
COMPACT COMPLIANCE AS A BENEFICIAL USE: INCREASING THE VIABILITY OF AN INTERSTATE WATER BANK PROGRAM IN THE COLORADO RIVER BASIN

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There is a looming problem facing the Colorado River Basin: an increasing likelihood of a compact call on the Upper Basin due to projected climate change and population growth stresses on the Colorado River. To address this problem, water resource managers and natural resource management organizations throughout the Upper Basin have proposed a leading approach of an interstate water bank program. There are three main shortfalls to this though, which do not make the program a viable approach in addressing the problem: (1) legal uncertainty regarding individual water rights; (2) concerns regarding speculation; and (3) lack of incentives for state participation. Recognizing compact compliance as a beneficial use addresses these three shortfalls and strengthens the viability of the water bank program in alleviating the problem facing the Colorado River Basin. Compact compliance as a beneficial use provides legal certainty regarding individual water rights, which in turn encourages participation of depositors in the water bank program. More depositors equate to more water available in the bank for the Upper Basin to meet its compact obligations and reduce the risk of shortage. Compact compliance as a beneficial use also quashes any fear that the bank is merely speculation on behalf of the Upper Basin states. This encourages state participation because it removes the possibility of a barrier to participating in such a program. Finally, compact

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compliance as a beneficial use incentivizes states to negotiate and contract to an interstate water bank agreement because it decreases the transaction costs associated with such a program.

INTRODUCTION.....	939
I. BACKGROUND	941
A. <i>Prior Appropriation</i>	941
1. Beneficial Use Requirement	942
2. Anti-Speculation.....	944
3. Abandonment	945
4. Requirements for Water Right Transfers	946
5. Calls on a Water System.....	947
B. <i>Interstate Compacts</i>	947
1. 1922 Colorado River Compact	948
2. 1948 Upper Basin Compact	949
3. Compact Call Scenario.....	950
II. CURRENT PROBLEM FACING THE COLORADO RIVER BASIN.....	951
A. <i>Climate Change Impacts on the Colorado River Basin</i>	951
B. <i>Population Growth Impacts on the Colorado River Basin</i>	953
III. LEADING APPROACH PROPOSED TO ADDRESS THE PROBLEM	954
A. <i>Water Banking</i>	955
1. Intrastate Water Banking: Colorado.....	956
2. Interstate Water Banking: Nevada and Arizona.....	957
B. <i>Lacking Viability of an Interstate Water Bank Program</i>	958
1. Legal Uncertainty Regarding Individual Water Rights.....	959
2. A Concern that the Program Is Merely Speculation	960
3. Lack of Incentives for State Participation in the Program	961
IV. COMPACT COMPLIANCE AS A BENEFICIAL USE.....	961
A. <i>Providing Legal Certainty Regarding Water Rights</i>	962
B. <i>Quashing Any Fear of Speculation</i>	963
C. <i>Encouraging State Participation</i>	964

INTRODUCTION

The Colorado River carves its way through seven states,¹ providing the home for twenty-two American Indian tribes, seven National Wildlife Refuges, four National Recreation Areas, and eleven National Parks.² “It . . . has more people, more industry, and a more significant economy dependent on it than any comparable river in the world.”³ Its waters are used to irrigate about 5.5 million acres of agricultural land throughout the Basin, and it supplies municipal water to nearly forty million people.⁴ Among these vital uses, the River is also used to generate thousands of megawatts of hydroelectric power,⁵ and it supports a \$26 billion recreation industry.⁶ As such, the Colorado River is the lifeblood of the West.

Since its initial mapping by John Wesley Powell in 1869,⁷ the Colorado River has been subject to myriad agreements, disputes, and changes.⁸ The River has known raging floods and scorching droughts; it has been captured and tamed, subject to controlled releases; and its waters have been altered in pH and temperature.⁹

1. U.S. BUREAU OF RECLAMATION, COLORADO RIVER BASIN WATER SUPPLY AND DEMAND STUDY: EXECUTIVE SUMMARY 2 (Reclamation: Managing Water in the West 2012) [hereinafter CRB STUDY 2012]. These states are Colorado, Wyoming, Utah, Arizona, New Mexico, Nevada, and California. *Id.*

2. *Id.* at 3.

3. MARC REISNER, CADILLAC DESERT 125 (1986).

4. CRB STUDY 2012, *supra* note 1, at 3. The Basin refers to the Colorado River Basin which is the entire area the River serves from headwaters in Colorado, to the mouth in Mexico. *Id.*

5. *Id.*

6. *Tackling Water Shortage: Working with Farmers to Protect the Colorado River*, NATURE CONSERVANCY, <https://www.nature.org/ourinitiatives/regions/northamerica/areas/coloradoriver/farmers-tackling-water-shortage-on-the-colorado-river.xml> (last visited Mar. 19, 2017) [<https://perma.cc/FH4P-V6TA>] [hereinafter *Tackling Water Shortage*].

7. WALLACE STEGNER, BEYOND THE HUNDREDTH MERIDIAN (1954) (chronicling Powell’s expedition down the Colorado River).

8. See REISNER, *supra* note 3, at 125 (“[The Colorado River] is the most legislated, most debated, and most litigated river in the entire world.”). See generally *Reclamation: Managing Water in the West*, U.S. BUREAU OF RECLAMATION, <https://www.usbr.gov/uc/> (last updated Dec. 4, 2017) [<https://perma.cc/3KAK-D7NW>].

9. See generally *Reclamation: Managing Water in the West*, *supra* note 8.

Because the Colorado River is such an important resource, the threats of climate change and population growth are not taken lightly. With these additional stresses on the River, water resource managers throughout the Basin states are acutely aware of the decreasing supply of the River, coupled with the increasing demand on the River.¹⁰ However, another problem looms from these stresses, one that is unfamiliar to the Basin states: an increasing likelihood of a compact call on the Upper Basin.¹¹

Given that the Basin states are contractually obligated to apportion and share the waters of the Colorado River,¹² a compact call could result in a very litigious, complex, and extremely messy situation with regard to water administration throughout the Basin.¹³ Thus, water managers and other natural resource management organizations are currently working on proposals to approach this impending problem from a proactive position, rather than a reactive one.

One leading approach is an interstate water bank program that would allow the Upper Basin states to store extra water in order to comply with their compact obligations to the Lower Basin states.¹⁴ However, interstate water banking raises concerns regarding: (1) the legal certainty of individual water rights; (2) speculation; and (3) incentives for state participation in the program. To best address these concerns, the solution ought to be found in the core of water law: beneficial use.¹⁵ Because beneficial use is the bedrock of water law in the West,

10. CRB STUDY 2012, *supra* note 1, at 4.

11. A compact call is when water rights holders must curtail the use of their water in order to meet the obligations of a compact, and this is discussed further in Part I. The Upper Basin, as discussed in Part I, is comprised of the Upper Division states: Colorado, Utah, Wyoming, and New Mexico.

12. This is the substance of the Colorado River Compact of 1922, an interstate agreement regarding the sharing of the Colorado River amongst the seven states. *See infra* Section I.B.

13. A strict compact call could result in the Upper Division states being forced to curtail use of their water, which would impact the major cities more so than individual farmers, resulting in a disparate impact on the economies and health of the states. *See infra* Part I.

14. *Tackling Water Shortage*, *supra* note 6; *see* Jesse Reiblich & Christine A. Klein, *Climate Change and Water Transfers*, 41 PEPP. L. REV. 439 (2014) (recognizing that a leading solution to the water scarcity problems posed by climate change is water markets, including water banking).

15. Beneficial use is the main requirement for obtaining a water right under the prior appropriation system, and it requires that the water be put to an actual use. *See infra* Part I.

satisfying this fundamental requirement would necessarily address legal issues stemming from water rights concerns. Therefore, in order for an interstate water banking approach to be viable in addressing the imminent problem facing the Basin, compact compliance must be considered a beneficial use of water.

This Comment is not meant to be an exhaustive discussion of interstate water banking; rather, it is another drop in the bucket in the water banking conversation. That said, the basis of this Comment relies on technical water law principles, and, accordingly, Part I explains the background of water administration in the West, including the pertinent features of prior appropriation and the interstate compacts of the Colorado River. Part II then describes the current problem facing the Basin, which is the increasing likelihood of a compact call. This Part further identifies and details the underlying causes of the current problem: projected climate change and population growth impacts in the Basin.

Part III of this Comment describes the current leading approach to addressing this problem, which is a proposed interstate water bank. This Part explains what water banking is, providing some examples of current programs, and it also discusses the shortfalls of such a proposed approach in the interstate context. Finally, Part IV argues that compact compliance must be considered a beneficial use in order for an interstate water bank program to be a viable approach to addressing the looming problem facing the Basin. Compact compliance as a beneficial use would provide legal certainty regarding water rights, it would quash any speculation concerns, and it would encourage state participation in an interstate water bank program.

I. BACKGROUND

Part I details the pertinent aspects of water administration in the West, including the prior appropriation doctrine and the seminal interstate compacts affecting the use of the Colorado River.

A. *Prior Appropriation*

Water administration in the West is based on the doctrine

of prior appropriation.¹⁶ This is a system of priority, which encapsulates the concept of “first in time, first in right.”¹⁷ Fundamentally, prior appropriation is when the prior user of water is entitled to divert¹⁸ his entire appropriated amount of water and put it to a beneficial use before the next junior rights holder is entitled to her appropriated amount.¹⁹ Some states differ in the procedure for obtaining a water right; but the priority system itself is mostly uniform throughout the West.²⁰ That is, there is a uniform notion that senior rights holders have priority over junior rights holders based on the date the water right was acquired.²¹ The aspects of prior appropriation that are relevant to this Comment are: beneficial use; anti-speculation; abandonment; requirements for water right transfers; and calls on a water system.

1. Beneficial Use Requirement

Beneficial use is commonly referred to as the “basis, the measure and the limit” of the right to use water in the prior appropriation system.²² “The beneficial use requirement encourages the actual use of water and discourages the holding

16. See BARTON H. THOMPSON ET AL., LEGAL CONTROL OF WATER RESOURCES 167–81 (5th ed. 2013).

17. See *id.*

18. Under prior appropriation, a diversion is usually a necessary element in obtaining a water right. TROUT, RALEY, MONTAÑO, WITWER & FREEMAN, P.C., ACQUIRING, USING, AND PROTECTING WATER IN COLORADO 26 (2d prtg. 2004) [hereinafter ACQUIRING, USING, AND PROTECTING WATER]. To divert water from a stream is to simply remove the water from the stream or to control the water, usually by means of an artificial or constructed device, such as a ditch, canal, flume, reservoir, pipeline, etc. *Id.* at 26–27.

19. THOMPSON ET AL., *supra* note 16, at 167–81. It is helpful to understand that water laws in the West originated from mining laws. Mining laws required that a person staking a claim must diligently work the claim, in order to later obtain a vested property right. COGGINS ET AL., FEDERAL PUBLIC LANDS & RESOURCES LAW Ch. 7 (7th ed. 2014). This concept of actual use and application of labor to the land spilled over into water law, which requires an actual use of the water in order to obtain a water right.

20. THOMPSON ET AL., *supra* note 16, at 167–81. Most western states adhere to a permit system, where one applies to the state engineer for a permit to divert water, and then once the permitted amount of water is put to a beneficial use, then the owner receives a vested water right. *Id.* Colorado is unique in its water court system, where there is no permitting process; rather, all water rights and proposed water rights are adjudicated. *Id.*

21. *Id.*

22. *Id.*; see also N.M. CONST. art. 16, § 3 (West 2016); WYO. STAT. ANN. § 41-3-101 (West 2016); UTAH CODE ANN. § 73-1-3 (West 2017).

of water rights for speculative purposes.”²³ At its core, the beneficial use requirement is meant to maximize the use of a valuable resource rather than hoard it for profit.²⁴

While beneficial use is a requirement in the prior appropriation system, there are not many clear definitions as to what exactly constitutes a beneficial use.²⁵ There are, however, two established components of beneficial use: the type and the amount of use.²⁶ The type of use reflects social values and scientific understandings,²⁷ while the amount of use reflects notions of waste.²⁸ Despite the lack of a clear definition of a beneficial use, each of these components reinforces the overall purpose of the beneficial use requirement—to

23. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 24.

24. A. Dan Tarlock, *Beneficial Use*, L. OF WATER RTS. AND RESOURCES § 5:68 (West July 2016 Update) (stating that the requirement for beneficial use is a result from “a tension between the encouragement of immediate development and the fear of hoarding”).

25. See ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 24 (“Almost any use of water that requires diversion or impoundment may be considered beneficial, including irrigation, mining, manufacturing, domestic, and impoundment for recreation and fish and wildlife purposes.”). Similarly, Colorado’s statute defining beneficial use is quite vague in that it is “use of that amount that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made.” COLO. REV. STAT. § 37-92-103(4) (West 2016). Given the broad definition of beneficial use, only a few limitations on the definition remain, aesthetic purposes being one main limitation. In *Empire Water & Power v. Cascade Town*, 205 F. 123 (8th Cir. 1913), the court held that merely using the water for aesthetic purposes did not constitute a beneficial use. This sentiment has remained strong today, as evidenced in *St. Jude’s Co. v. Roaring Fork Club*, 351 P.3d 442 (Colo. 2015), where a recreation club’s water diversion was not considered a beneficial use because it was only used for aesthetic and recreational purposes.

26. Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919, 926 (1998).

27. The type of use reflects social values and scientific understandings as evidenced by the changes and additions to traditional notions of beneficial use. Standard beneficial uses include: “domestic, municipal, irrigation, stock watering, mining, water power, and recreation.” Tarlock, *supra* note 24. New uses that have emerged as beneficial are: conservation, “storage and capture of flood water . . . fish and wildlife maintenance, instream flow protection and . . . groundwater recharge, soil leaching, the removal and collection of water from a coal methane field, and the use of reclaimed water for surface spreading, wetland restoration and streamflow augmentation.” *Id.*

28. Neuman, *supra* note 26, at 926 (“In order to be legally beneficial, the type of use must be something socially acceptable. As to the amount of use, there must be actual use in an amount that is not wasteful.”). The concept of waste is about as vague as the concept of beneficial use, insofar as it is the amount of water that is beyond the reasonable use of water to beneficially use. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 24.

emphasize that continued use of water is the basis for a water right.²⁹

2. Anti-Speculation

Speculation occurs when a person appropriates water but does not actually use the water; rather, he maintains the water right for the sole purpose of selling or transferring that water right in the future, usually for profit.³⁰ As stated previously, part of the purpose of the requirement for beneficial use is to discourage speculation.³¹ The rationale behind this purpose is that:

[The prior appropriation system] guarantees a right to appropriate, not a right to speculate. The right to appropriate is for *use*, not merely for profit * * * To recognize [water rights] grounded on no interest beyond a desire to obtain water for sale would as a practical matter

29. Tarlock, *supra* note 24. The notion of continued beneficial use of water as a reflection of social values is interesting because it can sometimes lead to odd results. For example, in *Carangelo v. Albuquerque-Bernalillo County Water Utility Authority*, 320 P.3d 492, 504 (N.M. Ct. App. 2013), the court held that a non-consumptive use may sometimes constitute a beneficial use. In that case, the city of Albuquerque proposed a plan to use water to help “carry” other water to a destination for use in a drinking water project. *Id.* at 496. The water at issue was never consumed in the entire process of diversion and carrying because the same amount of water used to carry the other water was returned into the stream. *Id.* at 497. The court further held that “whether the ‘use’ [was] carrying the [one amount] of water, or the diversion [was] made to facilitate the beneficial use of the [drinking water project] . . . the water [was] being put to a beneficial use.” *Id.* at 506. Similarly, most infrastructure for transporting water must be facilitating a beneficial use of water. The Central Arizona Project (CAP) was constructed for the purpose of transporting water from the Colorado River to central Arizona for use. *Central Arizona Project and Bureau of Reclamation Sign Groundbreaking Water Agreement*, CAP (Feb. 3, 2017), <https://www.cap-az.com/public/press-releases/605-central-arizona-project-and-bureau-of-reclamation-sign-groundbreaking-water-agreement> [<https://perma.cc/D4JG-FG3Y>]. The system is authorized to carry the project water from the Colorado River to central Arizona, which excludes using it for other water transports. *See id.* Recently, the CAP system was authorized to transport water for other beneficial uses, including non-project water. *CAP System Use Agreement*, CAP, <https://www.cap-az.com/departments/planning/service-area-planning/cap-system-use-agreement> (last visited Mar. 19, 2017) [<https://perma.cc/8UCW-BD98>]. Thus, without approval and recognition of a beneficial use, existing infrastructure is likely to not be allowed for use for water transportation.

30. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 31.

31. *Id.* at 24.

discourage those who have need and use for the water from developing it. Moreover, such a rule would encourage those with vast monetary resources to monopolize, for personal profit rather than for beneficial use, whatever unappropriated water remains.³²

Given this innate fear that one will hoard water for profit, as opposed to use that water for a specific purpose, one must demonstrate that she will put the appropriated water to a specific use. One can accomplish this through a showing of a vested interest in the land upon which the water will be used because such an interest—at least formally—connects the proposed use of the water with the specific purpose of the appropriation. A proposed appropriation of water will therefore be considered speculative, and will not be granted, if the applicant “does not have a legally vested interest or reasonable expectation of procuring an interest” in the land on which the water would be used.³³ Additionally, if the applicant for a proposed appropriation “does not have a specific plan and intent to divert, store, or otherwise capture, possess, and control a specific quantity of water for *specific beneficial uses*,” then the appropriation would be deemed speculative and the state would not grant it.³⁴

An exception to the anti-speculation doctrine exists for governmental entities and municipalities who are applying for additional appropriations to prepare for future growth.³⁵ However, this exception is relatively rare, and speculation is strongly discouraged in the priority system.³⁶

3. Abandonment

Another key notion of prior appropriation is “use it, or lose it.”³⁷ With a water right, one must beneficially use the water,

32. THOMPSON ET AL., *supra* note 16, at 254 (quoting *Colo. River Water Conservation Dist. v. Vidler Tunnel Water Co.*, 594 P.2d 566, 568 (Colo. 1979)).

33. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 31.

34. *Id.* (emphasis added).

35. *Id.* For an extreme example of this, see the discussion regarding the San Juan Chama Project in New Mexico. CHARLES F. WILKINSON, *CROSSING THE NEXT MERIDIAN* 219–31 (1992).

36. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 31.

37. THOMPSON ET AL., *supra* note 16, at 356–67.

or that right may be subject to abandonment.³⁸ In order to constitute abandonment, there must be continuous nonuse of the water right for a statutorily specified period of time.³⁹ In addition to nonuse, there must also be an intent to abandon the water right.⁴⁰ The latter element is very difficult to show, and thus abandonment findings are not very common.⁴¹ Even though abandonment is rare, the risk of abandonment is compelling. If a water right is considered for abandonment, it is costly—both in administrative and legal fees—to remove the right from consideration.

4. Requirements for Water Right Transfers

In the priority system, a water rights holder is able to transfer or change the water right.⁴² The main restraint or limitation on a water transfer is the no-injury rule.⁴³ A water transfer cannot injure or adversely affect the water right of any other users on the stream or system because those users “have vested rights in the continuation of stream conditions as they existed at the time of their respective appropriations.”⁴⁴

Additionally, an important aspect of water transfers is that the water rights administrator looks to the historic consumptive use of the water right, as opposed to the amount that was originally appropriated in the permit or decree.⁴⁵ This

38. *Id.*

39. *Id.* Most statutes range from five to ten years. *Id.*

40. *Id.*

41. *Id.*

42. *Id.* at 301–07. Other changes include increasing the amount of water diverted or changing the location of use. *Id.* Transferring a water right encompasses water marketing and sales and leases of water. *Id.* at 301–56.

43. *Id.* at 307.

44. *Id.* An injury would occur when a senior rights holder changes the place of use of his water right—so he now irrigates a field that is further upstream than his current field. The junior rights holder—who relies on receiving her water right from the return flow of the senior rights holder—now does not receive the same flow at the same time as she did before. Thus, the change in water right by the senior injures the junior.

45. THOMPSON ET AL., *supra* note 16, at 330–32. Historic consumptive use looks to the amount of water that was actually consumed in use, not the amount that was withdrawn from the stream. *See id.* Generally, historic consumptive use is calculated from the difference between the withdrawn amount of water and the amount of water returned to the stream, or “return flow.” *See id.* “The extent of historical beneficial use limits the amount of water that can be changed to another use,” due to the requirement of beneficial use. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 119. If a water rights holder does not

is important because it is very often the case that less water is consumed than is appropriated for, and when a water rights holder applies to transfer or sell that right, the amount may be less than he anticipated.⁴⁶

5. Calls on a Water System

In the priority system, in times of a water shortage, a senior water rights holder may request that the state engineer, or equivalent water administrator, effectively “shut off” water of a junior rights holder in order for the senior to divert his full appropriated amount.⁴⁷ This action is known as a “call” on the water system.⁴⁸ A “priority call does not mean that juniors ‘lose’ their water rights, but rather that they will be required to cut back during the [shortage].”⁴⁹ Similar to a priority call, a compact call is an order “to curtail diversions to meet a compact obligation.”⁵⁰

B. Interstate Compacts

Because the Colorado River is not confined to state lines, multiple interstate agreements have been made over the years regarding Colorado River water sharing and apportionment.⁵¹

beneficially use the entire appropriated amount of water, then it does not seem fair to allow him to sell or transfer the entire appropriated amount of water. *See generally* THOMPSON ET AL., *supra* note 16. In a way, it is almost as though the amount of water that was not historically consumed is abandoned in the context of a transfer.

46. THOMPSON ET AL., *supra* note 16, at 330–32.

47. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 101. The engineer does not actually “shut off” the water, but the junior rights holder is ordered to “let sufficient water flow” past his point of diversion, until all of the seniors have had their appropriated amounts filled. *Id.*

48. *Id.* Usually this occurs because the majority of senior rights holders are downstream from junior rights holders. *See id.* When the West was first settled, water was diverted for use in the flat plains for irrigation from points downstream of the headwaters in the mountains. *See generally* THOMPSON ET AL., *supra* note 16. Thus, as more appropriators diverted water, the only available points of diversion went further upstream, resulting in the current distribution of water rights holders as more senior downstream and more junior upstream. *See id.*

49. Ed Merta, *Priority Administration*, WATER MATTERS!, 2014, at 10-2.

50. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 102. While these calls have traditionally been administered by the state engineer, it is unclear who would administer a compact call on the Colorado River under the Colorado River Compact of 1922.

51. Colorado River Compact, 1923 Colo. Sess. Laws 684, COLO. REV. STAT. §

This Section discusses the two pertinent compacts to this Comment: the Colorado River Compact of 1922 and the Upper Basin Compact of 1948. Additionally, this Section addresses why the specified obligations under the compacts are cause for concern in a call scenario.

1. 1922 Colorado River Compact

The Colorado River Compact of 1922 is the seminal piece of water legislation in the West. The Compact was the first interstate compact in the United States,⁵² and its purpose was to “provide for the equitable division and apportionment of the use of the waters of the Colorado River System.”⁵³ The Compact divides the Colorado River Basin in two: the Upper Basin and the Lower Basin, and each basin receives an equal portion of the Colorado River water.⁵⁴ Specifically, each basin receives seven and one-half million acre feet of water per year.⁵⁵

To administer the Compact’s provisions and obligations, both state and federal officials are involved.⁵⁶ Additionally,

37-61-101 to -104 (2016); Upper Colorado River Basin Compact, ch. 48, 63 Stat. 31 (1949).

52. A. Dan Tarlock, *Interstate Compacts – Formation and Structure*, L. OF WATER RTS. AND RESOURCES § 10:26 (West July 2016 Update).

53. Colorado River Compact, § 37-61-101 art. I.

54. *Id.* § 37-61-101, arts. II(b), (f), (g). As stated previously, the Upper Basin states include Colorado, Wyoming, Utah, New Mexico, and a portion of Arizona (the dividing line is at Lee’s Ferry). *Id.* § 37-61-101, art. II(f). The Lower Basin states include Arizona, Nevada, and California. *Id.* § 37-61-101, art. II(g). While Arizona technically, that is geographically, falls into both the Upper and Lower Basins, for purposes of compact obligations, the Upper Division states of Colorado, Utah, Wyoming, and New Mexico have an obligation to the Lower Division states of Arizona, Nevada, and California. *Id.* § 37-61-101, arts. II(c)–(d).

55. *Id.* § 37-61-101, art. III(a). A common measurement of water is in acre feet, which equates to the volume of water it would take to cover an acre of land with one foot of water in depth. THOMPSON ET AL., *supra* note 16, at 26–27. This specific apportionment of seven and one-half million acre feet per year to each basin is currently problematic. See ERIC KUHN, RISK MANAGEMENT STRATEGIES FOR THE UPPER COLORADO RIVER BASIN 18 (2012). When the compact was originally drafted, the states relied upon climatic and hydrologic conditions from the previous fifty years dating back into the nineteenth century. *Id.* Today, through historic tree ring studies, we recognize that period of time “as an unusually wet period.” *Id.* Therefore, these specific apportionments of water to each basin are problematic because they do not reflect the more typical, dry conditions of the Colorado River. See *id.*

56. Colorado River Compact § 37-61-101, art. V (providing that the “chief official of each signatory State” as well as the “Director of the United States

while the Compact sets out interstate guidelines for the administration of the water, it authorizes the two basins, and the states within each, to regulate and control the “appropriation, use, and distribution of water” within their boundaries.⁵⁷

Another important provision of the Colorado River Compact of 1922 concerns the effect of the Compact on present perfected rights.⁵⁸ It provides that any present perfected rights are unimpaired by the Compact.⁵⁹ This provision is important because any compact calls or compact obligations will not affect current vested water rights holders of the Colorado River, as of 1922.⁶⁰

2. 1948 Upper Basin Compact

Pursuant to the provision of the Colorado River Compact that authorized each basin to apportion its share of water among its states,⁶¹ the Upper Basin states memorialized their apportionment agreement in the Upper Basin Compact of 1948.⁶² The Upper Basin Compact allots each state within the Upper Basin a specified percentage of the seven and one-half million acre feet apportioned to it via the Colorado River Compact.⁶³ Significantly, the Upper Basin Compact recognizes the importance of beneficial use within the priority system of the Colorado River, because it provides that “[b]eneficial use is the basis, the measure and the limit of the right to use” water from the Colorado River System.⁶⁴

Further, the Upper Basin Compact details the obligations of the Upper Basin in the event of a compact call.⁶⁵ The Upper Basin states must curtail the use of their water in order to

Reclamation Service and the Director of the United States Geological Survey” are charged with administration of the Compact).

57. *Id.* § 37-61-101, art. IV(c).

58. *See id.* § 37-61-101, art. VIII. Present perfected rights are the same as a vested water right. THOMPSON ET AL., *supra* note 16.

59. Colorado River Compact, § 37-61-101, art. VIII.

60. *Id.*

61. *Id.* § 37-61-101, art. IV(c).

62. *See* Upper Colorado River Basin Compact, ch. 48, 63 Stat. 31 (1949).

63. *Id.* art. III. Colorado receives 51.75%, New Mexico receives 11.25%, Utah receives 23%, and Wyoming receives 14%. *Id.* art. III(a)(2).

64. *Id.* art. III(b)(2).

65. As stated previously, a compact call would entail curtailing diversions in order to meet a compact obligation. *See supra* notes 47–50 and accompanying text.

“assure full compliance with . . . the Colorado River Compact.”⁶⁶ That is, the Upper Basin shall “not cause the flow of the [R]iver at Lee Ferry” to be less than the obliged seven and one-half million acre feet.⁶⁷

3. Compact Call Scenario

Even though a compact call is contemplated in the Upper Basin Compact, there is much uncertainty regarding the administration of a compact call, insofar as how such a call would be implemented within the Upper Basin.⁶⁸ Ignoring, *arguendo*, the complexities and alternatives to a strict compact call,⁶⁹ the plain language of the Upper Basin Compact, in conjunction with strict priority administration of the water, leads to an undesirable result.

Theoretically, this would mean that junior rights holders, who are mainly post-1922 rights holders in this context, would be curtailed first; and per the Colorado River Compact, pre-1922 perfected rights holders would be unaffected or untouched by the compact call.⁷⁰ This would have severe and serious consequences because most post-1922 junior rights holders include populous municipalities, while the pre-1922 perfected rights holders include smaller towns, irrigation districts, and

66. Upper Colorado River Basin Compact, art. IV(a).

67. *Id.* art. III(d). There is debate as to whether the Upper Basin is actually obligated to deliver the seven and one-half million acre feet to the Lower Basin, or whether the Upper Basin is merely obligated to maintain the flow of the river. This distinction is important in determining the precise obligations of the Upper Basin; however, it is beyond the scope of this Comment.

68. See Jason Anthony Robison, *The Colorado River Revisited*, 88 U. COLO. L. REV. 475, 533 (2017). The uncertainty stems from the fact that a compact call has never occurred before. See *id.*

69. The complexities and alternatives to a compact call diminish the likelihood of a compact call actually happening. Before litigation would even begin, it is likely that the “Secretary of the Interior would [use] all of his/her powers and influence to bring the basin states together to manage the available water in very different ways than the status quo and to avoid litigation.” KUHN, *supra* note 55, at 36. It is also likely that if the Lower Basin were to issue a compact call, the Upper Basin would not curtail any of its uses “unless ordered to do so by the United State Supreme Court.” *Id.* at 33. Additionally, there would likely be “political pressure to resist curtailment and litigate” because the Colorado River Compact apportioned each basin an equal annual share of the water, which may have instilled in the Upper Basin a right to consume that equal portion despite a compact call. *Id.* at 36.

70. Colorado River Compact, 1923 Colo. Sess. Laws 684, COLO. REV. STAT. § 37-61-101 to -104 (2016), art. VIII; KUHN, *supra* note 55, at 8.

individual farmers.⁷¹

For example, in Colorado, this would mean that most cities along the Front Range would have to curtail the use of their water, while alfalfa farmers on the Western Slope would be untouched by the call.⁷² This scenario would result in entire municipalities being forced to curtail or shut off their water use, while individual farmers are allowed to use their full amount of water to irrigate their fields.⁷³ Needless to say, a compact call would significantly impact the economy, health, and safety of the Upper Basin states to their detriment.⁷⁴

Given these potential severe consequences of a compact call, coupled with the uncertainty surrounding a compact call, there is a strong sentiment amongst the Upper Basin states to avoid allowing such a call to occur.⁷⁵ Despite the best intentions of the Upper Basin states, however, a problem looms in the Colorado River Basin: the increasing likelihood of a compact call.

II. CURRENT PROBLEM FACING THE COLORADO RIVER BASIN

The likelihood of a compact call looms so large because of the projected climate change impacts and population growth impacts throughout the Basin.⁷⁶

A. *Climate Change Impacts on the Colorado River Basin*

In the Colorado River Basin, “[c]limate change is water

71. KUHN, *supra* note 55, at 22 (In Colorado, “a number of West Slope towns such as Glenwood Springs and Grand Junction have significant pre-1922 Compact rights”; however, “almost all of the major transmountain diversions and most newer communities, special districts and industrial plants use post-1922 Compact water rights”).

72. *See id.*; *see also* Robison, *supra* note 68.

73. *See* KUHN, *supra* note 55; *see also* Robison, *supra* note 68. While it may seem that the Western Slope farmers would not mind this outcome, it is more likely that no one would like this outcome. There has always been tension in Colorado between the Western Slope and the Front Range regarding water use. The disputes lie in out-of-basin diversions and transmountain diversions of water from the Western Slope towns to the large municipalities along the Front Range. Because the large municipalities have the voting power, these diversions are more common than the Western Slope would like. With a compact call, though, this tension would only increase, and the result could be quite ugly.

74. KUHN, *supra* note 55, at 2.

75. *See id.*

76. CRB STUDY 2012, *supra* note 1, at 4.

change.”⁷⁷ In the Basin, this manifests itself as an increase in drought frequency and duration,⁷⁸ as well as a nine percent decrease in the natural flow of the Colorado River over the next fifty years.⁷⁹

By 2050, the Basin will experience an additional five degrees Fahrenheit of warming,⁸⁰ coupled with a continued trend towards drying.⁸¹ Higher temperatures will turn “what would have been modest droughts into severe ones,” known as “hot droughts.”⁸² Increasing temperatures further cause feedbacks of lower humidity, decreased cloudiness, and increased radiative heating.⁸³ There will also be a decrease in snowpack due to the warming and drying of the region.⁸⁴ While there is great uncertainty about precipitation patterns and projections, a settled finding is that “snowstorms will increasingly be transformed into rain events,” contributing to the decrease in snowpack.⁸⁵

An increase in temperature throughout the Basin will also increase the length of the growing season, in addition to increasing plant evapotranspiration.⁸⁶ Accordingly, there will be an increase in total crop demand on water,⁸⁷ because higher temperatures alone equate to less supply and more demand.⁸⁸

77. COLO. RIVER RESEARCH GRP., CLIMATE CHANGE AND THE COLORADO RIVER: WHAT WE ALREADY KNOW 1 (2016), http://www.coloradoriverresearchgroup.org/uploads/4/2/3/6/42362959/crrg_climate_change.pdf [<https://perma.cc/2FBV-NLAE>] [hereinafter CRRG REPORT].

78. Longer droughts are expected to “occur [fifty] percent of the time over the next [fifty] years.” CRB STUDY 2012, *supra* note 1, at 7.

79. *Id.*

80. CRRG REPORT, *supra* note 77, at 2.

81. CRB STUDY 2012, *supra* note 1, at 7.

82. Bradley Udall & Jonathan Overpeck, *The Twenty-First Century Colorado River Hot Drought and Implications for the Future*, 53 WATER RESOURCES RES. 2404, 2408 (2017), <http://onlinelibrary.wiley.com/doi/10.1002/2016WR019638/full> [<https://perma.cc/R2BY-UE2M>].

83. *Id.*

84. CRB STUDY 2012, *supra* note 1, at 7. The decrease in snowpack will be caused by a higher percentage of precipitation falling as rain rather than snow, in addition to the warmer temperatures causing an earlier melt. *Id.*

85. CRRG REPORT, *supra* note 77, at 2.

86. KUHN, *supra* note 55, at 17. Evapotranspiration is the “loss of water from the soil both by evaporation and by transpiration from the plants growing [on the soil].” *Evapotranspiration*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/evapotranspiration> (last visited Feb. 25, 2018) [<https://perma.cc/CC3B-RJCR>].

87. *Id.*

88. CRRG REPORT, *supra* note 77, at 2.

In sum, climate change effects in the Basin will impact the supply-demand balance of Colorado River water because the result is that there will be less water available in the River over the next fifty years.⁸⁹ With less water available, it will be increasingly harder for the Upper Basin to meet its compact obligations because there will simply be less water making it to the Lower Basin.⁹⁰

This imbalance in the supply and demand of the Colorado River will also affect short-term needs in the Basin, such as: “meeting peak summertime demands in urban areas; making water available to agricultural producers with greater need; [and] maintaining stream flows in reaches critical for fish and other aquatic species.”⁹¹ While climate change effects impact the supply of the River, projected population growth in the Basin will impact the demand on the River.

B. Population Growth Impacts on the Colorado River Basin

The Basin anticipates an increased demand for water.⁹² The largest increase in water demand will be due to population growth throughout the Basin, which is projected to increase by about ten to thirty million people by 2060.⁹³ Water uses in the Basin are therefore expected to increase to eighteen to twenty million acre feet per year by 2060.⁹⁴ All told, the “projected imbalance in future supply and demand is about [three million acre feet] by 2060.”⁹⁵

Given this imbalance of supply and demand on the Colorado River due to climate change effects and population growth, it will be harder for the Upper Basin to meet its obligations under the Upper Basin Compact. This, in turn,

89. See CRB STUDY 2012, *supra* note 1.

90. *Id.*

91. ANNE J. CASTLE & LAWRENCE J. MACDONNELL, AN ENHANCED WATER BANK FOR COLORADO 4 (2016), <https://www.colorado.edu/law/sites/default/files/An%20Enhanced%20Water%20Bank%20for%20Colorado.pdf> [<https://perma.cc/BZC6-D7SV>].

92. *Id.* at 2.

93. CRB STUDY 2012, *supra* note 1, at 8. The variation in projected population growth is due to a Slow Growth model and a Rapid Growth model. *Id.*

94. *Id.* Compare this amount with the total apportioned amount of Colorado River water under the Compact which is around fifteen million acre feet per year.

95. *Id.* at 9.

increases the likelihood of a compact call occurring, which means that “[s]tretching existing water supplies to meet growing and changing demands will be the central challenge of western water management”⁹⁶ moving forward.

III. LEADING APPROACH PROPOSED TO ADDRESS THE PROBLEM

To address the looming likelihood of a compact call given the projected imbalance of supply and demand of the River, water resource managers and natural resource management organizations are brainstorming approaches that are proactive.⁹⁷ Broadly, these approaches focus on demand management through conservation, efficiency, and flexibility,⁹⁸ including reservoir reoperations, cloud seeding, and similar conservation techniques.⁹⁹

The leading approach proposed to address demand management in the Upper Basin is an interstate water bank program that would allow the Upper Basin to store extra water to be made available to the Lower Basin.¹⁰⁰ In short, this program would allow the Lower Basin to receive its apportioned amount of water without issuing a compact call on the Upper Basin.¹⁰¹

96. Neuman, *supra* note 26, at 978.

97. See KUHN, *supra* note 55.

98. See Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, 73 Fed. Reg. 19,873 (Apr. 11, 2008). The Lower Basin is already implementing demand management projects such as drought contingency planning, where the states enter into agreements to reduce water use under certain shortage conditions. See *id.* at 19,886. It is much easier for the Lower Basin to implement demand management strategies and techniques because all of the water comes from one source: Lake Mead. Additionally, the lake is administered by the Bureau of Reclamation, so there is no complication over the management and distribution of the water. Unlike in the Upper Basin, where there are legal barriers to demand management such as the compact obligation of delivering a set amount of water to the Lower Basin.

99. *Id.*

100. See Robison, *supra* note 68, at 531 (“[W]ater banking and temporary transfer arrangements [are] emerging to address the distribution of pre- and post-1922 water rights.” These alternatives attempt to address the problem of an increasing likelihood of a compact call.). Water banking not only helps meet the increasing demand for Colorado River water, but it also insulates “critical water users dependent on post-1922 rights from compact calls and curtailments.” *Id.* at 528; see also *Tackling Water Shortage*, *supra* note 6 (stating that water banking is a tool that allows more flexible management of water “in advance of a crisis”).

101. The most likely location for the water bank would be Lake Powell itself.

While this is the leading approach to addressing the problem, an interstate water bank program suffers a few shortfalls, namely: (1) legal uncertainty regarding individual water rights; (2) a concern of speculation; and (3) a lack of incentives for states to participate. This Part examines water banking, both at the intrastate and interstate levels, and then discusses these shortfalls in greater detail.

A. *Water Banking*

Water banking is a voluntary, market-based mechanism that allows willing sellers and buyers to efficiently and effectively transfer water.¹⁰² At its core, “[a] water bank is a formal mechanism for pooling surplus water rights for rental to other water users.”¹⁰³ Similar to a financial bank, a water bank allows deposits and withdrawals of water, and a depositor typically receives either compensation or a use credit in exchange for the deposit.¹⁰⁴

A water rights holder may deposit a portion or all of her water into the bank by forgoing use of that right.¹⁰⁵ The

There are many issues surrounding this, including how to move the water through the Upper Basin states to reach the bank in Powell. However, this issue is currently being addressed by Anne Castle and Lawrence MacDonnell in their forthcoming paper on shepherding appropriated Colorado River water. LAWRENCE J. MACDONNELL & ANNE J. CASTLE, SHEPHERDING APPROPRIATED WATER WITHIN COLORADO AND TO LAKE POWELL FOR COLORADO RIVER COMPACT SECURITY (2017), https://leg.colorado.gov/sites/default/files/images/17wrrc_annecastlewhitepaper170829.pdf [<https://perma.cc/ZA8K-5AV4>]. Additionally, there are problems associated with the coordinated management between Lake Powell and Lake Mead; namely, any excess water in Lake Powell is released or “spilled” into Lake Mead. See Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, 73 Fed. Reg. 19,873. This creates problems for any water bank in Lake Powell because extra water stored would only be spilled to Lake Mead rather than serve the purpose the water bank is seeking to achieve. This type of coordinated management surrounding a water bank in Lake Powell would likely need to be addressed in the future interim guidelines.

102. Jon Stavney, *Flexible Water Sharing Reduces Risk in Dry Times*, COLO. RIVER DIST., <http://www.coloradoriverdistrict.org/water-banking/> (last visited Mar. 19, 2017) [<https://perma.cc/4LR5-VJE7>].

103. ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 82.

104. CASTLE & MACDONNELL, *supra* note 91, at 12.

105. Kevin B. Pratt, *Water Banking: A New Tool for Water Management*, 23 COLO. LAW. 595, 595–96 (1994). This can manifest itself in a variety of ways including fallowing a field (forgoing irrigation of a field), reducing the amount diverted, or potentially using more water-efficient agricultural practices to allow water to reach the bank. *Id.* For a more in-depth discussion on the process of

forgone water is then stored in the water bank downstream, where it will be available for lease by other users.¹⁰⁶ In order for a water bank to be successful, it must have willing sellers and buyers, and it must have legal permissions.¹⁰⁷

Water banks can be arranged, organized, and managed in a variety of ways; therefore, it is helpful to look at examples of water bank programs currently implemented at both the intrastate and interstate levels.

1. Intrastate Water Banking: Colorado¹⁰⁸

In 2001, the Colorado General Assembly authorized the state to form a pilot water bank in the Arkansas River Basin,¹⁰⁹ and, in 2003, that authorization was extended to other water divisions.¹¹⁰ The program was “intended to simplify and improve the approval of water leases, loans, and exchanges . . . of stored water within each river basin, reduce the costs associated with such transactions, and increase the availability of water-related information.”¹¹¹ The program focuses on assisting farmers in realizing the value of their water rights, without permanently selling those rights, by allowing participation in a water bank.¹¹² The possible benefits from the program include farmers generating income and municipal water providers or other lessees in the water bank

water banking, see CASTLE & MACDONNELL, *supra* note 91.

106. Pratt, *supra* note 105, at 595–96.

107. *Id.* at 596. Because water banks are voluntary programs, there must be willing sellers and buyers, otherwise the program would cease to exist. *See id.* Additionally, the water bank must have legal permissions, insofar as it must be authorized legally in some way. *See id.* Water banks are a form of water marketing, which smells like speculation in some jurisdictions, THOMPSON ET AL., *supra* note 16, at 345–54; thus, water banking must be legally sound in order for the program to succeed.

108. Colorado is one of the leading Upper Basin states to implement a water banking program, whereas there are multiple water banking programs within the Lower Basin states. *See, e.g.*, CASTLE & MACDONNELL, *supra* note 91, at 10 (describing Arizona’s water banking program which aims to “mitigate the effects of future Colorado River shortages . . . [and] plan[s] to make purchases of other water for the bank and anticipates the need, for the first time, to make water available from the bank to make up for shortfalls in the state’s Colorado River supplies”).

109. COLO. REV. STAT. § 37-80.5-102 (2001) (amended 2003).

110. CASTLE & MACDONNELL, *supra* note 91, at 7.

111. § 37-80.5-102.

112. *Id.*

ensuring adequate water supplies in dry years.¹¹³

The water bank in the Arkansas River Basin is designed to allow a depositor to receive compensation for the water deposit in the bank, and then have the amount of available water in the bank listed online for potential buyers to purchase and use.¹¹⁴ The primary goal is to merely facilitate efficient uses of water by allowing farmers to lease out their water rights in a less expensive way and allow users with greater need to access water in a less cumbersome way.¹¹⁵

Water banking can be accomplished and organized in a variety of ways, such as the program in Colorado, but an interstate program would involve more complexities and issues.¹¹⁶

2. Interstate Water Banking: Nevada and Arizona

Given that the leading approach to addressing the problem of a compact call in the Colorado River Basin is an interstate water bank program, it is helpful to look at a current interstate water bank program to better understand how it may work.

Currently, the Lower Basin states of Arizona and Nevada have an interstate water banking program in place.¹¹⁷ Most basically, the city of Las Vegas forgoes use of some of its Colorado River water and allows it to flow downstream to central Arizona, where it is stored underground via the CAP

113. Austin Hamre, *Water Banking: Should There Be More Interest?*, 25 COLO. LAW. 97, 97 (1996).

114. *See* 2 COLO. CODE REG. § 402-12.7 (2007).

115. *See id.* § 402-12.2. Compare the purposes and goals of Colorado's program with the purposes and goals of Arizona's program *supra* note 108.

116. Some such issues include enforcement, contribution amounts to the bank, costs of the water bank, use credits or compensation to the depositing state, determining the water bank operator, and any issues involved with discrepancies between states' water rights administration.

117. *See* Third Amended and Restated Agreement for Interstate Water Banking among The Arizona Water Banking Authority and The Southern Nevada Water Authority (May 20, 2013), http://www.azwaterbank.gov/Plans_and_Reports_Documents/documents/ThirdAmendedandRestatedInterstateBankingAgreement-Exec.5-20-13.pdf [<https://perma.cc/Y5PG-XTZ2>] [hereinafter AWBA-SNWA Agreement]. The Agreement is between the Southern Nevada Water Authority and Arizona Water Banking Authority—which is authorized to participate in interstate water banking of the Colorado River. ARIZ. WATER BANKING AUTH., <http://www.azwaterbank.gov/> (last visited Mar. 19, 2017) [<https://perma.cc/B69U-TTYG>].

system.¹¹⁸ When the water is stored, it is essentially as if the amount of water deposited by Las Vegas has a nametag on it that says “Property of Las Vegas,”¹¹⁹ and Arizona is not allowed to use it.

In exchange for its deposit, Las Vegas receives a use credit that it can cash in at a later time when it determines that it needs to use that stored water.¹²⁰ Additionally, the Southern Nevada Water Authority (SNWA), which is responsible for the management of the water, reimburses the Arizona Water Banking Authority (AWBA), which is responsible for managing the water bank, for all of its costs incurred related to the storage of Las Vegas’s deposit.¹²¹ When the city does cash in that use credit, it pulls water from Lake Mead, which is upstream from the city, and the nametag on the water stored in central Arizona, downstream, is removed and available for use in Arizona.¹²²

With this type of system in mind for interstate water banking,¹²³ there are shortfalls that must be addressed in order to make a similar program viable in the context of the problem facing the Colorado River Basin.

B. Lacking Viability of an Interstate Water Bank Program

The primary goal of the proposed interstate water bank program is to decrease the risk of a shortage in meeting the

118. David Owen, *Where the River Runs Dry*, NEW YORKER (May 25, 2015), <http://www.newyorker.com/magazine/2015/05/25/the-disappearing-river> [<https://perma.cc/LD6B-LDUP>]; *Central Arizona Project and Bureau of Reclamation Sign Groundbreaking Water Agreement*, *supra* note 29 (describing the CAP system, which is the Central Arizona Project, a “336-mile long system of aqueducts, tunnels, pumping plants and pipelines” that brings water from the Colorado River to central Arizona).

119. Owen, *supra* note 118.

120. *Id.*

121. AWBA-SNWA Agreement, *supra* note 117.

122. Owen, *supra* note 118. To date, Nevada’s current balance in the water bank in Arizona is about 600,500 acre feet, and the total payments made to AWBA are about \$122.7 million. AWBA-SNWA Agreement, *supra* note 117, at 6. These figures were current as of the date of the agreement, which was in 2013.

123. A similar system would be necessary for an Upper Basin water bank located in Lake Powell. Each Upper Basin state would effectively have a nametag on the amount of water deposited in the bank and in return, the state would receive a credit. The benefit of the credit creates value in the water bank—the state receives value in the decreased risk of shortage.

Upper Basin's compact obligations. Given that participation in the water bank would allow the Upper Basin to not only meet its requirements under the compact, but also avoid the risk of shortage, the Upper Basin states receive value from participating in the water bank because they can continually use their water without fear of a compact call. Standing in the way of the water bank achieving these goals, however, are the following concerns: (1) the legal uncertainty regarding individual water rights; (2) speculation; and (3) a lack of incentives for state participation.

1. Legal Uncertainty Regarding Individual Water Rights

One of the concerns regarding the viability of an interstate water bank program in the Colorado River Basin is legal uncertainty regarding individual water rights. As mentioned previously, in order to have a successful program, there must be willing sellers and buyers.¹²⁴ In order to encourage a willing seller or depositor, the water rights holder must be certain that his water deposit does not legally affect the status of his water right.¹²⁵ "Changes of water rights can upset the *status quo*, decreasing certainty [as to the water rights] for all water users."¹²⁶ Because a depositor forgoes use of a portion or all of the water right, he may be at risk of losing that water right.

Abandonment encompasses the concept of "use it, or lose it," and thus, because the depositor in a water banking situation is not using his water right, he may lose it. There are some statutes that address this point directly,¹²⁷ and there is always the intent limitation on a finding for abandonment;¹²⁸ nonetheless, this is a legal possibility for a potential depositor because there is continuous nonuse of the water right.

Another legal uncertainty regarding a deposit in the water

124. Pratt, *supra* note 105, at 596.

125. See discussion *supra* note 108. See also WESTERN WATER POLICY REVIEW ADVISORY COMM'N, WATER IN THE WEST: THE CHALLENGE FOR THE NEXT CENTURY at 6-3 (1998) [hereinafter WATER IN THE WEST] (recognizing the importance of existing water rights and thereby providing "certainty to water right holders and predictability of the process for change").

126. Hamre, *supra* note 113, at 97.

127. See, e.g., COLO. REV. STAT. § 37-92-103(2)(b)(IV) (West 2016).

128. See THOMPSON ET AL., *supra* note 16, at 356-67; see also *supra* notes 40-41 and accompanying text.

bank is whether the deposit may impair the ability of the depositor or water rights holder to transfer that water in the future. The determination of the amount available to be transferred depends on historic consumptive use.¹²⁹ Because a depositor has forgone use of that water, that nonuse detracts from the amount that is actually consumed. Therefore, the water rights holder may be impaired when she attempts to transfer the water right later, and the amount that she had been depositing in the water bank would not count towards her historic consumptive use, leaving her unable to transfer the full value of her water right.

2. A Concern that the Program Is Merely Speculation

There is also a concern that an interstate water bank operated by the Upper Basin would constitute speculation, which is strongly disfavored in the prior appropriation system.¹³⁰ Given that a compact call has never occurred, there is a speculation concern that the Upper Basin would be storing water for no actual use. Because the water bank would store water as a proactive measure to meet the Upper Basin's compact obligations—while it is presently meeting those obligations—there is no recognized beneficial use for which the water would be stored.¹³¹ Thus, there is no incentive for states or individuals to participate in the water bank program because no one will “commit to buy or lease [water] until the change of use is assured, while the filing [of a change of use] requires a buyer with a clear ‘beneficial use.’”¹³²

In short, anti-speculation requires there to be an assured water transfer, which is dependent upon a finding of beneficial use. This finding of beneficial use is precisely what the current model of an interstate water bank lacks. While there is an exception to the anti-speculation doctrine for municipalities preparing for future growth, the purpose of the water bank in this context would not be to store water for anticipated growth

129. THOMPSON ET AL., *supra* note 16, at 330–32.

130. *See supra* Section I.A.2.

131. *See* ACQUIRING, USING, AND PROTECTING WATER, *supra* note 18, at 31 (stating that speculation occurs when there is no “specific plan and intent to divert, store, or otherwise capture, possess, and control a specific quantity of water for *specific beneficial uses*” (emphasis added)).

132. Charles W. Howe, *Reconciling Water Law and Economic Efficiency in Colorado Water Administration*, 16 U. DENV. WATER L. REV. 37, 41 (2012).

but rather to meet a contractual obligation. Therefore, it is unlikely that the exception would apply in this situation.

3. Lack of Incentives for State Participation in the Program

The final concern, for purposes of this Comment, is that there is a lack of incentives for state participation in the interstate water bank program, in part due to high transaction costs.¹³³ Water transfers are necessary to operate a water bank, and they also happen to be quite expensive given the legal and engineering analyses required to determine historic consumptive and beneficial uses of the water right.¹³⁴ In addition to those costs, there are high transaction costs associated with the uncertainty discussed in the previous sections.¹³⁵ Hidden within these layers of transaction costs is also a concern that states may not be able to use existing infrastructure to transport bank water deposits unless that use was authorized.¹³⁶

Further, in the context of the Colorado River Basin, the Upper Basin Compact specifically provides that any use of the Colorado River water must be a beneficial use.¹³⁷ Therefore, without a beneficial use in storing the water in a water bank, coupled with the high transaction costs of such a program, states are disincentivized to participate in the program.

IV. COMPACT COMPLIANCE AS A BENEFICIAL USE

The goals of the proposed interstate water bank program are to avoid involuntary consequences from triggering legal requirements, i.e., a compact call, and to avoid the risk of shortages more generally. To meet these goals, we ought to “promote and support mechanisms to voluntarily put water use

133. See WATER IN THE WEST, *supra* note 125, at 6-28 (recognizing that the greatest incentive for water transfers is to keep the costs of transfers as low as possible).

134. Hamre, *supra* note 113, at 98.

135. See R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). The more uncertainty that exists in a given transaction, and the less information available to the parties, then the higher the transaction costs will be. *Id.*

136. See *supra* note 29 and accompanying text regarding the CAP system.

137. Upper Basin Colorado River Compact, COLO. REV. STAT. § 37-62-101, art. III(b)(2) (1948).

on a sustainable basis”;¹³⁸ that is, we ought to encourage voluntary water use actions such as participation in the proposed water bank program.

It is important to recognize the role that existing water rights and appropriation systems “play in developing and protecting water supply and use.”¹³⁹ At its core, the prior appropriation system is concerned with the beneficial use of water, which has become the bedrock of water rights and administration in the West. Rather than reinventing the wheel, the existing legal framework of beneficial use should address the concerns with the proposed interstate water bank program. Therefore, compact compliance should be considered a beneficial use.

By deeming compliance with an interstate compact—that is, meeting compact obligations—to be a legal use of water in this way,¹⁴⁰ the viability of an interstate water bank strengthens because it maximizes beneficial use of the water, protects existing water rights, and properly allocates the costs associated with it,¹⁴¹ all while encouraging participation in the program.

A. *Providing Legal Certainty Regarding Water Rights*

Beneficial use is the base, the measure, and the limit of a water right; thus, if a water rights holder does not beneficially use his water, he could lose that water. Participation in the proposed water bank program could subject the water rights holder to abandonment because forgone use of water constitutes nonuse of water.¹⁴² Therefore, participation in the

138. WATER IN THE WEST, *supra* note 125, at 6-3.

139. *Id.* (“[A]ny necessary changes in water use should take place within these systems in order to provide certainty to water right holders and predictability of the process for change.”).

140. There is a lingering question regarding how to go about this. Should the courts deem compact compliance a beneficial use, should that be left to legislature, or does the state engineer already have this authority? This is an ongoing debate and, while important, it is beyond the scope of this Comment.

141. See Hamre, *supra* note 113, at 97 (describing these as the three goals of water allocation in Colorado). While these goals are state specific, they can be translated across the western states that follow the prior appropriation system because the underlying principles are substantially similar. If the goals of water allocation are met, then the process by which those goals are met is viable; thus, if the interstate water bank meets these goals, then the viability strengthens.

142. See *supra* Section III.B.

water bank program must constitute a beneficial use in order for the *nonuse* to qualify as an *actual use*.¹⁴³ The water rights holder seeking to participate in the water bank would then be certain that his participation would not put him at risk for abandoning that water right; this eliminates a concern for abandonment because the forgone use of the water would constitute a beneficial use of water.

Similarly, compact compliance as a beneficial use provides legal certainty regarding future water transfers. The current concern is that participation in water banking would impair the depositor's ability to transfer that water in the future because it would decrease the historic consumptive use of that right.¹⁴⁴ Compact compliance as a beneficial use would allow the deposit of water in the water bank to count towards the historic consumptive use of the right because the amount deposited would be effectively "consumed" by the water bank itself.¹⁴⁵

Compact compliance as a beneficial use provides legal certainty regarding individual water rights, which in turn encourages participation in the water bank program. More participation from depositors equates to more water stored in the bank, which allows the Upper Basin to meet its compact obligations with greater ease. Additionally, deeming compact compliance a beneficial use necessarily maximizes the beneficial use of the water in a water bank, which provides for "reasonable flexibility so that water can be moved to the uses where it is most needed and where it can do the most good."¹⁴⁶

B. Quashing Any Fear of Speculation

Compact compliance as a beneficial use also quashes any fear of speculation because it allows participation in the water

143. Even though participation in the proposed water bank would require nonuse of the water, that nonuse would be considered a beneficial use because the deposit in the water bank goes to the purpose of the Upper Basin complying with its compact obligations.

144. See *supra* Section III.B. The historic consumptive use would not necessarily include the amount deposited in the water bank because that water was not actually diverted or consumed by a user.

145. Even though the water is "consumed" by the bank, the benefit of participation in the bank still accrues to the state because it receives the value of decreased risk of shortage.

146. Hamre, *supra* note 113, at 97.

bank to be considered an actual use of water rather than a hoarding of water for a speculative purpose. The purpose of the interstate water bank in the context of the Colorado River Compact is seemingly speculative because there has never been a compact call on the Colorado River. However, by making compact compliance a beneficial use of water, the water bank would store water for an actual use—compact compliance—rather than a speculative use.

Compact compliance as a beneficial use also satisfies the anti-speculation requirement of an assured water transfer because that determination is dependent upon a finding of beneficial use. Ideally, without the fear of speculation, compact compliance as a beneficial use will remove any hesitation in bringing states to the table to negotiate an interstate water bank agreement and afford them the flexibility in determining whether to participate.

C. Encouraging State Participation

In addition to diminished uncertainty with an interstate water bank program, compact compliance as a beneficial use has the potential to decrease transaction costs for states to contract to such a program.¹⁴⁷ By providing certainty regarding the legal status of the water right as well as to speculation concerns, compact compliance as a beneficial use increases the knowledge that is available to all states seeking to participate in the program, which in turn decreases transaction costs. The transaction costs associated with water transfers similarly would decrease because the entire amount of water deposited in the bank would count towards the historic consumptive use determination.¹⁴⁸

Further, compact compliance as a beneficial use would allow states to use existing infrastructure, as well as the River itself, to transport water to the bank, which would also decrease costs of participation. Existing infrastructure is

147. See *supra* note 135 and accompanying text. Because compact compliance as a beneficial use provides legal certainty regarding individual water rights and quashes any fear of speculation, states will be more apt to participate in the program.

148. WATER IN THE WEST, *supra* note 125, at 6-28 (recognizing that limiting the amount of water to be transferred to the historic consumptive use decreases transaction costs).

typically authorized for specific beneficial uses, and any extension of those systems requires authorization as well as beneficial uses.¹⁴⁹ Because deposits of water in the proposed bank would be considered a beneficial use of that water, there would be no concern that existing systems would be barred from transporting the water.

Lastly, because the language of the Upper Basin Compact specifically provides for only beneficial uses of Colorado River water, participation in the water bank would comply with this language if compact compliance is considered a beneficial use. Being compliant with the Upper Basin Compact, in turn, encourages states to participate in the program.

The legal certainty, with respect to water rights and compliance with the Upper Basin Compact, coupled with the possibility of using existing infrastructure to transport water to the bank, decrease transaction costs of participation in the water bank. These decreased costs will incentivize states to participate, and the decreased costs will bring them to the table to negotiate and contract to the proposed interstate water bank agreement. Encouraging state participation in this way strengthens the overall viability of the proposed interstate water bank program approach in addressing the problem facing the Colorado River Basin.

CONCLUSION

As the waters of the Colorado River shift and change over time, so too should our management of those waters. The increased stresses on the River due to climate change and population growth should put more pressure on us to adapt our administrative techniques. Given the finite constructs of the near-century-old Colorado River Compact of 1922, adaptation to changing waters is increasingly more difficult. The interstate water bank program is a proactive approach to the looming likelihood of a compact call, and while there are concerns with the viability of such a program, the solution to addressing those concerns can be found in the existing legal framework of water administration in the West.

The Colorado River is the lifeblood of the West, and we will

149. See *supra* note 29 and accompanying text regarding beneficial use and the CAP system.

always be inextricably tied to it, come Hell or high water. Marc Reisner said it well in *Cadillac Desert*:

One could almost say, then, that the history of the Colorado River contains a metaphor for our time. One could say that the age of great expectations was inaugurated at Hoover Dam—a fifty-year flowering of hopes when all things appeared possible. And one could say that, amid the salt-encrusted sands of the river's dried-up delta, we began to founder on the Era of Limits.¹⁵⁰

These limits are great indeed, but that does not mean the solutions to our growing water problems are beyond our reach. In fact, some may be hidden in plain sight, or at least in the existing legal and technical frameworks within our grasp.

150. REISNER, *supra* note 3, at 126.