

HYDRATING THE LONE STAR STATE FOR YEARS TO COME: A CALL TO IMPLEMENT INSTREAM FLOW PROTECTIONS

Comment

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I. TEXAS'S WATER CRISIS AND THE NEED FOR INSTREAM FLOW PROTECTIONS

From the tumbleweeds of the Panhandle to the pines of East Texas, the seaweed of the Gulf Coast to the live oaks of Central Texas, the Lone Star State has it all. Texas is known for many things, particularly its diverse

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regions full of beautiful natural attractions. In addition to over 191,000 miles of named streams, fifteen major rivers wind throughout the state.¹ But these waters are in danger of being depleted because Texas is facing a water crisis.

Texas's population is expected to double within fifty years.² Currently, 65% of the state's water is used for agricultural purposes and the urban population explosion is placing increasingly large demands on the water system.³ In addition, water is disproportionately allocated across the state, and the waters of at least twelve of Texas's fifteen river basins are already fully allocated.⁴ Furthermore, some Texas rivers are drying up. For instance, as of March 2001, the Rio Grande River's flow ceased to reach the Gulf of Mexico.⁵ According to the World Wildlife Fund, the Rio Grande is one of the ten most at-risk rivers in the world "because [it] is severely threatened by water diversions, widespread alteration of the floodplain, dams, and pollution."⁶ If the legislature does not act to preserve the river ecosystems, these waters will not be able to support the environment, let alone Texas's growing population.

These consequences would mean no more fly-fishing on the Llano, tubing down the Guadalupe, or canoeing on the Frio. As "the number one hunting and number three fishing state" in the United States, much of Texas's economy is dependent upon the many industries related to recreational activities.⁷ Accordingly, Texans feel the impact of depleted river systems through the loss of economic, recreational, and environmental benefits.⁸

The water crisis is the single most important issue facing Texas at this time because without a balanced approach to water distribution, our river systems will fail.⁹ Such a failure will have a profoundly negative impact on human consumption and the economy, as well as on recreational and aesthetic values.¹⁰ To address the degradation of Texas rivers before

1. See ANDREW SANSOM WITH EMILY R. ARMITANO & TOM WASSENICH, *WATER IN TEXAS: AN INTRODUCTION* 35 (2008).

2. See *infra* Part IV.C; Martin Hubert & Bob Bullock, *Senate Bill 1, The First Big and Bold Step Toward Meeting Texas's Future Water Needs*, 30 TEX. TECH L. REV. 53, 53 (1999).

3. See Hubert & Bullock, *supra* note 2, at 68.

4. See Andrew K. Jacoby, *Water Pressure: The Eightieth Texas Legislature Attempts to Protect Instream Flows of Rivers and Streams, and Freshwater Inflows to Bays and Estuaries*, 20 TUL. ENVTL. L.J. 381, 383 (2007).

5. See *Rivers*, TEXAS STATE UNIVERSITY, <http://www.rivers.txstate.edu/research/rivers.html> (last visited Sept. 19, 2010). "This episode was the culmination of several years of extreme drought along the border, resulting in severe reduction or complete cessation of the water releases which feed the river from reservoirs in Mexico." *Id.*

6. *WWF's Top 10 Rivers at Risk, Rio Grande Makes List*, WORLD WILDLIFE FUND (Mar. 19, 2007), <http://www.worldwildlife.org/who/media/press/2007/WWFPresitem925.html>.

7. SANSOM, *supra* note 1, at 2.

8. See *infra* Part II.A.

9. See *infra* Part II.A.

10. See *infra* Part II.A.

irreparable damage is done, the state should implement instream flow protections. The policy goal behind such protections “is to identify appropriate flow regimes that conserve fish and wildlife resources while also providing sustained benefits for other human uses of water resources.”¹¹

This Comment explores the need for instream flow protections, the current status of the instream flow policy initiative in Texas, and the approaches Idaho and Oregon implemented to provide such protections in their respective states.¹² Part II specifically considers the development of instream flow policies in the West, where water is scarce and there is a need for these regulatory programs.¹³ Part III then discusses the current state of instream flow studies in Texas.¹⁴ Part IV evaluates Texas water law and the legislature’s recognition of instream flow regimes as an important policy issue.¹⁵ Part V studies the approaches taken in Idaho and Oregon, where instream flow programs have been successful, and advocates that Texas adopt a similar approach.¹⁶ Finally, Part VI urges the Texas Legislature to recognize instream flows as a beneficial use of water and to incorporate this policy into Texas’s existing water scheme by allowing water to be appropriated for instream flow uses.¹⁷

Water is growing increasingly scarce as the Texas population continues to grow.¹⁸ Given the impending water crisis, the Texas Legislature must act now. In order to adequately meet the water needs of Texans for generations to come, the legislature must ensure sustained viability of river systems by implementing a customized instream flow regime.

II. DEVELOPMENT OF INSTREAM FLOW POLICIES

A. Defining Instream Flows

An instream flow is, at the most basic level, the amount of water flowing through a stream at any given time.¹⁹ Streams require a certain flow level to preserve the river system, which essentially consists of the

11. *Instream Flows in Texas*, TEXAS PARKS AND WILDLIFE, <http://www.tpwd.state.tx.us/landwater/water/conservation/fwresources/instream.phtml> (last visited Sept. 19, 2010).

12. See discussion *infra* Parts II-V.

13. See *infra* Part II.

14. See *infra* Part III.

15. See *infra* Part IV.

16. See *infra* Part V.

17. See *infra* Part VI.

18. See Jacoby, *supra* note 4, at 382.

19. See TOM ANNEAR ET AL., *INSTREAM FLOWS FOR RIVERINE RESOURCE STEWARDSHIP* 217 (The Instream Flow Council, rev. ed. 2004) (2002).

fish, wildlife, and streamside vegetation.²⁰ These instream flows vary from season to season and year to year and are measured based on the frequency and magnitude of water flow over time.²¹ This pattern is referred to as the stream's flow regime.²² Water diversions, where water is removed from the stream for use elsewhere, affect the frequency and magnitude of a stream's flow and therefore impact the stream's flow regime.²³

When a state sets out to create "instream flow requirements," the state is essentially monitoring the amount of water flowing in a natural stream or river to ensure sufficient flow to "sustain, rehabilitate, or restore the ecological functions of a stream in terms of hydrology, geomorphology, biology, water quality, and connectivity."²⁴ States develop instream flow requirements in order to balance competing water interests, including environmental necessities, hydroelectric power, and navigation, as well as industrial, recreational, and consumptive uses.²⁵ As human populations grow, consumptive needs increase and states are left with the predicament of meeting these human needs without depleting the natural environment.²⁶ To meet this goal, states must ensure that their water policies protect instream flows in order to prevent the degradation of river ecosystems.²⁷

It is difficult, yet essential, to protect the many services that natural river systems provide by balancing all competing interests in these waters.²⁸ Rivers serve many functions, including "flood mitigation, groundwater recharge, navigation, nutrient transport and recycling, pollution attenuation, water supplies, biological productivity, aesthetic values, and recreational opportunities."²⁹ Often, the many tangible and nontangible benefits of a well-managed stream system are not noticed until after the environment is depleted beyond repair.³⁰ States developed instream flow protections in recognition of the many benefits associated with maintaining a healthy

20. See DAVID M. GILLILAN & THOMAS C. BROWN, *INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE* 2 (1997).

21. See *id.* at 7.

22. *Id.*

23. See *id.* at 8. Water diversions typically occur with use of structures like diversion dams, which direct the water to the desired location. See *id.* These diversions sometimes dewater streams, which means that a stretch of the stream has dried up due to human removal. See *id.*; ANNEAR ET AL., *supra* note 19, at 215.

24. ANNEAR ET AL., *supra* note 19, at 217.

25. See *id.* at 1.

26. See *id.* In fact, "[c]ompeting uses have resulted in degraded river ecosystems in every region of the United States and Canada." *Id.*

27. See *id.*

28. See *Frequently Asked Questions*, INSTREAM FLOW COUNCIL, <http://www.instreamflowcouncil.org/faq.htm> (last visited Sept. 19, 2010). According to the Instream Flow Council, "informed and effective instream flow management should afford a healthy, enjoyable existence for people while maintaining healthy, diverse aquatic resources." *Id.*

29. *Id.*

30. See ANNEAR ET AL., *supra* note 19, at 2.

environment.³¹ These benefits fall into three main categories: economic, recreational, and environmental.³² Economic benefits arise from the many water-dependent industries, such as commercial fishing and water-borne commerce, in addition to recreation and tourism revenues.³³ Recreational benefits include the aesthetic beauty or river landscapes, as well as numerous outdoor opportunities, including fishing, swimming, and canoeing.³⁴ Maintaining instream flows also results in environmental protection because healthy flow levels are an integral component of the water cycle and the river ecosystem.³⁵

Instream flow regulatory programs, therefore, are an outgrowth of a state's desire to protect the vast interests encompassed by these three categories as the state stewards water resources.³⁶ Conserving river systems requires a proactive approach, which, historically, many states have not taken.³⁷ Technological improvements in recent years now enable the effective and efficient study of river systems, thus assisting states as they formulate and implement balanced approaches to water allocation.³⁸

B. Trends and Principles of Instream Flow Science

As technology has advanced, several trends have developed within the study of instream flows.³⁹ First is the study of hydrology and hydraulics, which represents the developing focus on flexible flow regimes rather than a single, minimum flow.⁴⁰ These flow regimes take subsistence flows, base

31. See Steven J. Shupe, *Keeping the Waters Flowing: Stream Flow Protection Programs, Strategies and Issues in the West*, in *INSTREAM FLOW PROTECTION IN THE WEST 2* (Lawrence J. MacDonnell, Teresa A. Rice & Steven J. Shupe, eds., 1989).

32. See *id.* at 2-4.

33. See *id.* at 3. Recreation and tourism have a large impact on the Texas economy. See TEXAS WATER DEVELOPMENT BOARD, *TEXAS INSTREAM FLOW STUDIES: TECHNICAL OVERVIEW 10* (May 2008), available at http://www.twdb.state.tx.us/publications/reports/GroundWaterReports/GWReports/R369_InstreamFlows.pdf. For instance, in 1993, tourists spent nearly \$200 million at Texas state parks, while wildlife enthusiasts expended nearly \$4 billion. *Id.*

34. See GILLILAN & BROWN, *supra* note 20, at 2.

35. See *id.*

36. See Shupe, *supra* note 31, at 2-4.

37. See ANNEAR ET AL., *supra* note 19, at 5-6. Western allocation priorities "reflect the dominant water uses and values at the time that western water allocation institutions were developed, in the mid-1800s, when the public sought to encourage the rapid development and settlement of the West." GILLILAN & BROWN, *supra* note 20, at 3. Also, historically, states required physical diversions in order to create a water right, which effectively blocked instream flow protections. See *id.* at 45-76. Ultimately, "[t]he solution is a balanced approach to river corridor management that is consistent with public stewardship responsibilities and legal mandates. Ideally, rivers and streams should have instream flow regimes that provide sustainable, healthy, and diverse aquatic ecosystems." ANNEAR ET AL., *supra* note 19, at 6.

38. See ANNEAR ET AL., *supra* note 19, at 6.

39. See NAT'L RESEARCH COUNCIL, *THE SCIENCE OF INSTREAM FLOWS: A REVIEW OF THE TEXAS INSTREAM FLOW PROGRAM 33* (2005).

40. See *id.*

flows, high flow pulses, and overbank flows into consideration.⁴¹ This results in a more accurate reflection of flow needs because it evaluates many types of flows over time while taking multiple factors into consideration.⁴² A biological trend focuses on multiple riverine ecosystem functions rather than on one particular species.⁴³ The geomorphologic focus also transitioned from a focus only on the stream channel to include “physical processes in the stream channel, riparian, and floodplain areas.”⁴⁴ Finally, the disciplinary focus shifted to include interdisciplinary teams, who work to balance “instream flow science(s), public values, and legal mandates.”⁴⁵

Legislators must consider several principles as they develop effective instream flow programs.⁴⁶ States should strive to create programs that first seek to preserve the entire ecosystem, rather than a single species, in order to achieve the full range of benefits offered by adequate instream flows.⁴⁷ Regulations should also “mimic, to the extent possible, the natural flow regime, including seasonal and inter-annual variability [and] [e]xpand the spatial scope of instream flow studies beyond the river channel to include the riparian corridor and floodplain systems.”⁴⁸ Furthermore, interdisciplinary studies that are conducted should include biologists, geomorphologists, hydrologists, and water quality experts.⁴⁹ In addition to these studies, states should “[u]se reconnaissance information to guide choices from among a variety of tools and approaches for technical evaluations in particular river systems.”⁵⁰ Finally, states must “[p]ractice adaptive management, [which is] an approach for recommending adjustments to operational plans in the event that objectives are not being achieved,” while also “[i]nvolv[ing] stakeholders in the process.”⁵¹ These principles are an outgrowth of the modern trends in instream flow science

41. *See id.* “Subsistence flow” refers to the “minimum streamflow needed during critical drought periods to maintain tolerable water quality conditions and to provide minimal aquatic habitat space for the survival of aquatic organisms.” *Id.* “Base flow[s]” are the “‘normal’ flow conditions found in a river in between storms” that provide adequate habitat for the support of native aquatic communities, while also supporting riparian vegetation. *Id.* “High flow pulses” result from storms and “flush fine sediment deposits and waste products, restore normal water quality following prolonged low flows, and provide longitudinal connectivity for species movement along the river.” *Id.* “[O]verbank flow[s]” are “infrequent, high flow event[s] that breach riverbanks.” *Id.* at 33-34. These can “drastically restructure the channel and floodplain, recharge groundwater tables, deliver nutrients to riparian vegetation, and connect the channel with floodplain habitats that provide additional food for aquatic organisms.” *Id.* at 34.

42. *See id.*

43. *See id.* at 34.

44. *Id.* at 35.

45. *Id.*

46. *See id.* at 35-36.

47. *See id.*

48. *Id.* at 35.

49. *See id.* at 36.

50. *Id.* (citation omitted).

51. *Id.* (citation omitted).

and provide the foundation for a state-of-the-science instream flow program.⁵²

C. The Instream Flow Council

While certain trends and principles permeate instream flow science, the resulting policies vary from state to state. The Instream Flow Council (IFC), which includes fish and wildlife management agencies at the state and provincial level across both the United States and Canada, exists to study and improve instream flow policies across North America.⁵³ The IFC conducts and publishes many studies to assist states as they seek to “establish, maintain, and administer . . . [programs] for quantification, protection, and restoration of instream flows for aquatic purposes” while also promoting “sound [instream flow science],” because creating effective instream flow programs is a highly technical process.⁵⁴

The science behind regulating instream flows is extremely complicated.⁵⁵ But, by facilitating the exchange of information between scientists and policymakers in the United States and Canada, the IFC helps bridge the gap as states seek to implement programs grounded in sound science.⁵⁶ Also, because of its wide membership, the IFC has a unique perspective on the many possible approaches to instream flow regulations, and its publications assist state legislators seeking to develop appropriate and effective state policies.⁵⁷ As policymakers develop these instream flow policies, it is important that they understand the combined effects of the following: (1) the historical backdrop, (2) the scientific workings of riverine ecology, (3) public involvement, and (4) the legal and institutional components.⁵⁸

The effective management of riverine systems requires an understanding of the river ecosystem itself because the primary goal is to sustain—or if the damage is already done, to restore—the natural ecosystem process.⁵⁹ Effective instream flow programs center around a specialized understanding of the particular river being sustained, which in turn, requires extensive scientific studies.⁶⁰ Ideal flow policies incorporate the specific needs of each stream while also allowing flexibility for implementation of

52. *See id.*

53. *See IFC Home*, INSTREAM FLOW COUNCIL, <http://instreamflowcouncil.org/> (last visited Sept. 19, 2010).

54. *About the IFC*, INSTREAM FLOW COUNCIL, <http://instreamflowcouncil.org/aboutifc.htm> (last visited Sept. 19, 2010).

55. *See id.*

56. *See id.*

57. *See id.*

58. *See ANNEAR ET AL.*, *supra* note 19, at 1.

59. *See id.* at 9.

60. *See id.*

new techniques in line with scientific developments.⁶¹ Riverine system managers must understand the hydrology, geomorphology, biology, water quality, and connectivity of a stream or river in order to evaluate the instream flow requirements for sustainability.⁶²

D. Instream Flow Strategies in the West

In recognition of both the tangible and intangible benefits of free-flowing water, legislators and citizens pursue instream flow strategies in a variety of ways in the public and private sectors.⁶³ Several methods are particularly common in western states.⁶⁴ The first method developed in Oregon during the 1920s.⁶⁵ In order to protect streams that citizens relied upon for both salmon populations and scenic beauty, the state passed a statute limiting new water withdrawals from these streams to "domestic use through the year and storage during the period beginning November 1 and ending April 30 of each year."⁶⁶ Following Oregon's lead, states began expanding on this model by prohibiting new withdrawals to protect the river's natural state.⁶⁷ Some states, however, found the time constraints used in this model to be too rigid.⁶⁸

Due to these limitations in Oregon's method, instream flow statutory protections continued to evolve.⁶⁹ In 1949, Washington passed a statute granting the express right to protect instream flows through the permit process.⁷⁰ Some states, including Washington and Utah, found that this system provided the flexibility that Oregon's method lacked.⁷¹ Washington's statute recognized the need to maintain water levels "necessary to adequately support food fish and game fish populations" and authorized the water administrative agency to deny permits if the new permit would cause a harmful effect on the flow levels.⁷² This method of granting express permit rights evolved when some states, including California and Alaska, implemented similar provisions and stipulated that the recipient of the new permit had a duty to maintain a specified minimum flow level.⁷³ Rather than imposing a duty, another variation of this method

61. *See id.*

62. *See id.* at 9-45.

63. *See Shupe, supra* note 31, at 2.

64. *See id.* at 4.

65. *See id.* at 5.

66. *Id.* (quoting OR. REV. STAT. § 538.300 (1988)).

67. *See id.*

68. *See id.*

69. *See id.*

70. *See id.*

71. *See id.* at 5-6.

72. *Id.*

73. *See id.* at 6.

revoked the new permittee's water rights if the instream flow fell below the specified level.⁷⁴

States experimented with the more flexible permit system of regulating instream flows; however, this system proved overly difficult to administer in some areas.⁷⁵ Accordingly, a third method of regulating instream flows thus evolved: the recognition of instream water rights.⁷⁶ This system treated instream flows in the same manner as consumptive water rights, and "[t]hese instream rights [were] established under state law through appropriation or reservation or through the transfer of senior water rights."⁷⁷ Within this instream-water-rights method, the state legislature establishes water rights on the public's behalf.⁷⁸ Establishing water rights on the public's behalf is done to recognize recreational values and to maintain the natural water levels.⁷⁹ Rather than appropriating these rights, some states have instead reserved water rights.⁸⁰ In such instances, the state legislature reserves certain waters and effectively prevents anyone from lowering the flow beyond a certain level.⁸¹ Finally, some states recognize instream water rights by transferring existing water entitlements.⁸² This method is more common in arid portions of the West where water is scarce or is already appropriated.⁸³ States adopting this approach allow those who already possess water rights to dedicate those pre-existing rights to the stream.⁸⁴

In addition to the methods of appropriating water for the public, there are also certain methods to appropriate instream flow uses for the private sector.⁸⁵ Environmental groups advocate these methods, and some states

74. *See id.*

75. *See id.*

76. *See id.*

77. *Id.*

78. *See id.*

79. *See id.* This concept developed in Idaho as early as 1925, when the state legislature expressly preserved certain lakes in light of these recreational values. *See id.* Colorado used this method to preserve over 7,000 miles of streams and rivers, in addition to lakes. *See id.* at 6-7.

80. *See id.* at 7.

81. *See id.* Alaska allows anyone to apply for recognition of instream water rights by reservation; in order for the permit to be granted, the applicant must prove that the reservation "will not affect prior appropriators, that a need exists for the instream reservation, that unappropriated water is available, and that the proposed reservation is in the public interest." *Id.* at 7-8. It is important to note, however, that Alaska's method is limited and may be revoked for future consumptive uses. *See id.* at 8.

82. *See id.*

83. *See id.*

84. *See id.* The Utah, Wyoming, and Colorado legislatures have acknowledged this method. *See id.*

85. *See id.* at 10.

have granted such rights to these groups.⁸⁶ Many states, however, do not recognize such appropriations.⁸⁷

III. INSTREAM FLOW POLICIES IN TEXAS

A. Recognition of Instream Flows as a Texas Public Policy Priority

The Texas Legislature identified protection of instream flows as an important state policy because “[m]aintaining the biological soundness of the state’s rivers, lakes, bays, and estuaries is of great importance to the public’s economic health and general well-being.”⁸⁸ Furthermore:

The legislature has expressly required the commission while balancing all other public interests to consider and, to the extent practicable, provide for the freshwater inflows and instream flows necessary to maintain the viability of the state’s streams, rivers, and bay and estuary systems in the commission’s regular granting of permits for the use of state waters.⁸⁹

The scientific studies require an understanding of concepts like hydrology, geomorphology, biology, water quality, and connectivity; however, the most important lesson Texas policymakers must learn is the importance of flow variability.⁹⁰ Flow levels vary in accordance with other ecological factors and must be maintained to “ensure sustained biological diversity and dynamic ecosystem functions.”⁹¹ While the legislature has identified the need for instream flow protections, it needs to take the next step and implement an instream flow policy in order to effectively steward Texas’s water resources.⁹²

B. Creation of the Texas Instream Flow Program

Senate Bill 2 (S.B. 2), enacted in 2001 by the seventy-seventh session of the Texas Legislature, formed the Texas Instream Flow Program.⁹³ The Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, and Texas Water Development Board (the Agencies) jointly administer the program and are consequently performing “scientific and

86. See *id.* at 10-11. Arizona, for example, approved applications by an environmental advocacy group “after determining that fish and wildlife protection is a beneficial water use under Arizona law, a physical diversion is not required for appropriating a new water right, and the applicant had followed the necessary procedures for establishing a valid right.” *Id.* at 11.

87. See *id.* at 10.

88. TEX. WATER CODE ANN. § 11.0235(b) (West 2007 & Supp. 2009).

89. *Id.* at § 11.0235(c).

90. See ANNEAR ET AL., *supra* note 19, at 9-45.

91. *Id.* at 45.

92. See *infra* Part VI.

93. See TEXAS WATER DEVELOPMENT BOARD, *supra* note 33, at 10.

engineering studies to determine flow conditions necessary to support a sound ecological environment in the river basins of Texas.”⁹⁴

Although S.B. 2 does not define “sound ecological environment,” relevant state statutes “make clear that the activities of the Agencies must provide adequate water quality and fish and wildlife habitat, link terrestrial and riparian habitats to the aquatic environment, and consider both short- and long-term consequences.”⁹⁵ Based on the statutory context, the Agencies define a sound ecological environment as “[a] resilient, functioning ecosystem characterized by intact, natural processes and a balanced, integrated, and adaptive community of organisms comparable to that of the natural habitat of a region.”⁹⁶

Due to the vast size of Texas, as well as the wide range of terrains, the Agencies have implemented a multidisciplinary and multiscale approach to ensure a thorough understanding of Texas’s riverine ecosystems.⁹⁷ Essentially, they must conduct technical studies to understand the instream flow needs of the many diverse Texas rivers in order for the state to implement instream flows that will achieve its ecological goals.⁹⁸

Accordingly, the Agencies released the Technical Overview, which outlined the process Texas must undertake to conduct the studies necessary to determine the proper flow conditions that will maintain a healthy ecosystem.⁹⁹ The ultimate goal of the studies is to develop a detailed understanding, grounded in sound scientific data, of the entire Texas riverine system.¹⁰⁰ This data will then be integrated to form flow generations, which will be presented to the legislature in a final study report.¹⁰¹ From that point, the focus will turn to implementation, monitoring, and adaptive management.¹⁰²

These scientific studies are so essential to the legislative process that the eightieth session of the Texas Legislature passed Senate Bill 3 (S.B. 3) in 2007, which “create[d] a process to generate regulatory environmental flow standards based on ‘the best available science.’”¹⁰³ This legislative mandate demonstrates Texas lawmakers’ desire to formulate effective policies that may continually be adapted as required by environmental needs.¹⁰⁴ The Texas Instream Flow Program’s role in the legislative

94. *Id.*

95. *Id.* at 11.

96. *Id.*

97. *See id.* at 13.

98. *See id.* Adequate timing of the instream flows is also an essential factor in riverine system management. *See id.* at 13-14.

99. *See id.* at 1.

100. *See id.*

101. *See id.*

102. *See id.*

103. *Id.* at 110.

104. *See id.*

process is to provide the “best available science” to assist lawmakers in creating policies to achieve a sound ecological environment.¹⁰⁵ At this time, however, instream flows are not adequately protected in Texas.¹⁰⁶ The legislature needs to take the next step and provide these protections in the Water Code to ensure the sustainability of Texas’s river systems.¹⁰⁷

C. Instream Flow Policy Implementation Issues in Texas

The Agencies commissioned the National Research Council (NRC) to evaluate the Texas instream flow initiative.¹⁰⁸ Accordingly, the NRC established a committee to evaluate the scientific and engineering methods used by the Agencies to develop the initiative.¹⁰⁹ The committee proceeded by evaluating key documents, reviewing scientific and technical matters, and evaluating the findings and recommendations of the Agencies.¹¹⁰ The NRC findings proved important to the study because they provided a comprehensive review of the Agencies’ efforts and recommended improvements.¹¹¹ Notably, the NRC report called for “clear and measurable goals and a discussion of implementation.”¹¹² While recognizing that creating an instream flow program is a complicated process, the NRC report also noted that the resulting program must “be flexible to meet the unique challenges and opportunities presented by the state’s rich mixture of river ecosystems, culture, water law, and water development.”¹¹³

The NRC committee recommended improvements as the Agencies proceeded with the Texas instream flow program.¹¹⁴ Importantly, the NRC stated that “[a] clear definition of the phrase ‘sound ecological environment’ need[ed] to be provided to supply context for instream flows in Texas.”¹¹⁵ Furthermore, clear and specific goals for the statewide instream flow program are needed, as well as clearer direction regarding “the process by which the individual technical evaluations will be integrated into instream flow recommendations.”¹¹⁶ The instream flow program must also “be integrated with the water quality, water permitting, and other water-related programs in Texas” in order for the ultimate program to fully address Texas’s ecological needs.¹¹⁷

105. *Id.*

106. *See infra* Part IV.B-C.

107. *See infra* Part VI.

108. *See* NAT’L RESEARCH COUNCIL, *supra* note 39, at 1.

109. *See id.*

110. *See id.* at 2.

111. *See id.* at vii-x.

112. *Id.* at viii.

113. *Id.* at 13.

114. *See id.*

115. *Id.* at 14.

116. *Id.*

117. *Id.* at 15.

In order to adequately protect environmental needs, Texas's ultimate instream flow policy must be workable.¹¹⁸ Full implementation will likely take several years due to Texas's many diverse river systems, and this implementation will occur in two stages.¹¹⁹ The first stage consists of a statewide program that "will be implemented as the river basin studies are conducted and completed."¹²⁰ The second stage is more specific and involves individualized flow recommendations for each river system.¹²¹

The most prominent issue permeating the study of instream flow policies is the precarious balance between human and environmental water needs.¹²² There are many factors that make this balance particularly difficult in Texas, including "the state's groundwater withdrawal policies and rapidly changing land uses, the state's many reservoirs, over-allocated rivers compared to rivers where water remains available, non-priority river basins, and climate changes."¹²³

While the Texas Water Code differentiates between groundwater and surface water, the two are not so easily divisible in ecological terms because "[g]roundwater is a critical aspect of instream flow."¹²⁴ Groundwater and surface water "function as a unified hydrologic system in many instances," and significant, unregulated withdrawals from groundwater sources can noticeably impact surface water.¹²⁵ "This disjunction between the unified physical nature of surface and groundwater systems and the bifurcated allocation system for surface- and ground-waters raised some questions about the efficacy of instream flow recommendations that may be affected by groundwater withdrawals."¹²⁶ Regardless of the means of allocation, it remains evident that groundwater pumping must be a factor in the development and implementation of an effective instream flow policy.¹²⁷

Inevitable changes in land usage will also affect the implementation of instream flow policies.¹²⁸ These changes will impact the watershed's hydrologic behavior, for "[a]s a watershed is converted from its natural vegetative cover into urban areas or farms, infiltration capacity of the watershed is reduced, leading to increases in high flow pulses and overbank flows and decreases of subsistence and base flows."¹²⁹ Texas's ultimate

118. *See id.* at 110.

119. *See id.*

120. *Id.*

121. *See id.* at 110-11.

122. *See id.* at 111.

123. *Id.*

124. *Id.*

125. *Id.*

126. *Id.* at 112.

127. *See id.*

128. *See id.*

129. *Id.*

instream flow policy must fit into the Texas Water Code and be flexible enough to adapt to changing river conditions.¹³⁰

IV. TEXAS WATER LAW

A. Water Diversion Systems

In order to design an appropriate instream flow regime for Texas, it is important to understand general water diversion systems in addition to Texas's specific water appropriation system. In the United States, there are two main water diversion systems: the riparian rights system and the prior appropriation system.¹³¹ The riparian rights system, which is used in every state east of the Mississippi River, holds that "only persons owning land on natural watercourses possess riparian rights."¹³² Furthermore, riparian rights cannot be held in groundwater, diffused surface water, or artificial water bodies.¹³³ Under this system, only riparian owners hold water diversion rights, and even these uses are restricted.¹³⁴ In order to be riparian, the land must (1) touch the body of water, and (2) be in the same watershed.¹³⁵ The riparian system operates on the basis that "water rights are incidental to ownership of land adjacent to a stream," and therefore the right to water is inherent in land ownership.¹³⁶

The prior appropriation system, on the other hand, developed in the West to govern appropriation of a scarce resource.¹³⁷ In some states, including Texas, riparian and prior appropriation rights co-exist.¹³⁸ Prior appropriation operates under the theory that "[f]irst in time is first in right," and water diversion rights are granted by permit.¹³⁹ In light of this theory, prior appropriation places great priority on the length of time the owner has possessed the water right.¹⁴⁰ The second principle, after time, is that "beneficial use shall be the basis, measure, and limit to the use of water."¹⁴¹

130. *See id.*

131. *See* Ralph A. Wurbs, *Administration and Modeling of the Water Rights System*, in *WATER FOR TEXAS* 44 (Jim Norwine et al. eds., 2005).

132. WILLIAM GOLDFARB, *WATER LAW* 21 (2d ed. 1989).

133. *See id.*

134. *See id.*

135. *See id.* at 21-22.

136. Wurbs, *supra* note 131, at 44.

137. *See* GOLDFARB, *supra* note 132, at 26; Wurbs, *supra* note 131, at 44. Twenty-nine eastern states base their water rights on the riparian system. *See* Wurbs, *supra* note 131, at 44. "Water law in twenty-nine eastern states is based primarily on the riparian doctrine. Nine western states adopted the prior appropriation doctrine from the beginning. Ten other states, including Texas, originally had riparian systems but later converted to appropriation systems while preserving existing riparian rights." *Id.*

138. *See* Wurbs, *supra* note 131, at 44.

139. *See* GOLDFARB, *supra* note 132, at 32.

140. *See id.* at 33.

141. *Id.*

This principle developed out of the need to carefully apportion rights to a scarce, but vital, resource.¹⁴² Appropriation rights differ from the riparian system because the water rights are granted by permit and can be appropriated for use anywhere, rather than for strict use on riparian land.¹⁴³ Also, appropriation rights differ in that the right is granted for a potentially limited amount of water.¹⁴⁴ Under this system, the appropriator has the right to use as much water as he pleases, as long as the use is beneficial and no minimum flow requirement is imposed.¹⁴⁵ Appropriation rights are separate from land ownership; therefore, ownership of the diversion right is typically transferable apart from the land.¹⁴⁶ Furthermore, these appropriation rights are granted indefinitely, as long as they are used lawfully; riparian rights are not.¹⁴⁷ Riparian rights, however, are not subject to abandonment, forfeiture, or prescription as appropriation rights are because the riparian right is tied to the land.¹⁴⁸

B. Allocation of Water Rights in Texas

In Texas, groundwater and surface water rights are governed by separate legal entities.¹⁴⁹ As a stated public policy goal, the state manages water right distribution in order to “provide for the conservation and development of the state’s natural resources.”¹⁵⁰ According to the Texas Water Code:

The water of the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater, and rainwater of every river, natural stream, canyon, ravine, depression, and watershed in the state is the property of the state.¹⁵¹

The Texas Water Code also provides that the prior appropriation doctrine governs allocation of these surface waters.¹⁵² Groundwater, which is defined as “water percolating below the surface of the earth,” is not

142. *See id.*

143. *See id.*

144. *See id.*

145. *See id.*

146. *See id.* at 34.

147. *See id.* at 33.

148. *See id.* at 34.

149. *See Edwards Aquifer Auth. v. Day*, 274 S.W.3d 742, 752 (Tex. App.—San Antonio 2008, pet. granted).

150. TEX. WATER CODE ANN. § 1.003 (West 2008).

151. *Id.* § 11.021(a).

152. *See id.* § 11.022. “The right to the use of state water may be acquired by appropriation in the manner and for the purposes provided in this chapter. When the right to use state water is lawfully acquired, it may be taken or diverted from its natural channel.” *Id.*

regulated according to the same rules as surface water.¹⁵³ Rather, groundwater is subject to the common law riparian rights system and the rule of capture.¹⁵⁴

The Texas Commission on Environmental Quality (TCEQ) controls the appropriation and diversion of state water, as well as the laws and rules governing the permitting process.¹⁵⁵ Permits are required before diversions may occur, unless the use is an exempted use.¹⁵⁶ Exempted uses include domestic and livestock use, wildlife management, emergency use, and other specified uses.¹⁵⁷ Two general categories of water rights exist: perpetual rights, including certificates of adjudication and permits, and limited term rights, which consist of both term permits and temporary permits.¹⁵⁸ An application must be filed with TCEQ to receive a permit; however, very little unappropriated water remains available in Texas.¹⁵⁹ According to TCEQ, some rivers are already over-allocated, even given the amount of water the river carries in a wet year.¹⁶⁰ If TCEQ cannot issue a permit, the applicant's only other option to obtain a water right is to purchase all or part of an existing water right.¹⁶¹ In addition, water may also be obtained by negotiating with a permit holder for impounded water collected from the permit holder's appropriated water.¹⁶²

The Texas Water Code also provides the purposes for which water may be appropriated.¹⁶³ Accordingly, "to the extent that state water has not been set aside by the commission under [§] 11.1471(a)(2) to meet

153. See *id.* § 35.002(5). Rather, groundwater is owned by the owner of the above land. See *id.*

154. See *Sipriano v. Great Spring Waters of Am., Inc.*, 1 S.W.3d 75, 80 (Tex. 1999). According to the rule of capture, the owner has the right to use or sell all the water they can capture from below their land with only very limited exceptions. See *id.* at 77. In *Sipriano*, a landowner challenged the rule of capture when Ozarka began pumping 90,000 gallons of water per day, seven days a week, subsequently draining *Sipriano's* water wells. *Id.* at 75-76. The Texas Supreme Court refused to throw out the rule of capture and apply the reasonable use approach to groundwater allocation. See *id.* at 80. The court cited recent legislative actions in groundwater management as the basis for its decision:

[W]e are reluctant to make so drastic a change as abandoning our rule of capture and moving into the arena of water-use regulation by judicial fiat. It is more prudent to wait and see if Senate Bill 1 will have its desired effect, and to save for another day the determination of whether further revising the common law is an appropriate prerequisite to preserve Texas's natural resources and protect property owners' interests.

Id.

155. See *Edwards Aquifer Authority v. Day*, 274 S.W.3d 742, 752 (Tex. App.—San Antonio 2008, pet. granted).

156. See TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, RIGHTS TO SURFACE WATER IN TEXAS 2 (Mar. 2009), http://www.tceq.state.tx.us/files/gi-228.pdf_4467322.pdf.

157. See *id.* at 2-3.

158. See *id.* at 3-4.

159. See *id.* at 16.

160. See *id.*

161. See *id.* at 17.

162. See *id.* According to the TCEQ, recreational businesses (such as canoe rental companies or rafting guides) have purchased water from the Guadalupe-Blanco River Authority when droughts have dried up the Guadalupe River below Canyon Lake. See *id.*

163. See TEX. WATER CODE ANN. § 11.023 (West 2008).

downstream instream flow needs or freshwater inflow needs, state water may be appropriated, stored, or diverted” for uses including domestic and municipal uses, agricultural uses and industrial uses, mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, public parks, and game preserves.¹⁶⁴ Section 11.023 also provides that state water may be “appropriated, stored, or diverted for any other beneficial use.”¹⁶⁵ The state appropriates use of state water because these waters are “held in trust for the public.”¹⁶⁶

Currently, the Texas Water Code does not provide for specific instream flow protections; rather, the Code states that “[m]aintaining the biological soundness of the state’s rivers, lakes, bays, and estuaries is of great importance to the public’s economic health and general well-being. The legislature encourages voluntary water and land stewardship to benefit the water in the state, as defined by [§] 26.001.”¹⁶⁷ The legislature directed the TCEQ, “while balancing all other public interests to consider and, to the extent practicable, provide for the freshwater inflows and instream flows necessary to maintain the viability of the state’s streams, rivers, and bay and estuary systems in the commission’s regular granting of permits for the use of state waters.”¹⁶⁸ Furthermore, “[a]s an essential part of the state’s environmental flows policy, all permit conditions relating to freshwater inflows to affected bays and estuaries and instream flow needs must be subject to temporary suspension if necessary for water to be applied to essential beneficial uses during emergencies.”¹⁶⁹

While the state thus recognizes the importance of instream flow regimes, this recognition is limited because the legislature “has not expressly authorized granting water rights exclusively for: (1) instream flows dedicated to environmental needs or inflows to the state’s bay and estuary systems; or (2) other similar beneficial uses.”¹⁷⁰ In an effort to balance competing demands for appropriated water, the legislature listed the preference given to various uses.¹⁷¹ The highest preference is given to domestic and municipal uses, which include uses to sustain human life as well as the lives of domestic animals.¹⁷² The legislature gives these uses the highest preference because:

[It is] the public policy of the state and for the benefit of the greatest number of people that in the appropriation of water as herein defined, the

164. *Id.* § 11.023(a)(1)-(8).

165. *Id.* § 11.023(b).

166. *Id.* § 11.0235(a).

167. *Id.* § 11.0235(b).

168. *Id.* § 11.0235(c).

169. *Id.*

170. *Id.* § 11.0235(d).

171. *Id.* § 11.024.

172. *Id.* § 11.024(1).

appropriation of water for domestic and municipal uses shall be and remain superior to the rights of the state to appropriate the same for all other purposes.¹⁷³

Next, the legislature named agricultural and industrial uses.¹⁷⁴ The list continues with mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, and finally, other beneficial uses.¹⁷⁵ In addition to listing beneficial uses, the Texas Water Code provides for allocation of surface water, as state property, according to the prior appropriation doctrine.¹⁷⁶

In accordance with this doctrine, the legislature provides a process for water allocation according to a list of preferences for water use.¹⁷⁷ The legislature recognizes the importance of instream flow regimes for environmental sustainability; however, no instream flow requirements are currently in place, and thus, this policy is not protected.¹⁷⁸

C. Recent Developments in Texas Water Law

Recently, the Texas Legislature recognized the need to evaluate current water allocations to ensure that future water needs can be fulfilled.¹⁷⁹ Senate Bill 1 (S.B. 1), passed in 1997, proved to be "a comprehensive water resource planning, management, and development bill passed during the seventy-fifth regular legislative session . . . [which] . . . contain[ed] the most exhaustive rewrite of Texas water law in the last thirty years."¹⁸⁰ This legislative focus on the existing water law system developed in response to a drought beginning in 1995 that brought Texas's water distribution issues to light.¹⁸¹ In addition to the problems created by the drought, a 1996 study by the Center for Demographic and Socioeconomic Research and Education Department of Rural Sociology at Texas A&M University projected a 50% increase in the Texas population within fifty

173. *Id.*

174. *Id.* § 11.024(2).

175. *Id.* § 11.024(3)-(7).

176. *See id.* § 11.022. "The right to the use of state water may be acquired by appropriation in the manner and for the purposes provided in this chapter. When the right to use state water is lawfully acquired, it may be taken or diverted from its natural channel." *Id.*

177. *See id.* § 11.024.

178. *See id.* § 11.0235.

179. *See* Act of June 2, 1997, 75th Leg., R.S., ch. 1010, § 1.01, 1997 Tex. Gen. Laws 3610 (codified in various sections of TEX. WATER CODE ANN., TEX. GOV'T CODE ANN., TEX. AGRIC. CODE ANN., TEX. TAX CODE ANN., and TEX. HEALTH & SAFETY CODE ANN.).

180. Hubert & Bullock, *supra* note 3, at 54.

181. *See id.* at 55.

years, which further demonstrated the need for a water system capable of supporting the exploding population.¹⁸²

S.B. 1 addressed the seriousness of the water situation in Texas and laid the foundation for a balanced water system that could meet Texas's current and future water needs.¹⁸³ As the legislature sought to balance competing water interests to provide for the state's needs for years to come, it recognized "that water must [also] be available to satisfy environmental needs for Texas's fish and wildlife habitat, instream flows, bays, and estuaries."¹⁸⁴ S.B. 1, therefore, added provisions requiring consideration of environmental needs.¹⁸⁵ One such provision, § 15.7031 of the Water Code, establishes the Texas Water Trust (the Trust) "within the water bank to hold water rights dedicated to environmental needs, including instream flows, water quality, fish and wildlife habitat, or bay and estuary inflows."¹⁸⁶ Under § 15.7031, "[w]ater rights may be held in the trust for a term specified by contractual agreement or in perpetuity."¹⁸⁷ While § 15.7031 allows water rights to be donated for environmental purposes, the Trust has not resolved the need for legislative instream flow protections.¹⁸⁸ To date, there are only two deposits in the Trust, thus demonstrating that "the Trust is woefully underutilized."¹⁸⁹

In fact, the San Marcos River Foundation litigation demonstrates that the Trust is not a sufficient means of protecting healthy instream flow levels.¹⁹⁰ The San Marcos River Foundation (SMRF) filed a permit application with the TCEQ in 2000.¹⁹¹ The SMRF sought to appropriate approximately 1.3 million acre-feet of water in the Guadalupe River Basin for environmental needs.¹⁹² In 2003, TCEQ denied SMRF's application, stating that "while the Commission has approved applications to add instream use designations to four specific water right permits previously issued for other beneficial purposes, the Commission has not heretofore issued a new permit for instream use only, as contemplated by this

182. *See id.* (citing STEVE H. MURDOCK ET AL., TEXAS CHALLENGED: THE IMPLICATIONS FOR POPULATIONS CHANGE FOR PUBLIC SERVICE DEMAND IN TEXAS 4-9 (1996)).

183. *See id.* at 55-56.

184. *Id.* at 65.

185. *Id.* (citing § 2.03, .05, .07-.08 1997 Tex. Gen. Laws 3619-23 (amending TEX. WATER CODE ANN. § 111.023, .036, .046, .085)).

186. TEX. WATER CODE ANN. § 15.7031(a) (West 2008).

187. *Id.* § 15.7031(d).

188. *See Texas Water Trust*, TEXAS WATER DEVELOPMENT BOARD, <http://www.twdb.state.tx.us/assistance/waterbank/wtrust.asp> (last visited Sept. 19, 2010). The TWDB lists two water trust deposits, one to the Rio Grande River and one to the San Marcos Tributary to the Guadalupe River. *See id.*

189. Jacoby, *supra* note 4, at 392.

190. *See generally* Tex. Comm'n on Env'tl. Quality v. San Marcos River Found., 267 S.W.3d 356, 359-61 (Tex. App.—Corpus Christi 2008, pet. denied) (supporting this assertion by looking at the San Marcos River Foundation case).

191. *See id.* at 357.

192. *See id.*

application.”¹⁹³ While the trial court reversed TCEQ’s decision, the appellate court ultimately reversed the trial court’s decision, finding the case to be moot due to § 11.0237.¹⁹⁴ Section 11.0237 provides:

The commission *may not* issue a new permit for instream flows dedicated to environmental needs or bay and estuary inflows. The commission may approve an application to amend an existing permit or certificate of adjudication to change the use to or add a use for instream flows dedicated to environmental needs or bay and estuary inflows.¹⁹⁵

Accordingly, this litigation demonstrates that neither the Texas Water Code nor the Trust adequately protect instream flows.¹⁹⁶

By beginning an overhaul of the Texas Water Code, S.B. 1 proved to be “landmark legislation in meeting the state’s current and future water supply needs” because it addressed a number of issues while providing the foundation for further changes by the legislature.¹⁹⁷ Building on this foundation, the seventy-seventh session of the Texas Legislature passed Senate Bill 2 (S.B. 2) in 2001.¹⁹⁸ S.B. 2 addressed the development and management of the water resources of the state and called for the creation of a state program for instream flows by the end of 2010.¹⁹⁹ In order to reach this goal, the legislature instructed three state agencies—the Texas Water Development Board (TWDB), the Texas Parks and Wildlife Department (TPWD), and the Texas Commission on Environmental Quality (TCEQ) (collectively, the Agencies)—to work together and develop an appropriate program.²⁰⁰ These agencies subsequently drafted two documents: the Programmic Work Plan and the Technical Overview Document.²⁰¹

The eightieth session of the Texas Legislature passed Senate Bill 3 (S.B. 3), which extended the Agencies’ deadline from December 31, 2010, to December 31, 2016.²⁰² By this date, the Agencies “shall establish a work plan that prioritizes the studies and that sets interim deadlines providing for publication of flow determinations for individual rivers and streams on a reasonably consistent basis throughout the prescribed study period.”²⁰³

193. *Id.* at 358.

194. *Id.* at 360-61.

195. *Id.* at 360.

196. *See id.* at 356-61.

197. Hubert & Bullock, *supra* note 2, at 70.

198. *See* Act of Sept. 1, 2001, 77th Leg., R.S., ch. 966, 2001 Tex. Gen. Laws 1991 (codified in various amendments to TEX. WATER CODE ANN.).

199. *See id.*

200. NAT’L RESEARCH COUNCIL, *supra* note 39, at 1.

201. *See id.*

202. *See* Act of Sept. 1, 2007, 80th Leg., R.S., ch. 1430, 2007 Tex. Gen. Laws 5848 (codified in various amendments to the TEX. WATER CODE ANN.).

203. *Id.* at § 1.23, sec. 16.059.

As S.B. 1 and S.B. 2 demonstrate, the legislature is overhauling the water system to provide for the state's increasing water demands; however, the legislature must take care not to allow instream flow regulations to fall to the wayside.²⁰⁴ S.B. 3 extended the Agencies' deadline by six years to 2016.²⁰⁵ While the Agencies' studies and findings are important to the process, the legislature also must ensure that it addresses this important policy issue in a timely manner before irreparable damage is done to Texas's river systems.²⁰⁶

V. VARIOUS APPROACHES TO INSTREAM FLOW PROTECTIONS

A. *A Study of Instream Flow Protection Policies in the West*

Water policies reflect how each state stewards a scarce resource, and "maximum productivity of the resource demands that water be allocated to whatever uses are most valuable."²⁰⁷ Accordingly, instream flow protections vary in content and scope from state to state.²⁰⁸ Some states have broad instream flow statutes, recognizing "fish and wildlife, other aquatic life, recreation, scenic and aesthetic, water quality, navigation, and transportation as water uses worthy of protection."²⁰⁹

The number of states with instream flow programs increased as states in the West realized the value of and need for instream flow protections.²¹⁰ State legislatures have implemented instream flow protections in eleven western states.²¹¹ These states implemented three main methods of instream flow protection: (1) instream flow rights, (2) minimum flows, and (3) instream reservations.²¹² Some states without legislatively mandated instream flow protections turned instead to various administrative initiatives.²¹³

204. See *infra* Part VII.

205. See source cited *supra* note 202.

206. See *infra* Part VII.

207. GILLILAN & BROWN, *supra* note 20, at 118.

208. See *id.* at 119.

209. *Id.*

210. See *id.* at 111.

211. See *id.* The eleven states include: Alaska, California, Colorado, Idaho, Kansas, Montana, Nebraska, Oregon, Utah, Washington, and Wyoming. *Id.* at 112.

212. See *id.* California, however, implemented a different method. See *id.* The California legislature chose to form "a state Wild and Scenic Rivers program in 1973 [which] authorized the transfer of existing rights to instream purposes in 1991, but it provided the greatest protection to instream flows by directing the state's administrative agency to protect flows through administrative methods." *Id.*

213. See *id.* at 113. Arizona and South Dakota both created instream flow protections through administrative initiatives. See *id.* While these programs vary by state, a similar process exists where:

(1) private citizens, groups or public agencies submit an instream water rights application to the state water rights agency; (2) the administrative agency determines that nothing in state law specifically prohibits the use, and so grants the permit; and (3) the process is repeated by

Water allocation is not a problem unique to Texas; therefore, as Texas develops its instream flow policies, it is helpful to see how other states have granted similar environmental protections. Texas needs to develop an individualized instream flow policy that is targeted to address the specific needs posed by the state's geography, climate, and the existing codified water law.²¹⁴ While Texas must create a specialized approach, general principles can be gathered from studying the methods used by other states to face the same larger issue—providing for human water consumption needs while also ensuring a sustainable ecosystem through instream flow policies.²¹⁵

B. Minimum Stream Flow Rights in Idaho

The study of Idaho's water diversion system is relevant to a study of Texas's water policies because Idaho is a western state that also applies the prior appropriation system to surface water allocation.²¹⁶ In Idaho, instream flow protection resulted from legislative action, statewide water policy planning, and court decisions.²¹⁷ In 1925, the Idaho Legislature authorized and directed the governor:

[T]o appropriate in trust for the people of the state of Idaho all the unappropriated water of Big Payette Lake, or so much thereof as may be necessary to preserve said lake in its present condition. The preservation of said water in said lake for scenic beauty, health and recreation purposes necessary and desirable for all the inhabitants of the state is hereby declared to be a beneficial use of such water.²¹⁸

Through this legislation, the Idaho Legislature recognized instream appropriations as beneficial uses of water.²¹⁹ The next notable recognition of the importance of instream flow protection occurred in 1971, when the legislature extended this protection to several streams.²²⁰ The legislature declared that "[t]he preservation of water in the area described for its scenic beauty and recreational purposes necessary and desirable for all citizens of the state of Idaho is hereby declared to be a beneficial use of such water."²²¹

other applicants, creating a de facto instream flow protection program.

Id.

214. *See id.* at 111.

215. *See id.*

216. *See* IDAHO CONST. art. XV, § 3.

217. Josephine P. Beeman & Kenneth R. Arment, *Instream Flows in Idaho*, in *INSTREAM FLOW PROTECTION IN THE WEST* 267 (Lawrence J. MacDonnell et al. eds., 1989).

218. IDAHO CODE ANN. § 67-4301 (2006). In 1927, the Idaho Legislature extended this protection to several additional lakes: Priest, Pend d'Oreille, and Coeur d'Alene Lakes. *See id.* § 67-4304.

219. *Id.* §§ 67-4301, 67-4304.

220. *See id.* §§ 67-4307 to -4312.

221. *Id.* §§ 67-4307, -4308, -4311.

These statutes establish the Idaho Legislature's commitment to two main principles: (1) that "the public use of the unappropriated water in the specific area herein described is declared to be of greater priority than any other use except that of domestic consumption"; and (2) that "[t]he preservation of water in the area described for its scenic beauty and recreational purposes necessary and desirable for all citizens of the state of Idaho is hereby declared to be a beneficial use of such water."²²² Two canal companies and the Idaho Water Users Association challenged these legislative mandates on the basis that a state agency cannot legally appropriate water, that recreation and scenic beauty are not beneficial uses, and that valid appropriations require physical diversions.²²³ The challengers contended that the legislation was invalid because the Idaho Constitution specifically listed five uses of water for appropriative purposes, and scenic beauty and recreation were not on that list.²²⁴ The Idaho Supreme Court, however, held in what is commonly known as the "Malad Canyon Decision" that the uses listed in the Idaho Constitution were not exclusive and that scenic beauty and recreation constituted beneficial uses.²²⁵ The court also held in the Malad Canyon Decision that the Idaho Constitution did not require a physical diversion for an appropriation, and furthermore, that the relevant statute dispensed any physical diversion requirement.²²⁶

The Malad Canyon Decision "represents an initial tier of examination of instream flows arising from perceived constitutional constraints" because at the time of the decision, Idaho did not have a statewide water plan.²²⁷ Within two years of the Malad Canyon Decision, Idaho adopted a statewide water plan, which significantly impacted the state's instream flow program.²²⁸ The 1976 state water plan called for an instream flow program to "fill a procedural void for establishing a right to an instream flow from the unappropriated waters of the state."²²⁹ This policy stated four objectives for the proposed legislation:

- [1] Water rights should be granted for instream flow purposes.
- [2] Protection should be afforded existing water rights and priorities of all established water rights.
- [3] Responsibility for determining instream flows and administrative authority of the program was to rest with the Idaho

222. *Id.* §§ 67-4307, -4310.

223. *See* State Dep't of Parks v. Idaho Dep't of Water Admin., 530 P.2d 924, 924-25 (Idaho 1974).

224. Beeman & Arment, *supra* note 217, at 268. The Idaho Constitution lists domestic, agricultural, mining, manufacturing, and power uses as permissible uses for appropriated water. *See id.*

225. *See id.*

226. *See id.*

227. *Id.*

228. *See id.* at 268-69.

229. *Id.* at 269.

Department of Water Resources. [4] Idaho Water Resource Board would be the only applicant for instream flows.²³⁰

The Idaho Legislature passed the proposed legislation in 1978 in an attempt to protect Idaho's streams and lakes for public health, safety, and welfare, as well as to protect the waters from out-of-state diversion and use.²³¹

Today, the Idaho Water Resource Board holds minimum stream flow water rights in the public trust.²³² A minimum stream flow is "the amount of flow necessary to preserve stream values, or minimum lake elevation necessary to protect lake values."²³³ A minimum stream flow "remains in a reach of a river or in a lake to protect fish and wildlife habitat, aquatic life, navigation, transportation, recreation, water quality or aesthetic beauty."²³⁴ Any person or entity is allowed to file an application for minimum flow protection on bodies of water within the state.²³⁵ Before an application may be approved, the state requires that the minimum flow water right "be in the public interest, not adversely affect senior water rights, represent the minimum flow and not the desirable flow, and be capable of being maintained."²³⁶

The Idaho instream flow protection program preserves the minimum flow or lake level rather than the most desirable flow level necessary to protect "the fish and wildlife habitat, aquatic life, water quality, recreation, aesthetic beauty, navigation or transportation."²³⁷ Idaho measures water right flows in cubic feet per second (cfs), and one cfs is approximately 450 gallons per minute.²³⁸ Minimum stream flows, like all Idaho water right applications, are filed on unappropriated waters.²³⁹ The Idaho Water Resource Board requires that the need for, and availability of, minimum stream flows be certified by valid scientific methods.²⁴⁰

The Idaho Water Resource Board follows a specified process when evaluating applications for minimum stream flows.²⁴¹ First, the IWRB reviews requests for minimum flow levels; then, if the IWRB deems the minimum stream flow to be desirable, it will hold public meetings in the

230. *Id.*

231. See *Idaho Minimum Stream Flow Program*, IDAHO DEPARTMENT OF WATER RESOURCES, 2 (Feb. 2010), http://www.idwr.idaho.gov/waterboard/WaterPlanning/Minimum%20Stream%20Flow/PDFs/MSF_Brochure.pdf.

232. See *id.*

233. *Id.*

234. *Id.*

235. See *id.*

236. *Id.* As of February 2010, 1,577 miles of Idaho streams, less than 2% of the total stream miles in the state, are currently licensed or permitted for minimum stream flows. See *id.* at 1. Four lakes are licensed or permitted for minimum lake levels. See *id.*

237. *Id.* at 2.

238. *Id.* Lake levels are measured in elevation, based upon feet above average sea level. See *id.*

239. See *id.*

240. See *id.*

241. See *id.*

vicinity of the requested stream flow.²⁴² Based on these public meetings, the IWRB will either withdraw, modify, or submit the request as-is to the Idaho Department of Water Resources (IDWR).²⁴³ Notice of the minimum flow application is given both through direct notice to affected property owners and water right holders and through advertisements in local and regional newspapers.²⁴⁴ This notice is followed by another public hearing, then the director of the IDWR will either deny the application or approve it in whole, in part, or with conditions.²⁴⁵ Formal parties have the right to appeal the director's decision at the district court level or request rehearing.²⁴⁶ Any approved minimum flow rights then go to the Idaho Legislature by the fifth day of the next regular session.²⁴⁷ The right is deemed approved if the legislature affirms by concurrent resolution or if the regular session ends and the legislature failed to act on the submitted right.²⁴⁸

Notably, Idaho recognizes instream uses of water as beneficial uses.²⁴⁹ By holding these waters in public trust, Idaho also allows citizens and entities to apply for minimum flow protections on state water.²⁵⁰ Idaho's minimum flow protections are broad and demonstrate a commitment to protecting and preserving river ecosystems and the many benefits associated with healthy rivers.

C. Instream Flow Protection in Oregon

While Idaho utilized minimum stream flows to address allocation and diversion issues, Oregon turned to appropriative instream water rights. Prior to 1909, Oregon operated under the riparian system; however, this system proved unworkable in the West where the rain supply is not sufficient to sustain crops and many areas are removed from the water supply.²⁵¹ Oregon's current water code, implemented in 1909, seeks to address the flaws of the riparian system and is primarily based on four main principles:

[1] Water belongs to the public[.] [2] Any right to use it is assigned by the State through a permit system[.] [3] Water use under that permit system follows the 'prior appropriation doctrine'—older water uses are entitled to

242. *See id.*

243. *See id.*

244. *See id.*

245. *See id.*

246. *See id.*

247. *See id.*

248. *See id.*

249. *See* IDAHO CODE ANN. §§ 67-4307 to -4312 (2006).

250. *See* IDAHO DEPARTMENT OF WATER RESOURCES, *supra* note 231, at 2.

251. RICK BASTASCH, *THE OREGON WATER HANDBOOK: A GUIDE TO WATER AND WATER MANAGEMENT* 55 (2d ed. 2006).

water before newer uses[.] [4] Permits may be issued only for beneficial use without waste.²⁵²

Now, “[a]ll water within the state from all sources of water supply belongs to the public.”²⁵³ When the state issues a water right, the right establishes:

[T]he beneficial use; the specific source that water will be taken from and the point of taking; the priority date, which determines where the holder stands in relation to other water right holders; the maximum amount of water that can be used; exactly where the water will be put to use; and any other use-related requirements imposed by the department.²⁵⁴

Early in the twentieth century, Oregon water law did not recognize keeping water in a stream as a beneficial use.²⁵⁵ The state sought to protect some streams because certain legislative and administrative water withdrawals protected fish or scenic beauty.²⁵⁶ These withdrawals, however, did not occur with sufficient regularity to protect instream flows.²⁵⁷ Oregon’s water appropriation system primarily sought to transfer water for agriculture and cities by building dams, which ultimately eliminated fish species or greatly decreased fish populations.²⁵⁸

In 1955, the Oregon Legislature took steps to provide affirmative protection for instream flows.²⁵⁹ Accordingly, “[t]he maintenance of minimum perennial streamflows sufficient to support aquatic life, to minimize pollution and to maintain recreation values shall be fostered and encouraged if existing rights and priorities under existing laws will permit.”²⁶⁰ Oregon treats these minimum flow levels as “administrative rules in basin programs that establish (usually monthly) flow levels for fish, water quality, and recreation.”²⁶¹ These flow levels are given a priority date, so junior rights cannot interrupt the flow; however, in the same light, these flow levels have junior status to water rights granted before them.²⁶²

Minimum flow levels in Oregon, therefore, are not actual physical water levels that must be maintained.²⁶³ Rather, they reserve a base amount of water from future appropriation.²⁶⁴ Early in this phase, the Water

252. *Id.* at 54-55.

253. OR. REV. STAT. § 537.110 (2009).

254. BASTASCH, *supra* note 251, at 60.

255. *See id.* at 109.

256. *See id.*

257. *See id.*

258. *See id.*

259. *See id.*

260. OR. REV. STAT. § 536.310 (2009).

261. BASTASCH, *supra* note 251, at 112.

262. *See id.*

263. *See id.*

264. *See id.*

Resources Board and the Water Policy Review Board adopted these minimum flows based on the average monthly flows of the lowest three consecutive months on record, rather than on biological needs.²⁶⁵ The process developed in the 1960s when the Oregon Department of Fish and Wildlife (ODFW) conducted stream surveys in order to identify minimum and optimum flows.²⁶⁶

The ODFW also relied on the Oregon Method, which was essentially a habitat model that included the “passage, spawning, egg incubation, and rearing needs of salmon and trout, based mostly on water depth and velocity requirements at key points along a stream.”²⁶⁷ In response to the new surveys and technologies, the state’s approach shifted to allow agencies to apply to the Board for certain flows.²⁶⁸ These flow levels tended to be higher than the previous flow levels, and because the policy at the time favored development rather than conservation of water resources, the Board typically granted the minimum rather than the higher flows requested.²⁶⁹

Many Oregonians saw the agency’s actions as resisting minimum flows “[r]ather than fostering and encouraging minimum flows as the statutes required.”²⁷⁰ In response to the agency’s actions, the legislature, in 1983, “made it ‘the policy of the State of Oregon that establishment of minimum perennial streamflows is a high priority of the Water Resources Commission and the Water Resources Department.’”²⁷¹ In the same statute, “[t]he legislature also directed the Departments of Fish and Wildlife and Environmental Quality to submit minimum flow requests on seventy-five of their highest-priority streams, and it required the Water Resources Department to take action on them within three years.”²⁷² Furthermore, the legislature “instructed the governor to ‘guide and assist . . . the Commission in performing duties . . . to insure compliance with the time limitation.’”²⁷³

Oregon used this system from 1958 to 1988, adopting 547 minimum perennial streamflows.²⁷⁴ The legislature eventually turned to a different method of instream flow protection due to several drawbacks with this plan.²⁷⁵ First, this plan only allowed creation of minimum streamflows for two benefits: fishlife and clear water.²⁷⁶ Second, the legislature recognized recreational values as an important objective of instream flows; however,

265. *See id.*

266. *See id.*

267. *Id.* at 112-13.

268. *See id.* at 113.

269. *Id.*

270. *Id.*

271. *Id.*

272. *Id.*

273. *Id.*

274. *Id.*

275. *See id.*

276. *Id.*

the Parks and Recreation Department was not allowed to request them.²⁷⁷ Third, this system treated minimum flows as rules rather than rights, which led to temporary suspension of minimum flows upon occasion.²⁷⁸

Oregon strengthened its commitment to instream flow protections in 1987 through the creation of appropriative instream water rights in the Instream Water Rights Act (IWRA).²⁷⁹ These amendments also broadened the eligible uses for protection, declared public uses to be beneficial, and recognized the State Parks and Recreation Department as a key player in the process.²⁸⁰ Oregon now recognizes three methods of establishing instream rights: conversion, application, and acquisition.²⁸¹ After the IWRA, a market developed for those interested in purchasing water rights to restore instream flows.²⁸² Significantly, the IWRA granted seniority to the flows, thus providing adequate protection and “creat[ing] a ‘culture’ of flow restoration” in Oregon by “erect[ing] the framework of a market for instream flows.”²⁸³

VI. RECOMMENDATION

Idaho, Oregon, and Texas each hold the state’s water in trust for the public.²⁸⁴ A key difference exists, though, because Idaho and Oregon’s water codes are structured to ensure river system sustainability through instream flow protections, while Texas’s water code is not.²⁸⁵ In order to ensure that Texas’s rivers will continue to carry enough water to meet the increasingly large demand, the legislature should reform the Texas Water Code to balance consumptive uses with environmental needs.

Texas can learn from the approaches taken in Idaho and Oregon as it seeks to develop and implement an instream flow policy.²⁸⁶ The Texas Legislature identified instream flow regulations as a public policy priority, but the current water code does not provide adequate instream flow protections.²⁸⁷ The legislature must adopt an approach to instream flow regulation that is flexible enough to allow for changes in environmental

277. *Id.*

278. *Id.* For instance, the Water Policy Review Board suspended minimum flows in 1973 during a drought. *See id.* Then, in 1981, “the commission suspended minimum flows to allow municipal uses on the South Umpqua River, Cow Creek, and Canyon Creek.” *Id.*

279. Janet Neuman, Anne Squier & Gail Achterman, *Sometimes a Great Notion: Oregon’s Instream Flow Experiments*, 36 ENVTL. L. 1125, 1125 (2006).

280. BASTASCH, *supra* note 251, at 113.

281. *See id.*

282. *See* Neuman, Squier & Achterman, *supra* note 279, at 1150.

283. *See id.* at 1151-52.

284. *See* discussion *supra* Parts IV.B, V.B-C.

285. *See* discussion *supra* Parts IV.B, V.B-C.

286. *See supra* Part V.B-C.

287. *See supra* Part IV.B-C.

needs and strong enough to serve its purpose by preserving the natural environment for the benefit of all Texas citizens.

Initially, the legislature should recognize the instream use of water as a beneficial use and allow water to be appropriated for instream uses. By taking this step, the legislature will lay the foundation for an effective Texas instream flow program. Such action will allow citizens and entities to begin dedicating water for environmental protection while the Agencies conduct studies to determine what flow levels are needed for river system sustainability. Designating instream flows as a beneficial use will also serve as a legislative mandate by demonstrating that the legislature is serious about vitalizing Texas's instream flow program.

It is important that the legislature provide clear statutory protections for instream water appropriations in order for these efforts to be effective. The Texas Water Trust is currently in place to foster environmental flow dedications; however, the San Marcos litigation demonstrates that the Trust is not an effective tool for this goal.²⁸⁸ The Trust has potential, but the legislature needs to designate instream flows as a beneficial use and allow appropriations to be made for this purpose for it to actually achieve the state's policy goal of protecting river systems.²⁸⁹

One option is to reform the Trust to resemble a revised version of Idaho's minimum flow program.²⁹⁰ Under the Idaho program, applications for minimum flows are filed on unappropriated waters. In order for this approach to prove effective in Texas, the legislature would need to permit applications on unappropriated waters and accept donations of appropriated water rights. Here, Texas should borrow from the Oregon method and cultivate a market for instream flows to encourage donations for environmental purposes.²⁹¹ Also, because the vast majority of Texas water is already appropriated, the legislature should implement something similar to Oregon's IWRA, which granted seniority to instream flows to protect them against other water rights.²⁹²

Such measures would revise the Trust and transform it into an effective tool for instream flow protection. The program must be flexible to truly breathe life to the state's instream flow program. According to § 11.0237, instream flows are an important public policy priority.²⁹³ The legislature, however, must go beyond nominally designating instream flows as an important policy by also supplying the requisite tools for this stated commitment to become a reality.

288. *See supra* Part IV.C.

289. *See supra* Part IV.C.

290. *See supra* Part V.B.

291. *See supra* Part V.C.

292. *See supra* Part V.C.

293. TEX. WATER CODE ANN. § 11.0237 (West 2008); *see supra* Part IV.C.

This action is needed, and needed promptly, to address the impending water crisis and provide a sound basis for sustaining the environment while also providing for human consumptive needs. The state should take a balanced approach to water because neglect of the environment will result in economic, environmental, and recreational losses for all Texans.²⁹⁴ The Texas Water Code currently offers limited protections to instream flows, but the legislature "has not yet fully embraced the concept of creating special measures to protect instream flows."²⁹⁵

Texas is at a crossroad because a water crisis is looming as the population continues to increase.²⁹⁶ A growing population will require more water; however, almost all of Texas's surface water is already allocated.²⁹⁷ Without instream flow protections, the water demands will increasingly deplete the river systems.²⁹⁸ In addition to depleting the environment, this will negatively affect human consumption.²⁹⁹ It is important, therefore, for the Water Code to balance consumptive needs with environmental needs because the two are interrelated. The legislature must have the foresight to embrace the concept of instream flow protections. By wisely stewarding the Texas water supply, the legislature will ensure that Texas's river systems remain viable for years to come.

VII. CONCLUSION

Rivers have an indescribable impact on Texas. Rivers not only constitute many of the state's borders, but also define and sustain the many regions within the state. A booming population is placing an increasingly large demand on Texas's rivers, and the legislature needs to step in and provide statutory protections for these waters. It is crucial for the long-term well being of Texans for legislators to appropriately balance competing water interests. Human consumption is, of course, an exceedingly important water use, but steps must also be put into place to ensure river system sustainability.

The Texas approach to instream flow regimes must address the challenge posed by the size and variety of terrains in the state and must be flexible enough to appropriately balance instream water use amongst competing interests.³⁰⁰ By recognizing instream uses of water as a beneficial use and encouraging citizens to donate water appropriations for environmental protection, the state can begin protecting these waters. This

294. See *supra* Part II.A.

295. GILLILAN & BROWN, *supra* note 20, at 112.

296. See *supra* Part IV.C.

297. See *supra* Part IV.C.

298. See *supra* Part II.A.

299. See *supra* Part II.A.

300. See *supra* Part III.

Comment advocates further statutory provisions similar to those in Idaho and Oregon.³⁰¹

The Idaho approach demonstrates a broad instream flow policy where instream flows are deemed a beneficial use and citizens are allowed to apply for minimum stream flow protections.³⁰² While also demonstrating a commitment to instream flow protections, Oregon's approach is slightly different.³⁰³ The Oregon approach also names instream flows as a beneficial use, and the current legislation fosters instream water rights through conversion, application, and acquisition.³⁰⁴ Water policies have a direct impact on human life, and the Idaho and Oregon approaches demonstrate that effective, efficient instream flow programs provide numerous benefits for recreation, the economy, and the environment.³⁰⁵

Given the scarcity of water, western states carefully govern water allocation.³⁰⁶ As the western population exploded, human consumption increased and negatively affected the river systems.³⁰⁷ In order to prevent river degradation, states began developing instream flow policies.³⁰⁸ These policies have increased and improved along with technology.³⁰⁹ The Texas Legislature recognized the importance of instream flow protection and declared it to be a public policy priority.³¹⁰ Thus far, however, the legislature has not implemented an effective method of instream flow protection.³¹¹ The consequences of this decision will continue to mount as the population—and thus the water demand—increases. The legislature must choose to make tough policy decisions, face the impending water crisis, and wisely steward the state's water resources to provide for future generations of Texans.

301. *See supra* Part V.

302. *See supra* Part V.B.

303. *See supra* Part V.C.

304. *See supra* Part V.C.

305. *See supra* Part V.

306. *See supra* Part II.D.

307. *See supra* Part II.D.

308. *See supra* Part II.D.

309. *See supra* Part II.D.

310. *See supra* Part III.A.

311. *See supra* Part IV.C.