rules of the Water Management Districts have a list of criteria for determining if a use is "reasonable-beneficial."¹¹⁵ A series of considerations are to be weighed in making the determination.¹¹⁶ One express requirement is that the permitted activity "not cause harm to the water resources of the area, [including causing] harmful hydrologic alterations to natural systems . . ." ¹¹⁷ Wholly apart from that, and possibly in recognition of the inadequacy of the statute's general standard to protect ecologically important flows and levels from quality impairment,¹¹⁸ the Florida Water Resources Act expressly includes a MFL provision:

Minimum flows and minimum water levels

(1) Within each section, or within the water management district as a whole, the department or the governing board shall establish the following:

(a) Minimum flow for all surface watercourses in the area. The minimum flow for a given watercourse is the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area.

(b) Minimum water level. The minimum water level is the level of groundwater in an aquifer and the level of surface water at which further

111. *See id.* § 373.219.

112. *Id.* § 373.223(1)(a)–(c). Similar to prior appropriation's unappropriated water test, subsection (b) requires that a to be permitted a use must not "interfere with any presently existing legal use of water."

113. *Id.* at § 373.019(16).

114. A few sections of the statute indicate that certain types of uses are or are not in the public interest. *See, e.g., id.* §§ 373.250, 373.223(4).

115. *See, e.g.,* FLA. ADMIN. CODE §§ 40D-2.301 (Southwest Florida Water Management District), Other Florida water management districts have parallel administrative rules which vary, some only slightly, *compare, e.g.,* 40C-2.301 (St. John's River Water Management District) (2018). Not all of the Water Management Districts have identical provisions. The Northwest Florida Water Management District, having far more supply relative to demand, has a simpler definition of reasonable use that does not have express protection against hydrologic alteration. *See, FLA. ADMIN. CODE* §§ 40A-2.301 (Northwest Florida Water Management District).

116. *See id.* § 40C-2.301.

117. *Id.* §§ 40C-2.301(2)(g) and 40D-2.301(2)(g). Both speak in terms of water *quality* impacts of dewatering.

118. The genesis of the Florida Statute was the highly regarded Model Water Code, *supra* note 109. The Florida legislation enacted the Model Code almost verbatim. *See generally* F. MALONEY ET AL., WATER LAW AND ADMINISTRATION—THE FLORIDA EXPERIENCE 221, 234 (1968) (recognizing the purpose of the Model Water Code was to provide a vehicle for comprehensive state regulation of water resources in Florida).

withdrawals would be significantly harmful to the water resources or ecology of the area.

The minimum flow and minimum water level shall be calculated by the department and the governing board using the best information available. When appropriate, minimum flows and minimum water levels may be calculated to reflect seasonal variations. The department and the governing board shall consider, and at their discretion may provide for, the protection of nonconsumptive uses in the establishment of minimum flows and minimum water levels.¹¹⁹

The problem that remained was the lack of will to implement the statutory provision by taking the steps necessary to determine what minimum flows were needed to adequately protect against harmful ecological changes. Once set, those minimum flows would thereafter act as an upper limit on the aggregate of permitted consumptive uses. A reasonable amount of time is necessary to use sound science and collect accurate data on flow and level conditions to set MFLs. Developmental interests, however, desiring to partake of the commons before the regulatory limit is implemented, seek to delay implementation of the MFLs. While some slippage was to be expected, Florida's state agencies' performances were even poorer and less protective than could have been predicted. For many years, few MFLs were established. Even the planning for setting MFLs was uneven. For example, in 1996, more than twenty years after the MFL statute was originally enacted, the legislature had to require the Southwest Florida Water Management District to prioritize setting MFLs.¹²⁰ The situation remained so bad that in 2016, a full forty-three years after the enactment of the MFL legislation, the Florida legislature enacted additional legislation to force the relevant state agencies¹²¹ to act with regard to waters that are among the highest value resources in the state, those with the label of "Outstanding Florida Spring."¹²²

If a minimum flow or minimum water level has not been adopted for an Outstanding Florida Spring, a water management district or the department shall use the emergency rulemaking authority provided in paragraph (c) to adopt a minimum flow or minimum water level no later than July 1, 2017, except for the Northwest Florida Water Management District, which shall use such authority to adopt minimum flows and minimum water levels for Outstanding Florida Springs no later than July 1, 2026.¹²³

119. FLA. STAT. § 373.042(1) (2018).

120. See Act adopted May 31, 1996, ch. 96, 1996 Fla. Sess. Law. Serv. 339, § 2 (West).

121. The responsible agencies are each of a series of six water management districts (WMDs) whose boundaries divide the state into regions, principally based on the boundaries between major surface water systems. See, e.g., FLA. STAT. § 373.1501 (2018). Not all of the WMDs have equally poor track records, but the fact that the legislation was passed at all, suggests the extent of the WMDs lack of will to act affirmatively to protect MFLs.

122. See *id.* § 373.802.

123. Act effective July 1, 2016, ch. 2016-1, 2016 Fla. Law Serv. 552 (West) (codified at FL. STAT. ANN § 373.042(2)(a)).

What are the consequences of the long-delayed implementation of MFLs? The delay creates a period of time in which economic and developmental interests can obtain water rights, and thus deplete flows and levels beyond what sound science would accept. Under regulated riparianism, permits do expire and renewal is not guaranteed, but this author can find no evidence that total permitted uses in Florida have been reduced after setting MFLs to protect a minimum level or flow. In contrast, there is extensive evidence of degradation of many “Outstanding Florida Springs” due to diminished flows that timely-adopted MFLs could have prevented.¹²⁴ The result is a Catch-22-like bootstrapping, whereby actions that would have been prevented by having MFLs timely set are allowed to proceed, at which point the reliance interest and investment of those users is used to defeat the establishment of the relevant MFLs or to sway permit renewals that risk over-allocation of water. Prior appropriation jurisdictions, where the appropriative rights are perpetual, face an even more difficult problem with MFLs that are not implemented before the legally recognized water uses threatens overuse of the stream. Users in those jurisdictions hold water rights with an expectation of permanence. Similarly, there is a greater chance that a state curtailing appropriative rights to enforce a later-in-time MFL will be subject to a successful claim that enforcement of the MFL amounts to a taking of property.¹²⁵

It is now time to move from Florida, with its long-delayed and less than fully effective MFL approach, to a state at the other end of the MFL enforcement spectrum: Washington.¹²⁶ The timing of Washington’s initial MFL legislation was similar to that of Florida, with concern for instream flows first receiving Washington’s legislative attention in 1969.¹²⁷ Two years later, the legislature followed with a very clear statutory standard:

The quality of the natural environment shall be protected and, where possible, enhanced as follows: . . .

. . . Perennial rivers and streams of the state shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values. Lakes and ponds shall be retained substantially in their natural condition. Withdrawals of water which would conflict therewith shall be authorized only in those

124. See, e.g., Cynthia Barnett, *Mirage: Florida and the Vanishing Water of the East* 26 (2007); David M. Bush et al., *Living on the Edge of the Gulf: The West Florida and Alabama Coast* 16–18 (2001).

125. The need for compensation to past and potential future water users who are denied water due to the enforcement of MFLs and methods to retire water uses that violate MFLs are discussed *infra* text accompanying notes 200–214.

126. Some other states have good statutory language on MFLs, for example, S.C. CODE ANN. § 49-4-150 (2018, Westlaw through 2018 Act. No. 263). The author of this Article, however, has not conducted a jurisdiction-by-jurisdiction review of how effective state MFL laws have been.

127. See 1969 Wash. Sess. Laws ch. 284, §§ 3-4 (codified at WASH. REV. CODE § 90.22.010).

situations where it is clear that overriding considerations of the public interest will be served.¹²⁸

Pursuant to that authority, in the 1970s and 1980s the Washington Department of Ecology established minimum flows.¹²⁹ In *Postema v. Pollution Control Hearings Board*,¹³⁰ its first direct opportunity to interpret the instream flow legislation, the Washington Supreme Court was protective of MFLs,¹³¹ and has continued to be since. *Postema* established that ecology-protective flows are themselves appropriations having an appropriation date and are not to be impaired even slightly by withdrawals of either surface water or hydrologically linked groundwater:

Once established, a minimum flow constitutes an appropriation with a priority date as of the effective date of the rule establishing the minimum flow. Thus, a minimum flow set by rule is an existing right which may not be impaired by subsequent groundwater withdrawals. The narrow exception to this rule is found in RCW 90.54.020(3)(a), which provides that withdrawals of water which would conflict with the base flows “shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served.” (Citations omitted.)¹³²

In that same case, the court rejected arguments that MFLs had to be set by weighing the basin’s need for future water uses against the economic impacts of the MFLs.¹³³ Finally, in perhaps the strongest indication of how seriously MFLs are taken under Washington’s statutory scheme, the court also categorically closed the door to what were claimed to be only de minimis impacts attributable to small uses: “we hold that a proposed withdrawal of groundwater from a closed stream or lake in hydraulic continuity must be denied if it is established factually that the withdrawal will have *any* effect on the flow or level of the surface water.”¹³⁴

128. 1971 Wash. Sess. Laws ch. 225 § 2 (codified at WASH. REV. CODE § 90.54.020(3)(a)).

129. See Adam W. Gravley, *Washington State’s Instream Flow Trilogy*, 36th Annual Am. Bar Ass’n Water Law Conference 2 (April 17, 2018) (copy on file with the UCLA Journal of Environmental Law & Policy). Starting in 1997 and thereafter, the Department of Ecology began a second phase of instream flow rulemaking recognizing groundwater surface water connections. *Id.* at 2–3.

130. *Postema v. Pollution Control Bd.*, 11 P.3d 726, 735 (Wash. 2000). The first judicial interpretation of the statute, *Hubbard v. State*, 936 P.2d 27, 29–30 (Wash. Ct. App. 1997), had laid the groundwork for a strictly enforced requirement, stating, “[a]ny effect on the river during the period it is below the minimum instream flow level conflicts with existing senior rights (such as the minimum flow level itself) and may reasonably be considered detrimental to the public interest.”

131. Washington sources use the term “minimum instream flows” (MIF). See Gravley, *supra* note 129, at 1. This paper will continue to use the more generic MFL term, even when discussing Washington materials.

132. See *Postema*, 11 P.3d at 735.

133. *Id.* at 735–36.

134. *Id.* at 742 (emphasis added). This holding by the eight-member majority provoked a dissent urging that impairment needed to be measurable rather than virtually assumed

In a later case, *Swinomish Indian Tribal Community v. Department of Ecology*,¹³⁵ the Washington Supreme Court made clear that the “overriding considerations of the public interest” (OCPI) exception stated in the last sentence of § 90.54.020(3)(a) is narrow and will not affect most situations. In *Swinomish*, the court reviewed a decade of litigation that had culminated in a settlement regarding the Skagit River’s instream flows. MFLs had been set in 2001 without reserving any water for future off-stream uses, leading Skagit County and others to sue to block adoption of the action. Eventually the Department of Ecology agreed to amend the MFL for the basin to also reserve water for new domestic, commercial, irrigation, and other out-of-stream uses. This decision was justified using the MFL statute’s OCPI exception.¹³⁶

The Washington Supreme Court invalidated the amended rule as “inconsistent with the statutory scheme.”¹³⁷ It further stated that “[t]he [OCPI] exception is very narrow . . . and requires extraordinary circumstances before the minimum flow water right can be impaired.”¹³⁸ Typical development was viewed as ordinary, not extraordinary.

Just two years later, in 2015, the Washington Supreme Court added more teeth to MFLs in *Foster v. Washington State Department of Ecology*.¹³⁹ *Foster* involved a regional plan to mitigate adverse streamflow impacts caused by pumping of hydrologically connected groundwater, that otherwise would result in violation of the relevant MFLs. In lower court proceedings, the administrative appellate hearings board rejected the Department of Ecology’s OCPI test in favor of a more stringent one requiring all potential in-kind mitigation options be exhausted before other forms of mitigation would be allowed. This latter plan required that, if at all possible, any newly permitted depletions below the MFL level be offset by the retirement of equal amounts of existing drafts on streamflow. If such in-kind mitigation was not possible, then other forms of mitigation, such as wetlands restoration, that was predicted to increase flow would be allowed.¹⁴⁰ The Washington Supreme Court invalidated what one commentator described as the “gold standard” of mitigation plans,¹⁴¹ again ruling that the OCPI could not be invoked to allow appropriations to undercut MFLs. The court construed the word “withdrawal” in the OCPI provision, which governed the permit the Department of Ecology was attempting to grant, as essentially different from the use of the word “appropri-

from the fact of hydrologic continuity of the groundwater and the closed stream (including a stream having an MFL that was not being satisfied). *See id.* at 762 (Sanders, J., dissenting).

135. *Swinomish Tribal Cnty. v. Wash. St. Dep’t of Ecology*, 311 P.3d 6 (Wash. 2013).

136. *Id.* at 9–10.

137. *Id.* at 18.

138. *Id.* at 8.

139. *Foster v. Wash. St. Dep’t of Ecology*, 362 P.3d 959 (Wash. 2015).

140. *See Foster v. Dep’t of Ecology*, PCHB No. 11–155, 2013 WL 1294427 (Wash. Pollution Control Bd. Mar. 18, 2013).

141. *See Gravley, supra* note 129, at 5.

ation” elsewhere in the MFL statute. The withdrawals authorized by the OCPI were meant solely to address short-term exigencies, according to the court, as “the OCPI provision does not allow for the permanent impairment of minimum flows.”¹⁴²

In *Whatcom County v. Hirst*,¹⁴³ the Washington Supreme Court took an even further step in the MFL field. The state’s statutes establish “[p]rotecting . . . surface water and groundwater resources” as a requirement for approval of plans under the state Growth Management Act.¹⁴⁴ *Hirst* not only construed that section to require adherence to MFLs, but also expressly required that even the effects on flows caused by water uses such as domestic wells,¹⁴⁵ that are exempt from water permitting, be considered in the determination of whether MFLs are violated.¹⁴⁶ An attorney well-versed in Washington water law has stated that a “practical effect of the [*Hirst*] decision may be to limit significantly the ability to develop land outside of public utility service areas where permit-exempt wells were the only source of water.”¹⁴⁷

Hirst demonstrates the potential of MFLs, when taken seriously, to limit growth. This issue is not unique to Washington state. The remaining portion of this Article will skip past two issues that are more a matter of science and administrative law than water law and policy. The first is reinforcing that MFLs are indeed worth enforcing, as both a matter of science and ecological value. There is a significant body of literature addressing this subject, and a strong

142. *Foster*, 362 P.3d at 963. The court reiterated its view set out in *Swinomish* that “municipal water needs, far from extraordinary, are common and likely to occur frequently as strains on limited water resources throughout the state.” *Id.*

143. *Whatcom Cnty. v. Hirst*, 381 P.3d 1 (Wash. 2016).

144. Section 36.70A.070(5)(c)(iv) of the Growth Management Act requires local comprehensive plans to include, “Protecting critical areas, as provided in RCW 36.70A.060, and surface water and groundwater resources.” *See* WASH. REV. CODE ANN. § 36.70A.070(5)(c)(iv) (West 2018).

145. *Id.* at § 90.44.050. “[A]ny withdrawal . . . for single or group domestic uses in an amount not exceeding five thousand gallons a day . . . is and shall be exempt from the provisions of this section, but, to the extent that it is regularly used beneficially, shall be entitled to a right equal to that established by a permit issued under the provisions of this chapter.” The court had already ruled that water taken through exempt wells was considered “appropriations.” *See Swinomish*, 311 P.3d at 9.

146. *Hirst*, 381 P.3d at 9.

147. *See* Todus Kisielius & Adam Gravley, *State Supreme Court Roils Rural Water Supply in Growth Management Decision*, VAN NESS FELDMAN (Dec. 12, 2016), <http://www.vnf.com/state-supreme-court-roils-rural-water-supply-in> [<https://perma.cc/LRV9-HM5P>]. Those authors went on to summarize the 2018 legislative response confirms the court’s holding about the Growth Management Act requirements; vests existing wells constructed under the permit-exempt withdrawal provision; authorizes counties to rely on Ecology MIF rules in some circumstances to make water availability determinations; and initiates an ambitious streamflow restoration program to offset cumulative impacts of new domestic wells on a basin-by-basin basis. *Id.* *See* S.B. 6091, 65th Legis., Reg. Sess. (Wash. 2018) [<https://perma.cc/2DM8-5DWZ>].

consensus that MFLs are important and valuable, both ecologically¹⁴⁸ and in terms of their ability to support recreational and other economies.¹⁴⁹ The second omitted topic is how to ensure that sound science survives the administrative process and results in MFLs that are well-fitted to the state's waters and needs. Here again Washington is a potential leader, having endorsed an approach that is not "one size fits all," but that instead sets policies for individual water basins or for small groups of basins.

B. *Addressing the Consequences of Minimum Flows and Levels*

Casting MFLs as the nemesis of regional growth and development is a major mischaracterization. The values protected by instream flows contribute directly to economic wellbeing by enhancing the desirability of certain places to live and anchor businesses whose workforces are attracted to the benefits, both recreational and other, of healthier riparian environments. Nevertheless, as evidenced by Washington's experience, at some point protecting MFLs will take on the characteristics of a zero-sum game, in which water "tied up" to ensure protection of MFLs is water made unavailable for use by others. Absent creative workarounds,¹⁵⁰ at that point MFLs would hinder some of the easiest paths for growth and development, such as relying on permit-exempt wells.¹⁵¹

The stresses that MFLs put on the initiation of new junior uses is a commonplace problem, little different than the difficulty facing any new user seeking to obtain a reliably satisfied water right on a heavily appropriated stream. Reallocation of appropriated water is a staple of present-day water law in the West.¹⁵² For example, obtaining an appropriation that would adversely affect a MFL could be conditioned on in-kind "wet water" mitiga-

148. See generally James W. Johnston, Comment, *Environmental Significance of Instream Flows*, 17 ST. MARY'S L.J. 1297 (1986) (arguing for more comprehensive environmental protection policy to implement a water plan that can reasonably protect the environment); Mallory A. Beagles, Comment, *Hydrating the Lone Star State for Years to Come: A Call to Implement Instream Flow Protections*, 43 TEX. TECH. L. REV. 687 (2011).

149. See generally DIANA C. GIBBONS, *THE ECONOMIC VALUE OF WATER* (Resources for the Future, Inc. 1986) (examining the water supply problem through five case studies); Bonnie G. Colby, *Economic Impacts of Water Law—State Law and Water Market Development in the Southwest*, 28 NAT. RESOURCES J. 721 (1988) (examining several themes in western state water law which have an impact on market activity and discussing economic implications of same).

150. For example, one of the forms of water banking, described later in this Article, could make water for development available without the inhibition imposed by the very high cost of project-specific purchases of senior water rights. See *infra* text accompanying notes 176–181.

151. At the societal level, this is not a classic zero-sum game because of the myriad of benefits provided by the water in situ, including recreation, ecosystem services, assistance in delivery of water to downstream offstream appropriators, etc. From the point of view of a would-be-developer for whom no water is available, however, the MFL does prevent that economic use.

152. Large sections of contemporary water law texts and treatises are devoted to the study of transfers because of their practical importance. See, e.g., TARLOCK, *supra* note 9, § 5.74.

tion. That mitigation would take the form of buying out and transferring a more senior water right to provide the necessary water in affected portions of an MFL-limited stream stretch at proper times of year.

In many basins, if not most, such in-kind “wet water” mitigation is possible if the price offered by a new entrant is sufficient to either buy out a previous use or, in some states, pay for conservation improvements by seniors, the water savings of which can be transferred to the new entrant.¹⁵³ As earlier Parts of this Article have demonstrated, over the last century and a half, prior appropriation has tolerated substantially inefficient water use that could be continued with less water if conservation improvements are made.¹⁵⁴ Outright retirement of older uses also is possible. A joke that has more than a grain of truth in Western water law circles is that a farmer with a very senior priority can sell his water right and move to La Jolla to raise a crop of martinis. Historically, the vast majority of water use (as much as 85 percent) was for agriculture,¹⁵⁵ often growing low value forage crops. Buying out low-value uses, or paying for efficiency increases in those uses and transferring their water rights, are the principal methods for supporting new uses, methods that would work equally well in the MFL mitigation context. Due to transaction costs,¹⁵⁶ however, these transfer methods may be impractical in the case of small scale uses, such as to support a small rural development project in a Washington basin where groundwater is hydraulically linked to a MFL-limited surface water stream. That situation, as well as those situations with basins in which a MFL has been set too late to have sufficient seniority to ensure the needed flow in most years, support an argument for seeking programmatic options that can obtain the same outcome in a way that reduces cost barriers. Moving away from a single project level to a broader approach not only invites seeking economies of scale, but also opens the door to considering cost-sharing and cost-bearing options beyond a “junior pays all” system.

The prior appropriation system, by forcing juniors to forego water until the seniors are fully satisfied, is one in which the juniors bear the entire burden of shortage when there is not enough for all uses. This feature of prior appropriation produces what is essentially a junior-pays-all system, because it requires the junior to pay to improve the seniority of the water right on which the junior relies. For example, the small developer in the Washington hypothetical, who is junior to the MFL (is attempting to create a right after the MFL was issued and the flow is at the allowable minimum), must bear all costs

153. See, e.g., CAL. WATER CODE §1011. Oregon’s Conserved Water Program allows the conserving user to retain or transfer 75 percent of the water saved and dedicates the remaining 24 percent to streamflow! See, OR. REV. STAT. §§537.455-.500 (2019).

154. See *supra* notes 56–59 and accompanying text.

155. See WAYNE B. SOLLEY ET AL., U.S. GEOLOGICAL SURV., ESTIMATED USE OF WATER IN THE UNITED STATES IN 1980, 33 (1983), <https://pubs.usgs.gov/circ/1983/1001/report.pdf> [<https://perma.cc/4C5E-ZDFY>] (34 percent withdrawals, 81 percent consumptive use).

156. See TARLOCK, *supra*, note 9, §5.71.

of finding and buying out a right senior to the MFL and transferring that right to a new location that will offset the impact of the new development on the MFL-protected flow. In doing so, along with the water rights cost placed on the junior, the standard approach of prior appropriation law also puts the burden of proof on the person making a change to demonstrate that other users of the water source will not be harmed.¹⁵⁷ As a result, the junior bears the cost not only of buying out the senior, but also of retaining hydrology experts and, potentially, of receiving an adverse result in litigation (i.e., the cost of that risk). The state faces a similar prospect if the MFL is too junior to reliably protect the flow. In that case (assuming for the moment that the seniors' rights will be protected against state action by the Fifth Amendment Due Process clause), the state faces the same junior-pays-all scenario in order to effectuate a MFL. There are reasons to question the fairness of these outcomes and ask whether seniors should be entitled to continued immunity from state regulation that might require them to alter their practices without paying compensation.

Consider first who created and continues to perpetuate the overuse problem. Although the prior appropriation system itself (and hence, any government that adopted it) created the overuse incentives, the seniors and their uses are, physically, the cause of the problem. This is not meant to indicate that their uses are morally blameworthy; it is only a recognition that "but for" their actions, dewatering would not occur. Recalling Hardin's dictum about the context-sensitive nature of morality, at the time the most senior appropriations began in the West, they were universally thought to be good, as they facilitated settlement of the region and created an economy that now sustains millions of people. Times change, though, and today's reality of many western streams is marked by congestion of the commons to an extent that the flows are no longer sufficient for all uses. A more evolved understanding of ecology imparts a finer appreciation of the importance of natural systems and the benefits they provide. In this modern context, the collective effects of the seniors' actions are no longer unequivocally good. As a matter of public policy, equity, and morality,¹⁵⁸ hewing to the junior-pays-all approach is no longer appropriate.

Requiring seniors to participate in the solution to the dewatering tragedy of the commons without compensation poses questions both legal, based on claims of due process in regard to taking private property for public use, and equitable, based on fairness of treatment. To explore these legal and equitable questions appropriately, begin by assuming that the state has enacted and administratively implemented MFLs and that the state's judiciary is willing to enforce them. From the seniors' point of view, being asked to participate

157. See, e.g., *Honhenlohe v. State*, 240 P.3d 628, 634 (Mont. 2010); *Searle v. Milburn Irrigation Co.*, 133 P.3d 382, 394 (Utah 2006); *City of Roswell v. Reynolds*, 522 P.2d 796, 801 (N.M. 1974). See generally *Lummi Indian Nation v. State*, 241 P.3d 1220 (Wash. 2010).

158. The arguments made in the text will focus on policy and how it is legally and equitably effectuated. Hardin would almost certainly say that continued unabated appropriation by the seniors when streams are being dewatered is no longer morally acceptable.

without full compensation, any solution to the problem of dewatering is the same.¹⁵⁹ If the seniors can legally and equitably be compelled to participate in bearing some or all of the costs of having effective MFLs in the most extreme settings, where active reductions in seniors' usage are needed to satisfy MFLs, it will also be legal and equitable to require seniors to participate in settings where the restrictions required to satisfy the MFL are likely to be less severe.

Governmental choices for dealing with analogous situations relating to land use regulation is one starting point when considering possible strategies to reduce or eliminate senior uses without paying compensation. Grandfathering uses but forbidding a transferee to continue the use has been widely found not to violate the takings clause of state or federal constitutions.¹⁶⁰ So, too, has amortization of nonconforming uses over periods of just a few years.¹⁶¹ Grandfathering seems to be far too slow of a process given the exigency of restoring and protecting live streams; furthermore, the distribution of losses it creates bears no rational relationship to one's degree of contribution to the collectively caused problem. Worst of all, grandfathering encourages continuation of the existing (over)use and simultaneously would frustrate the market for the water transfers relied upon by new entrants on heavily appropriated streams.

A second land use doctrine, amortization, would be more effective than grandfathering in the attainment of MFLs. It can be applied to all seniors in some pro rata fashion based on water withdrawals or, perhaps more aptly, consumptive use. Even for those uncomfortable with, or skeptical of, court decisions that hold amortization to not be a taking, under a pro rata reduction system, every senior is likely to suffer only a small diminution of use, which would avoid rising to the level of a *Lucas* wipeout of all economic use that would require compensation be paid.¹⁶² An amortization approach would risk being considered a taking of property only if the reduction is considered a permanent physical invasion of the property in relation to the portion of the water

159. There are two different scenarios that can lead a state to seek enforcing the senior to participate in avoiding dewatering. The more obvious of the two is where the MFLs have been set too late, i.e., the MFLs are put in place after there is so much use of water by the seniors on a regular basis that the MFLs are not being met in most years. The less obvious scenario is where the MFLs are senior enough to be met, but by enforcing the MFLs the region faces severe difficulty in supporting even modest new uses, such as rural residential or other forms of economic development. The smaller forms of growth are the more common but also the more concerning because project proponents for smaller projects will not have the cost bearing or cost spreading ability to overcome the transaction costs of securing water rights needed to support their activities.

160. See, e.g., *Contractor's Supply of Waterbury, LLC v. Comm'r of Env'tl. Prot.*, 925 A.2d 1071, 1081–83 (Conn. 2007).

161. See, e.g., *Art Neon Co. v. City & Cty. of Denver*, 488 F.2d 118, 121–22 (10th Cir. 1973) (upholding a five-and-a-half-year period); *Major Media of Se., Inc. v. City of Raleigh*, 792 F.2d 1269, 1272 (4th Cir. 1986) (five-and-a-half-year period upheld). See also 83 AM. JUR. 2D, ZONING AND PLANNING § 591 (2018).

162. *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1030 (1992).

right that can no longer be exercised, as opposed to being analyzed as a regulation of the overall water right.¹⁶³

Moving away from land use methods, conservation can be used to reduce water use by seniors, either as a requirement or through setting up incentives. The traditionally lax definition of waste¹⁶⁴ permitted inefficient water use practices. This approach to waste was tolerable in the era before massive regional growth and development, when demands on the commons were considerably less and the cost of greater efficiency was comparatively high. There is no remaining justification for not requiring reasonable water use efficiency as a performance standard, which is a technique reminiscent of the way water users are required to ensure their discharges conform to quality standards before discharging to the common pool resource.¹⁶⁵ Although the case is an anomaly, the Washington Supreme Court did require increased irrigation efficiency in *State Department of Ecology v. Grimes*,¹⁶⁶ and in so doing rebuffed a takings argument raised by the water user. The court focused on the right as bounded by the concept of beneficial use, whereby any excess water beyond that which would be nonwasteful was not a part of the water right.¹⁶⁷ The right at issue in that case was usufructuary—to make a particular use, in that case irrigation. Limiting the water user to a nonwasteful amount did not compromise the usufructuary right; rather, the limitation was justified as a forfeiture. The court declined to disturb the referee's ruling below, which applied Washington's forfeiture statute.¹⁶⁸ The Washington Supreme Court affirmed that "voluntary failure, 'without sufficient cause', to beneficially use all of the waters diverted requires that those waters [not beneficially used] 'revert to the state . . . and . . . become available for appropriation.'"¹⁶⁹ If the water to be taken back from seniors is based upon a case-by-case assessment of the waste and lack of benefits caused by their uses, there is no constitutional doubt about the validity of withholding any compensation for such water.

163. See *infra* note 205 and accompanying text.

164. See *supra* notes 56–59 and accompanying text.

165. See *RODGERS & BURLISON*, *supra* note 25, § 13–6.

166. *State Dep't of Ecology v. Grimes*, 852 P.2d 1044 (Wash. 1993). To say that *Grimes* has not caught on is an understatement. It has been cited only 11 times by Washington courts and none of those citations is in relation to eliminating waste. The only citation in a case addressing the topic of waste arose in *Delta Canal v. Frank Vincent Family Ranch LC*, 420 P.3d 1052, 1059 (Utah 2013). That court wrote as follows:

"An appropriator who diverts water in excess of the appropriator's 'actual requirements and allow[s] the excess to go to waste acquire[s] no right to the excess.' *State Dep't of Ecology v. Grimes*, 852 P.2d 1044, 1051 (1993) (en banc). The same is true for water diverted in excess of reasonable requirements and used inefficiently. 'A particular use must not only be of benefit to the appropriator, but it must also be a reasonable and economical use of the water in view of other present and future demands upon the source of supply.'" *Id.*

167. *Grimes*, 852 P.2d at 1055.

168. WASH. REV. CODE § 90.14.160 (2018).

169. *Id.*

Vast amounts of water—quite possibly enough to secure MFLs in many western stream systems—could be wrung out of senior appropriations by insisting on improved water use efficiency. For example, replacing open canals and ditches with closed plastic pipes for conveyance, an inexpensive modern option, could significantly reduce the amount of water withdrawn for the same agricultural production.¹⁷⁰ If a use is so marginally valuable that even a small investment in conservation is not economically feasible, that use should not be allowed to continue unless the user does what is reasonably achievable to protect the common value of the resource to all.¹⁷¹

Although insisting on efficient water use is good policy, using it as a tool to ensure satisfaction of MFLs has an obvious drawback—the inefficiency of case-by-case analysis of the practices of every appropriator on every stream. The administrative burden of making a case-specific waste determination on the state and on appropriators alike is great. A more generic approach is preferable, but reopens a possible question of constitutionality in the face of a takings challenge, and of whether burdens are equitably distributed.

Turning first to the equity question, there is a traditional equitable maxim that states, “[e]quality is equity.”¹⁷² The more generic solutions call for treating all water users similarly. Given the immense disparity in usage by volume of the hundreds or thousands of users of a given water system, the only sensible generic program is one applied ratably, either based on water users’ withdrawal amounts, consumptive amounts, or some blending of the two. By applying the requirement ratably, all water users are being treated roughly equitably in proportion to each user’s share of the problem. This solution, however, is an oversimplification and masks significant equity issues. Some users previously may have invested in more efficient methods, so to treat those users fairly in relation to the problem, some accounting for their past efficiency efforts is in order. Also, conservation techniques, and their expense, vary with the type of use. For example, the steps taken to improve irrigation efficiencies are entirely different from those that would improve industrial or power generation water use efficiency.

Rather than requiring ratable improvements, a preferable approach for lowering the total social cost of achieving the needed reductions in offstream use might be to opt for a market incentives-based program. This could be

170. See, Evans, *supra* note 58.

171. Think of this as “euthanizing dinosaurs.” If one felt sufficient solicitude for the affected water user, compensation could be paid voluntarily, not as constitutionally required, to lessen demoralization losses. See Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations, of “Just Compensation” Law*, 80 HARV. L. REV. 1165, 1214 (1967); Frank I. Michelman, *Justice As Fairness, Legitimacy, and the Question of Judicial Review: A Comment*, 72 FORDHAM L. REV. 1407 (2004). Since the enterprise could not afford even a small cost, its value based on profitability would be similarly low.

172. See e.g., 30A CORPUS JURIS SECUNDUM *Equity*, § 135. In Latin the maxim is “Aequalitus est quasi equitas.” See *Aequalitus est quasi equitas*, BLACK’S LAW DICTIONARY (2d ed. 1910).

accomplished by imposing a conservation tax based on water withdrawals or consumption.¹⁷³ Users for whom conservation is expensive would pay the tax, while users for whom the cost is low would implement conservation measures, and total water use would decline. Going a step further, such a program can be turned into a cap-and-trade system, where firms facing high costs could avoid the tax by buying credits from water users with lower reduction costs, who would then reduce their usage by more than a proportionate amount.¹⁷⁴ Both methods face problems of timing and location—unlike carbon dioxide emissions, where effluent taxes and cap-and-trade are concerned only with total global emissions, water uses are not fungible, due to the locational variation in conditions and the location of return flows, timing, and other considerations. As a result, trading would require some degree of supervision. A tax would be simpler to implement but would still likely require selective purchased water use retirements to protect some stream stretches from dewatering. Providentially, the tax raises revenues that can be dedicated to making such purchases or for other enhancements that support or increase the relevant streamflows.¹⁷⁵ In terms of equity, there should be virtually no sympathy for those forced to pay a small present and future tax that deters adverse overuse in exchange for many years of private benefit, both past and future, enjoyed as a result of the cost-free use of a public resource. The value of that past benefit, which for many senior users has been compounding for more than a century, completely dwarfs the amount of the tax.

A final variation on the tax proposal is an in-kind water tax, set at a level that ensures there will be enough water in the system to satisfy the MFL.¹⁷⁶ The in-kind water tax leads to a somewhat different, and in many ways more interesting, series of options for ensuring the effectiveness of MFLs. These options revolve around water banking, which would involve creating a bank where depositors place rights to use water and from which borrowers obtain those rights. For a bank to work, however, there must be sufficient deposits made to meet the lending needs—in the case of the water bank, there must be enough water to “lend” to ensure MFLs are met. Moreover, depositors will expect the bank to pay them something for the use of their deposits. In a watertight basin,

173. A water tax system can be set at a level high enough to raise funds for the outright purchase and retirement of a sufficient number of senior uses to ensure that the MFLs are met, instead of being solely a conservation incentive. Given the state's ability to sell revenue bonds supported by a water tax in times of escalating value for water, these bonds would be very secure—meaning that large sums could be raised immediately with the repayment coming from taxes collected over many years. This limits the short-term burden on the water users and on the state treasury.

174. An alternative to the tax is a cap and trade system. See PLATER ET AL., *supra* note 26, at 607.

175. Dedicating the tax to stream improvements has the additional equity advantage of “internalizing” the benefit on the water users paying the tax.

176. An in-kind water tax, in light of some existing case law, would have the greatest chance of being ruled a taking of property. See *infra* text accompanying notes 182–84.

there might not be enough deposits made to meet the MFL unless the bank charges a comparatively high price for the water loaned.¹⁷⁷

A more interesting idea is for the bank to ensure a sufficient amount is deposited beyond that required to meet MFLs, so that water could be “loaned” to other users. This system would create a readily available water supply for those new entrants or unsatisfied juniors willing to purchase rights at a higher price to support higher value uses. Those high prices charged to users in excess of what is needed to maintain MFLs could defray the costs of inducing the necessary deposits and thereby reduce the expense to the state of the water used for MFLs. The first objection to this system is that it is really just a more complex junior-pays-all scheme. Introducing a bank will, however, reduce transaction costs by identifying what “seller/depositors” are willing to part with in any given year and by setting prices for “deposits” and “loans.” Having the bank act as a clearinghouse also will tend to attract lower price short-term seller/depositors who are not using their full appropriation in a given year (due to fallowing, different cropping, etc.) and can now obtain a benefit from what would otherwise be an unused part of their water right.¹⁷⁸ The bank, particularly if run by the state water agency, will be in a position to minimize the costs of ascertaining the impact of transfers on the various parts of the basin.

An alternative that avoids the junior-pays-all aspect of the water bank is to ensure sufficient deposits by making them mandatory, again on some sort of pro rata basis. The bank would dip into this supply of water to satisfy the MFLs, and it would then collect the proceeds from water “borrowers” and distribute them to the depositors on that same pro rata basis. This has both distributional and equity benefits. In terms of “wet water” effects, the seniors as a group all give up a comparatively small amount, the public receives water needed to sustain the MFLs, and new entrants have water available for purchase. The seniors recoup only a portion of the perceived value of their water right—but that water was and remains a public resource that they are using free of charge, with the bulk of that beneficial use left unimpeded. Interestingly, having the excess water beyond that which is needed for MFLs available may be an important safety valve for those seniors whose water demands are hardened (i.e., no longer able to be met by conservation), such as municipal suppliers that have already implemented aggressive conservation programs. Those who cannot reduce their usage can enter the market and purchase the water they need knowing that there will be water available.¹⁷⁹ This system is, essentially, a cap-and-trade system where ini-

177. Note that this system, if it relies on voluntary deposits, is a return to a junior-pays-all system.

178. This benefit might not seem to be positive in relation to MFLs. Superficially it appears that any unused water of would-be-sellers/depositors, in the absence of the bank, would benefit the MFL without having to pay to “borrow” the water. Often this will not be the case if the MFL is junior to other would-be-water users who are enabled to make their appropriation because of the forbearance of those more senior to them.

179. Typically, those with hardened water demand are the highest value users such as

tial allocations are proportionate to historic use, which adds on an in-kind water tax to support MFLs and banking operations.¹⁸⁰ In terms of possible effects on property rights, this system requires all seniors to conserve or use less water and rebates a portion of those costs from the proceeds collected from high value users (new entrants or existing users who purchase additional water). If this is viewed as a regulatory program or a form of governmental triage in the face of the major public harm of dewatering, it will survive challenges claiming that it amounts to a taking of property.¹⁸¹

C. *An Excursion Into Takings Law as Applied in the Water Rights Setting*

A host of reasons support the view that enforcing MFLs in any of the number of ways suggested above is not a taking of property under the Fifth Amendment. Nevertheless, two decisions in the Court of Federal Claims¹⁸² and one in the Federal Circuit¹⁸³ have found that takings claims by holders of appropriations require compensation when appropriative rights have been curtailed to ensure water remained in place to protect endangered species. The United States Supreme Court has not addressed the issue.¹⁸⁴ Arguably, MFL protection has enough in common with endangered species protection that government-imposed MFL-enforcing limitations on appropriators' use of water might be subject to constitutional challenge.

Before turning to the takings discussion, it is useful to consider a possible role for the public trust in these cases since that doctrine could eliminate or skew the takings decision. The classic view of the public trust doctrine espoused by the Supreme Court is that the state holds natural resources in trust for its citizens, and there are limits on state alienation of trust property when alienation compromises the state's ability to govern the use of key resources.¹⁸⁵

municipal suppliers and, occasionally, industries. These users not only have deep pockets, but also cost spreading ability.

180. There is a potential source of inequity here similar to the problem of imposing a cap and trade pollution limitation system when some participants have already engaged in pollution prevention measures beforehand and others have not. This could be unfair to a farmer that made irrigation improvements but did not transfer any of the saved water, or to a city that has made extensive conservation efforts and is now told that it has to contribute the same percentage of its supplies as a city or farmer that has not made equivalent effort. If a state wanted to do so, the initial allocations of the burden to deposit water to the bank could adjust for past conservation efforts and also adjust ongoing burdens as "depositors" make present conservation improvements.

181. See *infra* text accompanying notes 200–14.

182. See *Tulare Lake Basin Water Storage Dist. v. United States*, 49 Fed. Cl. 313 (Fed. Cl. 2001); see also *Klamath Irrigation v. United States*, 129 Fed. Cl. 722 (Fed. Cl. 2016).

183. See *Casitas Mun. Water Dist. v. United States*, 543 F.3d 1276 (Fed. Cir. 2007).

184. The arguments of the parties in those cases have tried to analogize their cases to situations faced by the Court and the decisions rendered in those cases. See Robert H. Abrams, *Water Rights and Takings of Property*, in *WATER RIGHTS AND ENVIRONMENTAL REGULATION: A LAWYER'S GUIDE* 385, 390–96 (Robert H. Abrams and Latravia Smith eds., 2018).

185. See *Illinois Cent. R.R. Co. v. Illinois*, 146 U.S. 387 (1892). See also Joseph L. Sax,

As Justice Scalia recognized in a famous opinion, property rights are enjoyed subject to inherent limitations based on established state tort and property law.¹⁸⁶ The public trust is one potential limitation on the rights of appropriators. Upon joining the union, each state took on a mantle of sovereignty that incidentally included public trust responsibilities for natural resources, especially water resources. In that regard, the public trust acts as a servitude on the private rights the state grants in trust resources. The question of what that public trust entails is a question of state law and for the states to decide, according to a recent declaration by the Supreme Court.¹⁸⁷

Depending on the content a state gives to its public trust doctrine, a state's public trust law may constitute a preexisting servitude that burdens appropriators' rights.¹⁸⁸ If a state determines its public trust law prohibits certain forms of use, or that uses are in conflict with the servitude, the state's trust interest is superior to the private party's asserted property right. California has been a leader in applying the public trust to water resources. Like Hardin's view of morality in regard to use of the commons over time, the California Supreme Court has found that the public trust is dynamic and evolves as necessary to protect the paramount public interest.¹⁸⁹ Under that view of the public trust, the contemporary importance of MFLs could trigger requirements for the use of water rights that were previously not deemed necessary to protect the beneficial interest of the citizenry.

The issue of whether the public trust can be used to curtail appropriative rights was squarely before the California Supreme Court in *National Audubon Society v. Superior Court (Mono Lake)*.¹⁹⁰ This case demonstrated the dispositive role that the public trust could play in relation to water use outcomes. The court decided that the waters tributary to Mono Lake were subject to the public trust, and that significant impairment of Mono Lake by dewatering could constitute a violation of the trust.¹⁹¹ The court acknowledged that the public importance of the stability of rights obtained through appropriation could justify releasing that water from the trust and allowing it to be alienated without trust limitations in appropriate cases.¹⁹² The court simultaneously recognized that the trust should be deemed to have been released only after a

The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention, 68 MICH. L. REV. 471, 489 (1970).

186. See *Lucas v. S. C. Coastal Council*, 505 U.S. 1003, 1027 (1992).

187. See *PPL Montana, LLC v. Montana*, 565 U.S. 576, 603–04 (2012) (“the public trust doctrine remains a matter of state law . . .”) (citing *Idaho v. Coeur d’Alene Tribe of Idaho*, 521 U.S. 261 (1996)). But see Charles Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317 (1985).

188. See e.g., RODGERS & BURLESON, *supra* note 25, § 2–20 (2017).

189. See e.g., *Marks v. Whitney*, 491 P.2d 374, 380 (Cal. 1971).

190. *Nat’l Audubon Soc’y v. Superior Court*, 658 P.2d 709, 712 (Cal. 1983).

191. *Id.* at 732–33.

192. *Id.* at 722–23.

conscious decision to do so by an appropriate state entity.¹⁹³ Ultimately, the court concluded there had not been proper public trust consideration when the appropriative rights were issued and remanded the case.¹⁹⁴ After remand, it took eleven years of study of the Mono Basin and water alternatives for Los Angeles before the California State Water Board issued Decision 1631,¹⁹⁵ which called for gradually reducing the diversions until Mono Lake's water level was somewhat restored. Subsequent events have included \$60 million in funding for Los Angeles to reduce its per capita water use, and separate fish-protective litigation.¹⁹⁶

When applying the *National Audubon Society* state law approach to those MFLs that require the abnegation of some portion of existing appropriative rights, the outcome may turn entirely on how a state interprets its own public trust doctrine. A currently pending case in Nevada, involving the Walker River, raises the same issue as that posed by enforcing MFLs against seniors.¹⁹⁷ In that litigation, Walker Lake, which like Mono Lake is a mountain terminus lake, has seen its water level decline precipitously because of water being diverted before it reaches the lake. After certification by the federal Court of Appeals for the Ninth Circuit,¹⁹⁸ the Nevada Supreme Court agreed to answer the question, “[d]oes the public trust doctrine apply to rights already adjudicated and settled under the doctrine of prior appropriation and, if so, to what extent?”

If the public trust doctrine does not dispose of takings claims as a pre-existing limitation on appropriators' usufructuary rights, the issue becomes one raised by the second certified question in the Walker River case. That question asks, “[i]f the public trust doctrine applies and allows for reallocation of rights settled under the doctrine of prior appropriation, does the abrogation of such adjudicated or vested rights constitute a ‘taking’ under the Nevada Constitution requiring payment of just compensation?”¹⁹⁹ A finding that MFL-protective limits on prior appropriators is a taking places overarching importance on protecting reliance interests in the continuing inviolability of appropriative rights. Doing so in a blanket fashion that admits no possibility that the public may need to control its water resources in the future, however, is an abdication of the state's continuing authority to govern the resource and a violation of the very core of the public trust doctrine. Doing so on a

193. *Id.*

194. *Id.* at 732.

195. See *In the Matter of City of Los Angeles' Water Right Licenses*, Decision No. 1631, 1994 WL 16804395 (Cal. State Water Res. Control Bd., September 28, 1994) [<https://perma.cc/M7W7-FMJW>].

196. See THOMPSON, JR. ET AL., *supra* note 41, at 680–81; see also Erin Ryan, *The Public Trust Doctrine, Private Water Allocation, and Mono Lake: The Historic Saga of National Audubon Society v. Superior Court*, 45 ENVTL. L. 561 (2015).

197. *Mineral Cty. V. Walker River Irrigation Dist.*, 900 F.3d 1027 (9th Cir. 2018).

198. *Id.* at 1034.

199. *Id.*

case-by-case basis treats the issue as one regularly encountered and addressed by regulatory takings jurisprudence.

There is little doubt that regulatory restrictions widely imposed on seniors, such as those imposed on a pro rata basis (not based on priority alone where the most junior rights holders are shut off entirely), would not be a taking of property. Under the usual test for regulatory takings announced by *Penn Central Transportation Co. v. City of New York*,²⁰⁰ requiring a reduction in usage to ensure MFLs are met would present an easy case for sustaining the regulation. The *Penn Central* court articulated its considerations as follows:

In engaging in these essentially ad hoc, factual inquiries, the Court's decisions have identified several factors that have particular significance. The economic impact of the regulation on the claimant and, particularly, the extent to which the regulation has interfered with distinct investment-backed expectations are, of course, relevant considerations. So, too, is the character of the governmental action. A "taking" may more readily be found when the interference with property can be characterized as a physical invasion by government, than when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good.²⁰¹

Applying the *Penn Central* test to pro rata MFL-protective restrictions, there is insufficient interference with the rights of the affected appropriators to reach anywhere near the levels of loss required to sustain previous takings challenges.²⁰² The shares that must be foregone are relatively small and the rights of seniors can still be fulfilled even after being reduced to account for MFLs. The Court has established that the baseline for measuring diminution of value is in relation to the "parcel as a whole," not solely the portion of the property subject to regulation.²⁰³ With respect to MFLs, most of the water right would be unaffected, thereby ensuring that the appropriators would not suffer *Lucas* wipeouts.²⁰⁴

There is one thread available to those who argue that requiring seniors to contribute to reducing total use as part of effectuating MFLs amounts to a taking of property: that the forced reduction in the amount of water used is not regulation of the diversion of water, but is instead a permanent physical invasion of property. If, under *Loretto v. Teleprompter Manhattan CATV Corp.*,²⁰⁵ the governmental action is, in fact, a permanent physical invasion of property, then the *Penn Central* analysis does not apply. This argument has

200. *Penn Cent. Transp. Co. v. N.Y.C.*, 438 U.S. 104 (1978).

201. *Id.* at 124.

202. *See, e.g., Hadacheck v. Sebastian*, 239 U.S. 394 (1915); *Goldblatt v. Town of Hempstead, N.Y.*, 369 U.S. 590 (1962).

203. *See Tahoe-Sierra Pres. Council v. Tahoe Reg'l Planning Agency*, 535 U.S. 302, 327 (2002); *Keystone Bituminous Coal Co. v. DeBenedictis*, 480 U.S. 470 (1987).

204. *See generally* Glenn P. Sugameli, *Lucas v. South Carolina Coastal Council: The Categorical and Other "Exceptions" to Liability for Fifth Amendment Takings of Private Property Far Outweigh the "Rule"*, 29 ENVTL. L. 939 (1999).

205. *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 434 (1982).

prevailed in three lower federal court decisions in which water deliveries were withheld from appropriators, results that rely on logic that this author has criticized strenuously elsewhere and will not repeat at length here.²⁰⁶

Consider instead what acceptance of the physical invasion analysis implies about the nature of the water rights at issue. First, it is incongruous to contend that a state can “physically invade” an intangible usufructuary interest. Second, the tangible asset, the corpus of the water, does not belong to the appropriator; the states have retained that ownership.²⁰⁷ The state also owns and has a right to control all return flows. Even during the time that the appropriator has physical control of the water, the appropriator’s actions are subject to regulation, such as by laws prohibiting pollution and ensuring a use is beneficial and not wasteful. Yet somehow, despite all of the extensive interests and authority of the state, the crux of applying *Loretto* transmutes the appropriative right into one so strong and unbending that any form of regulation that reduces it, no matter how slightly, is a taking of property requiring compensation. Few, if any, states would diminish their own authority to that extent by granting such absolute private rights in a public resource.²⁰⁸

Another relevant line of Supreme Court takings cases involves legislation harming one legally protected property interest to prevent a greater (in the determination of the legislature) harm to another interest. These types of cases are a form of governmental triage,²⁰⁹ and, when applied to implementing and enforcing MFLs, even more strongly preclude a finding of a taking. Conceptually, this line of analysis is similar to the nuisance prevention rationale underlying Justice Brandeis’ position in *Pennsylvania Coal Co. v. Mahon*,²¹⁰ which is now the prevailing position since *Keystone Bituminous Coal Ass’n v. DeBenedictis*.²¹¹ The older “triage” cases decided in and before the *Pennsylvania Coal* era are still good law and involved such actions as deliberately burning down a person’s private property to prevent the spread of a conflagration that risked harming the public.²¹² *Miller v. Schoene* is another leading case

206. See, e.g., Robert Haskell Abrams, *Water and Property Rights*, *supra* note 100, Robert Haskell Abrams & Jacqueline Bertelsen, Downstream Inundations Caused by Federal Flood Control Dam Operations in a Changing Climate: Getting the Proper Mix of Takings, Tort, and Compensation, 19 U. DENV. L. REV. 1, 25–28 (2015). See also Sandra B. Zellmer, *Takings, Torts, and Background Principles*, 52 WAKE FOREST L. REV. 193 (2017).

207. See COLO. CONST. art. 16, § 5 (2018).

208. This last point distinguishes MFL regulation of the state’s waters from *Loretto* in which the physical invasion was at the heart of dominion over private property, the governmentally mandated placement of third party equipment on the premises of the land owner.

209. See Abrams & Bertelsen, *supra* note 206, at 28.

210. See *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 416–22 (1922) (Brandeis, J., dissenting).

211. See *Keystone Bituminous Coal Ass’n v. DeBenedictis*, 480 U.S. 470, 483–85 (1987).

212. See generally *Bowditch v. City of Boston*, 101 U.S. 16, 16 (1879) (rejecting landowner’s claim for compensation when city destroyed building to prevent spreading of fire); *United States v. Caltex*, 344 U.S. 149, 155–56 (1952) (finding destruction of property during military hostilities noncompensable); *Cook County v. City of Chicago*, 311 Ill. 234, 238 (Ill.

on the subject.²¹³ In *Miller*, the Virginia legislature required cedar tree owners to cut down and dispose of their cedar trees at their own expense to prevent harm to apple trees from a disease carried by cedar trees (which did not harm the cedar trees themselves). A unanimous Court, speaking through Justice Stone, rejected the cedar tree owners' takings claim:

When forced to such a choice the state does not exceed its constitutional powers by deciding upon the destruction of one class of property in order to save another which, in the judgment of the legislature, is of greater value to the public. It will not do to say that the case is merely one of a conflict of two private interests and that the misfortune of apple growers may not be shifted to cedar owners by ordering the destruction of their property; for it is obvious that there may be, and that here there is, a preponderant public concern in the preservation of the one interest over the other. And where the public interest is involved preferment of that interest over the property interest of the individual, to the extent even of its destruction, is one of the distinguishing characteristics of every exercise of the police power which affects property.

We need not weigh with nicety the question whether the infected cedars constitute a nuisance according to the common law; or whether they may be so declared by statute. For where, as here, the choice is unavoidable, we cannot say that its exercise, controlled by considerations of social policy which are not unreasonable, involves any denial of due process.²¹⁴

Applying the *Miller* standard to the MFL context, there is no doubt a takings challenge would be dismissed. The dewatering of streams is now a well-understood tragedy of the commons—an unhappy result of adherence to prior appropriation, and one that inflicts great public harm on the natural system and those who benefit from a living stream. The seniors' uses were not blameworthy when initiated, but cumulatively, protecting the public against the effects of those diversions today is readily characterized, like the protection of apple trees in *Miller*, as a "preponderant public concern." Moreover, unlike the unlucky cedar tree owners, who were passive observers of the threat posed by their trees, seniors forced to reduce their appropriations to ensure maintenance of MFLs are collectively the active cause of the harm the MFL is meant to avoid. Thus, while it would be unfair to call the seniors' uses a nuisance, as Stone's opinion in *Miller* makes clear, such a label is not a necessary condition for denying them compensation.

CONCLUSION

As it stands today, prior appropriation remains far from perfect. As Hardin pointed out, however, the rules of property, even when imperfect, serve a purpose in a commons: "[a]n alternative to the commons need not be perfectly

1924) (finding destruction of property to prevent spread of conflagration noncompensable).

213. *Miller v. Schoene*, 276 U.S. 272 (1928).

214. *Id.* at 279–80 (citations omitted).

just to be preferable. With real estate and other material goods, the alternative we have chosen is the institution of private property coupled with legal inheritance.”²¹⁵ Even beyond Hardin’s variation on the idea that the perfect should not be the enemy of the good, the move to prior appropriation should not be too aggressively faulted. At the time of prior appropriation’s adoption, western states could not anticipate the possibility of tragic overuse. It is doubtful that early westerners anticipated that demands for diversions would dewater important rivers.²¹⁶ Further, the full ecological consequences of the collapse of riparian ecosystems that attend dewatering also were unknown in that era.

With more than 150 years of experience and observation of the results obtained under prior appropriation, there are now reasons to be less charitable when assessing the doctrine’s workings. The initial freedom of the commons was successfully addressed by creating security of right, but recognized shortcomings of prior appropriation with regard to inefficiency and overuse persist. Neither implicit correctives, such as the beneficial use and antiwaste doctrines, nor more recent add-ons, such as the public interest requirement, have led to major improvements in the responsiveness of prior appropriation to changed conditions when scarcity and overuse of a congested commons are the predominant problems.

Prior appropriation’s failure in regard to destructive overuse is longstanding. The law’s “stitching and fitting” has not been sufficient to protect living streams. Prior appropriation, by rewarding priority in time with strong water use rights, encouraged and rewarded an entrepreneurialism that furthered national ambitions. Those same incentives, however, ensured over-rapid and inefficient use of the commons. Similarly, despite doctrinal efforts to limit profiteering by speculators, the system confers excessive windfalls on the initial senior rights holders should they decide to make a market transfer of their rights, although the asset involved is a public natural resource.

In contrast, where prior appropriation has failed to combat destructive overuse, MFLs show immense promise. Like the head-on water quality standards approach of the CWA that was needed after the failure of other potential protections against excessive water quality degradation of riparianism, prior appropriation, and tort law, MFLs are a head-on response to water overuse that results in stream and aquifer dewatering. As Washington is demonstrating, MFLs will work if fully implemented and enforced.

Hardin explained that conditions change, and with them the quality of acts. Moving beyond efficacy, MFLs are consistent with the contemporary

215. See Hardin, *supra* note 1, at 1247.

216. See Christopher J. Losi, *Keeping Dry Streams Green: Can Landowners in Arizona and California Use Property Rights to Maintain Groundwater-Dependent Riparian Habitat Along Non-Perennial Watercourses?*, 18 HASTINGS W.N.W. J. ENVTL. L. & POL’Y 121, 127 (2012) (“In the past, falling groundwater levels along the Carmel River in California, Coal Creek in Colorado, and the Santa Cruz and Gila Rivers in Arizona have led to a loss of groundwater-dependent riparian habitat.”).

needs for governing the commons. Under present conditions, the consequences of giving exceptionally strong property rights in use of the commons to senior appropriators is generating a different tragedy of the commons. There is nothing inequitable or unfair about ending a small portion of the governmentally bestowed largesse that has allowed appropriators free use of a public resource for up to 150 years.²¹⁷ This is especially so when the beneficiaries of the largesse are, collectively, the source of the modern problem, and when the remediation of the problem can be accomplished without major dislocations, even to those who will bear the brunt of the change, and without invasion of the constitutional enjoyment of their property rights.

217. Yet another argument against the takings claims has been mounted in the literature exploring “givings,” wherein the termination of governmentally bestowed advantages is not a deprivation of property, or at a minimum needs to be considered as a set off against any claim of loss. See Abraham Bell & Gideon Parchomovsky, *Givings*, 111 *YALE L.J.* 547 (2001).

