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Water Scarcity and Aquatic Sustainability: Moving beyond Policy Limitations

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INTERNATIONAL PERSPECTIVES

WATER SCARCITY AND AQUATIC SUSTAINABILITY: MOVING BEYOND POLICY LIMITATIONS

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INTRODUCTION

Water scarcity is a problem in many areas of the world. In the United States, this is particularly so in the southwest, for example, California and Nevada recently have reported the driest June to May period since 1924.[1] The Colorado River supplies water to 30 million people in seven states and Mexico, as well as the Lake Mead and Lake Powell reservoirs, which are only half full and are unlikely to recover for years.[2] Western Canada is no exception, particularly in the South Saskatchewan River basin ("SSRB"), which begins at the Continental Divide and flows through southern Alberta and into Saskatchewan.[3] A

1. Patrick O'Driscoll, *A Drought for the Ages*, USA TODAY, June 8, 2007, *available at* http://www.usatoday.com/weather/news/2007-06-07-drought_N.htm (last visited Apr. 1, 2010).

2. *Id.*; *see also*, University of Colorado at Boulder et al., *Future of Western U.S. Water Supply Threatened by Climate Change*, SCIENCE DAILY, July 21, 2009, *available at* http://www.sciencedaily.com/releases/2009/07/090720163555.htm (last visited Apr. 1, 2010).

3. CLIMATE CHANGE AND WATER: SSRB FINAL TECHNICAL REPORT 32 (Lawrence Martz

small portion of the basin dips into Montana.[4] In Alberta alone there are about 20,000 statutory water withdrawal allocation authorizations with respect to the SSRB.[5] Because of water scarcity, in 2006 the Alberta government declared a moratorium on new surface or surface connected groundwater water licence allocations for most of the sub-basins in the SSRB[6] and later limited allocations to serve First Nations needs, to enhance instream flows, and for storage to release for existing water allocations.[7] In some areas of the SSRB not all allocations can come to fruition, and accordingly, junior allocators – those who made license applications later in time than more senior allocators – experience frequent and even substantial deficits.[8] Population increases, coupled with booming economies in the SSRB, continue to stress dwindling fresh water supplies.[9] Climate change will further impact supplies.[10]

It is axiomatic that aquatic ecosystem environments need water to remain healthy. In many areas of western North America, dwindling fresh water supplies threaten the health of the instream aquatic environment. Typically, reducing flows to levels less than the natural flow regime results in a less healthy aquatic environment. If enough water is taken away, the aquatic environment becomes severely impacted and degraded. It also is a simple truth that if the aquatic environment becomes severely compromised, the economic, recreational, and cultural values of a watercourse also become compromised.[11]

All, however, is not bleak for the world freshwater aquatic ecosystem

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et al. eds., 2007), http://www.usask.ca/geography/giservices/images/SSRB_Final_Report.pdf.

4. *Id.*

5. ALTA. ENV'T, SOUTH SASKATCHEWAN RIVER BASIN WATER MANAGEMENT PLAN PHASE TWO: BACKGROUND STUDIES 8 (2003) [hereinafter SSRB BACKGROUND STUDIES], http://www3.gov.ab.ca/env/water/regions/ssrb/pdf_phase2/SSRB%20Backgroud%20Studies%20Web%20FINAL.pdf.

6. ALTA. ENV'T, APPROVED WATER MANAGEMENT PLAN FOR THE SOUTH SASKATCHEWAN RIVER BASIN 6 (2006) [hereinafter SSRB WATER MANAGEMENT PLAN], http://www.environment.alberta.ca/documents/SSRB_Plan_Phase2.pdf.

7. *See* Bow, Oldman and South Saskatchewan River Basin Water Allocation Order, Alta. Reg. 171/2007.

8. *See* SSRB BACKGROUND STUDIES, *supra* note 5, at 21-22.

9. *See* SSRB WATER MANAGEMENT PLAN, *supra* note 6, at 1, 4.

10. D.W. Schindler & W.F. Donahue, *An Impending Water Crisis in Canada's Western Prairie Provinces*, 103 PROC. OF THE NAT'L ACAD. OF SCI. 7210 (2006), *available at* http://www.pnas.org/content/103/19/7210.full.pdf+html (last visited Apr. 1, 2010).

11. Although instream flow is a necessary condition for a healthy aquatic ecosystem, there are many other values achieved or enhanced by restoring and protecting instream water. The Instream Flow Council's third book on instream flow summarizes the intrinsic and utilitarian reasons why flowing rivers are important: "Rivers have provided sustenance and economic inputs for centuries. They drive grist mills and power entire civilizations. They move commerce from seaports inland and back. Rivers provide inspiration for song, poems, cultural traditions, child's play, and religious rites. Humans are more strongly drawn to flowing water than any other physical feature on Earth." ALLAN LOCKE ET AL., INTEGRATED APPROACHES TO RIVERINE RESOURCE STEWARDSHIP 1 (2008).

future. There are a number of approaches and tools that would help address water scarcity and provide water to enhance the aquatic environment through the restoration and maintenance of instream flow needs, or IFNs, meaning the amount of water scientifically determined to be required in a watercourse or water body to achieve and maintain a healthy aquatic ecosystem.[12] Some of these tools have been with us for a long time, some are new. Some are *direct* methods to replenish instream flow and improve water and aquatic ecosystem quality, and some only do so *indirectly*. A 'direct' approach is one where water is left or put into a watercourse directly and intentionally to restore or maintain instream flow.[13] An 'indirect' approach is one where an activity, or course or combination of activities, result in more water remaining in a water course, where the primary focus of the activity or activities is not the restoration or maintenance of instream flow.[14] More holistic management would require that water managers adopt both direct and indirect approaches so as to most efficiently and effectively restore and protect IFNs.

Examples of these tools or approaches are:

(A) measuring instream flow needs and scientifically determining how much water needs to be kept instream to meet IFN ;[15]

(B) releasing stored water to restore and maintain instream flow;[16]

(C) reducing or limiting withdrawals to enhance instream flow;[17]

(D) timing diversions and changing points of diversions to enhance instream flow;[18]

(E) invoking watershed management to control land use impacts on instream water quality and quantity;[19]

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12. *See* TOM ANNEAR ET AL., INSTREAM FLOWS FOR RIVERINE RESOURCE STEWARDSHIP 129 (rev. ed. 2004).

13. *See generally* James D. Crammond, *Leasing Water Rights For Instream Flow Uses: A Survey of Water Transfer Policy, Practices, and Problems in the Pacific Northwest*, 26 ENVTL. L. 225, 228 (1996) (providing a review of instream water right leasing approaches).

14. *See, e.g.*, Ginette Chapman, *From Toilet to Tap: The Growing Use of Reclaimed Water and the Legal System's Response*, 47 ARIZ. L. REV. 773, 781 (2005) (providing a discussion about expanding reclaimed water as a means to more cost-effectively serve municipal and industrial out-of-stream uses, where instream restoration is an indirect benefit of such activities).

15. *See, e.g.*, G. KASEY CLIPPERTON ET AL., INSTREAM FLOW NEEDS DETERMINATIONS FOR THE SOUTH SASKATCHEWAN RIVER BASIN, ALBERTA, CANADA iii (2003), http://ssrb.environment.alberta.ca/pubs/IFN_Main_Report.pdf. Although determining IFN is not restoring or protecting it, it is an important step to these ends.

16. *See, e.g.*, Bd. of County Comm'rs v. Upper Gunnison River Water Conservancy Dist. (*In re* Applications for Water Rights of Upper Gunnison River Water Conservancy Dist.), 838 P.2d 840, 845 (Colo. 1992).

17. *See, e.g.*, Swinomish Indian Tribal Cmty. v. Skagit County, 158 P.3d 1179, 1180 (Wash. Ct. App. 2007).

18. *See, e.g.*, Colo. Water Conservation Bd. v. City of Central, 125 P.3d 424, 440 (Colo. 2005).

19. *See, e.g.*, SWIMMING UPSTREAM: COLLABORATIVE APPROACHES TO WATERSHED MANAGEMENT 32 (Paul A. Sabatier et al. eds., 2005); KENNETH N. BROOKS ET AL., HYDROLOGY AND THE MANAGEMENT OF WATERSHEDS 5 (3d ed. 2003).

(F) moving from supply side to demand side management to reduce demand, improve water use efficiency and conservation, and provide opportunities for more water to be left instream;[20]

(G) adopting water conservation with the result of there being more water instream;[21]

(H) managing groundwater and surface water conjunctively so as to most efficiently utilize supplies and consequently provide opportunities for more water to be left instream;[22]

(I) recycling and reusing water supplies with the result that less water is diverted from a watercourse, leaving more water instream; [23]

(J) invoking federal reserve rights to restore and protect instream water;[24]

(K) using court or government action pursuant to species protection legislation to compel water to be left or put instream.[25]

This paper is based on the assumption that an approach or tool will be successful only if it may easily operate within the prevailing water rights and management law and policy framework. It is also an assumption that by understanding to what extent an approach or tool may operate within a framework, law and policy makers, and other water managers, can better understand the limitations of a framework when attempting to restore and protect aquatic ecosystems. This paper demonstrates how western North American water rights and management laws and policies are, in many ways, abrasive towards the implementation of various approaches to restore and protect instream flow. This paper argues that when this is the case, a government has a range of choices from sitting back and allowing water rights and management laws and policies to continue, thereby maintaining the *status quo* for instream values, to tinkering with water rights frameworks, to aggressively stepping in and modifying water rights and management laws and policies to better enable and facilitate the implementation of water management approaches that can lead to a better aquatic environment. This paper takes a comparative law approach, comparing the legal and policy water rights frameworks in western Canada, as typified by the province of Alberta, with various western U.S. states. Additionally, this paper contrasts both western North American approaches with those of South Africa and Australia.

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20. *See, e.g.*, ANTHONY G. WILLARDSON, WESTERN STATES WATER COUNCIL, WATER CONSERVATION AND WESTERN WATER RESOURCE MANAGEMENT 4-5 (1983).

21. *Id.* at 9.

22. *See, e.g.*, THOMAS C. WINTER ET AL., UNITED STATES GEOLOGICAL SURVEY, GROUNDWATER AND SURFACE WATER: A SINGLE RESOURCE 76 (1998), *available at* http://pubs.usgs.gov/circ/circ1139/.

23. *See* Chapman, *supra* note 14, at 774-75.

24. *See, e.g.*, Avondale Irrigation Dist. v. N. Idaho Props., Inc., 577 P.2d 9, (Idaho 1978).

25. *E.g.*, Endangered Species Act, 16 U.S.C. § 1531(c)(2) (2006).

Part II of this paper describes the legal and policy water rights frameworks in western North America, as typified by Alberta, and in the western U.S. states. Part III sets out legal and policy barriers inherent to these frameworks that make it difficult for governments to replenish and protect instream flow via new water management approaches. Part IV describes legal tools and mechanisms that jurisdictions have invoked in connection with restoring or protecting instream flows, and describes law and policy obstacles to their implementation. Part V considers ways to overcome barriers to instream flow restoration and protection. It explores water law and policy reform in South Africa and Australia as examples of jurisdictions that have intervened in their water rights and management frameworks to implement new water management approaches, and generally to make water rights and management more efficient and equitable. Part VI sets out a range of interventions, from modest to major, that a western North American jurisdiction might explore to better facilitate the restoration and maintenance of IFNs and identifies policy considerations regarding each intervention.

I. NORTH AMERICAN LEGAL WATER MANAGEMENT FRAMEWORKS AND RESTORING AND PROTECTING ENVIRONMENTAL FLOWS

A. EVOLUTION OF WATER RIGHTS AND MANAGEMENT SYSTEMS IN NORTH AMERICA

1. Riparian Rights

In the 1800's both the western United States and western Canada developed water rights systems based on "first in time, first in right" ("FTFR") in an attempt to address deficiencies in the prevailing common law.[26] The prevailing common law in the early 1800's in both countries was riparian rights.[27] A riparian owner is a person whose land abuts the shore of a natural watercourse, such as a river or a creek, or a natural body of water, such as a lake.[28] At common law, riparian owners or occupants possessed "riparian rights."[29] Although there are numerous riparian rights, the primary one is the right to use water.[30] At common law, a riparian owner or occupier has the right to have the water continue to flow past the property in its natural state.[31] Generally, there is not limit on the amount of water that a riparian owner may take for domestic purposes on the land itself.[32] "Domestic purposes"

26. *See, e.g.,* Irwin v. Phillips, 5 Cal. 140, 141-42 (1855); Arlene J. Kwasniak, *Quenching Instream Thirst: A Role for Water Trusts in the Prairie Provinces*, 16 J. ENVTL. L. & PRAC. 211, 218 (2006) [hereinafter Kwasniak, *Instream*].

27. *See e.g., Irwin*, 5 Cal. at 143; Kwasniak, *supra* note 26.

28. Harris v. Brooks, 283 S.W.2d 129, 132 (Ark. 1955).

29. *Id.*

30. *Id.* at 133

31. *Id.*

32. *Id.* at 132-34 (holding that use of water for domestic purposes holds no

means household purposes such as water for drinking, cooking, fire control, and for watering domestic livestock.[33] If a riparian owner uses the water for an "extraordinary" purpose, such as a commercial enterprise, the use must be reasonable, and the user must return the water to the watercourse substantially unaltered in quantity and quality.[34]

2. Western U.S. Prior Appropriation Water Rights

Western U.S. state FTFR water rights, known as "prior appropriation water rights," developed at common law.[35] They originally developed because water rights based on riparian ownership did not facilitate mining on federal public lands, where there was not a riparian water source.[36] Common law "pure" appropriation rights were much like staking a mining claim.[37] An appropriator went to a stream, diverted water by using some kind of structure, dug a ditch, and installed a device to regulate flow from the stream to the ditch.[38] The ditch carried the water to where the owner would put it to use.[39] The common law of prior appropriation became established through courts recognizing and upholding diversions as a species of property right[40] that vested by the appropriator applying the water from a natural stream to a beneficial use, without waste, and with due diligence.[41] In time, prior appropriation states recognized a variety of uses as beneficial, including household uses, agricultural uses, municipal uses, and industrial uses.[42] Many states now recognize, either statutorily or through case law, recreational, or instream uses,[43] as beneficial uses.

As property rights, U.S. appropriation rights are constitutionally protected through the Fifth and Fourteenth amendments to the U.S. Constitution.[44] This means that government cannot expropriate or "take" a water right, insofar as it is constitutionally protected, without due process

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restriction against those seeking to use the water for irrigation, manufacturing, fishing, or recreation).

33. *Id.* at 133.

34. *See* Consol. Water Supply Co. v. State Hosp. for Criminal Insane, 66 Pa. Super. 610, 5 (1917).

35. Coffin v. Left Hand Ditch Co., 6 Colo. 443, 446 (1882).

36. Irwin v. Phillips, 5 Cal. 140, 145-46 (1885).

37. *Id.* at 147.

38. State *ex rel.* Sorensen v. Mitchell Irr. Dist., 262 N.W. 543, 545 (Neb. 1935); JOSEPH L. SAX ET AL., LEGAL CONTROL OF WATER RESOURCES: CASES AND MATERIALS 118 (3d ed. 2000).

39. SAX ET AL., *supra* note 38, at 118.

40. *See Irwin*, 5 Cal. at 142, 146-47.

41. SAX ET AL., *supra* note 38, at 98.

42. *Id.* at 125.

43. *See, e.g.*, ADAM SCHEMPP, WESTERN WATER IN THE 21ST CENTURY, POLICIES AND PROGRAMS THAT STRETCH SUPPLIES IN A PRIOR APPROPRIATION WORLD 12 (2009). For a summary regarding states recognizing instream uses as beneficial uses *see* ANNEAR ET AL., *supra* note 12, at 74-75.

44. U.S. CONST. amend. V; U.S. CONST. amend. XIV, § 1.

and compensation.[45] If another appropriator questions an appropriation right, a lawsuit might ensue and a court would adjudicate appropriation claims. A court enforces appropriation rights against other appropriators in accordance with the FTFR principle such that earlier appropriation rights have a greater right (priority) to water put to a beneficial use than later appropriation rights.[46] Such adjudication is possible because courts interpret appropriation rights as property rights enforceable against the world. However, because appropriation rights are property rights, junior appropriators may attack those rights by claiming forfeiture or abandonment of senior rights, thus bettering their own position.[47]

Early in the history of appropriation rights, the government rarely, if ever, involved itself in the acquisition of an appropriation right.[48] Eventually appropriation states developed permit systems, but some scholars have deemed these systems essentially "recording devices."[49] In other words, a right did not arise because of the issuance of a permit. The right arose at common law, and the permitting system perfected and recorded them. Eventually all appropriation states, save Colorado, developed permit systems.[50] However, there is a question regarding how much discretion a public authority may exercise in carrying out permitting functions in the face of available water and the satisfaction of common law rules for appropriation. This is especially true in states where the state constitution recognizes the right to appropriate.[51]

3. Western Canadian Prior Allocation Water Rights

The Canadian Dominion realized early in western Canadian history that water use rights based on riparian ownership or occupancy would not be appropriate for settlers in the arid western prairie provinces.[52] To attract settlement in the dry prairies, the Canadian Dominion

45. U.S. CONST. amend. V. There are issues surrounding what would amount to a "taking" of a U.S. FTFR water right. For example, would a modification of a right in the public interest so that less water may be appropriated in times of shortage to allow some water to remain instream constitute a "taking?" *See* Sandra B. Zellmer and Jessica Harder, University of Nebraska-Lincoln Law Center, *Water as Property, available at* http://watercenter.unl.edu/Downloads/ResearchInBrief/WaterAsPropertyUnicameral (last visited Apr. 1, 2010) [hereinafter Zellmer and Harder, *Property*] (referencing J. H. Archer & T. W. Stone, *The Interaction of the Public Trust and the "Takings" Doctrines: Protection Wetlands and Critical Coastal Areas*, 20 VT. L. REV. 81, 115 (1995)). *See also* Sandra B. Zellmer and Jessica Harder, *Unbundling Property in Water*, 59 ALA. L. REV. 679 (2008).

46. *See* Coffin v. Left Hand Ditch Co., 6 Colo. 443, 447 (1882).

47. *E.g.*, Jenkins v. State Dep't of Water Res., 647 P.2d 1256, 1260 (Idaho 1982).

48. SAX ET AL., *supra* note 38, at 132.

49. *Id.*

50. *Id.* at 131.

51. The strongest statement arises in Article 16, section 6 of Colorado's constitution, which states that the "right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied." COLO. CONST. art. 16, § 6 (2009).

52. David R. Percy, *Water Law of the Canadian West: Influences from the Western States, in* LAW FOR THE ELEPHANT, LAW FOR THE BEAVER 274, 281 (John McLaren et al. eds. 1992) [hereinafter Percy, *Canadian*]; Kwasniak, *supra* note 26, at 218.

needed to convince prospective settlers of the suitability of the land for farming.[53] A key element was the Dominion demonstrating sufficient water supplies.[54] Under the North-West Territories Act of 1870, [55] the area then comprising the North-West Territories[56] received all English law relating to water. [57] This meant that the common law of riparian rights, at least at first, governed the North-West territories. The doctrine of riparian rights, however, was not a suitable water rights system to attract settlers to the dry prairies.[58] Canadian Parliament, in seeking a solution, looked to jurisdictions that had to some degree ousted riparian rights to facilitate agriculture in the face of aridity.[59] It looked to Victoria, Australia, where the Legislature passed the Irrigation Act (1886) that claimed Crown ownership of surface water and initiated a government-controlled water rights system.[60] It also looked to the western U.S. states where prior appropriation water rights developed at common law.[61] Parliament settled on a legislative solution with the North-West Irrigation Act of 1894.[62] This Act introduced a water rights system similar to U.S. prior appropriation in that the Act incorporated the principle of FTFR.[63] The Act based priority to water on the date of completed application to the public authority.[64] In times of shortage, junior licensees – those with a later dated priority – had no right to water until all senior rights became satisfied.[65] Until 1930, water management for the prairies rested with the federal government, but after 1930, with the federal transfer of natural resources to Manitoba, Alberta, and Saskatchewan, water resource legislative authority and management fell within provincial jurisdiction.[66] Subsequent to the transfer, each of these provinces passed water management legislation that largely mirrored the federal Act.[67]

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53. *See* Percy, *Canadian*, *supra* note 52, at 281.

54. *Id.*

55. The North-West Territories Act, 50 R.S.C., 1893 60-61 Vic., c. 28, s 4 (Can.).

56. The Northwest Territory initially consisted of what is today the Yukon Territory, most of the Northwest Territory, northern Alberta and northern Saskatchewan (which today comprises northern Quebec and Ontario), the entire province of Manitoba, most of Saskatchewan, and part of Alberta. *See* David J. Hall, *North-West Territories, 1870-1905, in* CANADIAN ENCYCLOPEDIA (2010), *available at* http://www.thecanadianencyclopedia.com/PrinterFriendly.cfm?Params=A1ARTA0005805 (last visited Apr. 1, 2010); C. MARTIN, "DOMINION LANDS" POLICY 2-5 (1938).

57. *See* John E. Côté, *The Introduction of English Law into Alberta*, 3 ALTA L. REV. 262, 264 (1964).

58. *See* Percy, *supra* note 52, at 275-76.

59. *Id.* at 275-76, 285.

60. *Id.* at 285; EDWYNA HARRIS, AN EXAMINATION OF WATER RIGHTS IN TRANSITION IN COLONIAL VICTORIA, AUSTRALIA 1840-1886 15 (2006) http://www.isnie.org/ISNIE06/Papers06/03.4/harris.pdf.

61. Percy, *Canadian*, *supra* note 52, at 282-83.

62. North-West Irrigation Act, 61 Vict., S.C., ch. 35, s 4 (1894), amended by 1898 ch. 35 (Can.).

63. *Id.* at s. 25.

64. *Id.*

65. *Id.*

66. Percy, *supra* note 52, at 285.

67. Alta. Water Act, R.S.A. 2000, c. W-3, s. 30 (Can.); Water Rights Act, R.S.M. 1988,

FTFR water rights in western Canada exist as statutory rights.[68] For example, the Alberta government *allocates* water to users pursuant to statutory authority in contrast to users in western U.S. *appropriating* water in accordance with common law and legislation.[69] Hence, the government licenses prior allocation statutory FTFR rights in Alberta, in contrast to western U.S. prior appropriation rights.[70] As well, western Canadian FTFR rights in all likelihood are not property rights, although the courts have not determined this matter. Legal scholars, however, have suggested that these water rights do not confer a property right.[71] In any case, under legislation only the government can enforce prior allocation water rights, and these rights are not enforceable against the world. So, if a junior licensee wishes to challenge a senior right, the junior is at the mercy of the government. If, for example, the government chooses not to pursue a forfeiture allegation, there is little or nothing that the junior can do.[72]

Unlike the United States, neither the Canadian Constitution nor the Charter of Rights and Freedoms protect property rights.[73] So even if water allocation rights were property rights, there is no constitutional guarantee of procedural or substantive due process if a level of government attempts to modify or extract them.[74] Finally, in contrast to

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ch. W80, s. 8; Saskatchewan Watershed Authority Act, S.S. 2005, ch. S-35.03, s. 50.

68. North-west Irrigation Act, 1898 61 Vict., S.C., ch. 35, s. 4 (Can.).

69. *See, e.g.,* COLO. CONST. art. 16, § 5; Oldman River Basin Water Allocation Order (Water Act) Alberta Regulation 319/2003 (Can.); Coffin v. Left Hand Ditch Co., 6 Colo. 443, 446-47 (1882).

70. *See* Oldman River Basin Water Allocation Order (Water Act) Alberta Regulation 319/2003 (Can.).

71. *See, e.g.*, ALASTAIR R. LUCAS, SECURITY OF TITLE IN CANADIAN WATER RIGHTS 31 (1990). This claim is made only of licensed water allocation rights and not of water rights generally. Riparian rights for domestic use have, in a limited manner, survived water resource legislation. Riparian rights are usufructory property rights.

72. Alta. Water Act, R.S.A. 2000, c. W-3, s. 55(1)(f) (Can.) (authorizing a director to cancel or suspend a license for lack of use in limited circumstances, with no citizen enforcement provision in the Water Act. Although private prosecutions are possible under Canadian law, this process is available only where the offense is clear).

73. *See* Constitution Act, 1867, 30 & 31 Vict. ch. 3 (U.K.), *as reprinted in* R.S.C., No. 5 (Appendix 1985); Canadian Charter of Rights and Freedoms, Constitution Act 1982, Part I.

74. *See* Constitution Act, 1867, 30 & 31 Vict. ch. 3 (U.K.), *as reprinted in* R.S.C., No. 5 (Appendix 1985). There is no mention of property rights, and due process guarantees in Canada's Constitution. Not surprisingly, although there is ample Canadian case law dealing with out-and-out expropriations of land, there is no body of jurisprudence dealing with alleged regulatory takings, as there is in the United States. Of the occasional cases where Canadian litigants ask courts to order compensation where government action has restricted a property right, most attempts are unsuccessful. This is because the tests for a regulatory taking are strict and hard to establish. The Queen in Right of British Columbia v. Tener, [1985] 1 S.C.R. 533 (Can.) is one of the leading "takings" cases or, as it is often called in Canada, *de facto* expropriation cases. The Plaintiffs owned mineral claims granted by the Province of British Columbia. *Id.* at 6. The B.C. government, through legislation and regulatory actions, made it impossible for the Teners to access their claims to develop them. *Id.* at 24. The Plaintiffs were successful in their *de facto* expropriation claim, but the Supreme Court laid down strict rules for establishing it. Plaintiffs must prove:

(a) The existence of a property interest that was extracted by virtue of

U.S. prior appropriation states, in Alberta "beneficial use" concerns neither the *measure* nor the *limit* of a prior allocation right.[75] In fact, the notion plays no formal, legal role in determining the nature of an Alberta water right. Legislation sets out the *measure* and *limits* of a prior allocation right.[76] Under Alberta legislation, the water right is *the right to divert*, and the measure and limits are the quantity of water, rate and diversion point stated in a license, expressed purpose for the diversion, stated conditions of use, and applicable rights and limitations under prevailing legislation.[77] Hence, to avoid confusion, when referring to Alberta water law, this paper does not employ the term "beneficial use." Instead, it uses the expression "licensable use."

B. PRIOR APPROPRIATION, PRIOR ALLOCATION, AND INSTREAM FLOW

One of the gravest consequences of water shortages on both sides of the U.S./Canada border is the impact on instream flow needs. The exercise of prior appropriation and prior allocation water rights can completely dewater rivers and streams.[78] There is nothing inherent to these systems to stop appropriators or allocators from exercising their rights, albeit in accordance with the FTFR principle. In pure prior appropriation or allocation systems, those based only on FTFR and appropriation or allocation entitlement without conditions, the government may only stop out of stream diversions from water scarce areas when it takes emergency action.[79] Governments normally are hesitant to declare emergencies (which usually remove governance from Legislature to the Executive during the emergency), and courts are hesitant to endorse government action if a party challenges it.[80] As

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government legislation,

(b) The deprivation of the interest by government action,

(c) The acquisition of the interest by the government, and

(d) That legislation explicitly or implicitly provides for compensation for the taking of the right.

Regarding (a): the fact that the mineral interest was an interest in land was not contested. It was either a property interest in the nature of a *profit a prendre* that consisted of an access right and exploitation right, or a simple mineral title interest. *Id.* at 3, 6. Regarding (b): the Supreme Court found that the government's absolute refusal to issue a permit amounted to total extraction of the interest. *Id.* at 23-24 The Teners were left with nothing. Regarding (c): the Supreme Court noted that once the Crown *de facto* extinguished the Teners' interest, the right to access or profit a prendre, was, in effect, absorbed back into the Crown's fee title. *Id.* at 3. Regarding (d): the Supreme Court found that there was an explicit right to compensation under the British Columbia Parks. *Id.* at 4; *see also* British Columbia Park Act, 1996, ch. 344, §§ 6, 9, 11, 18 (B.C. 2009).

75. *See generally* The Alberta Water Act, § 51; Water (Ministerial) Regulation, ALTA. REG. 205/1998, § 11 (2010) (including, as licensable purposes, management of wildlife, habitat enhancement, and recreation) (Can).

76. *See generally* The Alberta Water Act, § 51.

77. *See generally* The Alberta Water Act, § 51.

78. ROBERT GLENNON, WATER FOLLIES: GROUNDWATER PUMPING AND THE FATE OF AMERICA'S FRESH WATERS 16-17 (2002); Kwasniak, *supra* note 26, at 215.

79. *See* Kwasniak, *supra* note 26, at 221.

80. For example, Canadian case law indicates that courts usually will allow executive exercise of legislated emergency powers only in extreme situations of clearly unforeseen

well, western U.S. governments may be reluctant to prohibit or limit diversions for fear of interference with property rights. Western Canadian governments also may be reluctant to take emergency measures but more because of their concerns about interference with vested rights, since allocation rights likely do not amount to property rights.

II. LEGAL BARRIERS INHERENT IN NORTH AMERICAN LEGAL WATER MANAGEMENT FRAMEWORKS TO ADOPTING NEW MANAGEMENT APPROACHES TO RESTORE AND PROTECT ENVIRONMENTAL FLOWS

A. INTRODUCTION

There are legal and policy barriers inherent to prior appropriation and prior allocation frameworks that make it difficult for governments to replenish and protect instream flow through the use of new water management approaches. This part of the paper sets out some, though not all, of such barriers. This paper identifies a core aspect of prior appropriation or allocation and then describes how it can be a barrier to new approaches to water management to restore or protect instream flow. Although the discussion is not exhaustive of how prior appropriation or allocation can pose a barrier, it covers, at least once, each new water management approach Part I identifies.

B "USE IT OR LOSE IT" (FORFEITURE)

Western U.S. prior appropriation water rights are based on the premise that if water is not used for a beneficial purpose, the holder forfeits the right, in whole or part.[81] Hence, the maxim "use it or lose it" applies. Since the provincial government legislates prior allocation rights, and these rights are not common law rights, the government must legislate any "use it or lose it" provisions.[82] Alberta's provisions are considerably weak. The Director may only cancel a license for lack of use if the licensee does not use the water for three years or more, and the Director foresees no reasonable prospect of any water use in the future.[83] There is no provision for partial cancellations, except where

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emergencies and that the powers may only be exercised during the emergency and no longer. *See, e.g.*, Kuypers v. Langley, [1992] CarswellBC 9, ¶¶ 16, 21, 22, 52 (Can.). In *Kuypers,* the defendant township declared via by-law a state of emergency pursuant to emergency powers in municipal legislation with regard to the frequency and severity of unprovoked attacks by "dangerous dogs." *Id.* at ¶¶ 16, 21-23. Justice Hogarth of the British Columbia Supreme Court determined that there was no "emergency," as defined in the Shorter Oxford English Dictionary definition of emergency as "the sudden or unexpected occurrence (of a state of things)." *Id.* at ¶ 22. Applying this to instream flow, a court would likely not find such deficits to be "sudden and unexpected" and, in any case, instream flow normally would require replenishment beyond an actual emergency situation.

81. Sears v. Berryman, 623 P.2d 455, 459 (Idaho 1981).

82. *See, e.g.* Alta. Water Act, R.S.A. 2000, c. W-3 (Can.)

83. Alta. Water Act, R.S.A. 2000, c. W-3, s. 55(1)(f) (Can.).

works are insufficient to handle the entire allocation.[84] Accordingly, in contrast to U.S. appropriators, "use it or lose it" should not be a huge threat to Alberta allocators if they choose to leave unneeded amounts instream. On the other hand, the legislated version of "use it or lose it" does not function to facilitate leaving water instream, and nothing prevents other allocators from using the amounts left instream.

The "use it or lose it" threat is thus an incentive to use one's maximum appropriation, whether or not an appropriator or allocator needs it. Here are some examples regarding how "use it or lose it" acts as a disincentive to some of the new water management approaches set out in Part I:

(c) Reducing or limiting withdrawals to enhance instream flow: "Use or lose it" is a disincentive to reduce or limit permitted withdrawals to enhance instream flow.

(f) Moving from supply side to demand side management to reduce demand, improve water use efficiency and conservation, and provide opportunities for more water to be left instream:

"Use it or lose it" is a disincentive to moving from supply side to demand side as not using an entire permitted amount could lead to loss of right.

(g) Adopting water conservation with the result of there being more water instream:

"Use it or lose it" is a disincentive to adopting water conservation because the conservator could lose part of a water right through conservation measures.[85]

Some states have taken steps to relax "use it or lose it" in order to increase instream flow. The earliest example of this approach is Oregon's 1987 Conserved Water Statute.[86] The legislation establishes a voluntary program that allows water rights holders to sell or lease up to 75% of water they conserve without losing water rights in accordance with "use it lose it."[87] Under the statute, the state allocates at least 25% of conserved water for instream use.[88] In 1995 the Montana Legislature modified its water use legislation to enable water right holders to lease all or a portion of their water rights to the Montana Water Trust such that the amount left instream is not subject to the "use it or lose it"

84. *Id.* s. 54(1)(a)(vii).

85. Some states have gotten around this by declaring conserved water a beneficial use. For example, Texas explicitly recognizes conserved water, meaning water "saved by a holder of an existing permit, certified filing, or certificate of adjudication through practices, techniques, and technologies that would otherwise be irretrievably lost to all consumptive beneficial uses arising from storage, transportation, distribution, or application." *See* TEX. WATER CODE ANN. § 11.002(9) (Vernon 2009). The requirement that the water would dissipate if not conserved limits the utility of this provision for restoring instream flows. California has a similar provision, see CAL. WATER CODE § 1011(a) (West 2010).

86. OR. REV. STAT. §537.460 (2009).

87. *Id.* §§ 537.470(3), .490(2).

88. *Id.* §537.470(3).

maxim.[89] Although such statutory modifications of the "use it or lose it" aspect of the prior appropriation doctrine have occurred, such incidents are piecemeal and do not address the underlying anti-water conservation policy of the prior appropriation system.

C. "FIRST IN TIME FIRST IN RIGHT"

Core to both prior appropriation and prior allocation legal frameworks is that the earlier the water right, the better the priority to water in times of shortage.[90] Here are some examples of how FTFR can act as a barrier or disincentive to adopting some of the new water management approaches to restore or protect instream flow identified in Part I:

(a) Measuring instream flow needs and scientifically determining how much water needs to be kept instream to meet IFN: Although FTFR does not prevent measuring instream flow needs and scientifically determining how much water needs to remain instream to meet IFN, it prevents protection in fully or over allocated water courses unless water rights become transferred to instream uses.[91] Further, as the next Part demonstrates, there are legal barriers to instream water rights being full players in the water rights acquisition or transfer regimes.

(b) Releasing stored water to restore and maintain instream flow: Generally speaking, stored water must be used in accordance with the permitted, beneficial use of the appropriation or allocation right.[92] Accordingly, unless the permitted purpose of stored water is to enhance instream flow, a user may not place water in storage unless for that purpose.[93] As well, as Professor Dan Tarlock points out, stored water backstops water rights to relieve the sting of shortages by making water rights firm even in water short years.[94] If anything, storing water when it is not immediately required reduces water instream that might otherwise be available for instream purposes.[95]

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89. MONT. CODE ANN. § 85-2-102(2)(a) (2009); Rob Chaney, *Missoula-Based Clark Fork Coalition Takes In Montana Water Trust*, MISSOULIAN, Feb. 26, 2010, *available at* http://www.missoulian.com/news/state-and-regional/article_fa00d51e-2290-11df-a6d2-001cc4c002e0.html (last visited Apr. 1, 2010); SASHA CHARNEY, COLO. WATER CONSERVATION BD., AN ANALYSIS OF INSTREAM FLOW PROGRAMS IN COLORADO AND THE WESTERN UNITED STATES 39, 45, 47 (2005) http://cwcb.state.co.us/NR/rdonlyres/140CFE4B-65FC-47C5-9A26-99CCB45A8D45/0/ISFCompStudyFinalRpt.pdf.

90. *See* Archuleta v. Gomez, 140 P.3d 281, 284 (Colo. App. 2006); Berscheid v. Ensign, [1999] CarswellBC 1111, ¶ 10 (Can.).

91. *See generally* A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RESOURCES J. 769, 772 (2001).

92. *See* COLO. REV. STAT. § 37-92-305(9)(a) (2009).

93. *Id.*

94. Tarlock, *supra* note 91, at 771.

95. However, a storage right may not be exercised if it interferes with other appropriative rights. This is because the right to store water rather than to use it directly from a source is subject to the no injury rule. For example, an irrigator may not exercise

(h) Managing groundwater and surface water conjunctively so as to most efficiently utilize supplies and consequently provide opportunities for more water to be left instream: Water rights based on FTFR are not always conducive to managing groundwater and surface water conjunctively. Experts report that

> [s]treams and rivers and shallow groundwater (or underflow) are often hydrologically linked. When such water is extracted from shallow groundwater aquifers, there may be related short- or long-term reductions in connected surface flows. . . . Consequently, the regulation and allocation of water should recognize the tributary relation between subsurface and surface waters.[96]

Unfortunately, until fairly recently, groundwater rights based on FTFR could be acquired without consideration of instream flow impacts, including any adverse impacts during low flow periods.[97] More enlightened water management would require groundwater withdrawals to avoid adverse impacts on instream flow during low flow periods, while enabling the groundwater user to store water for use during low flow conditions.

Even more worrisome than the fact that FTFR groundwater and FTFR surface water rights may not coalesce to result in efficient and instream flow-friendly water management is the fact that much groundwater use remains unregulated.[98] This is groundwater that domestic users divert under a well exemption from the priority system.[99] If a jurisdiction has an exempt well policy, then a groundwater user may divert water up to the amount of the exemption for any exempt purpose without an appropriation permit.[100] Professor Glennon states that most all states do not regulate exempt wells.[101] He surmises that "[m]ost states have tens of thousands, or even hundreds of thousands, of exempt wells" and that most of them are "relatively shallow and usually located near rivers, streams, or wetlands [and] their cumulative impact on

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a water right to store water for future irrigation if removing the water from source would interfere with the rights of other appropriators. *See* 45 AM. JUR. 2D *Irrigation* § 8 (2007).

96. ANNEAR ET AL., *supra* note 12, at 76.

97. Most, but not all, western states, subject to various exceptions, regulate groundwater based on FTFR. States using this method include Alaska, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. *See* JOHN W. JOHNSON, UNITED STATES WATER LAW: AN INTRODUCTION 66 (2009). The exceptions are discussed in the text of this paper *circa* this note. "Most states today recognize at least some connection between groundwater and surface streams." *Id.* at 69. For example, Colorado now defines "groundwater" as tributary to surface water in some situations. *Id*; *see also* COLO. REV. STAT. § 37-90-103(10.5), (10.7) (2009) (defining groundwater in terms of nontributary and not nontributary).

98. *See* GLENNON *supra* note 78, at 59.

99. *Id.*

100. *Id.*; *see, e.g.*, S.D. CODIFIED LAWS § 46-5-8 (2009).

101. GLENNON *supra* note 78, at 59.

surface flows can be substantial."[102]

(i) Recycling and reusing water supplies with the result that less water is diverted from a watercourse, leaving more water instream:

FTFR water rights legal systems do not always easily accommodate recycling and reusing water supplies, and thus do not easily accommodate returning recycled, reused water to the stream for the purpose of protecting instream flow.[103] FTFR rights originally were premised on water being taken from a river or other natural source and put to beneficial use or, in western Canada, to a licensable use.[104] Gradually, rights to store water developed within appropriation or allocation systems to be put to use when needed.[105] However, FTFR rights as they originally developed did not accommodate the secondary re-use or recycling of water after being put to the original beneficial or licensable use.[106] As a result, in a given jurisdiction there may be a question as to whether one may appropriate or allocate water that is recycled or waste. A related question is whether re-use or recycling is permissible in a water rights legal system, or whether one must return the water to its source after the primary use and make it available to other appropriators or allocators. States and provinces have developed an array of approaches to resolve these issues. [107]

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102. *Id.*

103. For an exception that enables the legal protection of water for instream uses, see CAL. WATER CODE § 1210 (West 2009).

104. Alberta Statutes, R.S.A. 2000, c. W-3, s. 49(1) (Can.); *see generally* JOHNSON, *supra* note 97, at 66.

105. *See* A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 5.37 (2009).

106. James W. Johnson et al., *Reuse of Water: Policy Conflicts and New Directions,* 38 ROCKY MTN. MIN. L. INST. § 23.01, § 23.02 (1992).

107. For example, regarding whether waste or recycled water may be appropriated, under Arizona law: "The waters of all sources, flowing in streams . . . waste or surplus water . . . belong to the public and are subject to appropriation and beneficial use . . . ." ARIZ. REV. STAT. ANN. § 45-141(A) (2006). Read plainly, Arizona law permits appropriation of wastewater. By contrast, the Colorado constitution refers only to the appropriation of "natural" streams and waters, therefore, assuming wastewater is not "natural water" it cannot be appropriated. COLO. CONST. art. XVI, § 5. Nevada law authorizes appropriation from "all sources of water supply" and thus should include wastewater or recycled water. NEV. REV. STAT. ANN. § 533.025 (2009). But under Wyoming law, appropriation of wastewater is unlikely since the Wyoming constitution only enables the water of "natural streams, springs, lakes or other collections of still water" to be state water, and a statute provides that only state water may be appropriated. WYO. CONST. art. VIII, § 1; WYO. STAT. ANN. § 41-3-101 (2010). In Alberta, "water" means "all water on or under the surface of the ground, whether in liquid or solid state." Alta. Water Act, R.S.A. 2000, c. W-3, s. 1(fff) (Can.). Thus, although there is no case authority on the issue, arguably "water" includes wastewater or recycled water. Regarding the legal question of whether used water must be returned to source, the common law "rule of return to common supply" can foil plans to re-use or recycle water. *See* Johnson et al., *supra* note 106, at § 23.02. The rule of return to common supply dictates, "water not consumed in the initial beneficial use must be allowed to return to the common supply for the benefit of other water users." *Id.* In the above referenced 1992 Rocky Mountain Mineral Law Institute publication, the authors suggest that

D. BENEFICIAL USE OR LICENSABLE USE

Core to appropriation rights is the requirement that users put the water to a beneficial use.[108] Similarly, western Canada's water allocation system requires a licensable use.[109] The beneficial/licensable use requirement could encumber approaches to effect instream flow restoration and protection identified in Part I:

(a) Measuring instream flow needs (IFN) and scientifically determining how much water needs to be kept instream to meet IFN:

A prior appropriation or allocation framework cannot protect necessary instream flow water unless the state recognizes instream flow as a beneficial or licensable use of water.[110] Over the last few decades, all western U.S. states, with the possible exception of New Mexico, have recognized at least some instream use as a beneficial use.[111] However, the range of beneficial instream uses vary from state to state, and states do not typically include all instream uses that need protection Most western U.S. state-legislated definitions of instream use as a beneficial use include water for fish, but only Idaho and Washington specifically mention other aquatic life besides fish.[112] Idaho is the only state to explicitly mention aesthetic beauty in its statute,[113] and together with Oregon, they are the only states with statutes to specifically mention pollution control or abatement.[114] Idaho limits what may be considered an instream beneficial use to "minimum stream flows"[115] which, as instream flow experts point out, may be inadequate to meet instream flow needs ideally

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"[m]ost reuse cases can be viewed as exceptions to the rule," and that these exceptions "have arisen in a specific context" where there was "in the court's view, a desirable social policy or specific factual circumstances favoring the permitted reuse." *Id.* There has been much litigation in the southwest U.S. on whether used water must be returned to source as a matter of law. In the context of municipal and industrial effluent cases, for example, in 1925 the Wyoming Supreme Court determined that effluent is such a noxious substance that it may be disposed of in any way the city sees fit. *Id.* § 23.04; Wyo. Hereford Ranch v. Hammond Packing Co., 236 P. 764, 772 (Wyo. 1925). A few years prior, the Colorado Supreme Court determined that water may be reused or otherwise disposed of but only if it is uneconomical to return it to the common supply. Johnson et al., *supra* note 106, at § 23.04; Pulaski Irrigation Ditch Co. v. City of Trinidad 203 P. 681, 683 (Colo. 1922). The Colorado approach differed from Wyoming because it seemed to create an obligation to explore all practicable alternatives to enable a return to the common supply, prior to disposal of effluent by evaporation. Johnson et al., *supra* note 106, at § 23.04.

108. TARLOCK, *supra* note 91, at 74.

109. Alta. Water Act, R.S.A. 2000, c. W-3, s. 49(1) (Can.).

110. *See* ANNEAR ET AL., *supra* note 12, at 75.

111. *Id.* at 12, 57-70.

112. *Id.*

113. IDAHO CODE ANN. § 42-1501 (2009).

114. *E.g.*, IDAHO CODE ANN. § 42-1734A(1)(d) (2009); OR. REV. STAT. § 537.336(2) (2007).

115. *E.g.*, IDAHO CODE ANN. § 42-1501 (2009).

based on a "natural flow paradigm."[116] These are but a few examples of the limitations on beneficial use recognition for instream flow.

The western Canadian provinces fare about the same. For example, Alberta's legislation specifically allows a number of instream type uses to be licensed, but the list is not comprehensive.[117] Accordingly, even though a state or province recognizes instream use as a beneficial or licensable use, it does not follow that the state or province enables the protection of all instream values.

E. INFLEXIBILITY REGARDING CHANGES OF DIVERSION POINT OR TIMING OF DIVERSION

Instream flow can be enhanced from time to time if water users change the timing or the point of diversion.[118] Here are examples of how this inflexibility poses difficulties in applying some of the new approaches to water management to enhance or protect instream flow:

(d) Timing diversions and changing points of diversions to enhance instream flow:

Prior appropriation and prior allocation water rights systems are inherently inflexible in this regard. Since these systems remain based on FTFR, the systems must, as much as possible, require that users retain the original conditions of use so that neither senior nor junior expectations for water are defeated by alteration of rights.[119] This results in burdensome administrative requirements for changing diversion point or timing, even when such changes do not impact other users.[120] For example, in Alberta, a licensee must apply to the Director for a license

116. *See* Ruth Mathews, *Instream Flow Protection and Restoration: Setting a New Compass Point*, 36 ENVTL. L. 1311, 1327 (2006) (discussing the "natural flow paradigm" as the optimal system and explaining "natural flow paradigm" as accounting for the seasonal patterns in terms of the magnitude, frequency, timing, and duration of the natural flow for interanual and intrannual seasonal flow). *See also* NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, THE SCIENCE OF INSTREAM FLOWS: A REVIEW OF THE TEXAS INSTREAM FLOW PROGRAM 140 (2005) (defining "minimum flow" to mean "[t]he lowest streamflow required to protect some specified aquatic function as established by agreement, rule, or permit," and "natural flow" as the "flow regime of a stream as it occurs under completely unregulated conditions; that is, a stream not subjected to regulation by reservoirs, diversions, or other human works.").

117. Water (Ministerial) Regulation, ALTA. REG. 205/1998, § 11 (2010) (including, as licensable purposes, management of wildlife, habitat enhancement, and recreation) (Can).

118. *Cf.* Colo. Water Conservation Bd. v. City of Central, 125 P.3d 424, 440 (Colo. 2005) (holding that municipality, in its administrative application to change certain water rights and diversions thereto, must provide a comprehensive augmentation plan to replace diverted waters so as not to violate the state's "no injury" statute, thereby protecting an adjudicated instream flow water right holder as entitled to the protection of the state's "no injury" statue).

119. *Id.*

120. *Id.*; *see also* COLO. REV. STAT. § 37-92-305(3)(b) (2009) (outlining the required administrative procedure to change an instream flow water right).

amendment to change licence conditions of the original license.[121] The process may be subject to public notice and review by those potentially "directly affected" by the amendment.[122] Comparable requirements apply in western prior appropriation jurisdictions.[123]

F. TIED TO TAND

Both prior appropriation and prior allocation rights are conceptually related to the land to which the right applies. In both western Canada and the western U.S., the FTFR water right was adopted so that non-riparian land, and improvements on specific parcels of non-riparian land, could benefit from the use of water.[124] Again, in both western Canada and the western U.S., water rights "attach" or are "appurtenant" to specific parcels of land and, short of a water right transfer to another parcel, which is a highly regulated process in most jurisdictions, the attachment cannot be altered.[125] If a water right is transferred, the right remains appurtenant to land; it is just appurtenant to a different parcel of land.[126] This core aspect of prior appropriation or allocation can pose a barrier to adopting a new water management approach to restore or protect instream flow. For example from Part I:

(a) Measuring instream flow needs and scientifically determining how much water needs to be kept instream to meet IFN:

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121. Alta. Water Act, R.S.A. 2000, c. W-3, s. 54(1)(b) (Can.) (requiring that the Director must be of the opinion that a change will not result in an "adverse effect on the rights of a household user, other licensee or traditional agriculture user and that the proposed change will not adversely affect the ability to conserve or manage a water body.").

122. *Id.* s. 115(1)(a)(i).

123. *E.g.*, *compare* MONT. CODE ANN. § 85-2-402(12) (2009) (requiring the water right holder to submit to the Water Resources Division an "application for change in appropriation right") *and* WYO. STAT. ANN § 41-3-104(a) (2009) (requiring the water right holder to file a change "petition" with the Board of Control, which shall determine that other appropriators are not injured by the change).

124. *See generally* United States v. Gerlach Live Stock Co., 339 U.S. 725, 745-46 (1950) (discussing the origins of the prior appropriation doctrine); Irwin v. Phillips, 5 Cal. 140, 146 (1855) (adopting prior appropriation doctrine); *accord* Percy, *supra* note 52, at 281.

125. Nebraska v. Wyoming, 325 U.S. 449, 614 (1945) (holding that a water right is appurtenant to the land) *accord* Nevada v. United States., 463 U.S. 108, 126 (1983); *see also* Lightning Creek Mining Co. v. Hopp, [1914] 19 B.C.R. 586, ¶ 43 (Can.) (holding that a lease to certain real property necessarily included the granted water rights to that certain real property as they are appurtenant and attach to the land).

126. *See, e.g.*, Navajo Dev. Co., v. Sanderson, 655 P.2d 1374, 1377-78 (Colo. 1982) (holding that "water rights may be bought and sold without regard to the real property over which the water flows" but such transfers are limited by the doctrine of prior appropriation in that the water must still be put to beneficial use upon the land to which it is appurtenant).

Unless legislation has specifically addressed the appurtenancy requirement, waters determined necessary for instream flow cannot be protected within a prior appropriation or allocation unless the appropriator or allocator owns land.[127] The law might accommodate such a protection where the owner of the bed and shores wishes to protect water instream. However, in western Canada such a protection will be limited to the government, because typically, beds and shores are Crown owned, thus limiting the potential for private instream licenses.[128] Western U.S. law permits private or public ownership of beds and shores, depending on the applicability of a complex body of law dealing with the ownership of lands underlying navigable and non-navigable waters.[129] With respect to private ownership, bed and shores are owned by the owners of the land on both sides on both sides of the water course. If the owners are not the same person, the *medium filum aquae* rule applies so that each owner owns the bed and shores adjacent to his or her property to the middle of the water course.[130] One can easily see the difficulties mounting for a person who wishes to protect instream water by using prior appropriation or allocation. First, for all practical purposes, the main objective of these water rights frameworks has been defeated as water rights depend on an incident of riparian ownership, namely ownership of bed and shores. Second, the entity which desires to protect water instream might well not be the owner of the bed and shores, or in a shared ownership situation, might only own half of the bed and shores. The alternative to bed and shores ownership is that a would-be instream flow protector owns land or has an interest in land adjacent to a water course. But again, this requirement is counter to the essence of prior allocation and appropriation, which is meant to overcome requirements for riparian ownership or

127. *But cf.* COLO. REV. STAT. § 37-92-102(3) (2009) (prohibiting anyone, even a riparian landowner, from owning an instream flow water right); *see also* City of Thornton v. Bijou Irrigation Co., 926 P.2d 1, 94 (Colo. 1996) (declining to extend protection of instream waters to a plaintiff appropriator using water in excess of its decreed appropriation); *but see* COLO. REV. STAT. § 37-92-102(5) (granting certain political subdivisions the right to make a "recreational in-channel diversion" thereby gaining an instream flow water right); *see generally* Joshua Mack, *The Evolution of Colorado's Recreational In-Channel Diversions*, 10 U. DENV. WATER L. REV 73, 73-96 (2006).

128. Arlene Kwasniak, *Alberta Crown Ownership of Slough/Marsh Wetlands*, 18 J. ENVTL. L. & PRAC. 57, 79 (2008) (noting that in Canada, beds and shores of natural streams and lakes are owned by the Federal Crown); *see also* North-west Irrigation Act, 61 Vict., S.C., ch. 35, s 4 (1894), amended by 1898 ch. 35 (Can.); Alta. Water Act, R.S.A. 2000, c. W-3, s. 3(2) (Can.) (noting that, currently, the Crown claims all waters, beds, and shores in Alberta).

129. *See generally* WELLS A. HUTCHINS, WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES 130-35 (1972) (showing the wide variety of approaches different states' use).

130. C.T. Foster, *Apportionment and Division of Area of River as Between Riparian Tracts Fronting on Same Bank, in Absence of Agreement or Specification*, 65 A.L.R.2D 143, § 8(a)(1) (2009).

occupancy. It also severely limits who may hold an instream license.

(e) Invoking watershed management to control land use impacts on instream water quality and quantity:

Watershed management involves conjunctive management of all potential sources of impacts in a watershed.[131] The doctrine of appurtenancy is a barrier to watershed management because an appropriation or allocation water right pertains only to the appurtenant parcel of land that benefits from the water.[132] If water rights reflected the principles of watershed management, then land uses that impact water quantity would require a water right, even though the land does not directly benefit from the use of water. For example, the development of a residential subdivision that would result in less aquifer recharge (because of asphalting over recharge areas thus diminishing instream flow) would require a water right even though there is no appurtenant parcel that benefits from the use of water.[133]

III. LEGAL TOOLS TO RESTORE AND PROTECT INSTREAM FLOW

A. INTRODUCTION

This Part of the paper describes legal or policy tools that have protected instream flow in prior appropriation and prior allocation jurisdictions. It briefly looks at the strengths and weaknesses of the tools. Where appropriate, the Part points out where a tool represents a departure from classic prior appropriation or allocation water rights frameworks to demonstrate the occurrence of incursion into these water rights systems.

B. INSTREAM FLOW RIGHTS AS PLAYERS IN THE WATER MARKET—ACQUISITIONS

One way of increasing instream flow is encouraging and facilitating private parties, including non-governmental organizations such as Trout Unlimited, Nature Conservancy, or a water trust, to hold instream flow water licenses.[134] This would enable society and the market to play

131. SUSAN S. BRANNING, THE WATERSHED MANAGEMENT APPROACH: POTENTIAL IMPACTS ON FRESH WATER INFLOWS 29 (2001), http://gbic.tamug.edu/gbeppubs/T1/gbnepT1_29-32.pdf.

132. George W. Pring & Karen A. Tomb, *License to Waste: Legal Barriers to Conservation and Efficient Use of Water in the West*, 25 ROCKY MTN. MIN. L. INST. § I, § III(A)(6) (1979).

133. Comparable points could be made for beneficial/licensable use and other aspects of prior appropriation and allocation. Prior appropriation and prior allocation focus on discrete beneficial/licensable uses of water relating to land or undertakings in relation to land. Watershed management would require that states tie water rights to uses of land that impact water other than water rights that directly use water.

134. *See* California Trout, *Instream Flows: a Perspective from California Trout, Trout Unlimited and the California Sportfishing Protection Alliance, available at* http://www.caltrout.org/pages/conservation/Instream_Flows.asp (last visited Apr. 1,

a stronger role in restoring instream values. After all, governments worldwide recognize the role for society and the market to play in protecting natural land values such as habitat and biological diversity. Governments welcome land conservation organizations to compete in the land acquisition market. Land conservation organizations, of course, acquire land to protect it from development, whereas, their competitors largely wish to develop land with the accompanying destruction of natural values. Why should governments not similarly welcome private environmental flow advocates to compete in the water rights acquisition market?

Unfortunately, neither prior appropriation nor prior allocation jurisdictions fully accept instream licenses as players in the water rights acquisition market. For example, in the Canadian prairie provinces, given that statutes dictate water rights, a private party may hold a water right to keep water instream, rather than to divert it out of stream, only if the water rights-authorizing statute enables instream water use licenses.[135] In Alberta, the potential for private instream licenses has decreased in the last decade. Prior to the Alberta Water Act coming into force in 1999, a 1971 amendment to the prevailing water rights and management legislation, the Water Resources Act, authorized water licenses to keep water in "its natural state for the purpose of conservation, recreation or the propagation of fish or wildlife or for any like purpose" as a valid license purpose.[136] Only one such license ever issued under the Act; it was to protect water in a series of wetlands in north-central Alberta.[137] Although regulations under the 1999 Water Act (which repealed and replaced the Water Resources Act) authorize licenses for instream flow type purposes such as management of fish, habitat enhancement, and recreation,[138] the Act itself requires that any water license involves a "diversion" of water and an identifiable point of diversion, thus making it legally questionable whether one may privately hold an instream license.[139] The 1999 Water Act only clearly authorizes instream licenses to the government by expressly excluding a diversion

2010); Brian D. Richter et al., *A Framework for Ecologically Sustainable Water Management*, HYDRO REV. 1-2 (2005), http://www.nature.org/initiatives/freshwater/files/hydro_review_july_2005.pdf.

135. ARLENE KWASNIAK, ALBERTA'S WETLANDS: A LAW AND POLICY GUIDE 76 (2001) [hereinafter KWASNIAK, WETLANDS], http://www.edmonton.ca/environmental/documents/Alberta_Wetlands_Guide.pdf.

136. GEOWA INFORMATION TECHNOLOGIES, LTD., WATER USE FOR INJECTION PURPOSES IN ALBERTA 3 (2003), http://www.waterforlife.gov.ab.ca/docs/geowa_report.pdf.

137. KWASNIAK, WETLANDS, *supra* note 135, at 76. The protected area is the Wagner Bog.

138. Water (Ministerial) Regulation, ALTA. REG. 205/1998, s. 11 (Can).

139. Alta. Water Act. R.S.A. 2000, c. W-3, s. 51(1) (Can.). It should be noted, however, that the matter could be clarified through a simple amendment to the regulations as the Water Act enables the Environment Minister to define in the regulations what constitutes a "diversion." *Id.* s. 1(m)(ii).

requirement for government instream licenses.[140] However, the government limits such licenses to established "water conservation objectives."[141] To date, the government has set these objectives considerably below the instream flow needs as established by a government sponsored report.[142]

With respect to the U.S. west, as Part III of this paper discusses, although most states recognize some instream uses as beneficial uses, such uses are not comprehensive and would not cover many legitimate instream values. In addition to this shortcoming, many state constitutions or water statutes require that an appropriation of water involves a diversion.[143] Hence, just as in Alberta, there are legal vagaries regarding the extent to which instream appropriation rights are possible.[144] Also, although many states' water rights and management legislation authorize government agencies to hold instream water rights, only four of the eighteen western states – Alaska, Arizona, Nevada, and South Dakota – allow members of the private sector to

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140. The Alta. Water Act. R.S.A., 2000, c. W-3, s. 51(2) (Can.), states: "(2) On application by the Government in accordance with this Act, the Director may issue a licence to the Government but to no other person, or may refuse to issue a licence, for

(a) the diversion of water,

(b) the operation of a works, or

(c) providing or maintaining a rate of flow of water or water level requirements for the purpose of implementing a water conservation objective." Under section 51(1) of the Act, private licenses only issue for a diversion of water or operation of works.

141. Alta. Water Act. R.S.A., 2000, c. W-3, s. 51(2) (Can.).

142. The water conservation objectives ("WCO"s) are set out in the Alberta Environmental South Saskatchewan River Basin Approved Water Management Plan. SSRB WATER MANAGEMENT PLAN *supra* note 6, at 8. The Plan states that for the most impacted rivers in the basin (Bow, Oldman, and South Saskatchewan) WCO is set at "instream objective" plus 10% or 45% of the natural flow, whichever is higher. *Id.* For existing licenses, WCO is the original instream objective, or "IO," even if a license had been reissued or renewed. *Id.* "Natural flow" means the flow "that would be in the river in the absence of man-made influences." SSRB BACKGROUND STUDIES *supra* note 5, at 24. The natural flow regime can serve "as a benchmark condition in making instream flow needs descriptions." *See* CLIPPERTON ET AL., *supra* note 15, at iii. Obviously, 45% of natural flow is not a very high objective for restoring instream flows. "Instream objectives" are regulated "[f]lows that are to remain in the river via dam operations or as a restriction on licence holders." SSRB BACKGROUND STUDIES, *supra* note 5, at 23. Through my research regarding key licenses with IO conditions, I have found that IO is considerably below IFN in these rivers. *See also* Michael M. Wenig et al., *Water Under the Bridge? The Role of Instream Flow Needs (IFNs) Determinations in Alberta's River Management, in* WATER: SCI. & POL. 22 (H. Epp and D. Ealey eds., 2006) http://www.cirl.ca/files/cirl/IFN-Determin.pdf.

143. Bureau of Land Management, Western States Water Laws, Water Appropriation Systems, http://www.blm.gov/nstc/WaterLaws/pdf/WaterApprSystems.pdf.

144. *See generally* Reed Benson, *"Adequate Progress," or Rivers Left Behind? Developments in Colorado and Wyoming Instream Flow Laws Since 2000,* 36 ENVT'L L. 1283, 1289-92 (2006) (showing several major deficiencies regarding the effectiveness of instream flow laws in Western states, as typified by Colorado and Wyoming).

hold instream water rights.[145] Here, instream water rights depart from common law appropriation rights, which do not discriminate on the basis of identity of user.[146]

C. INSTREAM FLOW RIGHTS AS PLAYERS IN THE WATER MARKET – CONVERSIONS, LEASES, AND TRANSFERS

Even if a state or province allows for protection of instream water through a water right, the instream right must have priority over out-of-stream diversions in times of shortage in order for the protection to be effective.[147] Unfortunately, most rivers that need more instream flow in both the dry western U.S. and in Alberta have been over-appropriated for decades.[148] This makes the acquisition of junior instream rights less than ideal since at times of water shortages out of stream diversions will inevitably have priority over instream rights.[149]

Instream flow could be enhanced if a senior licensee converted a consumptive use to an instream use, or transferred or leased a senior right for an instream use. States in the western U.S. generally allow holders of appropriation rights to convert their rights to other uses without losing priority, provided the change does not injure other (including junior) appropriators.[150] As well, subject to the "no injury" (to other appropriators) rule and legislative requirements and limitations, since U.S. appropriation rights are property rights, they can be transferred like other property. [151] Further, subject to the rule, appropriators may lease rights for a term to other appropriators.[152] However, as the previous section discusses, departing from classic appropriation rules, states limit who may hold conversions, transfers, or leases for instream purposes,[153] thus lessening the effectiveness of this tool to restore and protect instream flow.

Alberta is the only prairie province that allows transfers of allocations.[154] As noted previously, although instream use is a licensable use of water, the statute's diversion requirement could make privately held instream licenses unlikely. Indeed, to date, the government has not issued any private instream licenses under the 1999 Water Act.

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145. CHARNEY *supra* note 89, at 13.

146. *See* Steven E. Clyde, *Adapting to the Changing Demand for Water Use Through Continued Refinement of the Prior Appropriation Doctrine: An Alternative Approach to Wholesale Reallocation*, 29 NAT. RESOURCES J. 435 (1989).

147. PETER BORKEY ET AL., ECOSYSTEMS AND HUMAN WELL-BEING: FINDINGS OF THE RESPONSES WORKING GROUP 236 (Kanchan Chopra et al. eds., Island Press 2005).

148. David R. Percy, *Responding to Water Scarcity in Western Canada,* 83 TEX. L. REV. 2091, 2104 (2005) [hereinafter Percy, *Scarcity*].

149. Mary Ann King, *Getting Our Feet Wet: An Introduction to Water Trusts*, 28 HARV. ENVTL. L. REV. 495, 501 (2004).

150. Clyde, *supra* note 146, at 437–38.

151. George A. Gould, *Transfer of Water Rights*, 29 NAT. RESOURCES J. 457, 459–60 (1989).

152. *Id.* at 457.

153. CHARNEY *supra* note 89, at 11.

154. Percy, *Scarcity*, *supra* note 148, at 2101.

D. WATER TRUSTS

Water trusts have developed throughout the western United States to facilitate the restoration and protection of instream flow.[155] Water trusts seek to restore and protect instream flow through a variety of tools including water transfers, leases, and forbearance agreements. Forbearance agreements are contracts under which water rights holders agree not to exercise their water rights as permitted by state or provincial law, in order to retain water instream.[156] Although water trusts do excellent work and have been successful with a number of restoration and protection projects, their work necessarily butts up against the prior appropriation and allocation barriers discussed in this paper. These barriers include limitations on who may hold an instream right, government resistance to instream rights, limited definitions of "beneficial use," lack of priority for instream interests, the need for an interest in land, and diversion requirements. Forbearance agreements are interesting in that they evidence the inadequacy of prior appropriation and allocation frameworks to adequately deal with instream flow.[157] Unfortunately, if push comes to shove, it is unlikely that a court would enforce a forbearance agreement over a valid government-backed water right.[158]

E. RESIDUAL MINIMUM FLOW CONDITIONS IN WATER RIGHTS

Residual minimum flow conditions are terms on water licenses or permits that provide that the appropriator or allocator may not divert water under a water right unless there is a specified residual minimum flow remaining in the watercourse.[159] "Minimum flow" does not necessarily mean a scientifically determined instream flow need.[160] For

155. *See* King, *supra* note 149, at 495.

156. Sandra Zellmer, *The Anti-Speculation Doctrine and Its Implications for Collaborative Water Management.*, 8 NEV. L. J. 994, 1020 (2008).

157. *See id.*

158. This claim is based on research examining contracting out of and waiving water rights to effect more reasonable water management than afforded through prior appropriation and allocation water right frameworks. For example, the Supreme Court of Canada in Potash v. Royal Trust Co., [1986] 2 S.C.R. 351 (Can.), acknowledged that contracting out of or waiving statutory rights is permissible if the statute does not prohibit it, and if doing so does not contradict public policy. The core principle regarding contracting out is that contracting out is permissible if (a) the statute does not expressly or impliedly prohibit contracting out, (b) the contracting out is in direct and clear language, (c) the contracting out is not in relation to public and fundamental law, and (d) the statutory provisions in question are for a private benefit. *See generally id.* Furthermore, one cannot contract out of regulatory provisions imposed in the public interest. *Id.* It is doubtful that, given these limitations, a court would uphold a person contracting out of water rights conferred by a long-standing, and arguably fundamental, legal framework, developed, presumably, in the public interest.

159. King, *supra* note 149, at 504.

160. DAVID M. GILLILAN & THOMAS C. BROWN, INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE 129 (Island Press 1997) (1960).

example, in Alberta, generally speaking, minimum flows set in licenses are significantly below scientifically determined instream flow needs.[161]

Regarding the western United States, pure common law appropriation rights did not include residual minimum flow requirements.[162] Any residual minimum flow conditions result from legislation.[163] Although a few states have such legislation,[164] the requirements do not apply to water appropriation rights established prior to the legislative provisions coming into effect. Therefore, the requirements provide limited utility to protect instream flows. It is the more senior appropriation rights not subject to residual minimum flow conditions that will impact instream needs in time of water shortages.[165]

Alberta began including minimum residual instream flow conditions in some licenses in the late 1970s.[166] In the 1970s and 80s the government "updated and reissued" numerous licenses, some very senior, to include new minimum flow conditions, many of which the water controller could expressly vary from time to time (a "retrofit condition").[167] The 1999 Water Act contains provisions designed to legitimize reissued licenses in case they are legally challenged.[168] However, under government policy that applies to the SSRB, the government will not use retrofit conditions to impose or change minimum flow conditions, unless the license relates to an application made after May 1, 2005.[169] Accordingly, just as in the western U.S., such conditions will be of limited use in times of shortage as more senior licensees may receive their entire allocations.

F. OTHER POTENTIAL SOLUTIONS, SHORTCOMINGS, BARRIERS, AND DEPARTURES

1. Introduction

A number of other methods available on one or the other side of the U.S./Canada border may help to address instream flow deficiencies. The following sections provide a sampling of such approaches and the related barriers or shortcomings. The sections also discuss at what point a method involves a departure from the dominant water rights and

161. Percy, *Scarcity*, *supra* note 148, at 2104.

162. King, *supra* note 149, at 502.

163. *See* CHARNEY, *supra* note 89, at 22 (providing examples of legislation regulating minimum flow in the U.S.).

164. *See e.g.*, KAN. STAT. ANN. § 82a-703a (2009); OR. REV. STAT. § 537.346(1) (2009); WASH. ADMIN. CODE § 173-500-060(5)(a) (2009).

165. Randall W. Block & Joel Forrest, *A Gathering Storm: Water Conflicts in Alberta.*, 43 ALTA L. REV. 31, 40 (2005).

166. *See generally id.* at 33 (discussing how "[w]ater regulation in Alberta began in the latter half of the nineteenth century").

167. *See* PARTNERSHIP & STRATEGIES SECTION, ALTA. ENV'T, GLOSSARY OF TERMS RELATED TO WATER AND WATERSHED MANAGEMENT IN ALBERTA. 32 (2008), http://environment.gov.ab.ca/info/library/8043.pdf.

168. *See* Alta. Water Act, R.S.A. 2000, c. W-3, s. 18(2) (Can.).

169. SSRB WATER MANAGEMENT PLAN, *supra* note 6, at 8.

management framework in the jurisdiction.

2. Treated Wastewater to Restore Instream Flow – California

California's Water Code provides that an owner of a wastewater treatment plant holds the exclusive right to treated wastewater.[170] If the owner chooses to designate treated wastewater for instream beneficial uses, the government may not permit anyone else to use the water, and holders of existing water rights may not claim or use such water.[171] Hence, the designated water has an *über*-priority.

Although this is a welcome tool to restore instream flow, it is very limited in its application. The provision only applies to owners of wastewater treatment facilities, and applies only where the owner chooses to designate wastewater for instream use, rather than "selling" the water for some other use, such as industrial, livestock watering, irrigation.[172] The legislation contains no incentive for an owner to return the water to a watercourse for instream use.

The provision is a clear departure from the dominant water rights and management framework in California. California recognizes three kinds of water rights: (1) riparian, (2) prior appropriation, and (3) pueblo.[173] Before the development of prior appropriation rights in the 1800s, California based its water rights on riparian ownership or occupancy.[174] California riparian rights are limited to the amount of naturally flowing water that users can reasonably and beneficially put to use on the riparian parcel.[175] Before 1914, prior appropriation rights could be acquired at common law without a permit.[176] Since 1914, these rights could be acquired through a government permitting system.[177] Although government retains limited authority over permitted prior appropriation rights,[178] the rights retain the essential features of common law prior appropriation – putting water to a beneficial use, with due diligence and without waste, and subject to FTFR.[179] Pueblo water rights, derived from Spanish law, [180]allow the residents of Spanish or Mexican pueblos to claim water rights from

170. *See* CAL. WATER CODE § 1210 (2009).

171. *See id.* § 1212.

172. *Id.*

173. Bureau of Land Mgmt., Nat'l Science and Technology Center, Cal. Water Rights Fact Sheet (2001), *available at* http://www.blm.gov/nstc/WaterLaws/california.html (last visited Apr. 1, 2010).

174. Eric T. Freyfogle, Lux v. Haggin *and the Common Law Burdens of Modern Water Law*, 57 U. COLO. L. REV. 485, 500 (1986) (discussing the establishment of prior appropriation in California); *see generally* Mark T. Kanazawa, *Efficiency in Western Water Law: The Development of the California Doctrine*, 1850–1911, 27 J. LEGAL STUD. 159, 159-60, 182 (1998).

175. Bureau of Land Mgmt., *supra* note 173.

176. *Id.*

177. *Id.*

178. *See* CAL. WATER CODE § 1394 (2009).

179. *Id.* §§ 1410(a), 1455.

180. Eric B. Kunkel, *The Spanish Law of Waters in the United States: From Alfonso the Wise to the Present Day*, 32 MCGEORGE L. REV. 341, 352 (2001).

naturally occurring waters for municipal use.[181]

The specially designated instream treated wastewater rights are neither riparian rights nor prior appropriation, as they are an exception to the FTFR priority system, and they have nothing to do with pueblo rights. Instead, they are stand-alone water rights created, at least in part, because the prevailing legal water rights and management system does not adequately account for instream flow needs.

3. Public Trust Doctrine to Restore Instream Flow

Under the state-based public trust doctrine, the state holds the waters of navigable streams in trust for the benefit of all people. Under this doctrine, the state may not alienate trust property so as to violate the trust.[182] Some states have extended the doctrine to non-navigable tributaries of navigable waters, aesthetics, protection of fish and wildlife habitat, coastal access, and a variety of other public resources.[183] The doctrine has been applied to prevent a government from alienating to private uses instream water that it holds as trust property. The landmark case in this area is *The National Audubon Society v. Superior Court.*[184]

This case concerned water rights that the Department of Water and Power of the City of Los Angeles ("DWP") obtained in 1940 to divert almost the entire flow of five streams that flowed into Mono Lake at the base of the Sierra Nevada escarpment.[185] By 1980, Los Angeles diverted almost 100,000 acre-feet of water per year from the Mono Basin causing the lake to shrink from approximately eighty-five square miles to approximately sixty square miles.[186] The plaintiffs contended that the public trust protected the bed, shores, and waters of Mono Lake; therefore, the government must enjoin the DWP from diverting waters in a manner that harms trust property.[187] The defendant, on the other hand, argued that it had an appropriation right to the water free from limitations from any public trust.[188] Thus, the court was asked to "resolve a legal conundrum [between] two competing systems of thought – the public trust doctrine and the appropriative water rights system . . ."[189] In the end, the court found that the government must consider the public trust when administering the appropriative water rights systems.[190] The court, however, acknowledged "the state may

181. *See id.* at 353–54.

182. Joseph L. Sax, *Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 486–87 (1970).

183. Nat'l Audubon Soc'y v. Super. Ct., 658 P.2d 709, 712 (Cal. 1983); Marks v. Whitney, 491 P.2d 374, 380 (Cal. 1971); Carstens v. Cal. Coastal Comm'n, 182 Cal. App. 3d 277, 290 (Cal. Ct. App. 1986).

184. Jan Stevens, *Instream Uses Twenty-Five Years Later: Incremental Progress or Revolving Door?*, 36 MCGEORGE L. REV. 393, 400 (2005).

185. *Nat'l Audubon Soc'y*, 658 P.2d at 711.

186. *Id.* at 714.

187. *Id.* at 712.

188. *Id.* at 716–17.

189. *Id.* at 732.

190. *Id.* at 728.

have to approve appropriations despite foreseeable harm to public trust uses."[191] In the case at hand, the court found that the public trust was not considered at all when it approved the 1940 appropriation, and that to the extent that waters subject to the public trust formed part of the appropriation, the appropriator holds its right subject to the public trust.[192] Therefore, there can be no "taking" of property for which compensation is payable when the appropriator must limit an appropriation to honor the trust.[193]

Although cases such as *National Audubon Society v. Superior Court* demonstrate that in some states it may be possible to invoke the doctrine in isolated cases to restore trust property even after an appropriative right has been perfected, it is unlikely that the doctrine could be used as a general tool to restore instream flows. As one expert has stated, "It is virtually untested, and legislators and agencies have been fearful of pushing its limits."[194] Additionally, the court in *National Audubon* specifically rejected the plaintiff's claim that the "public trust is antecedent to and thus limits all appropriative water rights."[195]

4. Alberta Water Conservation Holdbacks

In Alberta, in certain circumstances the 1999 Water Act authorizes the Director to require a maximum ten percent holdback for instream use from the amount of water transferred from an allocation.[196] If a government license protects the held-back water, it will have the priority of the transferred license.[197]

Although this is a welcome tool to assist in restoring instream flow in the province, it is limited in several ways. First, only the government may hold the license.[198] Second, as mentioned earlier, the amount licensed cannot exceed a government established water conservation objective, which for the driest part of the province, is considerably less than instream flow need.[199] Third, the transfer procedure is highly regulated, and the Director's decision both whether to transfer and whether to require a holdback is discretionary.[200] From 1999 to 2009, there have been only about twenty-eight transfers in the province, and some of these transfers did not require a holdback.[201] All in all, the

191. *Id.*
192. *See id.*
193. *Id.* at 723.
194. Zellmer and Harder, *Property*, *supra* note 45, (referencing J. H. Archer & T. W. Stone, *The Interaction of the Public Trust and the "Takings" Doctrines: Protection Wetlands and Critical Coastal Areas*, 20 VT. L. REV. 81, 115 (1995)).
195. *Nat'l Audubon Soc'y*, 658 P.2d at 727.
196. Alta. Water Act, R.S.A. 2000, c. W-3, s. 83(1) (Can.).
197. *Id.* ss. 51(2), 83(3)(c).
198. *Id.* s. 83(3)(c).
199. Percy, *Scarcity*, *supra* note 148, at 2104–05.
200. Alta. Water Act, R.S.A. 2000, c. W-3, s. 83(1) (Can.).
201. ALTA. WATER COUNCIL, RECOMMENDATIONS FOR IMPROVING ALTA.'S WATER ALLOCATION TRANSFER SYSTEM 9 (2009), http://www.albertawatercouncil.ca/Portals/0/pdfs/WATSUP_web_FINAL.pdf.

conservation holdback provision is unlikely to result in any considerable instream flow restoration.[202]

The water conservation holdback and the transfer provisions are a departure from the previous FTFR regime set out in the Alberta Water Resources Act, which did not provide for either holdbacks or transfers.[203] However, it is worthy to note that in Alberta, the holdback does not amount to any kind of taking.[204] Before the Alberta Water Act came into law in 1999, a licensee could not transfer an allocation independent of a land transfer.[205] This right to apply to transfer an allocation independent of land arose with the 1999 Water Act.[206] Accordingly, the Water Act's discretionary holdback provision does not "take" anything away from a prior allocation right.[207] The right to apply to transfer is a new right and the potential for a holdback arises as a component of this right.

In contrast, beginning in the mid-1800s, state courts in the western U.S. made it clear that an appropriator has the right to sever a water right from land and transfer it for use elsewhere.[208] The basis of the right to transfer lies in the fact that in the western U.S. appropriation rights, as property, may be "transferred like other property."[209] If a U.S. state government were to impose a holdback on a prior appropriation right, an argument could be made that something has been "taken" from the appropriator. Whether such an argument would likely succeed in court will not be pursued here.

5. U.S. Endangered Species Act to Restore Instream Flow

The U.S. Endangered Species Act ("ESA")[210] contains provisions that could require water users to make changes in river operations to save species at risk of extinction or threatened. Section 9 of the ESA prohibits the "take" of any member of a listed fish or wildlife.[211] The ESA defines "take" to include to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[212] None of these words, except possibly "harm," would seem to prohibit or limit diversions, except where a watercourse is so

202. ALTA. ENV'T, SOUTH SASKATCHEWAN RIVER BASIS ALLOCATION 12 (2005), http://ssrb.environment.alberta.ca/pubs/SSRB_Water_Allocation.pdf.

203. Alta. Env't, Water Fact Sheet: Transfer of Allocation Water Under a License, *available at* http://www3.gov.ab.ca/env/water/legislation/factsheets/Transfer.html (last visited Apr. 1, 2010).

204. *See* Bryan P. Schwartz & Melanie R. Bueckert, *Regulatory Takings in Canada*, 5 WASH. U. GLOB. STUD. L. REV. 477, 482 (2006).

205. David R. Percy, *Seventy-Five Years of Alberta Water Law: Maturity, Demise & Rebirth*, 35 ALTA. L. REV. 221, 234–35 (1996).

206. Alta. Water Act, R.S.A. 2000, c. W-3, ss. 81(1), 82(1) (Can.).

207. *See id.* s. 83(1).

208. McDonald & Blackburn v. Bear River & Auburn Water & Mining Co., 13 Cal. 220, 232–33 (Cal. 1859).

209. *Id.* at 233.

210. Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2000).

211. *Id.* § 1538(a)(1)(B).

212. *Id.* § 1532(19).

low that fish are killed or about to be killed. Regulations under the ESA define "harm" to mean an act that "actually kills or injures wildlife."[213] Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."[214] This definition suggests that the ESA may be invoked where low instream flows seriously threaten the existence of fish, but that it cannot be used generally to limit appropriations to restore instream flow.

Section 7 of the ESA prohibits Federal agencies from carrying out any action that would "jeopardize the continued existence of any endangered species or threatened species."[215] This provision can be used to enjoin federal agencies to curtail diversions, but not without considerable controversy and claims for compensation.[216] For example, in 2001, each of the two agencies responsible for the administration of the ESA, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, issued a biological opinion that summer irrigation releases from the federal Klamath Irrigation Project would jeopardize the continued existence of Lost River sucker and coho salmon, listed under the ESA as endangered in 1988 (sucker) and 1997 (coho salmon).[217] The operation of the ESA forced the U.S. Bureau of Reclamation to close the headgates of the Klamath project.[218] In turn, this meant that irrigation water rights holders of could not divert water to irrigate.[219] What resulted was a heated conflict between state held appropriation rights and federal mandate under the ESA.[220] In addition to irrigators and conservation advocates, tribes that depend on fish populations have a key interest in the controversy.[221]

The controversy sparked litigation in the federal court by irrigators who claimed one billion dollars in compensation for what they perceived as a "taking" of their constitutionally protected water use rights.[222] The irrigators' claim was unsuccessful because the court found that under the circumstances, the irrigators' rights arose from contract for water deliveries, not from any property right to water.[223] Subsequently, the irrigators appealed, and the Court of Appeals for the Federal Circuit held that addressing any takings allegation required

213. 50 C.F.R. § 17.3 (2010).

214. *Id.*

215. 16 U.S.C. § 1536(a)(2) (2010).

216. For a fascinating account and analysis of the Endangered Species Act listings and consequences *see e.g.,* HOLLY D. DOREMUS & A. DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN: MACHO LAW, COMBAT BIOLOGY, AND DIRTY POLITICS (Island Press 2008).

217. *Id* at xi; NAT'L RESEARCH COUNSEL, SCIENTIFIC EVALUATION OF BIOLOGICAL OPINIONS ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN 2 (Nat'l Academy Press 2002).

218. DOREMUS & TARLOCK, *supra* note 216, at xvi.

219. *Id.*

220. *Id.* at xvii.

221. *Id.* at xvi.

222. *Id.* at 102.

223. Klamath Irrigation Dist. v. United States, 67 Fed. Cl. 504, 505 (Fed. Cl. 2005).

determination of the nature of the irrigators' water rights, a determination properly under the jurisdiction of the Oregon state courts.[224] The irrigators then filed suit in the Oregon state court for $100 million in damages for the alleged taking.[225] The ongoing litigation may be tempered by attempts to settle issues out of court in light of the 2008 Klamath Basin Restoration Agreement, signed by, among others, irrigators, conservation organizations, and tribes.[226] The Agreement involves the removal of four dams, and other measures anticipated to result in the restoration of natural fish production, and the assurance of reliable water supplies for agricultural and other uses.[227]

As a final comment in this section, the Endangered Species Act is an entirely different animal from prior appropriation. To some experts the two constitute "macho law" and are "two inflexible, winner-take-all regimes."[228] Nevertheless, the ESA has proven itself a stimulus in the Klamath basin by forcing cooperation to deal with instream water shortages and competing values.[229]

6. The Federal Reserved Rights Doctrine

The federal reserved rights doctrine holds that the U.S. federal government may explicitly or impliedly reserve water independent of state appropriation laws.[230] The first case that recognized the doctrine was *Winters v. United States*.[231] In *Winters,* the Supreme Court found that Congress impliedly reserved water for irrigation purposes in an 1888 treaty that established the Fort Belknap Reservation in what would become Montana, despite the treaty's silence with respect to water.[232] The Court reasoned that the underlying purpose of the treaty was to ensure land for agricultural purposes for the tribe.[233] The land would not serve this purpose without water. The right was senior to subsequent state-based appropriation rights because the reserved right's priority date was the date of the treaty because the treaty established

224. Klamath Irrigation Dist. v. United States, 532 F.3d 1376, 1377–78 (Fed. Cir. 2008).

225. Klamath Irrigation Dist. v. United States, 202 P.3d 159, 160 (Or. 2009); *Endangered Species Act Update*, ENVTL. & LAND USE LAW NEWSL. (Wash. Bar Ass'n), May 2009, at 29.

226. DEP'T OF THE INTERIOR, KLAMATH BASIN RESTORATION AGREEMENT FOR THE SUSTAINABILITY OF PUBLIC AND TRUST RESOURCES AND AFFECTED COMMUNITIES § 1 (2010), http://www.doi.gov/news/pressreleases/upload/Klamath-Basin-Restoration-Agreement-2-18-10.pdf.

227. ED SHEETS CONSULTING, SUMMARY PROPOSED KLAMATH BASIN RESTORATION AGREEMENT (2008), http://www.edsheets.com/Klamath/SummaryofKlamathBasinRestorationAgreemnt1-15-08.pdf.

228. DOREMUS & TARLOCK, *supra* note 216, at xvii.

229. *See generally id.* at xvi.

230. Idaho Dep't of Water Res. v. United States, 832 P.2d 289, 293 n. 3 (Idaho 1992).

231. Winters v. United States, 207 U.S. 564, 576 (1908).

232. *Id.* at 567.

233. *Id.* at 576.

the reservation.[234] Courts later extended the doctrine to other situations involving a federal implied reservation of water, such as water needed to maintain national forests.[235]

The federal reserve doctrine has limited application with respect to instream flow restoration or protection because a court may only find an implied reservation for the amount of water necessary to achieve the primary purpose of the reservation.[236] Accordingly, the doctrine enables instream flow restoration or protection only where the primary purpose of the reservation requires water either expressly or impliedly for such needs.[237]

Interestingly, the federal reserved rights doctrine on one hand conflicts with prior appropriation, but on the other, depends on it. It is in conflict with the water rights framework because a court may upset established FTFR priorities by imposing a federal priority for water relating to a federal purpose that can be more senior than existing appropriation rights.[238] Yet, the fact that the reserved right enjoys a senior priority depends on the existence of the FTFR system.[239]

IV. MOVING BEYOND POLICY BARRIERS TO RESTORATION AND MAINTENANCE OF INSTREAM FLOWS

A. SUMMARY OF LEGAL AND POLICY BARRIERS

In the western U.S. and Canada, there are numerous legal and policy barriers to implementing measures to restore and maintain environmental flows. These barriers emanate from the core of the legal frameworks governing water rights and water management in this area. The barriers include:

(1) **Use it or lose it** because it is a disincentive to
- reduce or limit permitted withdrawals to enhance instream flow;
- move from supply side to demand side approaches because not using an entire permitted amount could lead to loss of the right;
- adopt water conservation because the conservator could lose part of a water right.

(2) **The FTFR principle** since
- it prevents the acquisition of effective instream rights in fully or over-allocated water courses, unless senior water rights

234. *Id.* at 577.

235. Arizona v. California, 373 U.S. 546, 601 (1963).

236. *See, e.g.*, Cappaert v. United States, 426 U.S. 128, 141 (1976) (holding that when the United States reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the underground pool to preserve the level of water necessary for the aquatic inhabitants, and thereby giving the reservation a priority date senior to subsequent appropriations).

237. United States v. New Mexico, 438 U.S. 696, 701–02, 710 (1978).

238. *Cappaert*, 438 U.S. at 138.

239. *Id.*

are transferred to instream uses, and there are legal and policy barriers to instream water rights acting as full players in the water rights acquisition or transfer regimes;
- releases from stored water cannot usually be used for instream purposes since stored water backstops both junior water rights and the FTFR system;
- water rights based on FTFR are not always conducive to managing groundwater and surface water conjunctively;
- FTFR water rights systems do not always easily accommodate recycling and reusing water supplies;
- FTFR water rights systems are abrasive towards allowing instream water rights holders to be full players in the regime.

(3) **Beneficial use or licensable use** because
- waters needed for instream flow within a prior appropriation or allocation water rights framework cannot be protected unless instream flow use is recognized as a beneficial or licensable use of water and no state or province recognizes the entire range of instream needs as beneficial or licensable uses.

(4) **Inflexibility regarding changes of diversion point or timing of diversion to enhance instream flow** because of
- burdensome and inflexible regulatory requirements regardless of whether such changes would not impact other users.

(5) **Tied to land** since
- the appurtenancy requirement is difficult to meet for privately held instream flow right;
- the appurtenancy requirement, in effect, reintroduces an aspect of riparian water rights framework that prior appropriation/allocation was meant to overcome;
- watershed management involves management of all potential land uses that have quantity impacts in a watershed, and appurtenancy deals only with land that specifically benefits from a water right.

Although there is a potpourri of additional methods that this paper identifies to help restore and maintain instream flow, each has its shortcomings. Nevertheless, most of these methods depart from the underlying FTFR water rights framework, thereby demonstrating some loosening of the rigidity of that framework. However, it is doubtful that such piecemeal attempts could be successful at restoring and protecting environmental flows required for instream and riparian aquatic health.

B. LAW AND POLICY REFORM HERE AND ELSEWHERE

In the past, existing legal and policy frameworks did not stop western North American jurisdictions from law reform resulting in major changes to water rights and management legal frameworks. In

the 1800s, western states and provinces changed from water rights based on riparian ownership or occupancy, to water rights primarily based on appropriation or allocation.[240] Jurisdictions made these changes in water rights frameworks because of social and environmental conditions.[241] More recently, prior to 1971, Alberta groundwater rights were unlimited and were based on the law of capture. However, in 1971, Alberta brought groundwater rights under its hybrid system.[242] All of these changes occurred without government compensation even though surface and groundwater rights regimes established before appropriation and allocation were property based.[243] Why can't the prior appropriation and prior allocation governments do it again, in the public interest, for more rational and efficient water management?

The remainder of this paper outlines steps that two jurisdictions have taken to replace antiquated, inefficient, and inequitable water rights and management frameworks to better meet the goals of rational water management including restoration and protection of instream flow. The paper then discusses a range of approaches that western North American jurisdictions could take in attempting to remedy the current barriers to restoration and maintenance of instream flow requirements.

C. SOUTH AFRICA

Like the drier areas in western North America, South Africa's available freshwater resources are under stress. Freshwater resources are fully or almost fully utilized, and projected population growth and economic development will further stress their sustainability.[244] Prior to the late 1990s, South Africa based its water rights on riparian rights.[245] Accordingly, those who owned land next to a watercourse had exclusive rights in perpetuity to the use the surface water.[246] A similar water rights system pertained to groundwater such that "[t]hose who owned land under which groundwater occurred also effectively had exclusive use of the water."[247] Following the dismantling of apartheid in the 1990s,

240. Christopher L. Len, *Synthesis – A Brand New Water Law*, 8 U. DENV. WATER L. REV. 55, 59–60 (2004); Percy, *Scarcity*, *supra* note 148, at 2092–93.

241. Len, *supra* note 240, at 62.

242. ALTA. ENV'T, GROUNDWATER EVALUATION GUIDELINE (2003), http://environment.gov.ab.ca/info/library/7508.pdf.

243. *See* Schwartz & Bueckert, *supra* note 204, at 482.

244. DEP'T OF ENVTL. AFFAIRS AND TOURISM, NAT'L STATE OF THE ENV'T REPORT – S. AFR.: FRESHWATER SYSTEMS AND RESOURCES: OVERVIEW (1999), *available at* http://www.ngo.grida.no/soesa/nsoer/issues/water/ (last visited Apr. 1, 2010).

245. D. D. Tewari, *A Detailed Analysis of Evolution of Water Rights in South Africa: An Account of Three and a Half Centuries from 1652 AD to Present*, 35 WATER SA 693, 697 (2009), http://www.wrc.org.za/Lists/Knowledge%20Hub%20Items/Attachments/8541/2238%20abstract.pdf.

246. *Id.* at 694.

247. DEP'T OF WATER & FORESTRY, REPUBLIC OF S. AFR., NATIONAL WATER RESOURCE STRATEGY 13 n. 8 (2004), *available at* http://www.dwaf.gov.za/Documents/Policies/NWRS/Default.htm.

South Africa took advantage of the unique opportunity to reform its water rights and management framework. The reform resulted in The National Water Policy (1997),[248] the National Water Act (1998),[249] and regulations.

The purpose of the Act is to

> ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled' taking into account *inter alia* the basic human needs of present and future generations, equitable access to water, social and economical development, the public interest, the growing demand for water, ecosystems and biological diversity and international obligations.[250]

Key to implementing this purpose, the Act declares that water is owned by all of the people and is subject to government management as a public trust.[251]

The National Water Act must be understood in the context of South Africa's constitution which guarantees water for human needs and environmental sustainability as a right. [252] Only after these two basic constitutional requirements are met are other water uses possible. Water for human needs and environmental sustainability are part of a "Reserve," which has priority over all other water uses. Water allocations are subject to the Reserve, though the "requirements of the ecological Reserve may be met over time by progressively adjusting allocations."[253] In addition, this new approach to legal water rights strives to make the most of available water resources by implementing demand management, efficiency measures, water conservation, watershed management, and integrated resource management.[254] Although still in its early stages, South Africa's new water rights and management approach could serve as a model for other jurisdictions struggling to deal with water shortages. In short, South Africa, albeit having a unique political opportunity,-replaced an outdated, inequitable, and inefficient water management regime with an entirely new one. This new regime operates to make the most out of scarce water resources and to equitably and efficiently distribute water to users in the nation while protecting the aquatic environment by ensuring basic environmental flows.

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248. Kader Asmal, *White Paper on a National Water Policy for South Africa*, at 2 (1997), http://www.dwaf.gov.za/Documents/Policies/nwpwp.pdf.

249. Nat'l Water Act 36 of 1998.

250. G.J. Pienaar & E. van der Schyff, *The Reform of Water Rights in South Africa*, 3 LAW, ENV'T & DEV. J. 179, 183 (2007).

251. Nat'l Water Act 36 of 1998 s. 3.

252. S. AFR. CONST. 1996 art. 24, 27.

253. DEP'T OF WATER AFFAIRS & FORESTRY, *supra* note 247, at 66.

254. *Id.* at 54, 66, 76.

D. AUSTRALIA

Australia, which supports a population of nearly 22 million,[255] is noteworthy for being the world's driest continent inhabited by humans.[256] Much of the Australia's inland receives less than 500 millimeters of rainfall, and evaporation rates are very high.[257] A region severely impacted by water scarcity is the Murray-Darling Basin shared by New South Wales, Victoria, Queensland, South Australia, and the Australian Capital Territory.[258] Australia legislated water rights in the late 1800s to address the shortcomings of the riparian doctrine that Australia inherited from Great Britain.[259] Each state created a water rights system based on Crown ownership of water and government issued water allocations.[260] Initially, in all Australian states, water licenses "were defined in terms of irrigated land areas," and no restrictions applied to amount used.[261] From the 1890s onward, state statutes proliferated setting forth a range of water rights and management schemes to meet specialized demands such as irrigation, urban water supply, mining, and later for general water needs.[262] In short, "a complex institutional structure of multi-level water instrumentalities developed which supported water resources policy."[263] In view of environmental degradation, drought, over allocation of water, and concerns for water security, the need for water reform became evident by the 1980s.[264] Although reform commenced at the state level, [265] the Commonwealth initiated reform through the Council of Australian Governments ("CoAG") Water Resource program, which drove more focused reform measures.[266] In one of the key CoAG agreements, the Commonwealth, the Murray-Darling Basin states, and

255. Australia Bureau of Statistics, Population Clock, http://www.abs.gov.au/ (last visited Apr. 1, 2010).

256. Lee Godden, *Water Law Reform in Australia and South Africa: Sustainability, Efficiency and Social Justice*, 17 J. ENVTL. L. 181, 183 (2005).

257. *Id.*

258. *Id.*; Map of Murray-Darling Catchment, *available at* http://en.wikipedia.org/wiki/File:Murray-catchment-map_MJC02.png (last visited Apr. 1, 2010).

259. *See* ICM Agric. Pty. Ltd. v. Australia (2009) 51 C.L.R. 1, ¶¶ 50, 53, 54, 119, 120.

260. *Id.* ¶¶ 50, 53, 54, 58, 119, 120.

261. POH-LING TAN, INSTITUTE FOR RURAL FUTURES, AGRICULTURAL AND NATURAL RESOURCE MANAGEMENT. IN THE MURRAY-DARLING BASIN: A POLICY HISTORY AND ANALYSIS 9 (2002), http://www.thelivingmurray.mdbc.gov.au/__data/page/1482/Poh-ling_Tan_final_report1.pdf.

262. *Id.* at 4–5.

263. LEE GODDEN, AUSTL. ACAD. OF TECHNOLOGICAL SCI. AND ENG'G, PERCEPTION OF WATER IN AUSTRALIAN LAW: RE-EXAMINING RIGHTS AND RESPONSIBILITIES 3 (2003), *available at* http://www.atse.org.au/index.php?sectionid=629 (last visited Apr. 1, 2010).

264. *See* Godden, *supra* note 256, at 183,189–90.

265. *See e.g.*, Victoria Water Act, 1989 (Austl.), *available at* http://www.austlii.edu.au/au/legis/vic/consol_act/wa198983/ (last visited Apr. 1, 2010).

266. *See* MARINE AND WATER DIVISION, COUNCIL OF AUSTL. GOV'TS WATER REFORM, THE COUNCIL OF AUSTL. GOV'TS WATER REFORM FRAMEWORK 3–6 (1994), *available at* http://www.environment.gov.au/water/australia/coag.html (last visited Apr. 1, 2010).

the Australian Capital Territory, agreed to cooperative management of water resources in the basin for their mutual benefit and to effect domestic law reform to incorporate the objectives of the agreement.[267] Law reform objectives include protecting critical human needs first, restoring and protecting instream flow requirements, and generally to provide for watershed and sustainability management.[268] State water law reforms have effectively ousted previous water rights frameworks and substituted water entitlements based on volumetric "sharing the shortage," after accounting for critical human and environmental needs.[269]

E. LESSONS FOR WESTERN U.S. AND CANADIAN JURISDICTIONS? – MODEST TO MAJOR STEPS

This paper has shown that legal and policy frameworks of the western U.S. and Canadian jurisdictions exhibit barriers to restoration and maintenance of environmental flows through the adoption of new water management approaches. The questions raised as a result of these barriers are: What can these jurisdictions do about it? What stands in the way of their moving to more efficient and equitable water management as in South Africa and Australia? What can they do to remove legal and policy barriers?

In closing this paper's discussion, this section sets out a range of steps that these jurisdictions can take to deal with barriers. The steps toward the beginning tend to be more modest than those towards the end. In addition, a jurisdiction might consider a combination of steps.

1. *A jurisdiction affirms its current legal and policy framework, but continues its piecemeal and uncoordinated attempts at facilitating new water management approaches.* Here, the jurisdiction could take steps such as enabling private parties to hold instream rights and ensuring that they can have a viable place in the water transfer market.
2. *A jurisdiction affirms its current legal and policy framework, but takes more coordinated, focused action than in 1 above to ensure that new water management approaches fit in, while continuing to utilize FTFR.* For example, in addition to authorizing private instream rights the jurisdiction might coordinate surface and groundwater use while respecting FTFR.
3. *A jurisdiction, for the most part, affirms its current FTFR legal and policy framework, but tinkers with certain aspects in order to better facilitate new water management approaches.* For example, a jurisdiction might relax "use it or lose it" to facilitate

267. COUNCIL OF AUSTL. GOV'TS, AGREEMENT ON MURRAY-DARLING BASIN REFORM, 2, 10–11, 12, 21–22 (2008), *available at* http://www.coag.gov.au/coag_meeting_outcomes/2008-07-03/docs/Murray_Darling_IGA.rtf (last visited Apr. 1, 2010).

268. *Id.* at 2–3, 8, 33–34.

269. *Id.* at 5–6, 9, 33–34.

water conservation.

4. *A jurisdiction, for the most part, affirms its current FTFR legal and policy framework, but tests the limits of that framework to take better control and rationally, efficiently, and more equitably manage water resources.* For example, a jurisdiction might conduct legal studies on the nature of a water right to determine to what extent the jurisdiction may regulate rights in the public interest, without there being a compensable taking, and then, regulate those rights.
5. *A jurisdiction, while affirming the core components of its current FTFR framework, authorizes and provides incentives for voluntary departures from that framework.* One example is a "share the shortage" agreement, such as the Lower Athabasca Water Management Agreement, where Alberta oil sands companies agree with one another, the federal and provincial governments to forego FTFR rights, and they share water shortages after making accommodation for scientifically determined instream flow requirements.[270]
6. *A jurisdiction affirms FTFR, but through law reform alters other aspects of appropriation or allocation water rights.* For example, reformed water law might stipulate that all FTFR rights are subject to facilitation of new water management approaches. An example would be making all FTFR rights, even senior ones, subject to a residual instream flow sufficient for a healthy aquatic ecosystem. Whether this would be a taking depends both on the jurisdiction's property law in relation to water, and on the results of an analysis of the nature of the property inherent in a water right. In Canada, where property rights are not constitutionally protected, it should be easier for government to legislate such legal changes without there being a taking requiring compensation.
7. *A jurisdiction clears the deck and introduces a new water management regime as did western North American jurisdictions in the 1800s, South African jurisdictions in the 1990s, and as Australian states are currently doing.* The new regime could abandon FTFR and instead become based on "sharing the shortage." The new regime would facilitate new water management approaches. The regime would not necessarily need to alter the security of water rights under the previous regime, but it would require that rights be proven, and be subject to reasonable conditions regarding how they must be exercised. As in South Africa, rights could be subject to environmental flow

270. *See* ALTA. ENV'T, ATHABASCA RIVER WATER MGMT. FRAMEWORK 3 (2007), *available at* http://www.environment.alberta.ca/1547.html (last visited Apr. 1, 2010). There may be issues regarding the enforceability of such agreements. *See* discussion in note 158.

conditions and other requirements (such as water for basic human needs). Although this might require constitutional change in some jurisdictions (e.g. states in the U.S., like Colorado, that give a constitutional right to water by appropriation,), provided that senior water rights holders still get the water they need, arguably there would be no compensable taking.[271]

8. *As in 7 above, a jurisdiction clears the deck and institutes a new water rights system, except that there are no promises of securing the water right of existing water users, except for key requirements such as water for basic human needs, domestic use, and environmental flows.* In this scenario, anyone who holds an existing water right must re-apply under the new system. The new system would be designed to ensure that water is used for the most reasonable, environmentally sound, equitable, and economically viable uses. This approach extends beyond law reform in South Africa and Australian states. In addition to legislative changes, some jurisdictions may require constitutional change, and possibly payment of compensation.

271. COLO. CONST. art. XVI, sec. 5, 6 (1876).