

# **All We Really Need to Know We Learned in Kindergarten: Share Everything (Agricultural Water Sharing to Meet Increasing Municipal Water Demands)\***

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\* With apologies to Robert Fulghum, author of All I Really Need to Know I Learned in Kindergarten. ROBERT FULGHUM, ALL I REALLY NEEDED TO KNOW I LEARNED IN KINDERGARTEN (2003).

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## I. INTRODUCTION

With continuing population growth and a changing climate, Colorado's finite water resources face unprecedented pressure. Current projections indicate that Colorado's population will increase from the current 5.2 million people to between 8.3 and 9.2 million by 2050.<sup>1</sup> As a result of population growth, 2050 municipal water demand is predicted to swell by 600,000 to 1,000,000 acre-feet annually—a sixty to 100 percent increase—primarily to meet Front Range needs.<sup>2</sup> Colorado's remaining undeveloped water resources are limited, however, and pose nearly insurmountable challenges for thirsty Front Range water providers to access.<sup>3</sup> For decades, the primary municipal response to increasing water demands has accordingly been to acquire and convert agricultural water rights to municipal use, and dry up irrigated lands that then are permanently taken out of production.<sup>4</sup> If this business-as-usual “buy-and-dry” continues to be the most viable means for municipalities to meet growing water demands, Colorado may lose between 500,000 and 700,000 acres of irrigated agricultural land by 2050.<sup>5</sup> This would have significant adverse consequences for Colorado's rural communities as well as Colorado's society, economy, and the environment.

Currently, Colorado's legal and institutional structure unwittingly encourages buy-and-dry to meet growing municipal water demands and to respond to climate change and drought. Policymakers and stakeholders are aware that institutional changes are needed to provide viable alternatives to buy-and-dry, but to date, few legal and policy changes have truly shifted the pattern. Nevertheless, in the words of the great Bob Dylan, it appears that “the times, they may be a-changing.”<sup>6</sup> In December 2015, the state completed the first-ever Colorado's Water Plan,<sup>7</sup> which recognizes that Colorado needs to develop means of reducing the legal and institutional barriers to implementing agricultural water sharing arrangements.

Colorado's current legal structure is not effectively facilitating temporary agricultural sharing for two main reasons. First, Colorado's water law system, embodied in the water court process, poses significant barriers to creative temporary changes in water use. Second, to the extent

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1. THE COLO. WATER CONSERVATION BD., COLORADO'S WATER PLAN 5-4 (2015), <http://coloradowaterplan.com> [hereinafter COLORADO'S WATER PLAN].

2. *Id.* at 5-5.

3. *Id.*

4. *Id.* at 5-11.

5. *Id.* at 1-9.

6. BOB DYLAN, TIMES THEY ARE A-CHANGING (Warner Bros. Inc. 1963).

7. COLORADO'S WATER PLAN, *supra* note 1.

that some efforts have been made to reduce these barriers through statutory changes, these efforts have been largely unsuccessful because they did not go far enough to overcome institutional and legal barriers to water sharing.

This Article, in Section II, first describes the problem posed by drying up agricultural land in Colorado to meet growing municipal water demands. Section III discusses the current legal framework and water law in Colorado that impede implementation of agricultural water sharing as an alternative to buy-and-dry. Section IV analyzes Colorado's existing statutory mechanisms that may facilitate temporary water sharing arrangements and generally discusses the limits of their usefulness for those purposes. Section IV also discusses examples of effective mechanisms for water sharing in other Western states. Section V provides a case study of agricultural water sharing in the Lower Arkansas River Basin of Colorado, the so-called Super Ditch. Section VI provides recommendations for the critical components for developing and instituting a viable agricultural water sharing program in Colorado.

## II. THE BUY-AND-DRY PROBLEM

Three major factors are driving permanent agricultural dry-up (buy-and-dry): continued population growth, the inaccessibility of new water supplies, and Colorado's water court system.<sup>8</sup> As municipalities try to provide water to expanding populations from a limited supply, often their most viable option is to buy agricultural water rights and permanently take the associated agricultural lands out of production.

By 2050, Colorado's population is projected to be 9 million people, with a concomitant increase in demand for water.<sup>9</sup> The Colorado Water Conservation Board ("CWCB") predicts that municipal demands will grow by 600,000 acre-feet to 1 million acre-feet by 2050 from their current levels.<sup>10</sup> Such increases in demand have recently been met by acquiring agricultural water rights.<sup>11</sup>

Confounding the population growth issue, there is not enough unappropriated water<sup>12</sup> in Colorado to meet future demands on the Front

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8. See THE COLO. WATER CONSERVATION Bd., SWSI 2010 MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS 3 (2011), <http://cwcb.state.co.us/water-management/water-supply-planning/Documents/SWSI2010/SWSI2010FactSheet.pdf> [hereinafter MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS].

9. COLORADO'S WATER PLAN, *supra* note 1, at 5-4.

10. MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS, *supra* note 8, at 2.

11. *Id.*

12. JUSTICE GREGORY J. HOBBS, JR., CITIZEN'S GUIDE TO COLORADO WATER LAW 6 (Karla A. Brown ed., 2nd ed. 2004),

Range.<sup>13</sup> What additional water is available is primarily on the West Slope, and generally inaccessible to meet future Front Range municipal demands for myriad political, legal, and technical reasons. And Colorado's water challenges are likely to get worse as the gap between water supply and demand is projected to reach 500,000 acre-feet by 2050.<sup>14</sup> Demands for nonconsumptive water for recreation and the environment will also likely increase, especially in response to climate change, warmer and shorter winters, and threatened and endangered species.<sup>15</sup>

Finally, water law in Colorado has largely developed to protect existing uses rather than facilitate new uses, such as agricultural water sharing, as discussed in Section III. Under the current system, if a municipality wants to secure the long-term ability to share the use of agricultural water on a temporary basis, it likely would have to navigate a change-of-use case in water court for essentially the same time and cost as permanently changing the water right.

The consequence of this situation is that past and current practice to develop water supplies for municipalities has been to purchase and then change the use of agricultural water rights permanently. Buy-and-dry remains attractive because municipalities can acquire a certain, permanent, and reliable water supply, which aids in long-term planning.<sup>16</sup>

There is widespread agreement that buy-and-dry has many negative consequences and is not the best way forward for Colorado.<sup>17</sup> Traditional buy-and-dry is causing agricultural land to disappear, negatively affecting rural economies, and could ultimately harm the future of Colorado's food security.<sup>18</sup> If current trends and policies continue into 2050, when Colorado's population is expected to nearly double, this business-as-usual approach of buy-and-dry will also cause many adverse economic, social, and environmental effects statewide.<sup>19</sup>

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[http://www.colorado.edu/geography/class\\_homepages/geog\\_4501\\_s14/readings/CG-Law2004.pdf](http://www.colorado.edu/geography/class_homepages/geog_4501_s14/readings/CG-Law2004.pdf) ("Unappropriated" water is water that another user has not yet acquired a legal right to by putting it to beneficial use.)

13. THE COLO. WATER CONSERVATION BD., STATEWIDE WATER SUPPLY INITIATIVE 2010 6-1 (2011), <http://cwcb.state.co.us/water-management/water-supply-planning/Documents/SWSI2010/SWSI2010.pdf> [hereinafter STATEWIDE WATER SUPPLY INITIATIVE].

14. COLORADO'S WATER PLAN, *supra* note 1, at 1-9.

15. MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS, *supra* note 8, at 4.

16. STATEWIDE WATER SUPPLY INITIATIVE, *supra* note 13, at 7-19.

17. *Id.* at 7-18.

18. COLORADO'S WATER PLAN, *supra* note 1, at 1-9.

19. *Id.* at 6-6.

The Colorado General Assembly declared that “it is urgent to implement alternatives . . . to traditional transfers resulting in permanent agricultural dry-up.”<sup>20</sup> The Interbasin Compact Committee (“IBCC”) believes “[l]arge-scale dry-up of irrigated agriculture has considerable adverse social, economic and environmental consequences.”<sup>21</sup> The IBCC, however, concluded that “[a]lternatives to permanent agricultural water transfers represent a viable way to meet a portion of the [municipal & industrial] water supply gap.”<sup>22</sup>

Governor Hickenlooper also acknowledged that the current rate of buy-and-dry is “unacceptable” when he ordered the CWCB to commence work on Colorado’s Water Plan.<sup>23</sup> One of the CWCB’s principal goals for Colorado’s Water Plan is consequently to “[e]stablish [] cooperative alternatives to the rapid removal of water from farms and ranches to supply urban growth.”<sup>24</sup> Colorado’s Water Plan, in fact, set a goal of using alternative methods to share 50,000 acre-feet of water by 2030.<sup>25</sup> This goal is not realistic unless Colorado authorizes an alternative statutory mechanism to allow and facilitate agricultural water sharing.

Variations in precipitation such as the wild swing from drought to floods in 2013 will further complicate the process of meeting water demands as these variations become the norm.<sup>26</sup> Furthermore, large tracts of agricultural land around cities will be developed and water transfers from agricultural to municipal uses will increase.<sup>27</sup> Although the willingness to pay for social and environmental mitigation of new water development might increase, constrained water supplies will make it difficult to meet increased demand.<sup>28</sup>

As more water is transferred out of irrigation and into cities, economic effects will extend well beyond the original water owner. First, lower production will directly decrease revenue from the sale of crops.<sup>29</sup> Second, this falling production will lead to decreased demand for local

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20. H.B. 13-1248, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013).

21. Letter from the Interbasin Compact Comm. (IBCC) to Gov. Ritter and Gov.-Elect Hickenlooper, at 4 (Dec. 15, 2010), <http://cwcbweblink.state.co.us/weblink/0/doc/146566/Electronic.aspx?searchid=e0e845ca-f8c6-4efd-8e75-df2d9bf3a9d9>.

22. *Id.* at 10.

23. Colo. Exec. Order D 2013-005 2 (May 14, 2013), <https://www.colorado.gov/governor/2013-executive-orders>.

24. COLORADO’S WATER PLAN, *supra* note 1, at 1-4.

25. *Id.* at 6-111.

26. *Id.* at 1-8.

27. *Id.* at 6-6.

28. *Id.*

29. JENNIFER THORVALDSON & JAMES PRITCHETT, COLO. STATE UNIV.: DEP’T OF AGRIC. AND RES. ECON., ECONOMIC IMPACT ANALYSIS OF REDUCED IRRIGATED ACREAGE IN FOUR RIVER BASINS IN COLORADO 3 (2006).

agricultural services, such as seed and fertilizer, reducing revenue for support industries.<sup>30</sup> Third, less labor will be required to produce crops, reducing wage revenue and thus reducing spending throughout rural economies.<sup>31</sup> Fourth, as land is converted from irrigation to dry land, its appraised value will decrease and erode local governments' tax base.<sup>32</sup> This negative effect on local governments will be exacerbated if their costs increase to provide aid to unemployed farm workers and their families.<sup>33</sup> In some areas, workers can find alternative employment, but in agricultural regions like the Arkansas River Basin, there are limited employment opportunities in the local economy.<sup>34</sup>

Permanent agricultural to urban water transfers also adversely affect the environment. Weeds may take over fields where crops were once grown and encroach on neighboring fields that are still producing.<sup>35</sup> If revegetation of dried-up land is not maintained in perpetuity—a daunting challenge that perhaps no one has satisfied to date—exposed topsoil erodes away, which can also cause air quality deterioration due to blowing dust.<sup>36</sup> Furthermore, transferring water to urban uses often reduces stream flows, which negatively impacts wildlife habitat, recreation, and water quality.<sup>37</sup>

### III. COLORADO WATER DOCTRINES AFFECTING WATER SHARING ARRANGEMENTS

Colorado, like virtually all western states, allocates water under the prior appropriation doctrine.<sup>38</sup> Under this doctrine, the first person (senior) to divert and put water to beneficial use<sup>39</sup> has a superior right to

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30. *Id.*

31. *Id.*

32. *Id.* at 7.

33. *Id.* at 45.

34. *Id.* at 14.

35. TERESA A. RICE & LAWRENCE J. MACDONNELL, *AGRICULTURAL TO URBAN WATER TRANSFERS IN COLORADO: AN ASSESSMENT OF THE ISSUES AND OPTIONS*, COMPLETION REPORT NO. 177 11 (COLORADO WATER RESOURCES RESEARCH INSTITUTE, 1993).

36. *Id.*

37. See Mark W. Rosegrant & Claudia Ringler, *Impact on Food Security and Rural Development of Transferring Water Out of Agriculture*, 1 WATER POL'Y 567, 576 (1998).

38. COLO. CONST. art XVI, § 6; *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443 (1882).

39. Beneficial use “means 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. Without limiting the generality of the previous sentence, ‘beneficial use’ includes: (a) The impoundment of water for firefighting or storage for any purpose for which an appropriation is lawfully made, including recreational, fishery, or wildlife purposes; (b) The diversion of water by a

water compared to all later (junior) appropriators.<sup>40</sup> This means that a senior appropriator may divert all of their water before any junior appropriator may divert any water, placing the burden of droughts and shortages on junior appropriators.<sup>41</sup> This is particularly troublesome for municipalities, whose water rights are overwhelmingly junior to agricultural water rights.

### A. *Acquiring a Water Right: Adjudication*

A person acquires a water right by diverting and putting the water to beneficial use, but he or she must adjudicate that right in water court for it to be administered in the priority system.<sup>42</sup> A decreed water right includes a point of diversion, a rate of diversion, and type(s) of use. It may also specify the place of use and volumetric limits on diversion and use.<sup>43</sup>

Colorado is the only western state to use the court system rather than an administrative agency to make water rights determinations.<sup>44</sup> While water courts provide a great deal of protection to other water owners, the system is also costly, complicated, and time-consuming with unpredictable results.<sup>45</sup>

In order to obtain a new water right decree or change a decreed water right, the prospective water owner must file an application with the water court in the appropriate division.<sup>46</sup> Each month, the water clerk in each of Colorado's seven major water basins must publish a resume listing all applications filed in their office.<sup>47</sup> Any person may file a

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county, municipality, city and county, water district, water and sanitation district, water conservation district, or water conservancy district for recreational in-channel diversion purposes; and (c) For the benefit and enjoyment of present and future generations, the appropriation by the state of Colorado in the manner prescribed by law of such minimum flows between specific points or levels for and on natural streams and lakes as are required to preserve the natural environment to a reasonable degree." COLO. REV. STAT. § 37-92-103(4) (2015).

40. See Coffin, 6 Colo. at 447.

41. See *Aspen Wilderness Workshop, Inc. v. Hines Highlands Ltd. P'ship*, 929 P.2d 718, 724 (Colo. 1996) (Application for Water Rights).

42. COLO. REV. STAT. § 37-92-302(1)(a) (2015).

43. See Gregory J. Hobbs, Jr., *Second Update to Colorado Water Law: An Historical Overview*, 4 U. DENV. WATER L. REV. 111, 111-112 (2000-2001).

44. Yichuan Wang, *Courting Colorado's Water Courts in California to Improve Water Rights Adjudication? Letting Go and Improving Existing Institutions*, 15 VT. J. OF ENVTL. L. 538, 546 (2014).

45. Peter D. Nichols & Douglas S. Kenney, *Watering Growth in Colorado: Swept Along by the Current or Choosing a Better Line?* 6 U. DENV. WATER L. REV. 411, 420 (2003).

46. COLO. REV. STAT. § 37-92-302(1)(a)-(2)(a) (2015).

47. COLO. REV. STAT. § 37-92-302(3)(a) (2015).

statement of opposition within two months of the application.<sup>48</sup> Thereafter, if no statements of opposition are filed, the water referee consults with the appropriate division engineer or state engineer and makes a ruling approving the application, disapproving the application, or re-referring the application to the water judge.<sup>49</sup> If the referee approves the application, the water judge must sign the ruling to finalize the decree.<sup>50</sup> If anyone opposes the application, the case may be resolved by stipulation or go to trial in water court before the water judge, and the applicant must wait for the case to be completed before receiving a final decree.<sup>51</sup> This process can take as long as three to five years for a relatively simple case, and complex cases have been known to take five to ten years to resolve. Decades-long cases are not unheard of, depending on the complexity and level of opposition to an application. As a result, busy water courts cannot efficiently handle changing needs motivated, for instance, by droughts.<sup>52</sup>

Because the Colorado Constitution states that water belongs to the public subject to appropriation, “Property rights in water are usufructuary; ownership of the resource itself remains in the public.”<sup>53</sup> A water rights owner seeking to change a water right must accordingly prove to the court that her proposed change-of-use of the public’s resource will not injure other water owners.<sup>54</sup> In Colorado, a “change of water right” is defined broadly as “a change in the type, place, or time of use,” and also includes changing a point of diversion.<sup>55</sup> Furthermore, a change of water right is limited to its historical consumptive use.<sup>56</sup>

In a change-of-use proceeding, the parties must:

- (1) identify the original appropriation’s historic beneficial use; (2) fix the historic beneficial consumptive use attributable to the appropriation by employing a suitable parcel-by-parcel or ditch-wide methodology; (3) determine the amount of beneficial consumptive use attributable to the applicant’s ownership interest; and (4) affix

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48. COLO. REV. STAT. § 37-92-302(1)(b)–(c) (2015).

49. COLO. REV. STAT. §§ 37-92-303(1)–(2), 37-92-302(4) (2015).

50. COLO. REV. STAT. § 37-92-304(5) (2015).

51. COLO. REV. STAT. § 37-92-304 (2015).

52. Wang, *supra* note 44, at 552.

53. COLO. CONST. art. XVI, § 5; Santa Fe Trail Ranches Prop. Owners Ass’n v. Simpson, 990 P.2d 46, 54 (Colo. 1999).

54. COLO. REV. STAT. § 37-92-305(3)(a) (2015); Santa Fe Trail Ranches Prop. Owners Ass’n, 990 P.2d at 54.

55. COLO. REV. STAT. § 37-92-103(5) (2015).

56. Farmers Reservoir and Irrigation Co. v. Consol. Mut. Water Co., 33 P.3d 799, 807 (Colo. 2001).

protective conditions for preventing injury to other water rights in operation of the judgment and decree.<sup>57</sup>

As described in more detail below, the strict requirements for changing a water right do not facilitate temporary water sharing arrangements and instead incentivize water users to purchase water rights and obtain permanent changes of use.

### *B. Changing a Water Right: Legal Barriers*

Colorado water law is intended to “promote[] multiple use of a finite resource for beneficial purposes. . . . [through] priority administration.”<sup>58</sup> While the goals of prior appropriation “to guarantee security, assure reliability, and cultivate flexibility”<sup>59</sup> are highly desirable, the system inherently impedes creative means of sharing water supplies and fosters permanent changes to accommodate drought and population growth. The three major barriers that the law regarding changes of water rights imposes on flexible water sharing arrangements are the prohibition on expansion of use, the no-injury rule, and the anti-speculation doctrine.

#### *1. Expansion of Use is Prohibited and Historical Beneficial Use is Difficult to Quantify.*

Changing the use of a water right is based on the historical beneficial use of that water right.<sup>60</sup> Historical consumptive use is the actual amount of water beneficially used when measured over a representative time period, and may be less than the original decree.<sup>61</sup> When related to irrigation water, this is the amount consumed by a crop. Furthermore, in the context of a change in use, water used for irrigation purposes is limited to the appropriator’s original intent, the volume of water used and the acreage irrigated.<sup>62</sup> Thus, if a water owner irrigated more acreage than originally decreed, the additional acreage may not be counted for historical consumptive use.<sup>63</sup> Specifically, “a water right decreed for irrigation purposes cannot lawfully be enlarged beyond the

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57. *Id.*

58. *Empire Lodge Homeowners’ Ass’n v. Moyer*, 39 P.3d 1139, 1146–47 (Colo. 2001).

59. *Id.* at 1147.

60. *Santa Fe Trail Ranches Prop. Owners Ass’n v. Simpson*, 990 P.2d 46, 53 (Colo. 1999).

61. *In re Water Rights of Central Colo. Water*, 147 P.3d 9, 14 (Colo. 2006).

62. *Id.*

63. *Id.* at 16.

amount of water necessary to irrigate the lands for which the appropriation was made.”<sup>64</sup>

In two cases, the Colorado Supreme Court strictly prohibited any expansion of use of a water right, a rule that the legislature subsequently softened. In *Cent. Colo. Water Conservancy Dist. v. City of Greeley* (so-called “Jones Ditch”), the Central Colorado Water Conservancy District (“Central”) filed a change-of-use application for shares it owned in the Jones Ditch and claimed that the lawful historical use of those shares should include additional acreage irrigated by the appropriator after the 1882 decree.<sup>65</sup> The Colorado Supreme Court held that “[a]ny use beyond that appropriation, for however long a period, is not “historic use” for purposes of establishing the lawful historic use of the Jones Ditch Water Right, and constitutes an unlawful enlargement.”<sup>66</sup> As a result, the court dramatically reduced Jones Ditch’s lawful consumptive use from 1,100 acre-feet per year to 536 acre-feet per year.<sup>67</sup> Although Central’s change-of-use application was approved, it was for significantly less water than requested.

In *Burlington Ditch Reservoir & Land Co. v. Metro Wastewater Reclamation Dist.*, the applicant sought to change the use of an 1885 water right that had been used to irrigate land below Barr Lake for a century.<sup>68</sup> However, the court found that the historical consumptive use only involved irrigating lands above Barr Lake per the original decree, and reduced the water right from 350 to 200 cubic feet per second.<sup>69</sup> The court also held that water from the relevant irrigation system could only be applied to land above the lake and that other diversions constructed after 1885 were undecreed points of diversion and unlawful enlargements of use.<sup>70</sup>

In response to these two decisions, which severely limited changes of historical consumptive use even for century old irrigation practices, the Colorado legislature enacted a statute acknowledging that historical use practices should be recognized in change cases.<sup>71</sup> Accordingly, now when determining historical consumptive use: “if a decree entered before January 1, 1937, establishes an irrigation water right and does not expressly limit the number of acres that the appropriator may irrigate

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64. *Id.* at 14.

65. *Id.* at 12.

66. *Id.* at 14.

67. *Id.* at 12.

68. *Burlington Ditch Reservoir & Land Co. v. Metro Wastewater Reclamation Dist.*, 256 P.3d 645, 655 (Colo. 2011).

69. *Id.*

70. *Id.* at 654–655.

71. S.B. 13-074, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013).

under the water right, the lawful maximum amount of irrigated acreage equals the maximum amount of acreage irrigated in compliance with all express provisions of the decree during the first fifty years after entry of the original decree.”<sup>72</sup> While this legislative change protects some senior water rights holders who fear exposing their historical water use to judicial scrutiny, it does not protect situations where an old water rights decree explicitly limited the acreage to be irrigated but the irrigation use was subsequently expanded, even if that expansion occurred over a 100 or more years ago. Thus, irrigators are wary of water court proceedings that may expose their water rights to scrutiny by other water rights owners or the court because few know the appropriator’s original intent for the specific use of the water, or understand the extent of historical irrigation practices.

## 2. *Proving No-injury can be Costly and Time-consuming.*

In addition to demonstrating historical consumptive use, applicants for a change of water right must prove that their proposed change will not injure other users. Colorado law specifically provides that when applying for a change in water right, an applicant must establish the “absence of any injurious effect.”<sup>73</sup> Injury, and conditions levied to prevent it, encompasses more than just a quantity of water. “A classic form of injury involves diminution of the available water supply that a water rights holder would otherwise enjoy at the *time* and *place* and in the *amount* of demand for beneficial use under the holder’s decreed water right operating in priority.”<sup>74</sup> Because injury includes time, place, and amount, water courts impose protective conditions such as foregoing irrigation of historically irrigated land, monitoring and maintaining return flows, and accounting for diversions and deliveries.<sup>75</sup>

In preventing injury to other water rights, applicants must refrain from altering return flows when changing a water right.<sup>76</sup> In fact, “[i]t has been fundamental law in this state that junior appropriators have rights in return flow to the extent that they may not be injured by a change in the place of use of the irrigation water which provides that return flow.”<sup>77</sup> Therefore, water owners must maintain these historical flows after a change-of-use to prevent injury to other owners.

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72. COLO. REV. STAT. § 37-92-305(4)(a)(I)(B) (2015).

73. COLO. REV. STAT. § 37-92-304(3) (2015).

74. *Farmers Reservoir & Irrigation Co. v. Consol. Mut. Water Co.*, 33 P.3d 799, 807 (Colo. 2001) (emphasis added).

75. *Id.*

76. *See City of Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 80 (Colo. 1996).

77. *Id.*

Calculating the historical consumptive use and return flows can be complicated and requires significant engineering work be performed that considers the amount of water diverted and the number of acres historically irrigated over an extended study period, cropping patterns, and groundwater flow patterns to determine return flows back to the stream, among other things.<sup>78</sup>

The applicant bears the burden of proving no-injury, before the burden shifts to the objectors to prove that existing water rights will in fact be injured.<sup>79</sup> This framework requires the applicant to prove a negative—that their water use will not cause injury—which is exceedingly difficult.<sup>80</sup> Furthermore, in some over-appropriated basins such as the Arkansas River, the Colorado Supreme Court has held that there is a presumption of injury that the applicant must overcome.<sup>81</sup> For these reasons, applicants often agree to onerous terms and conditions that may significantly reduce the amount of their water right available for the requested changed uses in order to avoid costly, protracted, and uncertain litigation.<sup>82</sup> In turn, this discourages obtaining a change in use of a temporary water sharing arrangement where the costs may not justify the temporary use and the concessions needed to avoid protracted litigation over no-injury are too burdensome.

### *3. The Anti-Speculation Doctrine Prohibits Transferring Water to Unidentified Users or For Unspecified Uses.*

Colorado law prohibits appropriations of water that are based on a speculative sale or transfer of water to a third party.<sup>83</sup> In the seminal case of *Colo. River Water Conservation Dist. v. Vidler Tunnel Water Co.*, the Colorado Supreme Court held that there was insufficient evidence to grant a conditional water right for future water use by municipalities and stated:

Our constitution guarantees a right to appropriate, not a right to speculate. The right to appropriate is for use, not merely for profit. As we read our constitution and statutes, they give no one the right to

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78. TROUT, RALEY, MONTANO, WITWER & FREEMAN, P.C., ACQUIRING, USING, AND PROTECTING WATER IN COLORADO § 11.2.1 (2011).

79. *City of Thornton*, 926 P.2d at 88.

80. Britt Banks & Peter Nichols, *A Roundtable Discussion on the No-Injury Rule of Colorado Water Law*, 44 COLO. LAW. 87, 90 (2015).

81. *See, e.g.*, *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139, 1158 (Colo. 2001) (holding that opposers did not need to prove injury where water rights applicant made out-of-priority diversions in the Arkansas Basin without adjudicating an augmentation plan).

82. Banks & Nichols, *supra* note 80, at 90.

83. COLO. REV. STAT. § 37-92-103(3) (2015).

preempt the development potential of water for the anticipated future use of others not in privity of contract, or in any agency relationship, with the developer regarding that use.<sup>84</sup>

This holding was subsequently codified in the Colorado Revised Statutes.<sup>85</sup> In 2005, the Colorado Supreme Court ruled in *High Plains A & M, LLC v. Southeastern Co. Water Conservancy Dist.* (“High Plains”) that the anti-speculation doctrine and associated statutory requirements apply to applications seeking to change the use of a water right.<sup>86</sup> Applicants for a change in use must demonstrate a vested interest in the land that benefits from the changed water rights and a plan to use the water for specific, actual, beneficial purposes.<sup>87</sup> In *High Plains*, the court held that the change-of-use would violate the anti-speculation doctrine, because the applicant only identified a broad list of uses and a broad list of potential municipal water consumers, but had no contracts or firm plans.<sup>88</sup> The court itself noted that “change proceedings can be extremely expensive to participants and consume many days of trial and appeal time.”<sup>89</sup> Furthermore, the court dismissed High Plains’ argument that it could not enter into contracts with end users until it obtained court approval, reasoning that opposers must be given sufficient notice to comment on the application.<sup>90</sup>

Because water owners generally cannot change their water rights to other uses or places of use until a contract is in place, and even then both the end user and place of use will be limited to that contract, they cannot proactively seek to add additional uses to a water right to facilitate future temporary sharing of that water right. This doctrine accordingly discourages sharing where an irrigator may be willing to temporarily share her water with another user for a different type of use at a different place of use.

Historical consumptive use, the no-injury rule, and the anti-speculation doctrine are potential show-stoppers for anyone seeking to participate in agricultural water sharing. Furthermore, water court change-of-use cases are time-consuming because there are usually objectors, complex cases can last years, and appeals are frequent.<sup>91</sup> Legal

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84. Colo. River Water Conservation Dist. v. Vidler Tunnel Water Co., 594 P.2d 566, 568 (Colo. 1979).

85. § 37-92-103(3).

86. See *High Plains A & M, LLC v. Se. Co. Water Conservancy Dist.*, 120 P.3d 710 (Colo. 2005).

87. *Id.* at 720.

88. *Id.* at 721.

89. *Id.* at 722.

90. *Id.*

91. Nichols & Kenney, *supra* note 45, at 420.

and engineering costs in a change-of-use case can exceed the value of the water right, as water rights of any amount must go through the same procedure.<sup>92</sup>

#### IV. ALTERNATIVES TO THE WATER COURT PROCESS

As discussed in Section II, current buy-and-dry methods are leading Colorado down a path of losing large amounts of productive irrigated agricultural land. In response, various stakeholders have attempted to create temporary transfer mechanisms and processes to facilitate temporary arrangements that allow for agricultural water sharing through temporary land fallowing and municipal leasing, often referred to as leasing-fallowing.<sup>93</sup> These temporary transfer mechanisms are intended to offer opportunities for water rights owners to transfer water on either a long-term or short-term basis through leasing-fallowing.<sup>94</sup> Importantly, temporary transfer mechanisms do not preclude a water rights owner from later selling their water rights, but rather present choices that protect private property rights while providing potential benefits to the environment, recreation, industry and overall sustainability.<sup>95</sup>

Temporary transfer mechanisms can provide benefits to water rights owners who are seeking to enhance financial stability while remaining in agriculture. First, temporary transfer mechanisms can be flexible, so water can be more easily directed to where it is most needed during times of shortage or unusual demand, such as post-drought storage replenishment.<sup>96</sup> Second, these mechanisms can be simpler and cheaper because they rely on an administrative or streamlined process rather than traditional water court.<sup>97</sup> Third, these mechanisms may be more transparent.<sup>98</sup> Fourth, temporary transfer mechanisms provide income to farmers that may be reinvested to upgrade irrigation equipment or used

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92. *Id.*

93. COLORADO'S WATER PLAN, *supra* note 1, at 6-97.

94. *Id.* at 6-98.

95. *Id.* at 6-97 to 6-98.

96. See Ryan McLane & John Dingess, *The Role of Temporary Changes of Water Rights in Colorado*, 17 U. DENV. WATER L. REV. 293, 297 (2014).

97. See Wang, *supra* note 44, at 552.

98. See WESTERN GOVERNORS' ASSOCIATION, WATER TRANSFERS IN THE WEST 59-60 (2012), [http://www.westgov.org/images/dmdocuments/Water\\_Transfers\\_in\\_the\\_West\\_2012.pdf](http://www.westgov.org/images/dmdocuments/Water_Transfers_in_the_West_2012.pdf).

to pay debts to support continued agricultural operations.<sup>99</sup> Fifth, these mechanisms offer options that are faster, cheaper, and less risky than adjudicating a change-of-use in water court.<sup>100</sup> Finally, grouping together multiple water rights on different parcels of land allows more people to participate without giving up altogether on growing crops.

Temporary transfer mechanisms that are currently available for agricultural water sharing face numerous barriers in Colorado, which frequently mirror water court obstacles: the no-injury rule, historical use, and anti-speculation. First, potential applicants are often deterred by high transaction costs related to the expensive and lengthy water court process.<sup>101</sup> Second, alternative tools require different administrative procedures than traditional buy-and-dry, and there is uncertainty whether the State and Division Engineers or other administrators are preventing a water owner from expanding their water right or injuring other water owners.<sup>102</sup> Relatedly, the no-injury rule classifies any impact, no matter how small or distant, as injurious.<sup>103</sup> Thus, applicants for changes in water rights must “guarantee that essentially every drop of water is present at the same time, location and amount as before the change.”<sup>104</sup> Accordingly, applicants often take the cheaper, easier route of simply giving up part of their water rights rather than attempt to prove no-injury.<sup>105</sup> Third, municipal planners need permanent and firm water supplies, and temporary transfer mechanisms are often perceived as insufficient for municipal water supply strategies.<sup>106</sup> Fourth, there may be

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99. THE COLO. WATER CONSERVATION BD., ALTERNATIVE AGRICULTURAL WATER TRANSFER METHODS GRANT PROGRAM SUMMARY 4 (2011), [http://www.coagwater.colostate.edu/docs/ATM\\_Final\\_Report\\_5\\_3\\_11.pdf](http://www.coagwater.colostate.edu/docs/ATM_Final_Report_5_3_11.pdf).

100. See TIMELY, FAIR AND EFFECTIVE WATER COURTS: REPORT OF THE WATER COURT COMMITTEE TO CHIEF JUSTICE MARY J. MULLARKEY, COLORADO SUPREME COURT 7–9 (2008), [https://www.courts.state.co.us/userfiles/File/Court\\_Probation/Supreme\\_Court/Committee\\_s/Water\\_Court\\_Committee/Final\\_Report\\_August\\_1\\_2008.pdf](https://www.courts.state.co.us/userfiles/File/Court_Probation/Supreme_Court/Committee_s/Water_Court_Committee/Final_Report_August_1_2008.pdf).

101. STATEWIDE WATER SUPPLY INITIATIVE, *supra* note 13, at 7-19.

102. *Id.*

103. Banks & Nichols, *supra* note 80, at 87–91.

104. *Id.* at 88 (internal quotations omitted).

105. *Id.*

106. STATEWIDE WATER SUPPLY INITIATIVE, *supra* note 13, at 7-19. While beyond the scope of this paper, one potential solution to addressing a municipality’s need for a perpetual water supply while avoiding buy-and-dry is the pairing of conservation easements with municipal leasing option agreements. See, for example, Colorado Water Conservation Board, Grant Agreement with Open Water Foundation, Contract No. CTGG1 2015-3419 1, 18 (2015). In these arrangements, the purpose of the conservation easement is to conserve irrigated land by tying irrigation water rights to the land itself. The easement can permit temporary water transfers if they foster the preservation and protection of the appurtenant land. Furthermore, predictable yields and price supports for crops help support long term agricultural viability. The municipal option agreement functions as a purchase by the municipality of a perpetual option to lease water from

insufficient infrastructure to deliver transferred water from a downstream provider to a municipality.<sup>107</sup> Finally, municipalities often have more bargaining power and legal and technical resources than agricultural water owners, which deters irrigators from entering into agricultural sharing negotiations.<sup>108</sup>

### A. *Current Temporary Transfer Mechanisms in Colorado*

Currently, several temporary transfer mechanisms that are intended to facilitate agricultural water sharing through leasing-fallowing are statutorily authorized under Colorado law. Each of these will be discussed in turn, along with practical applications and their usefulness. Although temporary transfer mechanisms are available in Colorado, current options are often as, or more, expensive than traditional water rights transfers and can also be more legally burdensome and time-consuming.<sup>109</sup> The CWCB (and others) believe it is important to develop a variety of options, as different owners and users have varying needs and preferences.<sup>110</sup> Accordingly, Section IV also explores why many believe existing alternatives are insufficient to significantly reduce future buy-and-dry.

#### 1. *Substitute Water Supply Plans Allow Temporary Transfers under Limited Circumstances.*

The State Engineer may approve Substitute Water Supply Plans (“SWSPs”) allowing junior water rights owners to use water while their applications are pending in water court, as long as they provide the

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irrigators under defined circumstances, such as drought or post-drought storage replenishment. Importantly, these arrangements help farmers by providing a source of income during drought when there is not enough water for a viable crop, and help municipalities by providing an additional water supply. Moreover, conservation easements provide a legally enforceable mechanism for municipalities to rely on to ensure they will be able to access water when they need it. This effectively addresses municipal concerns regarding the permanence of a water supply while avoiding the expensive and time-consuming water court process if coupled with a temporary transfer mechanism to use the water encumbered by the conservation easement.

107. BROWN & CALDWELL, COMPLETION REPORT: DEVELOPMENT OF PRACTICAL ALTERNATIVE AGRICULTURAL WATER TRANSFER MEASURES FOR PRESERVATION OF COLORADO IRRIGATED AGRICULTURE 2-14 (May 2011), <http://cwcbweblink.state.co.us/WebLink/0/doc/195709/Electronic.aspx>.

108. *Id.* Furthermore, leasing-fallowing agreements should allow irrigators within a ditch system to lease water to cities outside of the system to create more flexibility.

109. COLORADO’S WATER PLAN, *supra* note 1, at 6-117.

110. *Id.*

stream with a substitute water supply.<sup>111</sup> SWSPs were first used as an interim approval method for augmentation plans, which replaced out-of-priority diversions with existing senior direct flow or storage rights of the same amount, quality, location, and time.<sup>112</sup> Initially, the State Engineer approved SWSPs without requiring water rights owners to apply for a formal augmentation plan in water court.<sup>113</sup> Subsequently, the Colorado General Assembly formalized the State Engineer's authority to approve SWSPs, subject to certain limitations.<sup>114</sup>

Under current Colorado law, the State Engineer may approve SWSPs in four circumstances: (1) during water court proceedings; (2) without a water court proceeding if the plan is for a limited (five-year) duration; (3) during emergency situations; and (4) to renew an SWSP approved prior to January 1, 2002.<sup>115</sup> Moreover, applicants must meet specific statutory conditions in each circumstance, and in all cases, the SWSP must not cause injury to other water owners.<sup>116</sup> SWSPs provide only an annual approval for an interim use and must be renewed by application each year.

The City of Aurora successfully leased water from the Lower Arkansas River using a substitute water supply plan in 2004 and 2005.<sup>117</sup> Under the terms of the lease, the High Line Canal Company temporarily transferred 840 shares of irrigation water to Aurora and shareholders agreed to temporarily fallow a commensurate amount of acreage.<sup>118</sup> Importantly, this lease was approved immediately following the severe 2002 drought, which left Aurora with only thirty-five percent of average raw water yields and vastly depleted reservoirs.<sup>119</sup> The State Engineer approved this short-term plan with relatively standard terms and conditions after considering eight comment letters.<sup>120</sup> It is doubtful that the terms of this SWSP, however, would pass muster in today's environment where concerns regarding expansion of use, injury and the precise maintenance of return flows in time, place, and amount have

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111. COLO. REV. STAT. § 37-92-308 (2015); Michael F. Browning, *Substitute Supply Plans: Recent Water Law Developments*, 31 COLO. LAW. 67, 67 (2002).

112. Browning, *supra* note 111, at 67.

113. Lain Strawn, *Comment: The Last Gasp: The Conflict Over Management of Replacement Water in the South Platte River Basin*, 75 U. COLO. L. REV. 597, 619 (2004).

114. COLO. REV. STAT. § 37-92-308 (2015).

115. Browning, *supra* note 111, at 69–70.

116. COLO. REV. STAT. § 37-92-308 (2015).

117. McLane & Dingess, *supra* note 96, at 305.

118. *Id.* at 310–11.

119. *Id.* at 306–07.

120. Letter from Office of State Eng'r to John M. Dingess, Duncan, Ostrander & Dingess, P.C. (Jan. 30, 2004) (on file with author); McLane & Dingess, *supra* note 96, at 310.

been taken to the extreme. For example, as discussed in detail in Section V, the Lower Arkansas Valley Super Ditch Company, Inc. (the “Super Ditch”) unsuccessfully attempted to implement an SWSP in compliance with unworkable terms and conditions as well as unprecedented opposition.

While SWSPs have been used for decades to authorize temporary new water uses, they are not a long-term solution to the buy-and-dry problem facing Colorado. This is because SWSPs are primarily interim water supply tools that must be renewed annually while a change-of-use or other application moves through water court, or to address an emergency situation (such as what Aurora faced after 2002) or for uses that will not exceed five years.<sup>121</sup> Therefore, SWSPs will not help in facilitating long-term water sharing arrangements, nor solve long-term issues with the water supply gap.

## *2. Interruptible Water Supply Agreements Allow the Temporary Transfer of Water under Limited Circumstances.*

In 2003, the Colorado legislature granted the State Engineer authority to approve the use of Interruptible Water Supply Agreements (“IWSAs”).<sup>122</sup> An IWSA is essentially a loan and allows the borrower to exercise an option to use the loaned water in accordance with the agreement while the owner of the water right stops using the water.<sup>123</sup> Additionally, the amount of water available to loan is the historical consumptive use.<sup>124</sup> The State Engineer may approve IWSAs for up to ten years, but the option may only be exercised in three of those ten years.<sup>125</sup> Two ten-year renewals are allowed, although the user may not rely on multiple IWSAs.<sup>126</sup> Similar to SWSPs, these agreements cannot cause injury to other existing water owners.<sup>127</sup>

Since the enactment of the IWSA statute in 2003, no agreements have actually been put into operation. A group of potential participants submitted two ISWA applications to the State Engineer in 2012 that were approved, but the applicants ultimately cancelled their plans in 2013.<sup>128</sup> Despite providing a more streamlined administrative approval process than traditionally changing or transferring a water right in water court, some believe IWSAs are not the solution to buy-and-dry due to a number

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121. COLO. REV. STAT. § 37-92-308(4), (5) (2015).

122. COLO. REV. STAT. § 37-92-309 (2015).

123. COLO. REV. STAT. § 37-92-309(2) (2015).

124. COLO. REV. STAT. § 37-92-309(1) (2015).

125. COLO. REV. STAT. § 37-92-309(3)(c) (2015).

126. H.B. 13-1130, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013).

127. § 37-92-309(1).

128. McLane & Dingess, *supra* note 96, at 296 n.22.

of problems. Primarily, the amount of water loaned out must be based on an individualized, water court style analysis of historical consumptive use, which is a complex and expensive analysis that requires expert engineers.<sup>129</sup> Second, because IWSAs can only be utilized in three out of ten years, their usefulness is limited and cannot provide a reliable supply for drinking water and household uses.<sup>130</sup> Similarly, cities may be reluctant to construct permanent infrastructure to transport agricultural water for a supply that can only be transported for three out of ten years.<sup>131</sup> Finally, although IWSAs avoid the traditional water court process, State Engineer approval, which uses the same standards as water court, may still be time-consuming and is also subject to appeal in water court, with no deference to the State Engineer's decision.<sup>132</sup>

### *3. Rotational Crop Management Contracts Authorize Farmers to Fallow Land and Temporarily Transfer Water.*

Rotational Crop Management Contracts ("RCMCs") are another statutorily specified mechanism that water owners may implement to change the use of water. The Colorado General Assembly passed a bill authorizing these contracts, which the governor signed in 2006.<sup>133</sup> Under an RCMC, owners of irrigation water rights may transfer the water to another use and rotate the lands that they fallow.<sup>134</sup> This method avoids the permanent dry-up of agricultural lands by allowing the water owner to only fallow certain parcels at a time. Like the previous water transfer methods, RCMCs must not cause injury to other existing water owners.<sup>135</sup> RCMCs must, however, go through a water court proceeding, although an applicant may apply for an SWSP while the application is pending.<sup>136</sup> According to the Colorado Division of Water Resources, RCMCs have never been used. This is likely because they require water court approval, so they do not provide a real alternative to the water court process.<sup>137</sup> Furthermore, some may question whether RCMCs truly are

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129. *Id.* at 314.

130. *Id.* at 296.

131. *Id.* at 326.

132. COMPLETION REPORT: DEVELOPMENT OF PRACTICAL ALTERNATIVE AGRICULTURAL WATER TRANSFER MEASURES FOR PRESERVATION OF COLORADO IRRIGATED AGRICULTURE, PREPARED FOR COLORADO WATER CONSERVATION BOARD 2-12 (May 2011), <http://cwcbweblink.state.co.us/WebLink/DocView.aspx?id=195709&page=1&dbid=0>.

133. H.B. 06-1124, 65th Gen. Assemb., 1st Reg. Sess. (Colo. 2006).

134. COLO. REV. STAT. § 37-92-103(10.6) (2015).

135. *Id.*

136. COLO. REV. STAT. § 37-92-308(4) (2015).

137. Interview with Jeff Deatherage, Chief of Water Supply for Colo. Div. of Water Res. (Aug. 31, 2015).

an alternative to buy-and-dry, since there is nothing that would prevent a municipality from converting an approved RCMC into a permanent transfer and buy-and-dry.<sup>138</sup>

*4. Water Banks Allow Temporary Water Transfers but have Failed in Colorado.*

Colorado law has allowed the formation of water banks in each division since 2003.<sup>139</sup> Rather than detailing the structure of water banks, the General Assembly granted the State Engineer the authority to promulgate governing rules that a water court must approve.<sup>140</sup> Subsequently, the Arkansas River Water Bank Pilot Program (“Water Bank”) was created with the intention of simplifying and reducing the costs of loaning and exchanging water.<sup>141</sup> This program only applied to owners of stored water within the Arkansas River Basin and was set to expire June 30, 2007.<sup>142</sup> According to the Water Bank Rules, stored water could not be used for instream flows or exports out of state and use of the bank must comply with all state and federal laws.<sup>143</sup> Furthermore, the rules required any potential depositor to pay an application fee and provide information including, among other things, proof that depositing the water would not result in an expansion of water use and an engineering report estimating historical consumptive use.<sup>144</sup> If the Water Bank deemed the water eligible, the depositor and Water Bank entered a deposit agreement that included the minimum price the depositor would accept for their water, a provision stating that the Water Bank had the exclusive right to lease the water, and a provision stating that the depositor could withdraw their water at any time.<sup>145</sup> Subsequently, the Water Bank would list the water on its website for bids, and the depositor was required to accept any in-basin bids meeting the minimum price within the first ten business days.<sup>146</sup> Originally, if no acceptable bids were received, the depositor was allowed to consider lower bids or offers

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138. See § 37-92-103(10.6) (no limitation on later permanent transfer after securing an RCMC).

139. COLO. REV. STAT. § 37-80.5-102 (2015).

140. *Id.*

141. STATEMENT OF BASIS AND PURPOSE: RULES GOVERNING THE ARKANSAS RIVER WATER BANK PILOT PROGRAM 1 (2002), <http://water.state.co.us/DWRIPub/Documents/arkriverbasis.pdf>.

142. RULES GOVERNING THE ARKANSAS RIVER WATER BANK PILOT PROGRAM, Rule 2(A) (2002), <http://water.state.co.us/DWRIPub/Documents/arkpilotrules052302.pdf>.

143. *Id.* at Rule 4.

144. *Id.* at Rule 5(A).

145. *Id.* at Rule 5(C), 6(B).

146. *Id.* at Rule 6.

from out-of-basin users.<sup>147</sup> However, due to concerns about trans-basin diversions, the statute was amended to disallow exporting water in 2003.<sup>148</sup> Any interested parties could sign up for the Water Bank Notification List and would receive notice of pending lease or option agreements.<sup>149</sup> Additionally, these parties could send comments, including claims of injury related to the pending agreements, to the State and Division Engineers for thirty days.<sup>150</sup> The Engineers would consider these comments in determining appropriate terms and conditions before approving a lease or option agreement.<sup>151</sup>

Despite high hopes for the program, the Water Bank generated little activity, with only two depositors and zero transactions between 2002 and 2005.<sup>152</sup> Furthermore, the Southeastern Colorado Water Conservancy District ceased operating the Water Bank in 2005.<sup>153</sup> The State Engineer identified ten main reasons for the Water Bank's failure in his report to the General Assembly:

1. Eligible water was limited to decreed storage rights, which eliminated most water owners in the basin who held direct flow rights.<sup>154</sup>
2. Cities were essentially unable to lease water through the Water Bank because trans-basin diversions were prohibited, and the five-year pilot project was too short to allow for long-term municipal planning.<sup>155</sup>
3. SWSP legislation was passed that allowed temporary changes of water rights and included direct flow rights.<sup>156</sup>
4. Continued resistance of water bank operation by water owners concerned about expansion of use of banked water.<sup>157</sup>
5. The water bank required a traditional historical consumptive use analysis, which can be expensive and time-consuming, and may have deterred some water rights owners from using the Water Bank.<sup>158</sup>

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147. *Id.* at Rule 6(C).

148. HAL SIMPSON, STATE ENGINEER, REPORT TO THE GOVERNOR AND LEGISLATURE ON THE ARKANSAS RIVER WATER BANK PILOT PROGRAM 3 (2005), <http://hermes.cde.state.co.us/drupal/islandora/object/co%3A11475>.

149. RULES GOVERNING THE ARKANSAS RIVER WATER BANK PILOT PROGRAM, *supra* note 142 at Rule 6(F).

150. *Id.* at Rule 7(C).

151. *Id.* at Rule 7(D).

152. SIMPSON, *supra* note 148, at 2.

153. *Id.*

154. *Id.* at 3.

155. *Id.*

156. *Id.* at 4.

157. *Id.*

158. *Id.* at 5.

6. Some water owners took advantage of advertising their water right through the Water Bank's website, but then withdrew and dealt directly with potential buyers to avoid administrative fees.<sup>159</sup>
7. Some water districts and ditch companies expressed concerns about operating external to their boundaries, as their bylaws might restrict leasing shares outside the system.<sup>160</sup>
8. Water in the Arkansas River Basin is subject to the Arkansas River Compact, and there was anxiety that Water Bank agreements might violate the Compact. However, this fear was somewhat unfounded as the State Engineer had to review agreements prior to approval.<sup>161</sup>
9. Potential users lacked appropriate economic incentives as depositors could set the asking price at any level, and some viewed the prices as unreasonable.<sup>162</sup>
10. The farming community in the Arkansas River Basin may have been skeptical about new forms of water transfers, especially given the current process of permanently drying up agricultural land.<sup>163</sup>

Most water owners in the Arkansas River Basin have shares in the water rights of a collective mutual ditch or other similar organization. Thus, it has also been suggested that because water bank transactions required individual deposits of water rights, they may have been concerned about reputational harm in the community caused by advertising their willingness to lease their water right out of the mutual ditch.<sup>164</sup>

All of these reasons, many of which embody the same concerns associated with the water court process, contributed to the failure of the currently authorized water banking program as a functional temporary transfer mechanism.

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159. *Id.*

160. *Id.* at 6.

161. *Id.*

162. *Id.* at 6–7.

163. *Id.* at 6.

164. JOHN WILKINS-WELLS & TROY LEPPER, WATER BANKING AND TRADITIONAL IRRIGATION ENTERPRISES: HOW LESSONS FROM THE PAST LEAD TO SUCCESSFUL WATER BANKING AND MARKETING, COLORADO STATE UNIVERSITY AGRICULTURAL EXPERIMENT STATION TECHNICAL REPORT TR06-11 17 (2006), <https://dspace.library.colostate.edu/bitstream/handle/10217/39225/tr06-11.pdf?sequence=1&isAllowed=y>.

*5. House Bill 13-1248 Authorized Leasing-Fallowing Pilot Projects.*

The Colorado legislature encouraged leasing-fallowing agreements by authorizing a pilot program in 2013 through House Bill 13-1248 for agreements between irrigators and municipalities, in which irrigators forego irrigating parcels of land and lease the water temporarily to cities.<sup>165</sup> This program was extended in 2015 to include environmental, industrial, and recreational uses, not just municipal uses, and is authorized through the end of 2018.<sup>166</sup> Through the Agricultural to Municipal Leasing-Fallowing Pilot Program, the CWCB may approve up to ten pilot projects lasting ten years, with no more than three in any major river basin.<sup>167</sup> The purpose of House Bill 13-1248 is to develop and implement leasing-fallowing, hoping to stem permanent agricultural dry up.<sup>168</sup> Furthermore, the pilot program is designed to demonstrate cooperation among water owners such as irrigators, ditch companies, and cities. A key aspect of the pilot program is to evaluate the feasibility of delivering temporary water to municipalities through a streamlined approach for determining historical consumptive use and injury.<sup>169</sup>

The pilot program is operated pursuant to criteria and guidelines developed by the CWCB.<sup>170</sup> The criteria and guidelines set forth the process and requirements for leasing-fallowing pilot project selection, application, and approval.<sup>171</sup> In selecting pilot projects, the CWCB must give preference to projects that would use existing infrastructure.<sup>172</sup> Project proposals must also contain sufficient information for the CWCB to evaluate the specific water rights involved, the land ownership and parcels to be fallowed, the water source used to meet return flow obligations, the process for delivering replacement and transferred water, and all necessary infrastructure.<sup>173</sup> The full proposal must provide

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165. COLO. REV. STAT. § 37-60-115(8) (2015); H.B. 13-1248, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013). House Bill 13-1248 was built on the ashes of House Bill 11-1068, a similar idea that ignited a firestorm of opposition, including calls for one of the authors' heads by a major newspaper.

166. S.B. 15-198, 70th Gen. Assemb., 1st Reg. Sess. (Colo. 2015).

167. § 37-60-115(8); H.B. 13-1248.

168. H.B. 13-1248.

169. THE COLO. WATER CONSERVATION BD., CRITERIA AND GUIDELINES FOR FALLOWING-LEASING PILOT PROJECTS 2 (2013), <http://cwcb.state.co.us/water-management/water-projects-programs/Documents/FallowLease/FallowingLeasingCriteria%2020131119.pdf> [hereinafter CRITERIA AND GUIDELINES FOR FALLOWING-LEASING PILOT PROJECTS].

170. *Id.*

171. *Id.*

172. *Id.* at 6.

173. *Id.* at 7–8.

evidence demonstrating the historical irrigation and include a historical consumptive use analysis.<sup>174</sup> HB 13-1248 and the criteria and guidelines, however, require that applicants use the Lease Fallow Tool (“LFT”) to evaluate historical consumptive use and return flows for leasing-fallowing projects.<sup>175</sup> The LFT is a spreadsheet-based model developed from the Irrigation Systems Analysis Model (“ISAM”) by the Colorado Division of Water Resources in collaboration with private consulting water engineers representing a broad range of water rights owners<sup>176</sup> through an open public process. The LFT is a transparent, simple, and streamlined approach for calculating historical consumptive use and return flow obligations.<sup>177</sup> Moreover, the LFT adopted conservative assumptions for factors such as irrigation efficiency that underestimate historical consumptive use and correspondingly overestimate historical return flows, which virtually eliminates the risk that leasing-fallowing projects will injure other water users or violate Colorado’s intestate obligations.<sup>178</sup>

After submittal of an application incorporating this information, interested or affected parties may submit comments to the proposal.<sup>179</sup> Additionally, projects must meet local land-use regulations, prevent erosion, and comply with noxious weed requirements, which help mitigate the potential negative effects of fallowing land.<sup>180</sup> House Bill 13-1248 has been used successfully, as discussed in detail in Section V.

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174. *Id.* at 9.

175. The Colorado Water Conservation Board, *Lease Fallow Tool*, <http://cwcb.state.co.us/water-management/water-projects-programs/Pages/LeaseFallowTool.aspx> (last visited Mar. 8, 2016) [hereinafter *Lease Fallow Tool*].

176. ISAM is a peer-reviewed computer program developed by the Colorado Division of Water Resources (“DWR”) to compare monthly water budgets of surface water irrigation systems with and without an improvement in order to evaluate the impacts of an improvement to a surface water irrigation system located in the Lower Arkansas Basin. DWR developed ISAM over a couple of years with input from an advisory committee of over a dozen water engineers. It has been in use for five years to analyze irrigation changes for over 100 farms annually, and eliminated the need for individual modeling of each farm. *In re* the Proposed Compact Rules Governing Improvements to Surface Water Irrigation Systems in the Arkansas River Basin in Colorado, Case No. 09CW110 (Water Div. No. 2, Oct. 25, 2009).

177. *Lease Fallow Tool*, *supra* note 175.

178. Banks & Nichols, *supra* note 80, at 91 n.10.

179. CRITERIA AND GUIDELINES FOR FALLOWING-LEASING PILOT PROJECTS, *supra* note 169, at 12.

180. *Id.* at 13.

*6. Other Colorado Initiatives to Address the Buy-and-Dry Problem are Unproven.*

Many stakeholders recognize the current buy-and-dry problem and legal impediments to addressing it. Accordingly, some are developing geographically-specific initiatives to try and share agricultural water within the existing legal and institutional framework. These initiatives are in their infancy and have not yet demonstrated whether they will effectively facilitate water sharing using existing legal mechanisms. A few of these efforts are described below.

i. Colorado River Water Bank: Water Leasing to Avoid a Compact Curtailment

The Colorado River Water Bank is an initiative currently under development that would allow farmers on Colorado's Western Slope to lease water to meet compact obligations, thus avoiding a compact curtailment that would threaten existing transmountain water rights relied on by Front Range municipalities.<sup>181</sup> This market-based approach could work well for Colorado River water, because, according to the Colorado River Compact, Colorado shares an obligation to Lower Basin (downstream) states that would deplete the Colorado River of more than 75 million acre-feet over any ten year period.<sup>182</sup> Moreover, Western Slope water rights holders have more senior Colorado River water rights than Front Range water owners, so a compact call would have a more significant effect on the Front Range.<sup>183</sup> Additionally, irrigation water on the Western Slope is worth around \$28 to \$100 per acre-foot, while Front Range municipalities pay upwards of \$9,000 to \$15,000 per acre-foot, or more.<sup>184</sup> Therefore, a market for Colorado River water looks like a viable option in this state. This water bank would not require physical transfers of water, but rather Front Range cities could pay Western Slope irrigators to conserve water so the cities could continue to divert their junior transmountain water rights to supply their customers.<sup>185</sup>

ii. The Poudre Runs Through It: Regional Agricultural Water Sharing

In Northern Colorado, a local organization called The Poudre Runs Through It Study / Action Work Group recently launched a new

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181. REED WATSON & BRANDON SCARBOROUGH, COLORADO RIVER WATER BANK: MAKING WATER CONSERVATION PROFITABLE, PERC CASE STUDIES 2 (2010), [http://www.perc.org/sites/default/files/pdfs/colo\\_water\\_cs.pdf](http://www.perc.org/sites/default/files/pdfs/colo_water_cs.pdf).

182. Colorado River Compact of 1922, COLO. REV. STAT. ANN. §§ 37-61-101.

183. WATSON & SCARBOROUGH, *supra* note 181, at 5.

184. *Id.*

185. *Id.* at 6.

initiative to study the feasibility of agricultural to urban water sharing.<sup>186</sup> The group is investigating a regional cooperative approach that would allow water rights owners to sell their Poudre River water into an alternative market that would keep the water in the Poudre Basin for a variety of purposes, including agriculture.<sup>187</sup> The current initiative builds upon a study conducted by the Poudre Water Sharing Group that investigated options for reducing buy-and-dry in the Poudre Basin.<sup>188</sup> If successful, this initiative could encourage temporary agricultural water sharing in Northern Colorado.

### iii. South Platte Agricultural Buffer: Open Space Water Leasing

In 2015, the Open Water Foundation secured a grant from the State of Colorado to conduct a feasibility analysis of an Agricultural Land / Water Buffer Program in the South Platte River Basin.<sup>189</sup> This program would create an open space buffer between cities while promoting agricultural production through the use of an IWSA.<sup>190</sup> The purpose is to create an open space system with an IWSA component that allows cities to lease water for municipal use under specified conditions, such as drought years.<sup>191</sup> Additionally, the feasibility study will examine how flexible water rights language can be incorporated into conservation easements.<sup>192</sup> Because conservation easements can be perpetual, agreements like these can help alleviate municipalities' concerns about securing permanent water supplies while also allowing land to remain in agricultural production in perpetuity.<sup>193</sup>

### iv. Proposed Flexible Water Decrees would have Allowed Beneficial Transfers to Unidentified Users for Unspecified Uses.

The Colorado General Assembly recently considered two bills that attempted to introduce more flexibility into water rights through the water court system.<sup>194</sup> House Bill 14-1026 would have allowed water

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186. See *Agricultural and Urban Water Sharing*, THE POUDE RUNS THROUGH IT STUDY / ACTION WORK GROUP, <http://cwi.colostate.edu/ThePoudreRunsThroughIt/WaterSharing.shtml>.

187. *Id.*

188. THE POUDE WATER SHARING WORKING GROUP, A REPORT TO THE COLORADO WATER CONSERVATION BOARD (2013), [http://www.cwi.colostate.edu/other\\_files/Whats\\_New/PWS\\_Final\\_Report\\_5-15-15.pdf](http://www.cwi.colostate.edu/other_files/Whats_New/PWS_Final_Report_5-15-15.pdf).

189. Colorado Water Conservation Board, Grant Agreement with Open Water Foundation, Contract No. CTGG1 2015-3419 1, 18 (2015) (on file at <http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=195748&&dbid=0>).

190. *Id.*

191. *Id.*

192. *Id.* at 19.

193. See *id.*

194. H.B. 15-1038, 70th Gen. Assemb., 1st Reg. Sess. (Colo. 2015); H.B. 14-1026, 69th Gen. Assemb., 2nd Reg. Sess. (Colo. 2014).

owners to apply for a change in use to any beneficial use, rather than designating a specific use.<sup>195</sup> The purpose was to enable water owners to obtain a change-in-use of a water right that could be exercised on a limited basis without identifying the end user or place of use.<sup>196</sup> The bill would have allowed the water court to pre-approve a “flex consumptive use” as long as historical consumptive use was quantified, conditions were imposed to prevent injury, and a fixed delivery point for consumptive water and return flows was established.<sup>197</sup>

A water owner seeking a decree for flex use was required to complete the water court process, and a flex use decree was also subject to reconsideration by the water judge on the question of injury.<sup>198</sup> Furthermore, if the water rights owner fallowed the entire property served by the flex use decree for longer than three consecutive years, the flex use would be automatically nullified.<sup>199</sup> Ultimately, House Bill 14-1026 died in Committee.<sup>200</sup> Opponents of the bill claimed that it allowed illegal speculation because water owners were not required to specify a beneficial use.<sup>201</sup> More importantly, critics feared that the bill would actually encourage buy-and-dry by allowing municipalities to buy and change irrigation water rights without designating an end use for the water, which would discourage temporary agricultural water sharing.<sup>202</sup>

In 2015, a similar bill was introduced with additional provisions intended to address the opponents’ speculation concerns.<sup>203</sup> First, House Bill 15-1038 limited flex use to fifty percent of the historical consumptive use over a ten year period, and any overage would result in nullification of the flex use decree.<sup>204</sup> Second, the bill only allowed for ten flex use decrees in any division at any one time.<sup>205</sup> Similar to House Bill 14-1026, this bill also required a fixed diversion point and prohibited any diversions out of the water division where the water was historically

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195. H.B. 14-1026.

196. *Id.*

197. *Id.*

198. *Id.*

199. *Id.*

200. S. COMM. ON AGRIC., NAT. RES., AND ENERGY, S. COMM. OF REFERENCE REP., H.B. 14-1026, 69th Gen. Assemb., 2d Reg. Sess. (Colo. 2014).

201. Ian Ferrell, *Colorado H.B. 14-1026—Model Legislation or a Trojan Horse?*, 4 ARIZ. J. ENVTL. L. & POL’Y 1039, 1042 (2014).

202. *Id.* at 1043.

203. H.B. 15-1038, 70th Gen. Assemb., 1st Reg. Sess. (Colo. 2015).

204. *Id.*

205. *Id.*

used.<sup>206</sup> The Senate Committee on Agriculture, Natural Resources & Energy postponed this bill indefinitely on March 5, 2015.<sup>207</sup>

Critics remained concerned about two main issues. First, they wanted to protect agricultural water owners who intended to remain in full-time agricultural production from being forced to participate in even more water court cases.<sup>208</sup> They reasoned that water rights owners would have to review all applications for flex use and potentially consult engineers and lawyers to prevent injury to their own water rights.<sup>209</sup> The second primary concern was that despite the changes from the previous proposal, the 2015 bill did not strike the appropriate balance between valid concerns over speculation and providing bona fide irrigators a means to participate in temporary water sharing.<sup>210</sup> Although these bills attempted to deal with the anti-speculation barrier, they did not address other impediments to temporary water rights transfers such as no-injury, expansion of use, and the water court process.

### *B. Examples of Successful Temporary Water Sharing*

Although agricultural water sharing currently faces substantial hurdles in Colorado, other states have successfully implemented similar programs. The next section describes four proven programs in California, Idaho, Washington, and Oregon that demonstrate that a water bank can successfully facilitate water sharing. Each of these states have administrative processes for determining water rights; their experience informs administrative approaches that could be more effective in implementing agricultural water sharing in Colorado than water courts. Three of the four programs are run by state agencies to implement policies of statewide importance, while the fourth is run by a political subdivision of the state pursuant to special state legislation.

#### *1. Palo Verde Irrigation District, California*

In California, a large-scale agricultural water sharing program has been thriving since 2005. There, the Palo Verde Irrigation District

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206. H.B. 15-1038; H.B. 14-1026, 69th Gen. Assemb., 2d Reg. Sess. (Colo. 2014).

207. *Summarized History for Bill Number HB15-1038*, COLORADO GENERAL ASSEMBLY, <http://www.leg.state.co.us/CLICS/CLICS2015A/csl.nsf/BillFoldersHouse?OpenFrameSet> (last visited Feb. 29, 2016).

208. *Flexible Water Markets: Hearing on H.B. 1038 Before the H. Comm. On Agric., Livestock, and Nat. Res.*, 70th Gen. Assemb., 1st Reg. Sess. (Colo. 2015) (statement of Chris Treese, Colorado River District).

209. *Id.*

210. *Id.*

(“PVID”) entered into a thirty-five year agreement with the Metropolitan Water District (“MWD”) of Southern California to supply up to 120,000 acre-feet of water annually to the city while fallowing some irrigated cropland.<sup>211</sup> Over the life of the agreement, PVID will supply up to 3.63 million acre-feet of water to cities including Los Angeles and San Diego.<sup>212</sup>

One potential reason for the success of the PVID agreement is that, unlike Colorado, California uses an administrative system to regulate water rights.<sup>213</sup> Furthermore, California law explicitly allows the State Water Resources Control Board to approve temporary water transfers and also longer-term private agreements such as the one between PVID and MWD.<sup>214</sup> The Board may approve petitions for long-term transfers as long as they do not cause “substantial injury” to other water owners.<sup>215</sup> And this administrative permitting process can be more flexible, especially in times of drought.<sup>216</sup>

## 2. Idaho Water Supply Bank

In Idaho, the legislature created a Water Supply Bank that the Idaho Water Resource Board administers for the purposes of encouraging beneficial use of water, providing adequate supplies for new uses, and providing funding for water facilities.<sup>217</sup> The Water Resource Board reviews and approves applications to rent banked water, and determines whether the use will be consistent with the Board’s rules.<sup>218</sup> The Director of the Department of Water Resources must also approve rentals from the bank.<sup>219</sup> Furthermore, the Director may reject a rental or impose conditions if he or she finds that the use will injure other owners, enlarge

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211. Tony Perry, *Palo Verde Valley Farmers and MWD Find Fallowing Deal a Win-Win, So Far*, L.A. TIMES (Aug. 15, 2015, 8:00 AM), <http://www.latimes.com/local/california/la-me-palo-verde-drought-20150816-story.html>.

212. *PVID/MWD Program*, PALO VERDE IRRIGATION DISTRICT, <http://www.pvid.org/PVID-MWD.html>.

213. Wang, *supra* note 44, at 541.

214. Lawrence J. MacDonnell & Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, 14 HASTINGS W.N.W. J. ENVTL. L. & POL’Y 105, 138, 146–47 (2008).

215. CAL. WATER CODE § 1736 (2015).

216. Wang, *supra* note 44, at 552.

217. IDAHO CODE §§ 42-1761 – 42-1766 (1979); *Water Supply Bank*, IDAHO DEPARTMENT OF WATER RESOURCES <https://www.idwr.idaho.gov/water-supply-bank/overview.html> (last visited Dec. 21, 2015).

218. OVERVIEW OF THE WATER SUPPLY BANK, <https://www.idwr.idaho.gov/files/water-supply-bank/Bank-Overview-FAQ.pdf>.

219. IDAHO CODE § 42-1763.

the original water right, conflict with the local public interest, or adversely affect the local economy.<sup>220</sup>

According to the 2014 annual report, the Water Supply Bank held 250,000 acre-feet of water and paid out over half a million dollars to water rights owners.<sup>221</sup> Currently, the Bank processes more applications to lease water into the bank than to rent water out, but there is a growing trend of applications for combined lease-rental, meaning that the lessors specify a renter for their water.<sup>222</sup> Additionally, four local rental pools are operating in Idaho, each with their own operating rules and pricing.<sup>223</sup>

### 3. *Washington Water Banking*

Similarly, Washington passed legislation in 2003 to allow water banking in the extensively irrigated and agriculturally productive Yakima basin, which it subsequently extended to the entire state in 2009.<sup>224</sup> Banked water is held in the state Trust Water program and can be used for new purposes including instream flows.<sup>225</sup> The Trust Water Program allows water rights owners to hold water rights for future use without relinquishing their priority dates, and in the interim, water can benefit groundwater, instream flows, or other uses.<sup>226</sup> Applicants may use the water bank to mitigate the effects of using water for new purposes, hold the water for later beneficial use, help meet future supply needs, and sell or lease water to third parties.<sup>227</sup> However, water banking must not injure existing water rights owners or be used for temporary potable water or federal projects.<sup>228</sup> In Washington, water banking began as a pilot project in the Yakima River Basin, which now hosts fourteen different water banks.<sup>229</sup> The most active of these banks approved 150 applications

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220. *Id.*

221. IDAHO WATER RESOURCE BOARD, WATER SUPPLY BANK: 2014 REPORT FOR THE BOARD'S WATER SUPPLY BANK, 2 (2014), <https://www.idwr.idaho.gov/files/water-supply-bank/2014-annual-report.pdf>.

222. *Id.*

223. *Water Supply Bank*, *supra* note 217.

224. WASH. REV. CODE § 90.42.040 (2009); *Water Banking*, STATE OF WASHINGTON DEPARTMENT OF ECOLOGY, <http://www.ecy.wa.gov/programs/wr/market/waterbank.html> (last visited Dec. 21, 2015).

225. *Water Banking*, *supra* note 224.

226. *Trust Water Rights Program*, STATE OF WASHINGTON DEPARTMENT OF ECOLOGY, <http://www.ecy.wa.gov/programs/wr/market/trust.html> (last visited DEC. 21, 2015).

227. Peggy Clifford, *2012 Report to the Legislature: Water Banking in Washington State*, STATE OF WASHINGTON DEPARTMENT OF ECOLOGY 3 (2012), <https://fortress.wa.gov/ecy/publications/documents/1211055.pdf>.

228. *Id.*

229. *Id.* at 4.

between its inception in 2010 and the 2012 report.<sup>230</sup> In the Walla Walla River Basin, the Walla Walla Water Bank allows water owners to conserve water and benefit instream flows and endangered species while preserving their water rights.<sup>231</sup> As of 2012, this bank had ninety-two agreements in place representing 8,418 acre-feet annually.<sup>232</sup> Another bank, the Walla Walla Mitigation Exchange, allows new residential water owners to purchase mitigation credits, so they can use well water for purposes such as watering lawns and filling swimming pools.<sup>233</sup> Similarly, the Dungeness Water Exchange sells credits to homeowners to mitigate residential water use.<sup>234</sup>

#### 4. Deschutes Water Alliance Water Bank in Oregon

In Oregon, the Deschutes River Alliance administers the Deschutes Water Alliance Water Bank for the purpose of assuring an adequate supply of water for agricultural, municipal, and environmental uses.<sup>235</sup> Through this water bank, irrigation districts can reallocate conserved water to instream flows, cities, or new lands within the district.<sup>236</sup> Additionally, the Deschutes River Conservancy leases water rights from irrigation districts and landowners for instream flows for one year, five year, or split-season terms.<sup>237</sup> The water right retains its original priority date through this program.<sup>238</sup>

#### 5. Colorado-Big Thompson Project

Colorado-Big Thompson (“C-BT”) units are often cited as the most efficient water market in the entire United States.<sup>239</sup> This water market is operated by the Northern Colorado Water Conservancy District

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230. *Id.* at 5.

231. *Id.* at 7.

232. *Id.*

233. *Id.* at 8.

234. *Id.* at 9.

235. *What is the Deschutes Water Alliance Water Bank?* DESCHUTES RIVER CONSERVANCY, <http://www.deschutesriver.org/what-we-do/water-banking/deschutes-water-alliance-bank/> (last visited Dec. 21, 2015).

236. OREGON’S INSTITUTE FOR WATER AND WATERSHEDS AND INSTITUTE FOR NATURAL RESOURCES, OREGON’S WATER MARKETS 3 (2012), [http://www.deschutesriver.org/Oregon\\_Water\\_Markets.pdf](http://www.deschutesriver.org/Oregon_Water_Markets.pdf).

237. DESCHUTES RIVER CONSERVANCY, WATER RIGHTS LEASING, <http://www.deschutesriver.org/what-we-do/streamflow-restoration-programs/water-rights-leasing/> (last visited Dec. 21, 2015).

238. *Id.*

239. *See, e.g.,* Janis M. Carey & David L. Sunding, *Emerging Markets in Water: A Comparative Institutional Analysis of the Central Valley and Colorado-Big Thompson Projects*, 41 NAT. RES. J. 283 (2001).

(“Northern”). Importantly, C-BT units do not face any of the traditional challenges that the Colorado Water Court process imposes on most water sharing arrangements because C-BT units are derived from decreed transbasin water. As such, there are no associated return flow obligations.<sup>240</sup> The Board of Northern sets the annual yield of C-BT units through a transparent public process. The range of future yield and long-term average yield is apparent from historical records.<sup>241</sup> Furthermore, Northern Water provides C-BT Project rental water information to its constituents who want to rent C-BT water or have C-BT water available to rent, serving as an impartial and effective broker.<sup>242</sup> The rental of C-BT water has been a success by any measure, and demonstrates that Colorado should be able to develop a similar temporary transfer mechanism to facilitate the same type of agricultural water sharing.

These temporary transfers provide successful examples for Colorado as the state addresses increasingly scarce water supplies. Colorado, however, will need to address current legal and institutional impediments to implementing similar programs, such as having only short-term temporary transfer mechanisms, the strict no-injury rule, and the anti-speculation doctrine. In Colorado, the only similar mechanism currently available is an SWSP, which is a much more limited and short-term agreement. Although the PVID agreement served as an inspiration for the Super Ditch leasing-fallowing project (discussed below), the legal landscape in Colorado has proven a significant barrier, as it has taken a number of years for the Super Ditch to get a small pilot project up and running. The Colorado legislature will need to change existing water law to authorize viable agricultural water sharing arrangements to meet Colorado’s Water Plan goal of providing 50,000 acre-feet of additional water supply through alternative transfer mechanisms by 2030.<sup>243</sup>

## V. CASE STUDY OF TEMPORARY TRANSFER MECHANISM AND AGRICULTURAL WATER

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240. Shares in another trans-mountain project, the Twin Lakes Reservoir and Canal Company, are also an example, although the use of Twin Lakes shares is usually not readily available to the public. *City of Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 173 (Colo. 1996).

241. See NORTHERN WATER, C-BT PROJECT QUOTA, <http://www.northernwater.org/AllotteeInformation/C-BTQuota.aspx> (last visited Feb. 1, 2016).

242. See NORTHERN WATER, C-BT PROJECT RENTAL WATER, <http://www.northernwater.org/AllotteeInformation/RentalWater.aspx> (last visited Feb. 1, 2016).

243. COLORADO’S WATER PLAN *supra* note 1, at 6-111.

## SHARING: THE LOWER ARKANSAS VALLEY SUPER DITCH

Of all of Colorado's basins, the Statewide Water Supply Initiative predicts that the Arkansas River Basin (the "Basin") will have one of the largest increases in municipal and industrial water demands by 2050.<sup>244</sup> Demand in the Basin is projected to increase from 254,500 acre-feet per year to 432,500 acre-feet per year.<sup>245</sup> The majority of this demand will be met with municipalities' existing water supplies, the full development of municipalities' conditional water rights, and the implementation of municipalities' other proposed projects and processes.<sup>246</sup>

Unfortunately, the Arkansas River is over-appropriated with no new reliable supplies available for development in the Basin.<sup>247</sup> Under the status quo, this water will primarily be provided by transfers from irrigation.

In the Basin, agricultural to urban water transfers have been common. So far, the Basin has lost over 100,000 irrigated acres to buy-and-dry since 1955.<sup>248</sup> The City of Pueblo initiated the first transfer in the region in 1955 by purchasing the Clear Creek Reservoir and storage rights from the Otero Ditch Company.<sup>249</sup> Other cities including Aurora and Colorado Springs as well as private investors—who sold the water rights to Aurora, Colorado Springs and Pueblo—continued the trend.<sup>250</sup> In addition to urban population growth, low economic returns to farming and the demise of the local sugar beet industry contributed to the dry-up of agricultural land and conversion of water for municipal use.<sup>251</sup> Unfortunately, additional permanent transfers are looming in the future

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244. STATEWIDE WATER SUPPLY INITIATIVE, *supra* note 13, at 4-17.

245. *Id.* (The Colorado legislature approved the Statewide Water Supply Initiative in 2004, through which the Colorado Water Conservation Board identified Colorado's current and future water needs comprehensively through 2030.); MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS, *supra* note 8, at 1.

246. STATEWIDE WATER SUPPLY INITIATIVE, *supra* note 13, at 5-33.

247. THORVALDSON & PRITCHETT, *supra* note 29, at 4.

248. Charles W. Howe, *The Regional Impacts of Transfers of Water from Irrigated Agriculture in the Arkansas Valley of Colorado to In-Basin and Out-of-Basin Non-Agricultural Uses* (Dec. 2002) (unpublished) (University of Colorado, Boulder) (updated). *About*, LOWER ARKANSAS VALLEY WATER CONSERVANCY DISTRICT, <http://www.lavwcd.com/about/>.

249. LAWRENCE J. MACDONNELL & THE NATURAL RESOURCES LAW CENTER, *FROM RECLAMATION TO SUSTAINABILITY: WATER, AGRICULTURE, AND THE ENVIRONMENT IN THE AMERICAN WEST* 51 (1999).

250. *Id.* at 51-52.

251. Chris Woodka, *Sugar beets big business, then disappeared*, THE PUEBLO CHIEFTAIN (March 29, 2009), [http://www.chiefads.com/news/local/sugar-beets-big-business-then-disappeared/article\\_205b5d07-426a-5c81-8a62-ec67765e14c2.html](http://www.chiefads.com/news/local/sugar-beets-big-business-then-disappeared/article_205b5d07-426a-5c81-8a62-ec67765e14c2.html).

and could dry-up an additional 73,000 irrigated acres in this basin by 2050.<sup>252</sup>

### A. *Agricultural Water Sharing in the Lower Arkansas Valley*<sup>253</sup>

Irrigators in the Lower Arkansas Valley in southeastern Colorado are currently reaching agricultural water sharing agreements with municipalities to help stem the growing buy-and-dry problem in the region. This Section first describes the area, then discusses relevant agricultural water transfers, and finally explains the communities' solution to this problem.

#### 1. *The Lower Arkansas Valley*

The Arkansas River arises above Leadville, Colorado and ultimately joins 1,450 miles later with the Mississippi River in Arkansas.<sup>254</sup> The Basin is the largest of Colorado's six major river basins, covering one-third of the surface area and housing one-fifth of the population.<sup>255</sup> However, the Basin's annual average yield is only six percent of Colorado's water supply, and much of this water must be delivered to Kansas by interstate compact.<sup>256</sup> Accordingly, the Basin's population relies on trans-basin diversions from the Colorado River Basin to meet water supply needs. Mountain snow provides the vast majority of the river's water as spring runoff, and the Lower Arkansas Valley (the "Lower Valley") is semiarid between Pueblo, Colorado and Garden City, Kansas.<sup>257</sup> As a consequence, streams on the eastern plains only provide an intermittent supply of water to the ditches along the Arkansas River.<sup>258</sup>

Irrigation development in the Lower Valley began in the mid-1800s and increased dramatically in the late 1800s with the introduction of

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252. STATE WATER SUPPLY INITIATIVE, *supra* note 13, at 4-28.

253. The authors wish to acknowledge and thank Veronique Van Gheem, Esq., for her work on this subject for an earlier unpublished law review article.

254. *Description of Arkansas River Basin*, U.S. GEOLOGICAL SURV., <http://ks.water.usgs.gov/description-of-arkansas-river-basin> (last modified Oct. 28, 2015).

255. David H. Getches, *Meeting Colorado's Water Requirements: An overview of the Issues, TRADITION, INNOVATION, AND CONFLICT: PERSPECTIVES ON COLORADO WATER LAW* (L. MacDonnell ed., 1986).

256. Ark. River Compact, COLO. REV. STAT. §§ 37-69-101 to 37-69-106 (1990).

257. Kenneth R. Watts, U.S. GEOLOGICAL SURVEY, HYDROGEOLOGY AND QUALITY OF GROUND WATER IN THE UPPER ARKANSAS RIVER BASIN FROM BUENA VISTA TO SALIDA, COLORADO, 2000-2003, SCIENTIFIC INVESTIGATIONS REPORT 2005-5179 at 2 (2005).

258. David W. Robbins & Denis M. Montgomery, *The Arkansas River Compact*, 5 U. DENV. WATER L. REV. 58, 60 (2001).

sugar beet production in the area.<sup>259</sup> Currently, there are twenty major irrigation ditches between Pueblo and the Kansas state line.<sup>260</sup> However, multiple trans-basin diversions have been developed in order to meet growing needs, primarily from the Colorado River Basin.<sup>261</sup> The major trans-basin diversion is the Fryingpan-Arkansas Project, which delivers on average 69,200 acre-feet per year.<sup>262</sup>

The Basin encompasses sixteen counties in Colorado and accounted for seventeen percent of the state's employment in 2000.<sup>263</sup> In the Basin, agriculture was less than two percent of employment and agricultural sales value was 1.7 percent of the annual value of sales and services in 2002.<sup>264</sup> However, in the Lower Valley (Baca, Bent, Cheyenne, Crowley, Kiowa, Otero, and Prowers Counties), agricultural sales accounted for thirty percent of this total, and the population of this area depends heavily on agricultural activities.<sup>265</sup>

In the Basin, over 500,000 acres are irrigated with approximately 1.7 million acre-feet of water per year.<sup>266</sup> In the Lower Valley, approximately 340,000 acres are irrigated, and thirty percent of the land base is dedicated to agricultural use.<sup>267</sup> Generally, downstream farmers grow salt-tolerant crops such as alfalfa, grain sorghum, and barley due to irrigation water salinity, while upstream farmers grow less tolerant crops including corn and onions.<sup>268</sup>

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259. MACDONNELL & THE NATURAL RESOURCES LAW CENTER, *supra* note 249, at 26.

260. Robbins & Montgomery, *supra* note 258, at 62.

261. JEDEDIAH ROGERS, U.S. BUREAU OF RECLAMATION, FRYINGPAN-ARKANSAS PROJECT 6 (2006) [http://www.usbr.gov/projects/ImageServer?imgName=Doc\\_1305042036789.pdf](http://www.usbr.gov/projects/ImageServer?imgName=Doc_1305042036789.pdf).

262. Congress authorized the project under Act of Aug. 16, 1962, Pub. L. No. 87-590; *See also Fryingpan-Arkansas Project History*, SOUTHEASTERN CO. WATER CONSERVANCY DIST., <https://secwcd.org/content/fryingpan-arkansas-project-history> (last visited Mar. 2, 2016); *Fryingpan-Arkansas Project*, U.S. BUREAU OF RECLAMATION, [http://www.usbr.gov/projects/Project.jsp?proj\\_Name=Fryingpan-Arkansas+Project](http://www.usbr.gov/projects/Project.jsp?proj_Name=Fryingpan-Arkansas+Project) (last updated Apr. 4, 2013).

263. JENNY THORVALDSON & JAMES PRITCHETT, COLO. STATE UNIV.: DEP'T OF AGRIC. AND RES. ECON., EDR 05-06, ECONOMIC DEVELOPMENT REPORT: PROFILE OF THE ARKANSAS RIVER BASIN 1 (2005), <http://webdoc.agsci.colostate.edu/DARE/EDR/EDR05-06.pdf> [hereinafter ECONOMIC DEVELOPMENT REPORT].

264. COLO. DEP'T OF NAT. RES., ARKANSAS BASIN WATER SUPPLY AND NEEDS REPORT 6-1 § 6.2.1 (2006), <http://hermes.cde.state.co.us/drupal/islandora/object/co%3A13859>; ECONOMIC DEVELOPMENT REPORT, *supra* note 263, at 1.

265. *Id.* at 2.

266. THE COLO. WATER CONSERVATION BD., UPDATE ON STATEWIDE WATER SUPPLY INITIATIVE – ARKANSAS BASIN 3 (2004).

267. ECONOMIC DEVELOPMENT REPORT, *supra* note 263, at 2-3.

268. MACDONNELL & THE NATURAL RESOURCES LAW CENTER, *supra* note 249, at 49.

## 2. *Agricultural Water Transfers in the Lower Arkansas Valley*

Agricultural-to-urban water transfers began in the Basin as early as 1955, when the City of Pueblo purchased the Clear Creek Reservoir and appurtenant storage rights from the Otero Ditch Company.<sup>269</sup> Pueblo further expanded its water supply with purchases in 1971, 1972, and 2009.<sup>270</sup> Additionally, the Crowley Land and Development Company, a private investor, acquired fifty-five percent of the Twin Lakes Reservoir and Canal Company by 1972, promising to produce Christmas trees and lettuce. It subsequently sold the shares to the cities of Aurora, Colorado Springs, and Pueblo for \$1,075 per share.<sup>271</sup> Farmers also sold their interests directly to the cities, and by 1980, the cities owned ninety percent of the Twin Lakes shares.<sup>272</sup>

Economic conditions, including low farm profits and the demise of the sugar beet industry, also contributed to agricultural dry-up in the Lower Valley.<sup>273</sup> For example, the last sugar beet factory in Rocky Ford, Colorado sold its water rights to Resource Investment Group, Ltd. in the 1980s, which made the private investors the majority shareholder in the Rocky Ford Ditch Company.<sup>274</sup> Aurora ultimately acquired all of the ditch company's shares for over \$2,000 per share and 8,250 acre-feet of water per year, which dried up 4,000 acres of farmland.<sup>275</sup> By 2009, over 100,000 acres of irrigated acres in the Lower Valley were permanently dried up due to sales of water for municipal use.<sup>276</sup> Furthermore, additional transfers are looming and could contribute to another 73,000 acres taken out of production by 2050.<sup>277</sup>

## 3. *Super Ditch: Mechanism for Agricultural-urban Water Sharing*

Driven by concerns about buy-and-dry, in 2002, sixty-four percent of voters in Bent, Crowley, Otero, Prowers, and Pueblo Counties approved the formation of the Lower Arkansas Valley Water

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269. *Id.* at 51.

270. Mark Squillace, *Water Transfers for a Changing Climate*, 53 NAT. RESOURCES J. 55, 92 (2013).

271. MACDONNELL & THE NATURAL RESOURCES LAW CENTER, *supra* note 249, at 51-53.

272. Marianne Goodland, *Buying and drying: Water lessons from Crowley County*, THE COLO. INDEP., (July 9, 2015), <http://www.coloradoindependent.com/154354/buying-and-drying-water-lessons-from-crowley-county>.

273. Woodka, *supra* note 251.

274. MACDONNELL & THE NATURAL RESOURCES LAW CENTER, *supra* note 249, at 53.

275. *Id.*

276. *About*, LOWER ARKANSAS VALLEY WATER CONSERVANCY DISTRICT, <http://www.lavwcd.com/about/>.

277. MISSION STATEMENT, KEY FINDINGS, AND RECOMMENDATIONS, *supra* note 8, at 2 fig.3.

Conservancy District (“Lower Ark District”).<sup>278</sup> The Lower Ark District’s purpose is to assure the continued availability of water resources for the long-term economic viability of the Lower Valley.<sup>279</sup> Some of the impetus for this initiative was the loss of Crowley County’s rural community, businesses, and agriculture due to municipal water purchases.<sup>280</sup> The Lower Ark District bought some farmland and acquired conservation easements but could not compete financially with thirsty cities, so the District started looking to agricultural water sharing as an alternative to buy-and-dry.<sup>281</sup>

Irrigators in the Lower Valley expressed positive reactions to agricultural water sharing following a workshop in 2006, focusing on innovative ideas including the Palo Verde Irrigation District model (discussed in Section IV).<sup>282</sup> Subsequently, the Lower Ark District commissioned an engineering firm to study water available for leasing and potential eligible ditches.<sup>283</sup> The report identified eight ditches that could participate, found that large amounts of water were available, and it concluded that forty percent of eligible irrigators could participate, assuming 25,000 acre-feet per year of demand and a three out of ten year crop rotation.<sup>284</sup> Following a field trip for farmers to talk with farmers enrolled in the PVID leasing program, the Lower Ark District convened a steering committee of farmers in 2007 to develop an agricultural water sharing program for the Lower Valley.<sup>285</sup>

The Lower Ark District did not intend to manage the water sharing program, but rather helped establish the Lower Arkansas Valley Super Ditch Company (the “Super Ditch”) for that purpose.<sup>286</sup> In 2008,

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278. PETER D. NICHOLS, DEVELOPMENT OF LAND FOLLOWING WATER LEASING IN THE LOWER ARKANSAS VALLEY 26 (2002 THROUGH MID 2011) (citing *In re the Lower Arkansas Valley Water Conservancy District*, Case No. 02CV793 (Pueblo Cty. Dist. Ct. Nov. 21, 2002)).

279. *In re the Lower Arkansas Valley Water Conservancy District*, Case No. 02CV793.

280. Telephone interview with Loretta Kennedy, founding Board member, Lower Arkansas Valley Water Conservancy District (June 2, 2011).

281. Telephone interview with Lynden Gill (June 13, 2011).

282. JAY WINNER & MARY LOU SMITH, COLORADO’S “SUPER DITCH:” CAN FARMERS COOPERATE TO MAKE LEMONADE OUT OF LEMONS? URBANIZATION OF IRRIGATED LAND AND WATER TRANSFERS USCID 2008 PROCEEDINGS 153 (2008), [https://dspace.library.colostate.edu/bitstream/handle/10217/46620/107\\_Proceedings%20008%20USCID%20Phoenix%20Winner.pdf?sequence=6&isAllowed=y](https://dspace.library.colostate.edu/bitstream/handle/10217/46620/107_Proceedings%20008%20USCID%20Phoenix%20Winner.pdf?sequence=6&isAllowed=y).

283. NICHOLS, *supra* note 278, at 30 (citing HDR ENGINEERING, INC., LOWER ARKANSAS VALLEY WATER LEASING POTENTIAL PRELIMINARY FEASIBILITY INVESTIGATION 2 (Aug. 2006)).

284. *Id.* at 31 (citing HDR ENGINEERING, INC., LOWER ARKANSAS VALLEY WATER LEASING POTENTIAL PRELIMINARY FEASIBILITY INVESTIGATION 5 (Aug. 2006)).

285. Telephone interview with Bill Hancock (June 13, 2011).

286. Telephone interview with Jay Winner (June 6, 2011).

shareholders of the Rocky Ford High Line Canal, Oxford Farmers Ditch, Otero Canal, Catlin Canal, Holbrook Canal, and Fort Lyon Canal (later joined by Bessemer Ditch) formed the Super Ditch, a Colorado for-profit corporation that is managed by a Board of Directors elected by Lower Valley irrigators.<sup>287</sup> This corporate form was chosen to help address three main concerns: creating an organization secure from municipal takeover as cities bought ditch shares, maximizing short and long-term value of water, and fallowing some land continuously and other land rotationally.<sup>288</sup> Moreover, individual irrigators needed an agency that would allow them to work in concert when negotiating with municipalities.<sup>289</sup> The Super Ditch fulfills that need and can negotiate on behalf of irrigators to lease water to other water owners through long term leases, interruptible water supply agreements, and water banking.<sup>290</sup> The Super Ditch planned to negotiate long-term lease terms and conditions with municipalities, which individual farmers could choose to accept and enter into agreements as lessors.<sup>291</sup> If insufficient water was pledged, the Super Ditch would re-open negotiations to improve terms, while irrigators remained free to use their water or seek other leases.<sup>292</sup> The goal of the Super Ditch was to facilitate concerted action by irrigators in the Lower Valley while maintaining individual freedom of choice.<sup>293</sup>

The Super Ditch immediately started negotiating with potential lessees, a process that proved difficult due to the experimental nature of the program.<sup>294</sup> Municipalities were reluctant to agree to a price without knowing which irrigators would provide the water because they wanted to evaluate yield and reliability, while irrigators would not commit to a lease without knowing the price.<sup>295</sup> Accordingly, the Super Ditch entered

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287. See Lower Arkansas Valley Super Ditch Company Articles of Incorporation (May 7, 2008).

288. In addition, the Lower Ark District lacks legal authority to lease the farmers' water for use outside the District. COLO. REV. STAT. § 37-45-118(1)(b)(I)(B), (C) (2015).

289. BILL HANCOCK, CONSERVATION PROGRAM MANAGER, LOWER ARKANSAS VALLEY WATER, LOWER ARKANSAS VALLEY WATER CONSERVANCY DISTRICT, SUPER DITCH TO BE INCORPORATED (April 28, 2008), <http://www.lavwcd.com/news/superditch2.html>.

290. Lower Arkansas Valley Super Ditch Company, Articles of Incorporation § 2.1 (May 7, 2008).

291. WINNER & SMITH, *supra* note 282, at 158.

292. THOMAS P. MCMAHON, JONES & KELLER, P.C., ANTITRUST IMPLICATIONS OF PLAN BY LOWER ARKANSAS VALLEY SUPER DITCH COMPANY TO COLLECTIVELY LEASE WATER RIGHTS (2008).

293. See WINNER & SMITH, *supra* note 282, at 160.

294. Telephone interview with John Schweizer (June 13, 2011).

295. E-mail from Alan Hamel, Exec. Dir., Pueblo Bd. of Water Works, to author (June 3, 2008).

into two nonbinding “terms sheets” in 2010 in addition to developing pilot programs.<sup>296</sup> First, the Super Ditch and Pikes Peak Regional Water Authority signed a terms sheet for 8,020 acre-feet per year at \$500 per acre-foot for lease terms up to forty years.<sup>297</sup> Second, the Super Ditch and Aurora signed a terms sheet for 10,000 acre-feet per year for three years in any ten-year period, up to 133,197 acre-feet through 2048.<sup>298</sup>

The Super Ditch also tried and failed to secure an SWSP for temporary water leasing in 2012. The Super Ditch applied for a one-ditch, one-year SWSP in an effort to demonstrate proof of concept of a large-scale rotational leasing-fallowing program.<sup>299</sup> Although the State Engineer approved the SWSP, it was subject to an unprecedented number of onerous conditions. Even with a panoply of protective terms and conditions, Tri-State Generation and Transmission and others sued, claiming that the SWSP would injure their water rights and that the State Engineer exceeded his authority in approving the application.<sup>300</sup> The Super Ditch subsequently withdrew its application and the SWSP because the water ran out during the litigation and the plan consequently could not operate.

### *B. Catlin Pilot Project: A Successful Agricultural Water Sharing Arrangement*

Pursuant to House Bill 13-1248, the Super Ditch and the Lower Arkansas Valley Water Conservancy District submitted an application for a leasing-fallowing pilot project called the Catlin Pilot Project, which the CWCB approved in January 2015.<sup>301</sup> The Catlin Pilot Project uses shares of water from the Catlin Canal Company to provide up to 500 acre-feet annually of temporary municipal water to the Town of Fowler Wells and the City of Fountain.<sup>302</sup> The thirty-five mile long Catlin Canal diverts water from the Arkansas River, which has historically been used to irrigate between 17,000 and 18,660 acres of farmland.<sup>303</sup> The six participating farms represent close to 1,000 acres of historically irrigated

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296. TERMS SHEET FOR SUPER DITCH / PPRWA AGREEMENT (Jun. 2, 2010).

297. *Id.*

298. *Id.*

299. Answer at 2, Amity Mut. Irrigation Co. v. Wolfe, 12CW46 (2012).

300. Complaint, Amity Mutual Irrigation Co. v. Wolfe, 12CW46 (2012).

301. CRITERIA AND GUIDELINES FOR FALLOWING-LEASING PILOT PROJECTS, *supra* note 169.

302. MARTIN AND WOOD WATER CONSULTANTS, INC., LETTER REPORT 1, 16 (Sept. 25, 2014), <http://cwcb.state.co.us/water-management/water-projects-programs/Documents/FallowLease/Catlin/CatlinCanalPilotProject.pdf>.

303. *Id.* at 2.

land, and each will fallow no more than thirty percent of its acreage per year under this ten-year project.<sup>304</sup> In order to calculate historical consumptive use, the participants used the third version of the LFT (discussed further in Section VI) provided by the Division of Water Resources, which indicated that acres fallowed in 2015 represented 477.5 acre-feet of consumptive use.<sup>305</sup> In order to protect existing water rights, the LFT uses conservative assumptions that underestimate historical consumptive use and overestimate return flows.<sup>306</sup> Accordingly, the use of the LFT reduced injury disputes and also engineering costs when used for the Catlin Pilot Project.<sup>307</sup> Already after its first year in operation, the Catlin Pilot Project has provided 400 acre-feet of water for municipal uses without permanently drying up agricultural land or resulting in an expensive water court case.<sup>308</sup>

The Catlin Pilot Project demonstrates that temporary agricultural water sharing is possible in Colorado. Moreover, Colorado's Water Plan directs the legislature to consider such options to limit future buy-and-dry.

## VI. RECOMMENDATIONS FOR TEMPORARY TRANSFER MECHANISMS FOR AGRICULTURAL WATER SHARING

Essentially, every existing or proposed temporary transfer mechanism for agricultural water sharing in Colorado contemplates a leasing-fallowing scenario where an irrigator would fallow irrigated land for some period of time and make the water's historical consumptive use available to another user, for instance, by a municipality. Agricultural water sharing arrangements can help minimize buy-and-dry because each historically irrigated field is generally fallowed for only a few years. The shared water allows municipalities to firm up their long term water supplies and to deal with future conditions, such as drought or post-drought storage replenishment. Essentially, an irrigated field can function as a reservoir that can be tapped (fallowed) when necessary to meet municipal or other demands.

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304. *Id.* at 2, 6.

305. *Id.*

306. Banks & Nichols, *supra* note 80, at 91 n.10.

307. *Id.*

308. LOWER ARKANSAS VALLEY WATER CONSERVANCY DISTRICT, 2015 ANNUAL REPORT: H.B. 13-1248 CATLIN CANAL COMPANY ROTATIONAL LAND FALLOWING MUNICIPAL LEASING PILOT PROJECT 1 (2015).

As discussed above at Section IV, many Western states have healthy, functioning water banks that facilitate water sharing to cope with unmet water demands and limited water supplies. Conversely, water users in Colorado—with the exception of those users who have C-BT units (discussed above)—still struggle to implement water sharing arrangements due to inflexible water right decrees, current water laws, the water court process, and entrenched water interests who use the law and the water court process to frustrate change. The primary challenge seems to be that proving no injury in a change-of-use case to the water court is prohibitively costly and time-consuming, and very risky for irrigators.<sup>309</sup> Furthermore, to comply with the anti-speculation doctrine, applicants must specifically identify every new use and location of a change in water right.<sup>310</sup> Scholars, however, have suggested that streamlined administration of agricultural water sharing could help address these hurdles.<sup>311</sup> Specifically, suggestions include: handling agricultural sharing transactions administratively rather than in water court, shifting the burden of proving injury onto the opposers if an applicant employs an approved, conservative methodology to calculate historical consumptive use and return flow obligations to limit the risk of injury, and waiving anti-speculation requirements for temporary agricultural water sharing agreements.<sup>312</sup> Many of these impediments either do not exist or have been removed to facilitate water sharing in other states (discussed above) and Colorado's current law would have to change to implement these proposals. The first two of these ideas are particularly timely, because they build on experience with temporary transfer mechanisms and do not challenge established legal doctrines. The discussion below explores their potential to facilitate agricultural water sharing in Colorado.

### A. *Connecting Supply and Demand*

A major challenge to implementing temporary transfer mechanisms is the absence of any market mechanism to connect interested irrigators with potential users. Buy-and-dry historically involved individual transactions between irrigators and municipalities, middlemen

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309. NAVIGATING A PATHWAY TOWARD COLORADO'S WATER FUTURE, A REVIEW AND RECOMMENDATIONS, COLORADO'S DRAFT WATER PLAN, GETCHES-WILKINSON CENTER, COLORADO WATER WORKING GROUP 33 (April 2015), [https://www.colorado.edu/law/sites/default/files/Navigating%20a%20Pathway.Publication.Web\\_.pdf](https://www.colorado.edu/law/sites/default/files/Navigating%20a%20Pathway.Publication.Web_.pdf).

310. *Id.*

311. *Id.* at 34.

312. *Id.*

functioning as brokers, often on behalf of municipalities, or municipalities actively seeking out potential sellers, frequently at times of economic stress in the local agricultural community. Irrigators are accordingly wary of negotiating individually with municipalities. In contrast, efficient markets are transparent so that prices reflect the fact that everyone has access to all relevant information.<sup>313</sup>

Colorado's Water Plan, consistent with the many temporary transfer statutes adopted by the Colorado legislature,<sup>314</sup> calls for widespread agricultural sharing to meet future municipal needs and minimize buy-and-dry.<sup>315</sup> The CWCB, as the official body charged with setting the State's water policy<sup>316</sup> as well as implementing Colorado's Water Plan,<sup>317</sup> is a logical choice to nurture a temporary transfer mechanism to facilitate agricultural water sharing. The CWCB is charged with implementing other policies of statewide importance, including the instream flow program and recreational in-channel diversions (so-called RICDs).<sup>318</sup> Moreover, the CWCB has demonstrated through its implementation of the House Bill 13-1248 Leasing-Fallowing Program that it has the expertise and credibility within the water community to wade more deeply into this essential sharing mechanism for the future of Colorado.

A program established to facilitate temporary transfers and agricultural water sharing should be operated pursuant to formal rules that are promulgated by the CWCB and approved by a water court. While the House Bill 13-128 pilot program is operated under administrative policy, the formal rulemaking process for a permanent program will provide all interested parties an opportunity to actively participate in their development to ensure that agricultural sharing under such program will not result in injury. This will give the entire water community their day in court, as the community had with both the instream flows and RICDs.<sup>319</sup> In addition, water rights owners may address their concerns about expansion of use and historical return flows

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313. See generally ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS (1776).

314. See *supra* Section IV.

315. COLORADO'S WATER PLAN, *supra* note 1.

316. COLO. REV. STAT. § 37-60-106 (2015).

317. COLORADO'S WATER PLAN, *supra* note 1.

318. COLO. REV. STAT. § 37-60-123.7 (2014); COLO. REV. STAT. § 37-92-102(5) (2015); S.B. 06-037, 65th Gen. Assemb., 2nd Reg. Sess. (Colo. 2006).

319. *Instream Flow Appropriations*, COLO. WATER CONSERVATION BOARD DEP'T OF NAT. RESOURCES, <http://cwcb.state.co.us/environment/instream-flow-program/Pages/InstreamFlowAppropriations.aspx>; *Recreational In-Channel Diversions*, COLO. WATER CONSERVATION BOARD DEP'T OF NAT. RESOURCES, <http://cwcb.state.co.us/environment/recreational-in-channel-diversions/Pages/main.aspx>.

to prevent injury in one proceeding, rather than having to defend their water rights in multiple proceedings as required by water court change applications.

Irrigators may also be more likely to participate in water sharing if there is an uninterested agent that provides a level playing field with municipalities. This would help alleviate the issue of municipalities unilaterally setting unreasonable prices.

### *B. Analyzing Historical Consumptive Use, Return Flow, and Interstate Obligations*

Another key attribute of a temporary transfer mechanism that will facilitate water sharing is having clearly defined and simplified means to determine historical consumptive use, return flow obligations, and interstate obligations. As discussed in Section IV, one of the main problems is the cost and time involved in calculating historical consumptive use and return flows to avoid injury, as a farm-by-farm analysis is necessary when seeking approval under existing mechanisms.

One notable exception to this is the House Bill 13-1248 pilot program. As discussed above, House Bill 13-1248 requires that applicants use the Lease Fallow Tool (“LFT”) to evaluate historical consumptive use and return flows for leasing-fallowing projects.<sup>320</sup> By using conservative assumptions for factors such as irrigation efficiency that underestimate historical consumptive use and correspondingly overestimate return flows, use of the LFT increases the amount of water in the river compared to historical use of a water right. This allays fears of injury and virtually eliminates the risk that leasing-fallowing projects will injure other water users or violate Colorado’s interstate obligations.<sup>321</sup> Although historical consumptive use analysis is still necessary for temporary sharing agreements, experience with the Catlin Pilot Project<sup>322</sup> proved the LFT to be a comparatively simple, straightforward and transparent method to make these calculations. Furthermore, the CWCB not only allows, but actually requires the use of this tool in leasing-fallowing pilot projects initiated after 2015.<sup>323</sup> Conservative, transparent calculations of historical consumptive use and return flow obligations will likely reduce concerns about injury and related conflict among water users by assuring there will be no enlargement of use.

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320. *Lease Fallow Tool*, *supra* note 175.

321. Banks & Nichols, *supra* note 80, at 91 n.10.

322. *Supra* Section V(B).

323. CRITERIA AND GUIDELINES FOR FALLOWING-LEASING PILOT PROJECTS, *supra* note 169, at 9.

Development of the LFT by the State Engineer and CWCB with public input from practicing professionals enhanced its credibility. The State Engineer and CWCB not only are seen as objective but most also recognize that their statutory responsibilities ensure a conservative approach. The State Engineer is the logical choice to build on the experience of the LFT for a temporary transfer mechanism to implement agricultural sharing statewide. House Bill 13-1248 appropriately played to the State Engineer's strengths in engineering and administration, placing responsibility for policy implementation with the CWCB—an appropriate model for new temporary transfer mechanisms.

State Engineer approval, as with ubiquitous SWSPs, should alleviate concerns about expansion of use and return flows and violation of interstate obligations. However, to assure interested parties that agricultural sharing will not result in injury, the State Engineer should promulgate the methodology for calculation of historical consumptive use and return flow obligations by rule to give the entire water community their day in court, much as he did with the ISAM.<sup>324</sup> Again, it is advantageous to allow water rights owners to address their concerns about expansion of use and historical return flows to prevent injury all at one time, rather than requiring the owners to defend their water rights in multiple proceedings as required by water court change applications.

In 2016, House Bill 16-1392 was introduced, which proposed enactment of these concepts in a new statute to establish a statewide water bank.<sup>325</sup> The sponsors withdrew the legislation, however, in the absence of sufficiently widespread support from the State, the West Slope, and the South Platte River Basin.

## VII. CONCLUSION

Colorado is at a crossroads of continuing the status quo of buy-and-dry, or embarking on a path that encourages agricultural water sharing in order to minimize the permanent dry-up of irrigated land. As discussed above, current temporary transfer mechanisms in Colorado are insufficient to truly meet the challenges to achieve widespread agricultural water sharing and minimize buy-and-dry.

Numerous initiatives demonstrate that it is possible for agricultural producers and municipal water providers to collaborate and share resources. Other states have successfully implemented water sharing

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324. *In re Proposed Compact Rules Governing Improvements to Surface Water Irrigation Systems in the Ark. River Basin in Colo.*, Case No. 09CW110 (Water Div. No. 2, Oct. 25, 2009).

325. H.B. 16-1392, 70th Gen. Assemb., 2nd Reg. Sess. (2016).

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agreements, like the PVID/MWD contract that allows cities to obtain water during dry years without permanently removing agricultural land from production. In Colorado, the Catlin Pilot Project shows that stakeholders are willing to enter into agricultural water sharing arrangements despite institutional and legal challenges.

To encourage agricultural water sharing in Colorado, it is vital to create a friendlier institutional and legal structure that removes some of the barriers to these agreements. Lawmakers should facilitate this solution by allowing agricultural water sharing agreements to be handled administratively, requiring applicants to use conservative tools like the LFT to prevent injury, vesting authority in the State Engineer to approve agricultural water sharing terms and conditions to similarly prevent injury, and authorizing the CWCB to establish and operate a water bank to connect willing irrigators and interested water users.