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Changing Currents: Climate Change and Stakeholder Involvement in the Colorado River Basin

*Subarus topped with kayaks. Trailers stacked with rafts. Teenagers toting inner tubes. The streets of Glenwood Springs are a dead giveaway: this is a river town.*¹

In December 2013, the City of Glenwood Springs, Colorado filed an application with the District Court of the State of Colorado, Water Division No. 5 to confirm three conditional water rights.² These rights, if confirmed, would allow the City to divert additional water from the Colorado River for a recreational in-channel diversion (RICD) to support the construction of three new whitewater sport facilities in Glenwood Springs.³ Glenwood Springs's economic livelihood is dependent on the throngs of tourists who arrive each summer to enjoy the plethora of water sports and activities available. If confirmed, these additional water rights will permit the city to operate its whitewater facilities even during periods of drought, when natural river conditions are not sufficient.

While the City's application continues to face significant challenges, this step to confirm water rights for the promotion of recreational tourism highlights an unresolved issue relevant across most of the American West: As droughts become increasingly frequent and extreme in the Rocky Mountains as a result of changing global climatic conditions, who should decide how already over-appropriated sources of water are apportioned and used in the future?

This Comment seeks to show that increased stakeholder involvement, as embodied in Colorado legislation, is essential in both reaching equitable water management decisions and minimizing conflict among competing water users. Part I discusses general global climatic change trends, with a particular emphasis on projections for the American Southwest. The legal doctrine that governs water law in the western United States is then examined in Part II, followed by an overview of the external constraints that curtail the State of Colorado from utilizing all of the water resources within its borders, namely the "Law of the River" and the reserved water rights of American Indian tribes.

In focusing on the recent controversy sparked by Glenwood Springs's requests to divert additional water from the Colorado River to maintain its

1. *The 16 Best Places to Live in the U.S.: 2015*, OUTSIDE (Aug. 18, 2015), <http://www.outsideonline.com/2006426/americas-best-towns-2015>.

2. *See infra* note 160 and accompanying text.

3. *See infra* note 160 and accompanying text.

thriving whitewater recreational economy, Part III of this Comment offers increased stakeholder involvement in water management policies as a solution to minimizing conflicts among competing water users in a new climatic era of projected water shortages in the Colorado River Basin. As such, Part III explores best practices in stakeholder involvement in water management from central Arizona and northern California.

During a new era of climatic uncertainty, the goal of this Comment is to provide a new framework for addressing competition for water resources in a region of the United States that has always been delineated by its aridity. The need for such framework is exacerbated by both climate change projections and future population estimates for the region. Part IV of this Comment concludes with a few parting remarks on the importance of infusing traditional western water management and planning with ideas of cooperation and equity in light of pending climatic uncertainty.

I. Setting the Stage: Climate Change and the American Southwest

The vast majority of scientists studying climate change “agree that the earth is warming and that greenhouse gas emissions are the principal cause.”⁴ Over the past twenty years, many Americans have also come to accept that climate change is indeed a reality.⁵ The phrase “climate change,” however, can mean different things to different people, so it is important to unpack the meaning of that phrase. For the purposes of this Comment, “climate change” refers to the phenomenon of “[c]hanges in average weather conditions that persist over multiple decades or longer.”⁶

A. Global Climate Change

Over the last three decades, the science behind climate change has evolved significantly⁷ across multiple scientific disciplines.⁸ The general

4. Michael B. Gerrard, *Introduction and Overview*, in GLOBAL CLIMATE CHANGE AND U.S. LAW 3, 5 (Michael B. Gerrard & Jody Freeman eds., 2d ed. 2014). In fact, only 3% of scientists studying climate change disagree with that vast majority. *See id.*

5. *See Public Opinion Estimates, United States, 2014*, YALE PROJECT ON CLIMATE CHANGE COMM., <http://environment.yale.edu/poe/v2014/> (last visited Sept. 15, 2016). According to the Yale Project on Climate Change Communication, in 2014, an estimated 63% of American adults believe that global warming is happening. *Id.*

6. U.S. Glob. Change Research Program, *Understand Climate Change*, GLOBALCHANGE.GOV, <http://www.globalchange.gov/climate-change> (follow “Climate change” hyperlink) (last visited Sept. 15, 2016).

7. *See generally* Hans-Martin Füssler & Richard J.T. Klein, *Climate Change Vulnerability Assessments: An Evolution of Conceptual Thinking*, 75 CLIMATIC CHANGE 273, 301 (2006).

consensus of that research is that “the planet is warming, and over the last half century, this warming has been driven primarily by human activity—predominantly the burning of fossil fuels.”⁹ The burning of fossil fuels has created huge concentrations of greenhouse gases¹⁰ in the earth’s atmosphere, thereby preventing infrared solar radiation from escaping into space, which in turn, causes the gases to “absorb and reradiate some of the [trapped] heat . . . [that then] warms the oceans and surface of the earth.”¹¹

The extent to which the earth’s atmosphere will continue to warm will largely be a function of future (and currently unforeseeable) greenhouse gas emissions.¹² Although slight variation in average temperatures may not seem devastating, or even noticeable on a daily basis, the cumulative effects of even a few degrees can have catastrophic impacts on nearly every aspect of the natural world.¹³ Depending on the type of greenhouse gas, dissipation rates can range from a mere few years to millennia,¹⁴ meaning that current and future mitigation efforts will not be able to successfully “undo” climate change but only have the ability to prevent the situation from worsening.¹⁵ Therefore, at best, policy decisions mandating reduced greenhouse gas

8. See Gerrard, *supra* note 4, at 5.

9. U.S. Glob. Change Research Program, *What’s Happening & Why*, GLOBALCHANGE.GOV, <http://www.globalchange.gov/climate-change/whats-happening-why> (last visited Sept. 15, 2016).

10. *Sources of Greenhouse Gas Emissions*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions> (last visited Sept. 15, 2016). According to the United States Environmental Protection Agency, greenhouse gases are those “[which] trap heat in the atmosphere.” *Overview of Greenhouse Gases*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/ghgemissions/overview-greenhouse-gases> (last visited Sept. 15, 2016).

11. Gerrard, *supra* note 4, at 8-9.

12. John Walsh et al., *Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 19, 25 (Jerry M. Melillo et al. eds., 2014) [hereinafter THE THIRD NATIONAL CLIMATE ASSESSMENT], http://s3.amazonaws.com/nca2014/low/NCA3_Climate_Change_Impacts_in_the_United%20States_LowRes.pdf?download=1 (last visited Sept. 15, 2016) (“Global climate is projected to continue to change over this century and beyond. The magnitude of climate change beyond the next few decades depends primarily on the amount of heat-trapping gases emitted globally, and how sensitive the Earth’s climate is to those emissions.”).

13. See World Wildlife Fed’n, *What Are Climate Change and Global Warming?*, WWF, <http://www.wwf.org.uk/climate-change-and-global-warming> (last visited Sept. 15, 2016).

14. *Overview of Greenhouse Gases*, *supra* note 10.

15. Walsh, *supra* note 12, at 25 (“A certain amount of continued warming of the planet is projected to occur as a result of human-induced emissions to date; another 0.5°F increase would be expected over the next few decades even if all emissions from human activities suddenly stopped . . .”).

emissions will still produce temperature increases between three degrees and five degrees Fahrenheit warmer than temperatures recorded at the end of the nineteenth century.¹⁶ Projections that do not consider reduced greenhouse gas emission scenarios predict temperatures as high as five to ten degrees Fahrenheit warmer than recorded temperatures of the late nineteenth century.¹⁷

Again, the magnitude of such seemingly small deviations in average temperatures and the seriousness of their expected impacts on the planet cannot be understated. As “the ‘defining challenge of our generation,’”¹⁸ the implications of climate change are tremendous,¹⁹ and its adverse effects are increasingly well documented by the scientific community.²⁰ Although the impacts of climate change across the United States will vary significantly by region, a brief sampling of projected challenges include sea level rise;²¹ more intense and prolonged extreme heat events,²² resulting in drought and contributing to flash flooding when precipitation does occur;²³ issues pertaining to both the quantity²⁴ and quality of water resources;²⁵

16. Gerrard, *supra* note 4, at 6.

17. *Id.*

18. *Climate Change: The Defining Challenge of Our Generation*, DIPNOTE: U.S. DEP’T OF ST. OFFICIAL BLOG (Mar. 31, 2015), <https://blogs.state.gov/stories/2015/03/31/climate-change-defining-challenge-our-generation>.

19. The enormous consequences of future uncapped global greenhouse gas emissions was recently addressed during the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change. At the close of the “Paris Climate Talks,” 195 countries signed the Adoption of Paris Agreement which described climate change as “an urgent and potentially irreversible threat to human societies and the planet and thus requir[ing] the widest possible cooperation by all countries, and their participation in an effective and appropriate international response, with a view to accelerating the reduction of global greenhouse gas emissions.” Conference of the Parties, *Adoption of the Paris Agreement*, 1, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015).

20. *See* Gerrard, *supra* note 4, at 15.

21. *Future Climate Change*, U.S. ENVTL. PROTECTION AGENCY, <http://www3.epa.gov/climatechange/science/future.html> (last visited Sept. 15, 2016).

22. *Id.*

23. Aris Georgakakos et al., *Water Resources*, in *THE THIRD NATIONAL CLIMATE ASSESSMENT*, *supra* note 12, at 69, 75.

24. *Id.* at 76.

25. *Id.* at 78.

decreased flora and fauna biodiversity;²⁶ and damage to and destruction of infrastructure.²⁷

B. Climate Change in the American Southwest: The Looming Threat (and Reality) of Drought

As mentioned above, the projected impacts of climate change across the United States vary greatly by geographic area.²⁸ In the American Southwest,²⁹ “an already parched region,”³⁰ climate change is expected to manifest as drought, heat waves, and reduced snowpack and streamflow,³¹ all of which stem from increased average temperatures.³² Thus, climate change will add significant new stresses to vast landscapes already prone to “[n]atural climate variability.”³³

Of utmost concern for those that call the American Southwest home are projections regarding drought. As “a hazard event that lacks clear

26. See World Wildlife Fed’n, *The Effects of Climate Change*, WWF, http://www.wwf.org.uk/what_we_do/tackling_climate_change/impacts_of_climate_change/ (last visited Sept. 15, 2016).

27. See generally Evan Lehmann, *Infrastructure Threatened by Climate Change Poses a National Crisis*, SCI. AM. (Mar. 6, 2014), <http://www.scientificamerican.com/article/infrastructure-threatened-by-climate-change-poses-a-national-crisis/>.

28. See THE REGIONAL IMPACTS OF CLIMATE CHANGE: AN ASSESSMENT OF VULNERABILITY 4 (Robert T. Watson et al. eds., 1998).

29. Throughout this Comment, there are references to several geographic regions, all of which represent various ways to describe the American West and the Colorado River Basin. Generally, the American West encompasses seventeen states west of the 100th Meridian: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming, all of which are characterized by their aridity, or lack of water. U.S. ARMY CORPS OF ENG’RS & CONSENSUS BLDG. INST., WATER IN THE U.S. AMERICAN WEST: 150 YEARS OF EFFECTIVE STRATEGIES 6 (2012), <http://www.building-collaboration-for-water.org/documents/wwfh20amwest%20full2.28lr.pdf>. For purposes of climate change discussions, this Comment will refer to the United States Global Change Research Program definition of the American Southwest, which encompasses all of the states in the Colorado River Basin with the exception of Wyoming. See Gregg Garfin et al., *Southwest*, in THE THIRD NATIONAL CLIMATE ASSESSMENT, *supra* note 12, at 462.

30. Garfin et al., *supra* note 29, at 463.

31. *Id.*

32. See Cody Knutson et al., *Drought: The Knowledge Base*, in PLANNING AND DROUGHT 15, 19 (James C. Schwab ed., 2013) (“The general implication of increased warmth is a greater frequency of more drought-like conditions.”).

33. Jonathan Overpeck et al., *Summary for Decision Makers*, in ASSESSMENT OF CLIMATE CHANGE IN THE SOUTHWEST UNITED STATES: A REPORT PREPARED FOR THE NATIONAL CLIMATE ASSESSMENT 1, 1 (Gregg Garfin et al. eds., 2013), <http://swccar.org/sites/all/themes/files/SW-NCA-color-FINALweb.pdf>.

boundaries,”³⁴ drought by its very nature is difficult to define.³⁵ In the broadest sense, drought is “a deficiency of precipitation over an extended period of time—usually a season or more—resulting in a water shortage for some activity, group, or environmental sector.”³⁶ Yet the phenomenon is more abstract than this definition implies “because it often develops slowly over months or years, and has different impacts depending on the location, time of year, and sector of the community.”³⁷ To further complicate the matter, drought is highly place and context sensitive because “[a] level of rainfall that is perfectly normal in the desert may be a serious aberration in a more humid environment.”³⁸

Although it is subtler than many other natural disasters, drought can have devastating immediate and long-term impacts.³⁹ Such impacts can be broadly categorized as those relating to water resources, public health, the natural and built environments, economic repercussions, and secondary hazards.⁴⁰ Of particular concern in this Comment is the impact of drought on water resources.

In the American West, snowpack is critical to determining the availability of future water supplies.⁴¹ Much of the West’s precipitation—and, therefore, water supply—arrives “in the form of snow,”⁴² making drought relevant during any season.⁴³ Intuitively, precipitation falls as snow

34. Jeff Brislaw et al., *Drought: The Problem*, in PLANNING AND DROUGHT, *supra* note 32, at 2.

35. By the 1980s, there were “more than 150 published definitions of drought.” *Types of Drought*, NAT’L DROUGHT MITIGATION CTR., <http://drought.unl.edu/DroughtBasics/TypesofDrought.aspx> (last visited Sept. 15, 2016).

36. *What Is Drought?*, NAT’L DROUGHT MITIGATION CTR., <http://drought.unl.edu/DroughtBasics/WhatisDrought.aspx> (last visited Sept. 15, 2016).

37. Brislaw et al., *supra* note 34, at 2.

38. *Id.*

39. See *Types of Drought Impacts*, NAT’L DROUGHT MITIGATION CTR., <http://drought.unl.edu/droughtforkids/howdoesdroughtaffectourlives/typesofdroughtimpacts.aspx> (last visited Sept. 15, 2016).

40. Brislaw et al., *supra* note 34, at 2-14.

41. Knutson et al., *supra* note 32, at 17-18 (discussing the importance of winter snowpack and spring snowmelt to supply water for the summer months in the American West).

42. NAT. RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC., SNOTEL AND SNOW SURVEY & WATER SUPPLY FORECASTING (2016), http://www.wcc.nrcs.usda.gov/snotel/SNOTEL_brochure.pdf.

43. According to the National Drought Mitigation Center, hydrological drought “is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply.” *Types of Drought*, *supra* note 35.

during the winter months, and when spring returns with warmer temperatures, the snow melts to create streamflow.⁴⁴ Both the amount and the type of snowfall impact waters supplies.⁴⁵ Snowpack is able to replenish water supplies when it “slowly melts and releases water in spring and summer, when both natural ecosystems and people have the greatest needs for water.”⁴⁶ The importance of snowpack and subsequent snowmelt cannot be underestimated since “[a]s much as 75 percent of water supplies in the western states are derived from snowmelt.”⁴⁷

The fact of the matter is that drought puts water supplies in peril no matter the time of year, making it troubling that climate change is projected to make droughts in the American Southwest “substantially hotter . . . more frequent, intense, and longer lasting.”⁴⁸ For the Colorado River, a lifeline of precious water spanning approximately 1450 miles in length through most of the American Southwest, including Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming,⁴⁹ climate change is perilous. In the Upper Basin—comprised of Colorado, New Mexico, Utah, and Wyoming—climate change has already taken its toll, with decreased snowpack and earlier snowmelt being just the first symptoms of a larger disease.⁵⁰ By 2050, scientists expect that snowmelt contributions from the

44. In fact, the scientific relationship between snowpack and streamflow is complicated by a variety of factors, “primarily moisture content of the soil, ground water contributions, precipitation patterns, fluctuation in air temperature, use of water by plants, and frequency of storm events” all of which vary by location. *Snow Surveys and Water Supply Forecasting*, NAT. RES. CONSERVATION SERV., http://www.wcc.nrcs.usda.gov/factpub/sect_2.html (last visited Sept. 15, 2016).

45. *See id.* Different types of snow can produce varying amounts of water. For instance, one foot of heavy, wet snow in the Cascade Mountains translates up to one and a half inches of water, whereas a foot of light, powdery snow of the Wasatch Mountains might translate to one inch of water. *Id.*

46. Garfin et al., *supra* note 30, at 465.

47. U.S. Geological Survey, *Snowmelt - The Water Cycle*, USGS, <http://water.usgs.gov/edu/watercyclesnowmelt.html> (last modified Dec. 15, 2016).

48. Garfin et al., *supra* note 12, at 465.

49. *Change the Course: The Colorado River*, NAT’L GEOGRAPHIC, <http://environment.nationalgeographic.com/environment/freshwater/change-the-course/colorado-river-map/> (last visited Sept. 16, 2016).

50. *See* Garfin et al., *supra* note 30, at 465; *see also* Robert W. Adler & John C. Ruple, *Water and Climate Change*, in *GLOBAL CLIMATE CHANGE AND U.S. LAW 622* (Jody Freeman & Michael B. Gerrard eds., 2d ed. 2014) (“By 2050, precipitation is projected to increase 2.1 percent in the upper basin” However, “[w]armer conditions will convert some snowfall to rain, producing earlier runoff patterns and resulting in a projected 8.5 percent decrease in mean annual runoff at Lees Ferry [Arizona] by 2050. Warmer temperatures will also

Upper Basin into the Colorado River will be between 6% and 20% less than that experienced in the twentieth century.⁵¹ These projections of decreased water have potentially profound environmental and legal consequences for the Lower Basin—comprised of Arizona, California, and Nevada.⁵² The repercussions of reduced annual snowpack projections and the earlier timing of springmelts in the Upper Basin will be felt throughout the Lower Basin, which relies heavily on water from the Colorado River supplied by the Upper Basin.⁵³ Climate change, regardless of its severity based on greenhouse gas emission projections, will indeed have troubling consequences for the Colorado River Basin and the millions of people who rely on it.⁵⁴

II. Colorado Water Law: Historical Principles and Modern Challenges

In the American West, a geographic area delineated from others by its aridity,⁵⁵ the importance of water cannot be understated. Since time immemorial, “the availability of water has defined its landscapes [and the] history of human settlement,”⁵⁶ making it imperative that the legal system governing such an important resource is grounded in the fact that water is a finite resource. The prior appropriation doctrine, commonly simplified as

increase evapotranspiration, more than offsetting increases in precipitation for much of the southwest.” (footnote omitted)).

51. ANDREA J. RAY ET AL., *W. WATER ASSESSMENT, CLIMATE CHANGE IN COLORADO 2* (2008), http://www.colorado.edu/publications/reports/WWA_ClimateChangeColoradoReport_2008.pdf.

52. *See infra* Section II.B.

53. Garfin et al., *supra* note 12, at 465-66.

54. According to the U.S. Department of the Interior Bureau of Reclamation, “The Colorado River and its tributaries provide water to nearly 40 million people for municipal use, supply water to irrigate nearly 5.5 million acres of land, and is the lifeblood for at least 22 federally recognized tribes (tribes), 7 National Wildlife Refuges, 4 National Recreation Areas, and 11 National Parks.” BUREAU OF RECLAMATION, U.S. DEP’T OF THE INTERIOR, *COLORADO RIVER BASIN WATER SUPPLY AND DEMAND STUDY 3* (2012), http://www.usbr.gov/watersmart/bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf.

55. *See* MARC REISNER, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 2* (Penguin Books 1993) (1986) (“Thanks to irrigation, thanks to the Bureau [of Reclamation] . . . millions settled in regions where nature, left alone, would have countenanced thousands at best; great valleys and hemispherical basins metamorphosed from desert blond to semitropic green.”).

56. Garfin et al., *supra* note 12, at 463.

“first in time, first in right,”⁵⁷ dominates water law in the American West, with “[m]ost Western states shar[ing] this legal system in a pure or hybrid form.”⁵⁸

A. The Prior Appropriation Doctrine: Historical Development and Modern Application

Two dominant philosophies govern the division of water resources in American law: riparianism and the prior appropriation doctrine, with the appropriateness of each philosophy depending largely on the availability of water.⁵⁹ In riparianism, water rights are associated with the land bordering bodies of water, creating correlative rights between all bordering landowners to use the water “reasonably.”⁶⁰ Riparianism, however, is based on the assumption that there is enough water to satisfy the demands of all water users.⁶¹ Although this doctrine functions well in the eastern half of the United States, where water is abundant, the concept of riparian rights proved unworkable as settlement began pushing westward into more arid parts of the country during the nineteenth century.⁶²

Historically, the prior appropriations doctrine developed as a means of legally coping with water scarcity in the American West.⁶³ It was a doctrine born of necessity. The discovery of gold in California in the mid-nineteenth

57. JOSEPH GRANTHAM, COLO. DIV. OF WATER RES., SYNOPSIS OF COLORADO WATER LAW 3 (7th ed. 2016), <http://water.state.co.us/DWRIPub/DWR%20General%20Documents/SynopsisofCOWaterLaw.pdf>.

58. STATE OF COLO., COLORADO’S WATER PLAN 2-3 (2015), <https://www.colorado.gov/pacific/sites/default/files/CWP2016.pdf>.

59. Adler & Ruple, *supra* note 50, at 624-25 (noting that “[t]he riparian rights doctrine was widely adopted in the comparatively water-rich eastern United States, generally in states east of the 100th [M]eridian,” whereas “[t]he prior appropriation doctrine controls water allocation in the dryer western United States, generally west of the 100th Meridian.”).

60. See GREGORY S. WEBER ET AL., CASES AND MATERIALS ON WATER LAW 252 (9th ed. 2014).

61. See Joseph W. Dellapenna, *The Law of Water Allocation in the Southeastern States at the Opening of the Twenty-First Century*, 25 U. ARK. LITTLE ROCK L. REV. 9, 9 (2002) (describing the eastern United States as an environment in which “people consider[] water to be readily available at little or no cost” and thus, creating a setting in which riparianism could evolve and flourish); see also STATE OF COLO., *supra* note 58, at 2-3 (explaining that the prior appropriations doctrine evolved out of necessity “because the riparian water laws of Europe and the Eastern United States would not have adequately protected older water rights from new uses when there were water shortages”).

62. See GRANTHAM, *supra* note 57, at 1-2.

63. Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 242-47 (2015).

century accentuated the need for an apportionment system compatible with both the arid landscape and mining practices, and it inevitably led to the establishment of the prior appropriation system in the American West.⁶⁴ Today, the doctrine of prior appropriations includes the following features: (1) the establishment of priority amongst water rights chronologically⁶⁵ and (2) the application of diverted waters to a beneficial use.⁶⁶

Priority among water users is the predominant feature of the prior appropriation system.⁶⁷ This system is based on the assumption that sometimes there will not be enough water to meet the needs of all users, making it essential that the system has a means of prioritizing between users.⁶⁸ This means that in times of shortages, “water rights with earlier dates (senior rights) can use water before . . . rights with later dates (junior rights) may use any remaining water.”⁶⁹ Junior users are thus at a severe disadvantage whenever water is scarce. Although this may seem harsh, the concept of priority is a long-standing legal tradition.⁷⁰

In many western states, the prior appropriation system has evolved into an administrative permitting system.⁷¹ Since 1879, however, prior appropriation in Colorado has been delegated to a judicial process known as adjudication.⁷² Acquiring a water right is an abstract process until it is adjudicated in a water court, which then determines the specifics of that right, including its priority date as compared to other rights holders, the amount of water to which the user is entitled, to what uses it may be applied, and for what duration.⁷³ However, while adjudication of a water

64. WEBER ET AL., *supra* note 60, at 18-19.

65. James N. Corbridge, Jr., *Historical Water Use and the Protection of Vested Rights: A Challenge for Colorado Water Law*, 69 U. COLO. L. REV. 503, 505 (1998).

66. JUDITH V. ROYSTER ET AL., NATIVE AMERICAN NATURAL RESOURCES LAW: CASES AND MATERIALS 374 (3d ed. 2013) (“Historically, a beneficial use is one which removes water from the [water source] and applies it elsewhere. For example, taking water out of the [water source] by way of a canal or ditch and using it to irrigate croplands is a traditional beneficial use. Consequently, the water is often used at a location remote from the source of the water.”).

67. See GRANTHAM, *supra* note 57, at 1-2.

68. ROYSTER ET AL., *supra* note 66, at 374 (“The appropriation system is predicated on the concept that in the West there is not enough water to go around, and so some means of allocating the scarce resource must be determined.”).

69. GREGORY J. HOBBS, JR., CITIZEN’S GUIDE TO COLORADO WATER LAW 6 (Caitlin Coleman ed., 4th ed. 2015), http://issuu.com/cfwe/docs/wl4_r9_web.

70. See MacDonnell, *supra* note 63, at 286.

71. WEBER ET AL., *supra* note 60, at 126.

72. HOBBS, *supra* note 69, at 6.

73. *Id.*

right is necessary in Colorado, “[a] water court decree confirms a water right, but does not create it.”⁷⁴

In Colorado water law, “[a]ctual application of water to a beneficial use creates a water right.”⁷⁵ Under Colorado statute, beneficial use is defined broadly as “the use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made.”⁷⁶ Historically, beneficial use was required as a means of preventing water speculation,⁷⁷ a practice that is universally frowned upon in the arid West.⁷⁸ What activities constitute beneficial use can change to reflect the policy decisions of Colorado’s citizens.⁷⁹ And once water has been applied to beneficial use, that water is considered appropriated.⁸⁰

B. External Constraints on Colorado’s Water Resources

As is true with all governments, “Colorado must live within its water constraints.”⁸¹ The most basic of these constraints is precipitation, or lack thereof.⁸² This Comment is particularly concerned with the external political constraints on Colorado’s water resources, which play pivotal roles in the ways Colorado is able to appropriate water within its borders.⁸³ In utilizing its water resources, Colorado must bow to the “law of the river,”⁸⁴ a “complex body of state, federal, and international law” that governs the Colorado River and has been continually evolving since the beginning of the twentieth century.⁸⁵ According to Marc Reisner, the “law of the river” is

74. *Id.* at 12.

75. *Id.*

76. COLO. REV. STAT. § 37-92-103(4) (2015).

77. Lisa Greenberg, Note, *Trusting the Public: Reshaping Colorado Water Law in the Face of Changing Public Values*, 40 B.C. ENVTL. AFF. L. REV. 259, 264 (2013).

78. Aaron Pettis, *Conditional Water Rights and the Problem of Speculation*, 18 U. DENV. WATER L. REV. 312, 318 (2015) (noting that “[i]n western water law . . . there is ‘a strong sense that speculation in water is just plain wrong.’”).

79. HOBBS, *supra* note 69, at 7.

80. *See id.*

81. *Id.* at 22.

82. *See id.*

83. *Id.* (noting the obligations imposed on Colorado to limit uses and comply with equitable apportionment decrees).

84. WEBER ET AL., *supra* note 60, at 489. The Law of the River is extensive and a complete survey would not only be inadequate, but also unnecessary for this Comment; rather, a brief overview of the most pertinent external constraints on Colorado’s ability to use waters of the Colorado River and its tributaries are considered here.

85. *See id.* at 489-90.

what makes the Colorado River so remarkable and notorious—it is not the biggest, longest, or most scenic river in the West—but it “is the most legislated, most debated, and most litigated river in the entire world.”⁸⁶ In a landscape where water is scarce, and with nearly 40 million people dependent on its waters for sustenance,⁸⁷ the Colorado River is a testament to Mark Twain’s observation: “Whiskey is for [d]rinking, [w]ater is for [f]ighting.”⁸⁸

Organization of the Colorado River as it is today began in 1922 with the signing of the Colorado River Compact, a historic interstate compact that appropriated the waters of the river among Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.⁸⁹ Upon signing the Compact, the states divided themselves into two distinct entities: the Upper Basin, comprising of Colorado, New Mexico, Utah, and Wyoming, and the Lower Basin, comprising of Arizona, California, and Nevada.⁹⁰ Herbert Hoover, as Secretary of Commerce, noted that this compromise provided a resolution to “one of the problems of more extreme complexity than will ever be appreciated by the outside world.”⁹¹ The Compact held that the Upper Basin and the Lower Basin would share the Colorado River (almost) equally.⁹² However, the Compact was merely a first step in dividing the waters of the Colorado, with decades of intense negotiation and litigation necessary to determine the exact appropriations due to each state.⁹³

Although all seven states signed the Compact in 1922, the Arizona legislature ultimately refused to ratify the Compact for an astounding twenty-two years.⁹⁴ Unfortunately, Arizona’s “political logjam” resulted in a stalemate, for “[w]ithout a seven-state agreement, there could be no

86. See REISNER, *supra* note 55, at 120.

87. See *supra* note 54 and accompanying text.

88. *A Century of Cooperation: Reclamation and Arizona*, U.S. DEP’T OF THE INTERIOR: BUREAU OF RECLAMATION, http://www.usbr.gov/lc/phoenix/AZ100/1950/whiskey_drinking_water_fighting.html (last visited Sept. 16, 2016).

89. NORRIS HUNDLEY, JR., *WATER AND THE WEST: THE COLORADO RIVER COMPACT AND THE POLITICS OF WATER IN THE AMERICAN WEST* 1-3 (2d ed. 2009).

90. REISNER, *supra* note 55, at 124-25.

91. HUNDLEY, *supra* note 89, at 1.

92. REISNER, *supra* note 55, at 125.

93. See HUNDLEY, *supra* note 89, at 4-5 (noting that the Compact’s framers would have been very disappointed if they could have foreseen the future problems associated with their monumental Compact).

94. JACK L. AUGUST, JR., *DIVIDING WESTERN WATERS: MARK WILMER AND ARIZONA V. CALIFORNIA* 35-37 (2007).

legislative action and therefore no development on the river.”⁹⁵ As a result, it quickly became apparent that large-scale development of the West, which could not be possible until water resources were legally secured, was dependent on crafting a solution independent of Arizona’s cooperation.⁹⁶

In 1922, representatives from California, a state not content to wait on Arizona to ponder the Compact at length, introduced the first Swing-Johnson Bill, which contained California’s own demands for an appropriation system, including “provisions for storage, power production, and an all-American canal.”⁹⁷ Shortly thereafter, the remaining five states, with the blessing of federal officials, successfully forged a new agreement that would allow for the adoption of the Compact without Arizona’s approval.⁹⁸ But California’s insistence on the construction of a dam near Boulder Canyon created new resistance to the agreement from the Upper Basin states.⁹⁹ Despite considerable backlash from Arizona and an air of uneasiness among the remaining states, the Boulder Canyon Project Act (as California’s efforts became known) made its way through Congress and was signed into law by President Calvin Coolidge on December 21, 1928.¹⁰⁰ After months of tumultuous politics and following Utah’s ratification on March 6, 1929,¹⁰¹ President Herbert Hoover proclaimed the Boulder Canyon Project Act effective on June 25, 1929.¹⁰² The resulting dam, originally planned for Boulder Canyon, was eventually built twenty miles downstream at Black Canyon in 1936.¹⁰³ To commemorate President Hoover’s role in the apportionment and development of the Colorado River, Congress officially named the dam at Black Canyon the Hoover Dam in 1947.¹⁰⁴

The Boulder Canyon Project Act was yet another monumental victory in the decades-long political battle of dividing the Colorado River. With its

95. *Id.* at 38.

96. *See id.* at 41; *see also* REISNER, *supra* note 55, at 125 (noting that after the Colorado River Compact and even more so after the subsequent Boulder Canyon Project Act “the [Colorado River] basin could now embark on an orgy of growth the likes of which the West had never seen.”).

97. AUGUST, *supra* note 94, at 37-38.

98. *Id.* at 38.

99. *Id.*

100. *Id.* at 40.

101. *See* HUNDLEY, *supra* note 89, at 276, 281.

102. *Id.* at 281.

103. *Id.* at 290; *see also* REISNER, *supra* note 55, at 127-31 (describing the construction of what became known as Hoover Dam).

104. H.R. REP. NO. 80-87, at 1026 (1947).

passage, the Lower Basin's annual 7.5 million acre-feet of water were divided between the states; the lion's share of 4.4 million acre-feet was to be delivered annually to California, Arizona was to receive 2.8 million acre-feet of water, and Nevada received a promise of 300,000 acre-feet.¹⁰⁵ However, disagreements over the Lower Basin were far from settled, and it would take decades of litigation to finalize the apportionments articulated in the Boulder Canyon Project Act.¹⁰⁶

The final hurdle in solidifying the Colorado River's modern apportionment framework was perhaps the most daunting.¹⁰⁷ The Boulder Canyon Project Act circumvented Arizona's authority and "Arizona's unhappiness . . . manifested itself immediately."¹⁰⁸ In 1930, Arizona filed the first of three unsuccessful lawsuits against California and other Basin states in the United States Supreme Court.¹⁰⁹ By the time Arizona's claims successfully reached the Supreme Court in 1963,¹¹⁰ not only were the Upper Basin and Nevada keenly interested in the final determination of precisely how much water California would be allowed to take from the Colorado at the expense of Arizona,¹¹¹ but all of America was watching. The magnitude of *Arizona v. California* cannot be understated:

Arizona v. California was a 12-year epic battle including three years of trial in front of a special master appointed by the U.S. Supreme Court. The trial involved 106 witnesses and hundreds of volumes of exhibits, ultimately producing a 433-page final report from the Master in December of 1960. Proceedings at the U.S. Supreme Court required two oral arguments, producing a 5-

105. AUGUST, *supra* note 94, at 40.

106. *See id.* at 43-44; *see also* HUNDLEY, *supra* note 89, at 288 ("Unable to obtain a favorable lower-basin settlement . . . Arizonans turned to the Supreme Court for redress.").

107. Robert Glennon & Jacob Kavkewitz, "A Smashing Victory"? Was *Arizona v. California* a Victory for the State of Arizona? 4 ARIZ. J. ENVTL. L. & POL'Y 1, 20 (2013) ("*Arizona v. California* proved to be one of the most complex and fiercely contested cases in Supreme Court history.").

108. *Id.* at 15-16.

109. *Id.* at 15-17. *See generally* AUGUST, *supra* note 94 (offering a thorough history of Arizona's attempts to bring matters of the Colorado River to the Supreme Court prior to 1963).

110. *Arizona v. California*, 373 U.S. 546, 564-65 (1963).

111. *See id.* at 562-63.

3 decision in 1963 with two dissenting opinions, with the majority opinion implemented by a decree in 1964.¹¹²

Against all odds and “[t]o California’s astonishment,” Arizona prevailed in its efforts to protect what it saw as its rightful share to the waters of the Colorado.¹¹³ The Court held that Congress’ ability to apportion the Lower Basin’s share of the Colorado River was constitutional¹¹⁴ and that Arizona was guaranteed 2.8 million acre-feet of Colorado River water, annually.¹¹⁵ To Arizona’s satisfaction, the Court held that the Boulder Canyon Project Act only applied to the Colorado River for purposes of apportionment and not to its tributaries.¹¹⁶ As a result, the Gila River and its tributaries, which provide two to three million acre-feet of water annually, belonged almost exclusively to Arizona.¹¹⁷ The Court also held that the reserved rights doctrine, as first articulated in *Winters v. United States*,¹¹⁸ applies to the rights of American Indian tribes along the Colorado River and that these rights have priority under the Boulder Canyon Project Act.¹¹⁹

Arizona v. California was of utmost importance to the development of the American Southwest. According to former Arizona Senator Jon Kyl, the Court’s holding “helped secure for Arizona a substantial water supply thereby removing the only obstacle to growth and prosperity in Arizona.”¹²⁰ *Arizona v. California* “paved the way for Arizona to seek approval of and funding for the Central Arizona Project.”¹²¹ If not for the subsequent development of the Central Arizona Project,¹²² made possible only by

112. Lawrence J. MacDonnell, *Arizona v. California Revisited*, 52 NAT. RESOURCES J. 363, 365 (2012).

113. REISNER, *supra* note 55, at 261.

114. *Arizona v. California*, 373 U.S. at 565-66 (“Where Congress has so exercised its constitutional power over waters courts have no power to substitute their own notions of an ‘equitable apportionment’ for the apportionment chosen by Congress.”).

115. *Id.* at 564-65.

116. *Id.* at 573-75.

117. REISNER, *supra* note 55, at 261 (“The Salt-Verde-Gila watershed was exclusively Arizona’s except for a small portion that belonged to New Mexico.”).

118. 207 U.S. 564 (1908).

119. *Arizona v. California*, 373 U.S. at 600.

120. AUGUST, *supra* note 94, at xvii.

121. Glennon & Kavkewitz, *supra* note 107, at 32.

122. Robert Jerome Glennon, *Coattails of the Past: Using and Financing the Central Arizona Project*, 27 ARIZ. ST. L.J. 677, 682 (1995) (“The Central Arizona Project is a 335-mile long series of canals, siphons, pumping plants, and tunnels that move Colorado River water from Lake Havasu across the State of Arizona through the Phoenix valley and south to Tucson.”).

Arizona, the cities of south central Arizona, (namely Phoenix and Tucson) would not exist.¹²³

C. The Colorado River: Future Challenges

Although things have finally settled—at least for the time being¹²⁴—yet another element of complexity overshadows current and future appropriations of the waters of the Colorado. Modern science has now shed light on what could one day develop into one of America’s greatest blunders, with profound consequences for the West as it exists today. Based on dendrochronology—the study of tree rings, which allows for “a year-by-year record . . . reflect[ing] the climatic and environmental conditions in which the tree grew”¹²⁵—it is now recognized by scientists that decades worth of compacts and litigation were based on a misunderstanding of how much water from the Colorado River was truly available to share.¹²⁶ At the signing of the Colorado River Compact in 1922, it was believed by all involved—based on the available science of the time—that the annual streamflow of the river would have allowed the Upper and Lower Basins to each receive 7.5 million acre-feet annually.¹²⁷ Dendrochronology, however, tells a much different story. Tree-ring studies completed in the 1970s show that between 1906 and 1922—the span of years surveyed to generate the estimates upon which the Colorado River Compact is based—the river was experiencing “the longest period of sustained high streamflow [since 1564].”¹²⁸ Continued research in this area has “confirmed that, over a 500 or 1000-year period, the average annual flow in the [Colorado] River at Lee Ferry was in the range of 13 to 14 [million acre-feet], not the 18 to 20 [million acre-feet] as anticipated by the framers of the 1922 Colorado River Compact.”¹²⁹

123. See AUGUST, *supra* note 94, at 99-100, 108.

124. Glennon & Kavkewitz, *supra* note 107, at 34 (“Although Arizona could be said to have achieved a ‘smashing victory’ in the battle over the allocation of Colorado River water rights in *Arizona v. California*, the River’s inherent inconsistencies combined with increased variability in future years due to climate change and the looming issue of the Upper Basin’s rights mean that the war over the River’s flow is not over.”).

125. *What Is Dendrochronology*, CORNELL UNIV.: CORNELL TREE-RING LAB., <http://dendro.cornell.edu/whatisdendro.php> (last modified May 27, 2015).

126. Glennon & Kavkewitz, *supra* note 107, at 33-34.

127. See HUNDLEY, *supra* note 89, at 307-08.

128. Ramzi Touchan & Malcolm Hughes, *The Role of Dendrochronology in Natural Resource Management*, 2000 U.S. DEP’T OF AGRIC. PROC. RMRS-P-13 277, http://www.fs.fed.us/rm/pubs/rmrs_p013/rmrs_p013_277_281.pdf.

129. Glennon & Kavkewitz, *supra* note 107, at 36.

Ultimately, dendrochronology points to a frightening conclusion: there is considerably less water available in the Colorado River than initially presumed. Nearly one hundred years of litigation, negotiation, and compacting are based on an incorrect assumption about the total amount of water available to share. The inevitable shortages will be further complicated by both climate change and population projections. As discussed, the Colorado River Basin will become subject to more frequent and intense droughts.¹³⁰ At the same time, the West is projected to experience a substantial growth in population; by 2050, an estimated ninety-four million people will call the West home and all of them will need water.¹³¹ Therefore, it is essential that management of the Colorado River Basin begins to take into consideration these substantial challenges.

The reserved water rights of American Indian tribes make apportionment of water rights in the Colorado River Basin even more complex. In 1908, the Supreme Court heard *Winters v. United States*, a case concerning the rights of American Indians living on the Fort Belknap Reservation in Montana to irrigate their lands.¹³² Acknowledging that the Reservation was established to promulgate the ideals of agrarian society among its indigenous occupants,¹³³ and that the arid lands of Fort Belknap would be “practically valueless” in the absence of irrigation,¹³⁴ the Court held that the United States government had reserved the water necessary for that objective to be achieved.¹³⁵

The *Winters* Court’s reasoning must be viewed in light of the prevailing federal Indian policy of the time. During the nineteenth century, the United States government’s American Indian policy was largely shaped by the ideology of “Manifest Destiny.” Coined by journalist John L. O’Sullivan in 1845, the term came to perfectly summarize America’s “broadly held national sentiment” of territorial and ideological expansion.¹³⁶ Manifest Destiny proved to be the perfect justification for American military conquests of the nineteenth century, particularly conflicts with American Indian tribes during westward expansion.

130. *See supra* Section I.B.

131. Garfin et al., *supra* note 29, at 463.

132. 207 U.S. 564, 565 (1908).

133. *Id.* at 576.

134. *Id.*

135. *Id.* at 577.

136. Jeanne T. Heidler & David S. Heidler, *Manifest Destiny*, ENCYCLOPÆDIA BRITANNICA, <http://www.britannica.com/event/Manifest-Destiny> (last updated Mar. 9, 2015).

Marked by the Massacre at Wounded Knee in December 1890,¹³⁷ the close of the large-scale military conflict with American Indians required a paradigm shift for federal Indian policy. As such, Manifest Destiny slowly gave way to a new era marked by assimilationist efforts. Horrified at the government's treatment of American Indians, reformers in the eastern United States became obsessed with "saving" America's indigenous peoples.¹³⁸ Although history would remember them as paternalistic,¹³⁹ these well-intentioned reformers became focused on protecting indigenous peoples—from themselves. Henry Pratt's remark, "[K]ill the Indian in order to preserve the man,"¹⁴⁰ embodied the rationalization of these reformers who deemed Christianity, agriculture, and democracy to be pivotal in the destruction of traditional communal values, thereby allowing American Indians to enjoy the benefits of "civilization."¹⁴¹

In 1888, the Fort Belknap Indian Reservation was established in northern Montana and "set apart 'as an Indian reservation as and for a permanent home and abiding place of the Gros Ventre and Assiniboine bands or tribes of Indians.'"¹⁴² Beginning in 1889, agents of Fort Belknap began appropriating water from the Milk River—which defines the Reservation's northern boundary—in order to irrigate land for agriculture, "[e]nabl[ing] by means thereof to train, encourage, and accustom large numbers of Indians residing . . . to habits of industry and to promote their civilization and improvement."¹⁴³ In 1900, Henry Winters and other non-Native settlers in the area constructed diversions on the Milk River above the Reservation, thereby preventing sufficient amounts of water from reaching the Reservation for irrigation purposes.¹⁴⁴

137. *See generally* DEE BROWN, *BURY MY HEART AT WOUNDED KNEE* (1970).

138. *See generally* FRANCIS PAUL PRUCHA, *THE GREAT FATHER: THE UNITED STATES GOVERNMENT AND THE AMERICAN INDIANS* 611-30 (combined & unabr. vol. I & II 1995).

139. *See id.* at 610 ("The reformers knew what was best for the wards of the government. Lacking all appreciation of the Indian cultures, they were intent on forcing upon the natives the qualities that they themselves embodied. It was an ethnocentrism of frightening intensity . . .").

140. *See* CLARA SUE KIDWELL & ALAN VELIE, *NATIVE AMERICAN STUDIES* 50 (2005).

141. *See* PRUCHA, *supra* note 138, at 687 (noting that amongst Christian reformers "there was fundamental agreement that neither homesteads nor legal citizenship would benefit the Indians if they were not properly educated to appreciate the responsibilities as well as the benefits of both.").

142. *Winters v. United States*, 207 U.S. 564, 565 (1908).

143. *Id.* at 566-67.

144. *Id.* at 568-69.

In its decision, the Court relied heavily on the idea that the Fort Belknap Reservation was created for the purpose of providing a place for the tribes to occupy and use.¹⁴⁵ Furthermore, the Reservation was established by the United States government for the tribe to transition from what the government perceived as an undesirable nomadic society to an agricultural one.¹⁴⁶ The Court acknowledged that, without the availability of irrigation, the Reservation's arid lands would be "practically valueless."¹⁴⁷ The Court concluded that because the Reservation had been established for the purposes of promoting agriculture among its indigenous inhabitants, the government had reserved the water necessary for that objective to be achieved.¹⁴⁸

The effect of *Winters* was an affirmation that the United States had reserved the water rights of American Indian reservations at the date of their establishment. Much later, in *Arizona v. California*, the Court quantified the reserved water rights of American Indian tribes in the Lower Basin states as the water necessary for an individual reservation's "practicably irrigable acreage" or "PIA."¹⁴⁹ These reserved rights differ from prior appropriation in two incredibly important respects: (1) a reservation's creation date serves as its date of priority, and (2) the right to water is not lost through non-use.¹⁵⁰ Taken together, the modern implications of the *Winters* Doctrine, PIA, and deviations of reserved rights from prior appropriation mean that American Indian tribes control vast amounts of water in the parched American West.¹⁵¹

D. Glenwood Springs, Colorado: A City's Fight to Protect its Water-Based Tourism Industry from Drought

Some 170 miles west of Denver, deep in the heart of Colorado's Western Slope country at 5,761 feet above sea level, lies Glenwood Springs, Colorado. With less than 10,000 full-time residents, Glenwood Springs's laidback attitude and quaint downtown invoke images more consistent with

145. *Id.* at 575-76.

146. *Id.* at 576.

147. *Id.*

148. *Id.* at 577.

149. 373 U.S. 546, 600-01 (1963).

150. Sylvia F. Liu, *American Indian Reserved Water Rights: The Federal Obligation to Protect Tribal Water Resources and Tribal Autonomy*, 25 ENVTL. L. 425, 428-29 (1995).

151. According to the Colorado River Water Users Association, there are twenty-nine tribes within the Basin, "with vested water rights in excess of 2,900,000 acre feet to the Colorado River." *Ten Tribes Partnership*, COLO. RIVER WATER USERS ASS'N, <http://www.crwua.org/colorado-river/ten-tribes> (last visited Sept. 18, 2016).

a groovy mountain town than its title as an incorporated city suggests.¹⁵² These factors, as well as the affordability of housing in the area compared to pricier communities along Colorado's Western Slope region, such as Aspen, combined with the area's year-round outdoor recreational opportunities, helped Glenwood Springs snag the number five spot in Outside Magazine's "Best Places to Live in the U.S." in 2015.¹⁵³

Whether it is for the mineral hot springs pool or rafting, paddle-boarding, and fly-fishing opportunities on the Colorado or Roaring Fork Rivers, "Glenwood's claim to fame has always been water."¹⁵⁴ It is evident that the Glenwood Springs loves being associated with recreational water opportunities, especially since tourism is a massive economic force with "[a]s many as 60,000 tourists raft[ing] the Colorado River above this scenic canyon town each summer."¹⁵⁵ Tourism has a meaningful impact on Glenwood Springs's economy, making it essential that tourists return year after year.¹⁵⁶

Like many other Colorado "gateway communities,"¹⁵⁷ water-based tourism is crucial to the city's reputation and economy, making it imperative that even in times of drought and low in-streamflows on the Colorado River, tourists will still be flocking to Glenwood Springs for its water attractions.¹⁵⁸ On December 19, 2013, the city council of Glenwood Springs approved a motion authorizing the City to proceed with confirmation of water rights on the Colorado River that, if perfected by adjudication, would give the City the ability to support the construction of three new whitewater parks.¹⁵⁹ Within two weeks, the City submitted its application to perfect these conditional "surface water rights for

152. *The 16 Best Places to Live in the U.S.: 2015*, *supra* note 1.

153. *Id.*

154. *Id.*

155. Jim Carlton, *Water Fight Stirs Up Old Rivalries in Colorado*, WALL ST. J. (Aug. 24, 2015, 2:04 PM), <http://www.wsj.com/articles/water-fight-stirs-up-old-rivalries-in-colorado-1440439441>.

156. *Tourism Report*, GLENWOOD SPRINGS CHAMBER RESORT ASS'N, <http://www.glenwoodchamber.com/tourism-report.html> (last visited Sept. 18, 2016).

157. Gateway communities refer to "the towns and cities bordering public lands such as state and national parks, forests, wildlife refuges, historic sites and wilderness areas." Luther Propst et al., *Meeting the Challenge of Change in Western Communities*, 18 J. LAND RESOURCES & ENVTL. L. 63, 63 (1998).

158. Carlton, *supra* note 155.

159. See Brent Gardner-Smith, *Glenwood Drops into Whitewater Court*, ASPEN JOURNALISM (Feb. 17, 2014), <http://aspensjournalism.org/2014/02/17/glenwood-drops-in-to-whitewater-court/>.

recreational in-channel uses” to the District Court, Water Division No. 5 of the Colorado state court system.¹⁶⁰

1. Recreational In-Channel Diversions (RICDs)

Over the past several decades, many Colorado communities have vigorously rebranded themselves as outdoor paradises by “marketing their natural landscape and outdoor amenities in the growing recreation and tourism industry.”¹⁶¹ RICDs have become incredibly important because of the implicit reliance such economies have on adequate water supplies.¹⁶² Under Colorado law, an RICD is defined as:

the minimum amount of [streamflow] as it is diverted, captured, controlled, and placed to beneficial use between specific points defined by control structures pursuant to an application filed by a county, municipality, city and county, water district, water and sanitation district, water conservation district, or water conservancy district for a reasonable recreation experience in and on the water from April 1 to Labor Day of each year unless the applicant can demonstrate that there will be demand for the reasonable recreation experience on additional days.¹⁶³

RICDs permit the construction of “control structures,”¹⁶⁴ which allow for manipulation of both the concentration and timing of streamflows.¹⁶⁵ The manipulation of water supplies for recreational purposes through the RICD

160. Application for Surface Water Rights for Recreational In-Channel Uses at 1, Colorado v. County of Garfield, No. 2013CW3109 (Colo. Dist. Ct. Water Div. No. 5 Dec. 31, 2013), <http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=174537&searchid=a811645f-3be4-4b8f-b874-704eba873c9f&dbid=0>.

161. Rebecca Abeln, *Instream Flows, Recreation as Beneficial Use, and the Public Interest in Colorado Water Law*, 8 U. DENV. WATER L. REV. 517, 518 (2005).

162. *Id.* at 519 (“The latest trend across Colorado has been to host the whitewater sports of boating and kayaking, which depend, of course, on water supply and the right to use it.” (footnote omitted)).

163. COLO. REV. STAT. § 37-92-103(10.3) (2015).

164. A “control structure” is defined under Colorado statute as “a structure consisting of durable man-made or natural materials that has been placed with the intent to divert, capture, possess, and control water in its natural course for an appropriator’s intended and specified recreational in-channel diversion.” COLO. REV. STAT. § 37-92-103(6.3) (2015).

165. *Id.* (“Concentration of river flow by a control structure constitutes control of water for a recreational in-channel diversion.”).

mechanism “helps to protect the investment Colorado communities make in whitewater parks and the economic benefits associated with those parks.”¹⁶⁶

RICDs remain a relatively new phenomenon in Colorado water law.¹⁶⁷ As previously discussed,¹⁶⁸ “[t]he creation of a water right in Colorado is accomplished by fulfillment of three elements: (1) intent to use the water; (2) diversion of the water; and (3) application of the diverted water to a beneficial use.”¹⁶⁹ However, in 2001, the Colorado legislature, recognizing the value of recreational water use,¹⁷⁰ passed Senate Bill 216 (SB 216).¹⁷¹

SB 216 dramatically altered the basic tenets that had governed Colorado water law since its establishment as a territory in 1861.¹⁷² In an attempt to create a new method to govern RICD requests that was compatible within the traditional water law framework,¹⁷³ the Colorado legislature ultimately created a new category of water rights that do not explicitly require the physical diversion of water from its source.¹⁷⁴ Rather than diverting water from its source for beneficial use elsewhere, RICDs allow for the manipulation of streamflows as “necessary for a reasonable recreational experience in and on the water.”¹⁷⁵ To many,¹⁷⁶ SB 216 signals a paradigm

166. Jason Carey, *Recreational In-Channel Diversions in Colorado*, ENVTL. PROTECTION (July 17, 2013), <https://eponline.com/articles/2013/07/17/ricds-in-colorado.aspx?admgarea=ht.industrytrends>.

167. Joshua Mack, *The Evolution of Colorado’s Recreational In-Channel Diversions*, 10 U. DENV. WATER L. REV. 73, 73 (2006) (“Recreational In-Channel Diversions (‘RICDs’) are an area of Colorado water law that has developed only in recent years.”).

168. See *supra* Section II.A.

169. Abeln, *supra* note 161, at 520-21.

170. COLO. RIVER WATER CONSERVATION DIST., RECREATIONAL WATER USE 1 (2016), <http://www.coloradoriverdistrict.org/wp-content/uploads/2014/10/Recreational-Water-Use-2016.pdf>.

171. Glenn E. Porzak et al., *Recreation Water Rights: “The Inside Story”*, 10 U. DENV. WATER L. REV. 209, 212 (2007).

172. See HOBBS, *supra* note 69, at 5.

173. Mack, *supra* note 167, at 79-81.

174. Porzak et al., *supra* note 171, at 210 (“In the eyes of many of Colorado’s most powerful water users—sometimes referred to as the ‘water buffaloes’—when it comes to water appropriation, ‘traditional’ has meant only out-of-channel diversion and water consumption.”).

175. *Recreational In-Channel Diversions*, COLO. WATER CONSERVATION BOARD, <http://cwcb.state.co.us/environment/recreational-in-channel-diversions/Pages/main.aspx> (last visited Sept. 19, 2016).

176. There was heated opposition to creating the SB 216 framework within Colorado water law that recognized recreational in-channel diversions as beneficial uses. Some suggest that the Colorado Water Conservation Board has a “collective disdain” for recreational in-channel diversions and have historically not been favorable to such

shift in Colorado law to a framework in which recreational water rights, non-consumptive by their very nature, are “a legitimate use of Colorado’s water.”¹⁷⁷

Not only did SB 216 substantially revise diversion requirements, but it also shifted the traditional role of adjudication in the creation of water rights.¹⁷⁸ Under SB 216, applications for RICDs filed with the district court are forwarded to the Colorado Water Conservation Board (CWCB) for review.¹⁷⁹ While acting as a “fact-finder for the water court,”¹⁸⁰ the CWCB is charged with evaluating the RICD application in light of the following: (1) “[w]hether the adjudication and administration of the recreational in-channel diversion would materially impair the ability of Colorado to fully develop and place to consumptive beneficial use its compact entitlements;”¹⁸¹ (2) “[w]hether exercise of the recreational in-channel diversion would cause material injury to instream flow water rights appropriated pursuant to subsections (3) and (4) of this section;”¹⁸² and (3) “[w]hether adjudication and administration of the recreational in-channel diversion would promote maximum utilization of waters of the state.”¹⁸³ The CWCB’s recommendation and findings of fact are then considered by the water court in their ultimate determination to approve or deny applications for RICDs.¹⁸⁴ If the water court determines that the RICD application meets the aforementioned statutory requirements, then the court may issue a decree for the RICD.¹⁸⁵ If the proposed diversion request would “materially impair the ability of Colorado to fully develop and place to consumptive beneficial use its compact entitlements, the court shall deny the application.”¹⁸⁶

applications. *See Mack, supra* note 167, at 89-90; *see also Recreational In-Channel Diversions, supra* note 175 (“The size and magnitude of flows protected by many of the RICD water rights to date have the potential to restrict future upstream development potential and may reduce the flexibility that Colorado has to manage its water resources.”).

177. Porzak et al., *supra* note 171, at 212.

178. *See supra* Section II.A.

179. *See* Porzak et al., *supra* note 171, at 224-25.

180. *Id.* at 225.

181. COLO. REV. STAT. § 37-92-102(6)(b)(I) (2015).

182. *Id.* § 37-92-102(6)(b)(IV).

183. *Id.* § 37-92-102(6)(b)(V).

184. *Id.* § 37-92-305(13)(a).

185. *Id.* § 37-92-305(13)(e).

186. *Id.* § 37-92-305(13)(c).

2. *Glenwood Springs's RICD Request*

The ultimate fate of Glenwood Springs's application for a new RICD has yet to be fully determined. In July 2015, the CWCB voted to adopt the CWCB staff's findings that

the adjudication and administration of the proposed RICDs, for the flow amounts and time periods specified in the proposed [application] . . . will materially impair the ability of Colorado to fully develop and place to consumptive beneficial use its compact entitlements and will have an impact on the manner, cost, and timing of such development.¹⁸⁷

Upon the CWCB's vote, these findings of fact were submitted to the District Court of the State of Colorado, Water Division No. 5. Although the district court has yet to announce its final decision regarding Glenwood Springs's RICD request, an application rooted in a desire to protect its booming whitewater industry even during times of drought and low streamflows, Glenwood Springs's application provides a meaningful starting point for a discussion regarding stakeholder involvement in water management.

III. *Stakeholder Involvement: A (Relatively) New Approach for the Future of Water Policy*¹⁸⁸

In the coming decades, as water resources become increasingly scarce, particularly in the Colorado River Basin, local governments and communities will be tasked with striking a balance between prioritizing water rights and finding equitable solutions that are able to satisfy the needs of existing—and future—water users. To accomplish this formidable task, it is essential that governments at municipal, state, and regional levels not only recognize the importance of stakeholder involvement when making

187. Archive of *Public Deliberation on the Board of Commissioners for the City of Glenwood's Recreational In-Channel Diversion (RICD) Application in Case No. 5-13CW3109*, COLO. WATER CONSERVATION BOARD, <http://cwcwebblink.state.co.us/WebLink/ElectronicFile.aspx?docid=195871&searchid=fef9e7e2-47d3-4585-84bd-33398fbb99d4&dbid=0> (last visited Sept. 19, 2016).

188. There are many terms to describe the various activities and those are involved with the process generally referred to as "public participation." Jerome Delli Priscoli, *What Is Public Participation in Water Resources Management and Why Is It Important?*, 29 WATER INT'L 221, 221 (2004) ("Participation can mean many things to many people."). Therefore, in this Comment, I have chosen to utilize the term "stakeholder involvement."

decisions regarding water management but go a step further and incorporate meaningful involvement processes into mandated legal structures.

A. The Importance of Citizen Participation

In her seminal article, “A Ladder of Citizen Participation,” Sherry Arnstein famously quipped, “The idea of citizen participation is a little like eating spinach: no one is against it in principle because it is good for you.”¹⁸⁹ In this regard, little has changed since initial publication of “A Ladder of Citizen Participation” in 1969; as a pillar of American democracy, citizen participation still garners enormous respect,¹⁹⁰ at least in theory. In everyday practice, however, citizen participation is generally regarded as cumbersome¹⁹¹ and even ineffective, both in terms of achieving consensus within communities¹⁹² and spurring government action.¹⁹³

According to Arnstein, when citizen participation is defined as a “redistribution of power” among those who have previously been excluded in a community’s decision-making processes, resistance to such engagement inevitably emerges.¹⁹⁴ Citizen participation is not only important as a broad conceptual theory; Arnstein argued that all forms of participation are not created equal.¹⁹⁵ To emphasize this point, she constructed the groundbreaking and now well-known “Ladder of Citizen Participation” to show that “significant gradations of citizen participation” exist.¹⁹⁶ Each of the ladder’s eight rungs corresponds to varying levels of control that citizens have in the outcome of citizen participation, ranging from the lowest degrees of power (manipulation and therapy) to middle degrees of power (consultation and tokenism) and ending with citizen

189. Sherry R. Arnstein, *A Ladder of Citizen Participation*, 35 J. AM. INST. PLANNERS 216, 216 (1969).

190. *Id.* at 216 (“Participation of the governed in their government is, in theory, the cornerstone of democracy—a revered idea that is vigorously applauded by virtually everyone.”).

191. *See generally* SAUL D. ALINSKY, FROM CITIZEN APATHY TO PARTICIPATION 1 (1957), http://www.iupui.edu/~mswd/S516/multimedia/word_doc/Alinsky1957.pdf (“I know that building a community organization or circumstances for citizen participation is hard, tedious, tough and at many points a rough experience.”).

192. *See* Renée A. Irvin & John Stansbury, *Citizen Participation in Decision Making: Is It Worth the Effort?*, 64 PUB. ADMIN. REV. 55, 55 (2004).

193. *See* Stephen D. Cupps, *Emerging Problems of Citizen Participation*, 37 PUB. ADMIN. REV. 478, 478-79 (1977).

194. Arnstein, *supra* note 189, at 216.

195. *Id.*

196. *Id.* at 217.

control, the highest degree of power that those engaged in public participation processes can wield.¹⁹⁷

The purpose of Arnstein's Ladder of Citizen Participation is not only to recognize that citizen participation matters in and of itself, but that the actual quality of participation processes matters.¹⁹⁸ Participation is truly meaningful only when processes are designed to allow those involved to have a significant opportunity to "determin[e] the end product."¹⁹⁹ It is, therefore, critical that *meaningful* citizen participation processes are included in water management and policy.

B. Stakeholder Involvement and Water Management

A stakeholder is "any person who has an interest in the outcome of [a] policy or planning decision."²⁰⁰ In water management literature, stakeholders are often referred to as "individuals and groups with an interest in water allocation decisions."²⁰¹ The term has evolved from connoting mere public participation to "imply[ing], if not actually confer[ring], something resembling legal standing."²⁰² The benefits of stakeholder involvement in water management decisions go far beyond satisfying legal mandates for public participation by providing a space that allows stakeholders to engage with political leadership to craft solutions for the issue at hand.²⁰³ Most importantly, stakeholder involvement in water policy creates a "necessary sense of ownership" in the outcome, "contribut[ing] to community cohesion and empowerment."²⁰⁴

In Colorado, the state's current stakeholder involvement system is a testament to the resolve of its political leadership to address the uncertainties surrounding Colorado's future water supply in the wake of a historic drought in 2002.²⁰⁵ The state's long-term water vulnerabilities became even more apparent when studies suggested that, taking into

197. *Id.*

198. *Id.* at 216-17.

199. *Id.* at 217.

200. Jeff Loux, *Collaboration and Stakeholder Engagement*, in WATER RESOURCES PLANNING AND MANAGEMENT 251, 251 (R. Quentin Grafton & Karen Hussey eds., 2011).

201. James L. Huffman, *Comprehensive River Basin Management: The Limits of Collaborative, Stakeholder-Based, Water Governance*, 49 NAT. RESOURCES J. 117, 140 (2009).

202. *Id.*

203. *Id.* at 141.

204. *Id.*

205. Nelson Harvey, *Colorado's Water Plan, Then: How We Got Here*, HEADWATERS, 2015, at 8, 11, http://issuu.com/cfwe/docs/colorado_swatplan.

account current water demands coupled with projected population growth, Colorado would face an annual deficiency of 630,000 acre-feet of water by 2030.²⁰⁶ Faced with drought and projected water shortages, Colorado's efforts over the last decade to gain control over its water future incidentally created one of the most pro-stakeholder-involvement water policy schemes in the American West.

In 2003, these concerns about the reliability and longevity of Colorado's water resources led to the establishment of the Statewide Water Supply Initiative.²⁰⁷ Designed to "proactively address the state's water supply challenges through a thorough 'bottom-up, not top-down' analysis of state water supplies and demands," the Statewide Water Supply Initiative invited stakeholders to participate in "basin roundtables."²⁰⁸ This initial progress was furthered with the Colorado legislature's passage of House Bill 05-1177 (HB 1177), known as the "Colorado Water for the 21st Century Act," in 2005.²⁰⁹ HB 1177 made each of the nine roundtables—one for each of the state's eight river basins, as well as one exclusively for the Denver metropolitan area—permanent "to encourage locally driven collaborative solutions to water supply challenges."²¹⁰ Composed of more than 300 volunteers, these basin roundtables were tasked with the creation of basin-wide water needs assessments for each of the nine basins.²¹¹

C. Best Practices from Across the West

Across the American West, local, state, and regional governments are beginning to involve constituents representing a broad range of interests to influence the decision-making process regarding water management. Although these examples highlight different stages in the stakeholder-involvement process, as well as consider different scales of involvement, the strategies employed in central Arizona and Sacramento, California, are noteworthy examples for consideration.

206. Eryn Gable, *A Numbers Game: What the Technical Work Surrounding the Interbasin Compact Process Reveals*, HEADWATERS, 2009, at 11, 11, http://issuu.com/cfwe/docs/hw19_web/0.

207. George Sibley, *Colorado's Water for the 21st Century Act: Finally Doing the Right Thing?*, HEADWATERS, Spring 2009, at 4, 6-7, http://issuu.com/cfwe/docs/hw19_web/0.

208. *Id.* at 7.

209. Colorado Water for the 21st Century Act, 2005 Colo. Sess. Laws 1472 (codified as amended at COLO. REV. STAT. § 37-75-101 (2015)).

210. Colorado Water for the 21st Century Act, 2005 Colo. Sess. Laws 1473 (codified as amended at COLO. REV. STAT. § 37-75-104(1)(a) (2015)).

211. *Basin Roundtables*, COLO. WATER CONSERVATION BOARD, <http://cwcb.state.co.us/water-management/basin-roundtables/Pages/main.aspx> (last visited Sept. 20, 2016).

1. Arizona's "Sun Corridor"

In 2012, the Lincoln Institute of Land Policy partnered with the Sonoran Institute's Western Lands and Communities Program to host a workshop regarding water management choices in central Arizona's "Sun Corridor."²¹² Motivated by the philosophy that "effective water management will increasingly require broader public engagement and more participatory governance mechanisms," the Sonoran Institute's and the Lincoln Institute of Land Policy's collaboration was designed to stimulate a dialogue among participants about current and future challenges to Arizona's water future.²¹³ In particular, the workshop aimed to discover the values that participants assigned to water in four distinct categories: (1) agriculture; (2) the natural environment; (3) public spaces ("Aesthetics and Urban Environments"); and (4) household use ("Our Lifestyle of Affluence").²¹⁴ The vast majority of participants were from Maricopa and Pima Counties, representing various entities such as educational and environmental groups, industrial and agricultural interests, municipal water providers, civic organizations, as well as individual citizens.²¹⁵ Additionally, a large number of participants self-identified as "water buffalos."²¹⁶

After an introduction to the categorical water uses, workshop participants were asked to discuss their own assumptions about water use, with moderators asking follow-up questions designed to challenge reported assumptions.²¹⁷ For instance, following a conversation regarding land use choices in central Arizona—notably, the use of irrigation to support agriculture in the Sonoran Desert and lifestyle choices such as the prevalence of personal swimming pools and lush grass lawns—participants were asked to reconsider these assumptions with specific questions such as,

212. Jim Holway & Alexandra Arboleda, *Fostering Public Engagement in Water Choices: Lessons from a Sun Corridor Workshop 1* (Lincoln Inst. Of Land Policy, Working Paper WP12JH1, 2012).

213. *Id.*

214. *Id.* at 5.

215. *Id.* at 13-14.

216. *Id.* at 14. The Lincoln Institute of Land Policy loosely defines a "water buffalo" as "a term used to describe the experts who have spent much of their careers working on water policies in the West, usually representing a particular water user perspective but sometimes as senior officials or administrators of state and federal water management agencies as well." *Id.* at 4 n.2.

217. *Id.* at 5.

when forced to choose between swimming pools and wildlife, “What is the ‘right’ or ‘best’ choice and who should decide?”²¹⁸

The Sun Corridor workshop is a great example of the initial stages of stakeholder involvement. Furthermore, while the workshop yielded impressive results, feedback from event organizers provides important information for others engaged in crafting stakeholder involvement processes. First, organizers recognized that diversity of stakeholders in small group discussions resulted in “unproductive arguments and an inability to facilitate genuine sharing and understanding of different perspectives.”²¹⁹ Whereas this aspect of organization created less than desirable results, organizers were incredibly pleased with the interaction and discussion spurred among participants through the use of keypad polling.²²⁰ In hindsight, organizers recognized that workshop participants were “not a representative selection of Arizonans”²²¹ and that future policy discussions would need to involve stakeholders from underrepresented groups.²²² As exemplified by the Sun Corridor workshop, organizers of similar stakeholder involvement events should be mindful to appropriately manage stakeholders in order to incite meaningful participation and to make sure that all necessary stakeholders are included in the process.

2. Sacramento’s Water Forum

In 1993, Sacramento, California, incidentally began one of the most impressive stakeholder involvement processes when it formed the Sacramento Area Water Forum.²²³ Similar to the Sun Corridor workshop, the Water Forum “did not arise out of any specific dispute or crisis” but “emerged in a region that had a history of considerable conflict in regard to water.”²²⁴ Rather, the Water Forum evolved “organically” and humbly began when the City of Sacramento and Sacramento County agreed to staff a regional water plan, which resulted in the creation of the City-County Office of Metropolitan Water Planning (CCOMWP).²²⁵ The CCOMWP was established in order for the municipal and county governments “[t]o

218. *Id.* at 7.

219. *Id.* at 21.

220. *Id.*

221. *Id.* at 13.

222. *Id.* at 21.

223. See Sarah Connick, *The Sacramento Area Water Forum: A Case Study 5* (Inst. of Urban & Reg’l Dev. Univ. of Cal. at Berkeley, Working Paper No. 2006-06, 2006), <http://iurd.berkeley.edu/wp/2006-06.pdf>.

224. *Id.* at 6.

225. *Id.* at 10.

formulate an area-wide plan for providing a safe and reliable water supply in a manner that protects the environment.”²²⁶

Early in the development phase, CCOMWP recognized that if the goal of agreement to any large-scale water plan was to be achieved, it was critical to involve entities that were absent.²²⁷ Soon thereafter, the CCOMWP began assembling stakeholders with the help of a trained facilitator and organized them into four distinct groups to represent the following interests: (1) water interests, (2) development and business interests, (3) environmental interests, and (4) public interests.²²⁸ Stakeholders were chosen based on the idea of involving “those who are directly affected by the issue, those who could make change happen, and those who could block change.”²²⁹ As expected, many of these interest groups had historically been adversarial parties and were admittedly accustomed to advancing their agenda through litigation.²³⁰ “Building the Water Forum Agreement proved to be a painstaking task,”²³¹ but it was one that culminated in a memorandum of understanding in 2000 between more than forty-one entities within the region.²³²

Several important lessons emerged from the Sacramento Area Water Forum because of the size of the stakeholder process. First, as the Water Forum demonstrates, it may be necessary to bring in professionals who are trained at facilitating discussion among stakeholders, particularly stakeholders who have had adversarial relationships in the past. Second, creating a meaningful discussion among diverse stakeholders can be a resource-intensive process, both in terms of time and financial costs. However, as the seven-year-long Water Forum highlights, such daunting undertakings can prove to yield impressive, equitable results in creating a water management policy that at least considers, if not incorporates, all stakeholders’ views.

IV. Moving Forward: Suggestions for Future Stakeholder Involvement in Colorado

As evidenced by the Colorado Water for the 21st Century Act, Colorado has taken tremendous strides to actively engage its citizens in formulating

226. *Id.*

227. *Id.* at 15.

228. *Id.* at 17.

229. *Id.* at 18.

230. *Id.*

231. *Id.* at 47.

232. *Id.* at 5.

the state's future water policies.²³³ The creation of the basin roundtable system is an excellent means of soliciting stakeholder involvement, but the addition of tribal involvement and further engagement with stakeholders about the importance of aggressive water conservation would dramatically improve Colorado's existing stakeholder involvement framework.

A. Tribal Engagement

One of the most glaring discrepancies in Colorado's current stakeholder involvement system is the absence of the state's American Indian tribes. Tribal water rights in the American West are generally misunderstood,²³⁴ largely unsettled,²³⁵ but astonishingly valuable. However, the Southern Ute Indian Tribe and the Ute Mountain Ute Tribe appear to be largely absent from the past decade's discussions about Colorado's water future. Although serious precautions would need to be taken in the establishment and organization of an involvement mechanism for the tribes due to the actual and perceived different legal doctrines that govern American Indian water rights, a tribal presence at roundtables would have allowed the Southern Utes and Ute Mountain Utes to share their perspectives about water use in the basins of their homelands and jurisdictional territories. Furthermore, this presence would have given the tribes a platform to educate other stakeholders about their perspectives on basin waters and their legal rights.

233. See *supra* notes 208-211 and accompanying text.

234. *Panel Discussions from "Indian Nations on the Eve of the Twenty-First Century,"* 43 S.D. L. REV. 438, 444 (1998) ("I'll speak for about ten minutes and try to cover--at least skim the mountain tops of the Indian-reserved doctrine, because it is a very complicated area of federal Indian law as much as it is a complicated area of law because it concerns water law and water rights.").

235. In Colorado, tribal reserved water rights have been settled. STATE OF COLO., *supra* note 58, at 2-30. However, many tribal water rights in the West have yet to be litigated and adjudicated. DAVID H. GETCHES ET AL., CASES AND MATERIALS ON FEDERAL INDIAN LAW 766-67 (6th ed. 2011) ("Nearly all of the western states are embroiled in reserved water rights issues."). From a municipal water provider perspective, this perhaps makes it even more valuable that American Indian tribes are present in on-going state, regional, and local water policy discussions that impact their rights in an effort to avoid costly, burdensome litigation. *Id.* at 767. ("The cost and inflexibility in judicial quantification of reserved rights has led many states and tribes to negotiate rather than litigate the extent of reserved rights, and then to ask Congress or the courts to approve their agreements.").

B. Conservation Through Education

Planning for drought is a difficult undertaking.²³⁶ As a “creeping phenomenon,” it is often difficult to tell exactly when a drought is occurring.²³⁷ Furthermore, while droughts can have devastating long- and short-term impacts on communities,²³⁸ it can be difficult to prioritize drought planning when communities may not be aware of the toll that drought can have.²³⁹ However difficult, drought planning can have a massive effect on preparing communities for times of water shortages.

According to the American Planning Association, drought can be conceptualized as an equation—one side being water supply and the other being water consumption.²⁴⁰ While it may be obvious that planning cannot induce desperately needed precipitation during drought events,²⁴¹ planning can influence large-scale water consumption patterns that can ease the impacts of drought.²⁴² Thus, water conservation can have a tremendous influence on mitigating the impacts of drought. If demands on water resources are reduced, regardless of whether or not there is a drought, communities will not only have more water available to them during times of drought,²⁴³ but will become more drought-resilient in the process.²⁴⁴

Another worthy addition to Colorado’s stakeholder involvement process would be aggressive promotion of water conservation. Education about water conservation among diverse water users in each of the nine basin roundtables would be instrumental in helping Coloradans effectively conceptualize and work within the external constraints placed on their water resources. Workshops, such as that utilized in Arizona’s Sun Corridor Project, could be advantageous in helping citizens evaluate the ways in which they currently utilize water and identify beneficial uses that may need to be reprioritized if water resources are negatively impacted by climate change in the future.

236. Brislaw et al., *supra* note 34, at 2 (discussing the compounding difficulties of planning for a natural hazard that is not only challenging to define, but to also conceptualize and identify).

237. NAT’L DROUGHT MITIGATION CTR., *supra* note 36.

238. *See supra* Section I.B.

239. Brislaw et al., *supra* note 34, at 12-13.

240. *Id.* at 14.

241. *Id.*

242. *See id.*

243. *Water Conservation*, NAT’L DROUGHT MITIGATION CTR., <http://drought.unl.edu/DroughtforKids/HowCanWeProtectOurselves/WaterConservation.aspx> (last visited Sept. 21, 2016).

244. Brislaw et al., *supra* note 34, at 14.

Conclusion

In his post-apocalyptic fictional thriller *The Water Knife*, Paolo Bacigalupi reimagines an American Southwest ravaged by a decades-long drought in which water serves as currency, state militias keep climate refugees from crossing their borders, and Marc Reisner's *Cadillac Desert* is regarded as a realized prophecy.²⁴⁵ The Colorado River is itself a character in *The Water Knife*.

Even much reduced by droughts and diversions, the Colorado River awakened reverent hungers. Seven million acre-feet a year, down from sixteen million . . . but still, so much water, simply there on the land. . . . In its prime, the Colorado River had run more than a thousand miles, from the white-snow Rockies down through the red-rock canyons of Utah and on to the blue Pacific, tumbling fast and without obstruction. And wherever it touched—life. . . . These days the river ran low and sluggish²⁴⁶

Although *The Water Knife* is a work of fiction, there are certain uncomfortable and hard truths that have to be acknowledged. Water policies, management systems, and consumption patterns will undoubtedly impact the West's water future—for better or for worse. The projected impacts of climate change on the Colorado River Basin—and the repercussions that will impact the lives of an estimated thirty-three million people who depend on the river for water supplies²⁴⁷—have yet to fully manifest. What is known, however, is that already over-appropriated water resources will likely be subject to more frequent and more extreme drought, causing users to challenge their assumptions about how they utilize this finite resource²⁴⁸ and increasing the likelihood of conflict among competing users.²⁴⁹

245. PAOLO BACIGALUPI, *THE WATER KNIFE* (2015).

246. *Id.* at 11-12.

247. *About the Colorado River Basin*, COLORADO RIVER: SETTING THE COURSE, <http://www.coloradoriverbasin.org/about-the-colorado-river-basin/> (last visited Sept. 21, 2016).

248. Gregory J. Hobbs, Jr., *Reviving the Public Ownership, Antispeculation, and Beneficial Use Moorings of Prior Appropriation Water Law*, 84 U. COLO. L. REV. 97, 105, 153-54 (2013) (“Any system of water law adopted by a state or nation will necessarily reflect the needs and values of its populace and, most significantly, the supply of water available for use in addressing those needs and values.”).

249. Garfin et al., *supra* note 30, at 463 (“Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing competition among farmers,

Over the last decade, Colorado has taken tremendous steps to invite its citizens to participate in envisioning what the future of Colorado's water resources should look like by determining how this precious resource should be used. Across the American West, meaningful stakeholder involvement—that which ultimately influences and dictates water policy decisions—will become increasingly important in creating equitable solutions to the inevitable water challenges that are induced by climate change.²⁵⁰ Water planning is a continually evolving process, and if Colorado is able to continue actively engaging with its citizenry in statewide water policy issues, Colorado is poised to become the leading example of stakeholder involvement in water resource management in the American West.

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energy producers, urban dwellers, and plant and animal life for the region's most precious resource.”).

250. See Glennon & Kavkewitz, *supra* note 107, at 38 (“If we are to achieve this sustainable future, the path forward must not be litigation, but cooperation and collaboration . . . Colorado River stakeholders should engage in a dialogue that recognizes that viable alternatives to litigation offer the best prospect for our future.”)