

***Reclaimed Water: Terminology, 2025 Sunset,  
and Streambed “Managed” Recharge***

**May 1, 2017**

The strategic use of reclaimed water is a key component of Arizona’s water policy. Since Arizona is largely an arid state, the reuse of water is central to ensuring the state continues its legacy of innovative water planning. While decades ago wastewater was viewed as a nuisance, today it is a valuable asset that cities and others use with care. For example, within the Central Arizona Project’s three-county service area, more than 95 percent of all wastewater is treated and put to use.<sup>1</sup> Cities and water providers treat and transport this water for a variety of purposes, including farming, irrigation of parks, schools and golf courses, power generation, restoring riparian areas, and augmenting water supplies in aquifers for future drinking water supplies.<sup>2</sup>



There is widespread agreement that this valuable resource matters for Arizona’s future. In fact, in 2010 the final report for the *Governor’s Blue Ribbon Panel on Water Sustainability* recognized that the reuse and storage of reclaimed water is vital in managing Arizona’s water supplies and meeting the goals of the Groundwater Management Act.<sup>3</sup> The report outlined numerous ways water providers utilize reclaimed water to augment their water resource portfolios. A key challenge in the continued use of this resource is to enact policies that promote safe and effective reuse and increase public acceptance.

Even though Arizona has an innovative water reuse framework, the state’s statutes as currently written present at least three challenges for the state’s reclaimed water users. The first is how the law refers to reclaimed water. Arizona’s statutes and administrative rules in many cases use different terms to refer to reclaimed water. State law should be changed to utilize a single term. Uniformity among statutes, rules, and terminology by the state’s administrative agencies and water providers will help decrease confusion and improve messaging to the media and public about the role of reclaimed water.

Second, under current law no water user in the state will be able to accrue long-term storage credits with reclaimed water starting in 2025.<sup>4</sup> While 2025 is less than 8 years away, cities and other water users must have certainty to engage in long-range planning and to make the necessary investments for new reclaimed water storage projects. Recognizing the

---

<sup>1</sup> Tim Thomure, *M&I Water Conservation Practices and Reuse in the CAP Service Area*, HDR Technical Memo to CAP Staff, 17 (December 3, 2013).

<sup>2</sup> *Id.*

<sup>3</sup> *Governor’s Blue Ribbon Panel on Water Sustainability: Final Report*, ADEQ, ACC, & ADWR, 7 (Nov. 30, 2010).

<sup>4</sup> A.R.S. § 45-852.01(B); § 45-802.01(f).

importance of storing reclaimed water, in 2014 ADWR recommended within its *Strategic Vision* to remove the 2025 sunset.<sup>5</sup> Eliminating this provision will continue the incentive for cities and water users to store reclaimed water underground to augment aquifers.

Third, state statute currently imposes a 50 percent “cut to the aquifer” for putting reclaimed water in streambed “managed” recharge projects.<sup>6</sup> A “cut to the aquifer” is water that the storing party cannot pump later because it stays in the ground for the benefit of the aquifer. Despite the multi-use and community benefits of managed projects, this 50 percent cut may drive certain water users to take reclaimed water out of some of Arizona’s rivers that rely on the water to flow.<sup>7</sup>

The purpose of this paper is to discuss the history, context, and some of the implications of these provisions and practices, as well as reasons why discussion and further action may be appropriate.

### **Terminology**

In the coming years, water users in Arizona will likely reuse water in new and innovative ways. This could include adopting technologies and practices that allow for the direct reuse of water for drinking water supplies and other purposes. For this to become a reality, the media and public will need to have a greater understanding about water reuse.

In order to engage the media and public about this issue, it is vital that the state’s administrative agencies and water users develop standard terminology. This will help in messaging the importance of this resource going forward. Currently, different administrative agencies in the state and even different state statutes use multiple terms to refer to the reuse of water. For example, water quality statutes that ADEQ administers use the term “reclaimed water,” while recharge statutes ADWR administers use the term “effluent.”<sup>8</sup> Some entities and groups use a third term, “recycled water,” including the Governor’s Water Augmentation Council’s Recycled Water Committee.

This paper will use the term “reclaimed water.” However, beyond this paper a thoughtful discussion and decision needs to be made about what to call this resource to ensure greater understanding and acceptance from the public. Amending state statutes and rules to utilize a uniform term would go a long way towards achieving this objective.

### **2025 Sunset**

Under current law, reclaimed water storage will not be eligible for long-term storage credit accrual beginning January 1, 2025.<sup>9</sup> Removing the 2025 sunset for reclaimed water is

---

<sup>5</sup> ARIZ. DEP’T WATER RES., *ARIZONA’S NEXT CENTURY: A STRATEGIC VISION FOR WATER SUPPLY SUSTAINABILITY* 19, 70 (2014).

<sup>6</sup> A.R.S. § 45-852.01 (C)(1).

<sup>7</sup> See, e.g., Bureau of Reclamation, *Final Environmental Assessment*, 3 (August 2016).

<sup>8</sup> See, e.g., A.R.S. § 45-101(4); 49-201(32).

<sup>9</sup> A.R.S. § 45-852.01(B); § 45-802.01(f).

good water policy for the state, as this change will incentivize continued augmentation of groundwater supplies. The state has recognized the importance of changing this policy. In 2014, ADWR's *Strategic Vision for Water Supply Sustainability* included the removal of the 2025 sunset in the Department's 10-year action plan.<sup>10</sup>

The 2025 sunset is less than 8 years away. This creates some level of uncertainty as cities and water users plan and invest in future water storage projects for reclaimed water. AMWUA staff understands that multiple water users outside of the AMWUA cities are concerned about proceeding on specific recharge projects as a result of the 2025 sunset.

In addition to being good water policy, such a change will aid cities in utilizing their water beneficially. The state's largest cities have spent enormous sums on pipes and infrastructure to deliver reclaimed water to golf courses, parks, large-scale development, and other water users. After meeting customer demands, many cities have additional reclaimed water to put to beneficial use by recharging it for later use.

### Managed Recharge Explained

As currently written, Arizona's statutes allow an entity that recharges reclaimed water underground to accrue "credits" for that water and later pump it from the aquifer.<sup>11</sup> The ability to accrue long-term storage credits through the recharge of reclaimed water provides an incentive to augment groundwater supplies.<sup>12</sup>

Water recharge in Arizona occurs by several methods including spreading basins, aquifer storage and recovery (ASR) wells and vadose-zone wells. In addition to these methods, Arizona law allows water users to accrue long-term storage credits by discharging water in a normally dry river channel if ADWR designates it as a managed storage facility.<sup>13</sup> In order to accrue credits, the water must be eligible for recharge under state law, thus excluding naturally occurring storm flows.<sup>14</sup> As seen in the chart below, there are currently six managed recharge projects in the state.



Project Name	Location	Permit Holder	Annual Permitted	Water Type	Length	2015 Deliveries	2014	2013
Lower Santa Cruz	Santa Cruz River near Tucson	Tucson, Metro Water, Marana, Pima County, and others	43,000 AF	Effluent	17.91 mi	32,150	30,261	15,624
Agua Fria Managed	Agua Fria River, Phoenix	CAWCD	100,000 AF	CAP	4.04 mi	12,288	9,726	15,631
Hassayampa	Western Phoenix AMA	Hassayampa Ventures	50,000 AF	CAP	33 mi	3,564	0	0
Casa Grande Managed	Casa Grande	City of Casa Grande	3,500 AF	Effluent	6 mi	0	0	N/A
Oldberg Dam	GRIC Reservation, Southern Phx. AMA	GRIC	7,500 AF	CAP	7 mi	3,194	N/A	N/A

<sup>10</sup> ARIZ. DEP'T WATER RES.; ARIZONA'S NEXT CENTURY: A STRATEGIC VISION FOR WATER SUPPLY SUSTAINABILITY (2014).  
<sup>11</sup> See A.R.S. § 45-852.01; A.R.S. § 45-834.01.  
<sup>12</sup> See A.R.S. § 45-852.01; A.R.S. § 45-834.01.  
<sup>13</sup> A.R.S. § 45-852.01.  
<sup>14</sup> See A.R.S. § 45-852.01.

Like constructed underground storage facilities, state law directs ADWR to give credits to an entity storing water at a managed facility at a rate of 95 percent of the recharged amount.<sup>15</sup> However, there is an important exception. If an entity stores reclaimed water in a managed facility, the law only allows the party storing the water 50 percent credit.<sup>16</sup> The law thus makes a distinction between reclaimed water and other types of water. As a point of reference, other categories of recharge have cuts to the aquifer in statute ranging from 10 percent to zero percent depending on the water type and other circumstances.<sup>17</sup>

The legislative purpose behind the 50 percent provision was not based on hydrology. The Legislature included it in conjunction with other underground water storage provisions it passed in 1994.<sup>18</sup> Based on discussions and interviews with ADWR staff and others, it appears that the 50 percent number was a legislative compromise between those that wanted 100 percent and those that wanted zero percent credit.<sup>19</sup> One former ADWR employee suggested that ADWR promoted the 50 percent provision in order to incentivize deliberate, constructed recharge as opposed to riverbed discharge of water that was occurring anyway.<sup>20</sup> Discharging treated wastewater into riverbeds was the practice for wastewater disposal in the early 1990s before the Legislature passed the law.

In addition to this 50 percent limitation, the law states that long-term storage credits from reclaimed water stored at a managed facility cannot be used to demonstrate an assured or adequate water supply.<sup>21</sup> This provision may limit the market for these credits to buyers that

---

<sup>15</sup> A.R.S. § 45-852.01(C).

<sup>16</sup> A.R.S. § 45-852.01 (C)(1). The one exception to this exception is if the effluent is stored at a managed facility that could add value to a national park, national monument, or state park—although it appears this provision has not been used before. *See* A.R.S. § 45-852.01(C). Based on discussions with entities in Southern Arizona, it does not appear likely that impacted entities will seek a monument or state/national park designation with respect to the Santa Cruz River.

<sup>17</sup> A.R.S. § 45-852.01(C).

<sup>18</sup> Session Laws 1994, Ch. 291, § 32.

<sup>19</sup> Conversation with ADWR Staff (January 4, 2017).

<sup>20</sup> Kathy Jacobs, Former Director of the Tucson AMA, Tucson-area Stakeholder Discussion Relating to Managed Recharge, Water Resources Research Center (March 17, 2017).

<sup>21</sup> A.R.S. § 45-853.01. The one exception in the statute to this requirement is that credits may be used for an assured or adequate water supply if the water is stored at a facility that adds value to a national park, monument, or state park. *Id.*

have no need to develop an assured or adequate water supply, including the Water Bank and CAGRD.

The 50 percent limitation for reclaimed water impacts certain storers in particular, such as Tucson-area entities that have rights to reclaimed water discharged into the Santa Cruz River. The largest holders of this water include Tucson Water, the Secretary of Interior, Pima County, and Metro Water District. The City of Casa Grande also has a managed facility for reclaimed water, but it has not recently stored water there. Managed recharge currently occurs in the Phoenix AMA with Colorado River water, and is therefore unaffected by the 50 percent limitation.

*While this analysis explores some of the impacts of increasing credit accrual at managed projects, this analysis does not advocate for a specific amount or percentage going forward.*

### **Hydrology & Accounting**

From a hydrologic perspective, dry riverbeds are often favorable locations for recharge.<sup>22</sup> For this reason, several constructed spreading basins, including SRP's GRUSP facility and others, are located at or near river channels. Although discharges into dry riverbeds are highly effective at recharging water, some hydrologists believe that constructed spreading basins function better at recharging water as slow moving water has more weight and pressure driving it into the ground.<sup>23</sup>

The infiltration rates at managed recharge sites are highly variable. For example, in 2012 and 2014, the Lower Santa Cruz managed project recharged 25,500 and 31,000 acre-feet respectfully. This equates to a recharge rate of 52 and 68 percent of the total water delivered to the project in those years.<sup>24</sup> However, in 2015, that number increased to 89 percent as a result of the increased water quality from the two renovated water treatment plants along the Santa Cruz River; water quality being one of many factors that influences recharge rates.<sup>25</sup> Tucson Water estimates that the rate may even be higher now.<sup>26</sup> In addition to water quality, other factors influencing recharge include clogging of river channels by biofilms and suspended particles, hydrogeologic properties of the stream, and the speed of stream flow.<sup>27</sup> Infiltration rates can also increase as the result of the scouring of streambeds from large storm flows.<sup>28</sup>

---

<sup>22</sup> Conversation with ADWR Staff (January 4, 2017).

<sup>23</sup> Conversation with ADWR Staff (January 4, 2017).

<sup>24</sup> Bureau of Reclamation, *Final Environmental Assessment for the Construction of a Temporary Project to Reuse up to 7,000 Acre Feet Annually of Effluent at a Groundwater Savings Facility in Pima County* [hereinafter "Final Environmental Assessment"], 40 (August 2016).

<sup>25</sup> *Id.* at 35-36, 40.

<sup>26</sup> Conversation and Email Exchange with Tucson Water Staff (February 27, 2017).

<sup>27</sup> Bureau of Reclamation, *Final Environmental Assessment*, 35 (August 2016).

<sup>28</sup> *Id.* at 35-36.

It is important to note ADWR’s accounting differentiates between water that a user delivers to a managed project, and water that is actually recharged into the ground. This means that ADWR ensures that only water that is recharged into the ground counts for purposes of credit accrual. Also, managed recharge projects can have greater losses than constructed projects because evapotranspiration rates often exceed the typical evaporation losses at constructed projects. ADWR’s calculations address such losses when accounting for water stored at managed projects.

ADWR’s accounting for managed recharge projects is different than other types of recharge. In fact, ADWR often uses different methods between the six managed projects across the state, depending on when they were permitted, operational considerations, and methods of measuring flows and evapotranspiration. However, for illustrative purposes, the nearby chart provides a simplified framework for how ADWR calculates credits. It is important to note that during rainstorms, ADWR does not calculate any recharge at managed sites due to difficulties in distinguishing between natural flows and reclaimed water.

<u>Reclaimed Water Managed Recharge Accounting Illustration</u>	
+	Water Delivered to Managed Project
-	Evapotranspiration (Usually Wetted Acres & Vegetation Quantity)
-	Water Flowing Out of Project / Diversions
<hr/>	
=	Total Recharge
X	.50 for Cut to the Aquifer
<hr/>	
=	Long-term Storage Credits

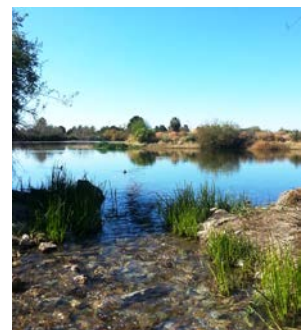
The 50 percent cut to the aquifer for managed projects has the effect of decreasing the amount of credits the storing party can receive, thus making it a less efficient means of accruing credits. For example, Tucson Water has stated that for every 100 acre-feet of water it introduces into the Santa Cruz, it will usually get anywhere from 40 to 45 long-term storage credits after the applicable cut to the aquifer and other losses.<sup>29</sup> The water that makes up the 50 percent cut is “gifted” to the aquifer, which in turn helps promote safe-yield in the AMA.

### Considerations

Increasing the number of long-term storage credits that can be accrued through managed recharge will have the effect of increasing the incentive for more managed recharge in the state. It is important to understand the implications, considerations, and potential issues with using managed recharge as a water management tool.

- **Multi-Purpose Uses:** The water that goes into a managed project supports multiple purposes—aquifer recharge and the environment. As has been shown at Gilbert’s Riparian Preserve, Phoenix’s Tres Rios, Chandler’s Veterans Oasis Park, and other locations, streambed recharge and

<sup>29</sup> Conversation with Tucson Water Staff (February 27, 2017).



Gilbert Riparian Preserve. Town of Gilbert

constructed riparian recharge provide benefits beyond just getting water into the ground. These projects benefit the environment, wildlife, and the surrounding community. Often these projects attract economic and recreational opportunities.

The current 50 percent provision appears to be driving water users including the federal government to consider taking reclaimed water out of Arizona's rivers.<sup>30</sup> The current policy thus creates tension between the environment and water management when other approaches are possible.<sup>31</sup> Water users must consider that there may be challenges to repurposing reclaimed water in the future if it is currently supporting riparian areas.

- **Lower Storage Costs & Ease of Maintenance:** Managed recharge projects are much less expensive to create and maintain than other forms of recharge. Within the Tucson AMA, after considering all capital and O&M costs, a managed facility can recharge water at a per acre-foot cost of \$2.51. An equivalent cost in the Tucson AMA for constructed projects ranges from \$140 to \$191 an acre-foot.<sup>32</sup> Unlike traditional spreading basins and other forms of recharge, managed projects require very little maintenance but may require more monitoring.<sup>33</sup>
- **Constant Loading:** Wastewater treatment plants produce a relatively constant amount of reclaimed water that can be put to beneficial use. Use of reclaimed water for managed streambed recharge ensures that there is the opportunity for a more continuous flow into a storage project.
- **Distance Between Recharge & Recovery:** Managed recharge opportunities are limited to locations where there is a moderate-sized dry stream or riverbed. Many of these streams and riverbeds are not located where pumping of credits will occur, which in turn could complicate efforts to ensure recovery occurs in proximity to the location of storage.<sup>34</sup> However, this issue is not unique to managed recharge projects as the hydrologic disconnect between storage and recovery occurs with constructed as well as managed facilities. Past efforts by ADWR and other stakeholders to address this complicated issue have yet to yield a consensus approach.<sup>35</sup> It has been suggested by some that if the Legislature changes the 50 percent limit to a higher percentage, consideration should be given to linking credit accrual at managed recharge sites to the future recovery of those credits.

---

<sup>30</sup> See, e.g., Bureau of Reclamation, *Final Environmental Assessment*, 3 (August 2016).

<sup>31</sup> Tim Thomure, Director of Tucson Water, Tucson-area Stakeholder Discussion Relating to Managed Recharge, Water Resources Research Center (March 17, 2017).

<sup>32</sup> Pima County Memo, *Intergovernmental Agreement with Cortaro-Marana Irrigation District (CMID) and the Bureau of Reclamation*, 4 (November 18, 2016).

<sup>33</sup> Conversation with Tucson Water Staff (February 27, 2017).

<sup>34</sup> Several parties have raised this as a primary concern in conversations about managed recharge.

<sup>35</sup> Information about this effort in 2013 and 2014 to tie geographical recharge to recovery—known as Enhanced Aquifer Management—can be found on ADWR's website:

<http://www.azwater.gov/azdwr/WaterManagement/AMAs/EnhancedAquiferManagementStakeholderGroup.htm>

- **Recovery of Stored Water:** A potential consequence of decreasing the 50 percent cut to the aquifer for managed projects occurs when the credits are later pumped. The net effect could be increased groundwater pumping, as a higher percentage of water could be withdrawn. This consequence must be weighed against the benefits of a change to the managed recharge statutes, including the community, economic, and environmental benefits of incentivizing innovative multi-faceted uses of water.

It is important to note that some argue that decreasing the cut to the aquifer for managed projects will not lead to increased mining of native groundwater per se, but will result in more recovery of stored water that cities and water providers purchased and imported. The water is thus an investment by a city or provider that provides a net benefit to the AMA.

- **Water Flow & Project Area:** Some water that is recharged in managed projects has the potential to flow out of the project's designated area. This water cannot be counted for credit purposes but is beneficial to the environment and streamflow. In recent years water regularly flowed past the end of the Lower Santa Cruz River managed recharge project near Tucson. Recent upgrades to the two discharging water treatment plants have improved water quality and increased recharge rates, significantly decreasing any flow out of the project.<sup>36</sup>
- **Wide Variability of Recharge Rates:** Infiltration rates at managed recharge projects can be unpredictable.<sup>37</sup> However, variability in recharge rates is an operational and planning issue that occurs in some form with all types of recharge projects. While maintenance can be performed to increase infiltration rates at constructed facilities, managed facilities often rely on large storm flows to clean the streambed and increase recharge rates.
- **Administrative Challenges:** Managed recharge projects are more onerous for ADWR to administer compared to constructed projects. This is due to the increased number of variables and factors that go into calculating recharge rates.
- **Recharge is Recharge:** Some have expressed the view that if an entity is actually getting water into the ground, the type of water and the method of recharge should not matter. With respect to aquifer storage, highly treated reclaimed water is just as effective as CAP water at replenishing aquifers, even if current law distinguishes the two types for credit accrual at managed facilities.
- **Policy Behind the 50 Percent Limitation:** Some parties, particularly those in southern Arizona, argue that the purpose of the 50 percent limitation was to provide an incentive to reuse reclaimed water instead of discharging it in a river channel. These parties assert that because reclaimed water in the region is now going to almost all possible uses with water to spare, there is a growing interest to keep water in rivers for environmental, economic and hydrologic purposes.

---

<sup>36</sup> Conversation with Tucson Water Staff (February 27, 2017).

<sup>37</sup> Bureau of Reclamation, *Final Environmental Assessment*, 40 (August 2016).



## Managed Recharge & Southern Arizona

Over the past several years, nearly all of the reclaimed water discharged into managed recharge projects in the state occurred at the Santa Cruz River and Lower Santa Cruz River recharge projects in the Tucson AMA.<sup>38</sup> The following chart shows which entities stored water in these two projects in 2015 and the relative percentages of ownership for the delivered water.<sup>39</sup>

Entities Storing in Santa Cruz Managed Projects in 2015	Percentage
Bureau of Reclamation	69%
City of Tucson	21%
Metro Water	5%
Pima County	4%
Other	1%
<b>Total</b>	<b>100%</b>

In 2011 and 2012, Pima County looked at pursuing a legislative change to the managed recharge cut to the aquifer.<sup>40</sup> Currently, there is growing interest to seek a multi-AMA coalition to address this issue in future legislative sessions, and possibly as soon as 2018.<sup>41</sup> There appears to be momentum on this issue as it is being discussed within the Governor’s Water Augmentation Council.

As shown in the chart above, the party that the 50 percent limit impacts the most is the Department of Interior through the Bureau of Reclamation (“Reclamation”). Reclamation has an allocation of 28,200 acre-feet per year of reclaimed water in order to assist in meeting settlement obligations with the Tohono O’odham Nation.<sup>42</sup> The transfer of this reclaimed water occurred as part of the Southern Arizona Water Settlement Act of 1992.<sup>43</sup> Under the terms of the Arizona Water Settlements Act of 2004, Reclamation cannot deliver this reclaimed water directly to the Nation without the Nation’s prior written consent.<sup>44</sup> The amended settlement further states that any revenues Reclamation receives from the sale or lease of this reclaimed water or resulting credits go toward the delivery of the Nation’s CAP water.<sup>45</sup> As a result of this

---

<sup>38</sup> See the chart on page two of this paper.

<sup>39</sup> Pima County Memo, *Intergovernmental Agreement with Cortaro-Marana Irrigation District (CMID) and the Bureau of Reclamation*, 3 (November 18, 2016).

<sup>40</sup> Conversation with Pima County Staff (March 10, 2017).

<sup>41</sup> Conversation with Tucson Water Staff (February 27, 2017).

<sup>42</sup> Bureau of Reclamation, *Final Environmental Assessment, 1-3* (August 2016).

<sup>43</sup> Under the 1992 settlement, the United States allocated 37,000 acre-feet per year of CAP Indian Priority water to the San Xavier and Shuk Toak Districts of the Tohono O’odham Nation, along with 28,200 acre-feet per year of water from another water source upon the dismissal of the litigation regarding groundwater pumping by Tucson and others. Senate Report No. 108-360, at 66, 97 (2004). The water source for the 28,200 acre-foot entitlement was understood to be effluent transferred from the City of Tucson to the Secretary of Interior. *Id.* at 66. After the parties met several conditions relating to the settlement, in 1993 several of the Nation’s allottees filed another lawsuit that again sought to stop the City of Tucson from pumping. *Id.* The issues in that lawsuit were settled by the interested parties through an amendment to the Nation’s settlement that was included in the Arizona Water Settlements Act of 2004. *Id.* Among other things, the Nation’s amended settlement designates CAP NIA priority water as the water source for the Nation’s 28,200 acre-foot entitlement. *Id.* at 67; Arizona Water Settlements Act, Pub. L. No. 108-451, § 104(a)(1)(A)(ii) (2004). It is within this context that Reclamation acting on the Secretary’s behalf has decided to use its effluent entitlement to fund delivery of the Nation’s CAP supply.

<sup>44</sup> Arizona Water Settlements Act, Pub. L. No. 108-451, § 305(b)(4) (2004).

<sup>45</sup> Arizona Water Settlements Act, Pub. L. No. 108-451, § 310(a)(2)(E); (b) (2004).

reality, it is important to recognize that changing the 50 percent limitation for managed recharge must be considered in the context of the agreements reached in the settlement.

Reclamation has made the strategic decision to recharge its reclaimed water in the Santa Cruz and sell the credits to fund delivery of the Nation's 66,000 acre-foot CAP allocation, and also to firm the Nation's NIA water.<sup>46</sup> Reclamation currently pays about \$4.5 million per year to deliver CAP water to the Nation, and at current rates Reclamation's fund for the Nation could be depleted in four years.<sup>47</sup>

Reclamation has stated that it "needs to find new ways to efficiently meet its firming obligations," including finding ways to obtain 100 percent credit.<sup>48</sup> Reclamation has stated that it will examine taking its reclaimed water out of the Santa Cruz to obtain more credit, although it prefers to leave water in the River.<sup>49</sup>

Reclamation has been active in seeking solutions to get more value for its water. Over the past several years, Reclamation worked on a pilot project with Metro Water and Pima County to take 2,200 acre-feet of reclaimed water out of the River to send to the Cortaro-Marana Irrigation District, a nearby groundwater savings facility where the entities could obtain more credit.<sup>50</sup> The agreement among the three parties contemplated an extension past the initial pilot phase of up to 7,000 acre-feet per year. As a result of pressure from local environmentalist groups and other factors, the Pima County Board of Supervisors ultimately modified the agreement by decreasing the amount of water and shortening the project duration, thus making the project uneconomical.<sup>51</sup>

Reclamation has since stated that it will pursue other options to meet its obligations. There have been discussions among partners in southern Arizona about installing small check dams along the Santa Cruz that would act as water "speed bumps," thus allowing the two projects to be classified as "constructed" facilities allowing for full credit accrual.<sup>52</sup> However, Reclamation at this time does not see this as a viable path forward due to operational challenges and funding limitations for ongoing operations and maintenance for such a project. It is also important to note that in recent years Reclamation has had several conversations with state officials about the impacts of the law.

---

<sup>46</sup> Bureau of Reclamation, *Final Environmental Assessment, 1-3* (August 2016).

<sup>47</sup> Tony Davis, *Santa Cruz Stretch Pitted Against Competing Water Needs*, Arizona Daily Star (February 27, 2016).

<sup>48</sup> Bureau of Reclamation, *Final Environmental Assessment, 3* (August 2016).

<sup>49</sup> Tony Davis, *Feds Want to Pull Santa Cruz River Effluent to Pay O'odham Debt*, Arizona Daily Star (March 4, 2016).

<sup>50</sup> See Pima County Memo, *Intergovernmental Agreement with Cortaro-Marana Irrigation District (CMID) and the Bureau of Reclamation* (November 18, 2016).

<sup>51</sup> Letter from Leslie Meyers of Bureau of Reclamation to Pima County Staff, *Cortaro -Marana Irrigation District, Metropolitan Domestic Water Improvement District and Bureau of Reclamation Effluent Interconnect Pipeline Project* (Jan. 11, 2017).

<sup>52</sup> *Id.* at 5.

This issue impacts other water users in southern Arizona including the City of Tucson. Tucson Water has stated that it is already meeting demand for reclaimed water by all major potential users, and thus wants to find new ways to use its supply. As a result, Tucson Water is working with local stakeholders to look at putting effluent in the Santa Cruz riverbed near downtown Tucson. The goal of this initiative is to utilize more effluent, expand riparian habitat, store water, and spur economic development along that stretch of the River.<sup>53</sup> Tucson Water refers to this initiative as “Agua Dulce.” In order to get the most value out of the proposal, the City has stated that it needs to get more credit for the water it will recharge at the proposed project.

### **Tucson AMA-Specific Considerations**

In March of 2017, several Tucson AMA stakeholders met at the University of Arizona’s Water Resource Research Center to discuss the impacts of any change to the 50 percent policy. During that meeting, water users, academics, environmental activists, current and former ADWR staff, Reclamation staff, and other stakeholders discussed the issue at length. Among other things, those present discussed some of the fundamental assumptions that influenced ADWR and other decision makers in the early 1990s to implement the 50 percent requirement.<sup>54</sup> Many of the assumptions have since changed. These assumptions include the following:

- **Groundwater Use:** At the time the Legislature passed the relevant statutes in 1994, Tucson had just recently obtained access to Colorado River supplies through the Central Arizona Project after decades of dependence on groundwater.<sup>55</sup> Furthermore, ADWR staff had serious doubts about ever achieving safe yield in the Tucson AMA. Now, the Tucson AMA has had access to Colorado River water for over two decades, and in recent years has achieved safe yield.<sup>56</sup>
- **Effect of Assured Water Supply Rules:** In 1994, ADWR was finalizing the Assured Water Supply rules in an effort to encourage use of renewable supplies. Now, as a result of the implementation of the rules and access to Colorado River water, groundwater levels in many parts of the Tucson AMA have recovered, even though localized areas of concern still exist.<sup>57</sup>

---

<sup>53</sup> Conversation with Tucson Water Staff (February 27, 2017).

<sup>54</sup> One of the participants, Kathy Jacobs, served as the Director of the Tucson AMA in the early 1990s when the Underground Water Storage provisions—including the 50 percent limitation for reclaimed water in manage projects—came into place. Many of the observations in this section come from her comments at the WRRC stakeholder meeting. Among other things, she observed that the decision to allow 50 percent credit accrual for effluent recharge was deliberate in an attempt to incentivize constructed recharge.

<sup>55</sup> See Jennifer E. Zuniga, *The Central Arizona Project*, Bureau of Reclamation, 35, 47 (2000).

<sup>56</sup> ADWR, *Proposed Fourth Management Plan, 2010-2020, Tucson Active Management Area*, p. 1-5 (May 2016).

<sup>57</sup> See *Id.* at 2-17.

- **Demand & Paradigm Shift:** ADWR staff in the early 1990s believed that demand for reclaimed water would continue to grow in the Tucson AMA, particularly for turf facilities such as golf courses. However, demand for reclaimed water is actually decreasing in the Tucson area.<sup>58</sup>

Changes in water demand in the City of Tucson have resulted in a paradigm shift with respect to uses of reclaimed water. In 2012, Tucson Water updated its Recycled Water Master Plan.<sup>59</sup> In 2012 Tucson Water’s projections showed that the city would need another source of water by 2040.<sup>60</sup> Staff contemplated using reclaimed water in the future for potable reuse.<sup>61</sup> However, around 2012 demand for reclaimed and potable water began to drop unexpectedly.<sup>62</sup> As a result of these decreases in demand, Tucson Water is now exploring other options such as Agua Dulce that support economic development and riparian habitat.<sup>63</sup>

The 50 percent cut to the aquifer for managed projects has undoubtedly contributed to Tucson’s safe-yield condition in recent years.<sup>64</sup> However, at least for the Tucson AMA, many of the underlying assumptions from the early 1990s when the statutes were written have changed.

### Conclusion

The AMWUA cities continue to promote the reuse of water. We believe now is the time to continue to advance the use of reclaimed water as an important source for augmenting groundwater and to support other valuable community, economic, and environmental purposes. As part of discussions about the future of reclaimed water, the AMWUA cities support efforts to have uniformity in terminology for reclaimed water, the elimination of the 2025 sunset, and consideration of increasing credit accrual for streambed recharge of reclaimed water.

---

<sup>58</sup> Jeff Biggs, *Tucson’s Recycled Water Use Past & Future*, Presented to Governor’s Water Augmentation Council Recycled water Committee (Dec. 5, 2016).

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

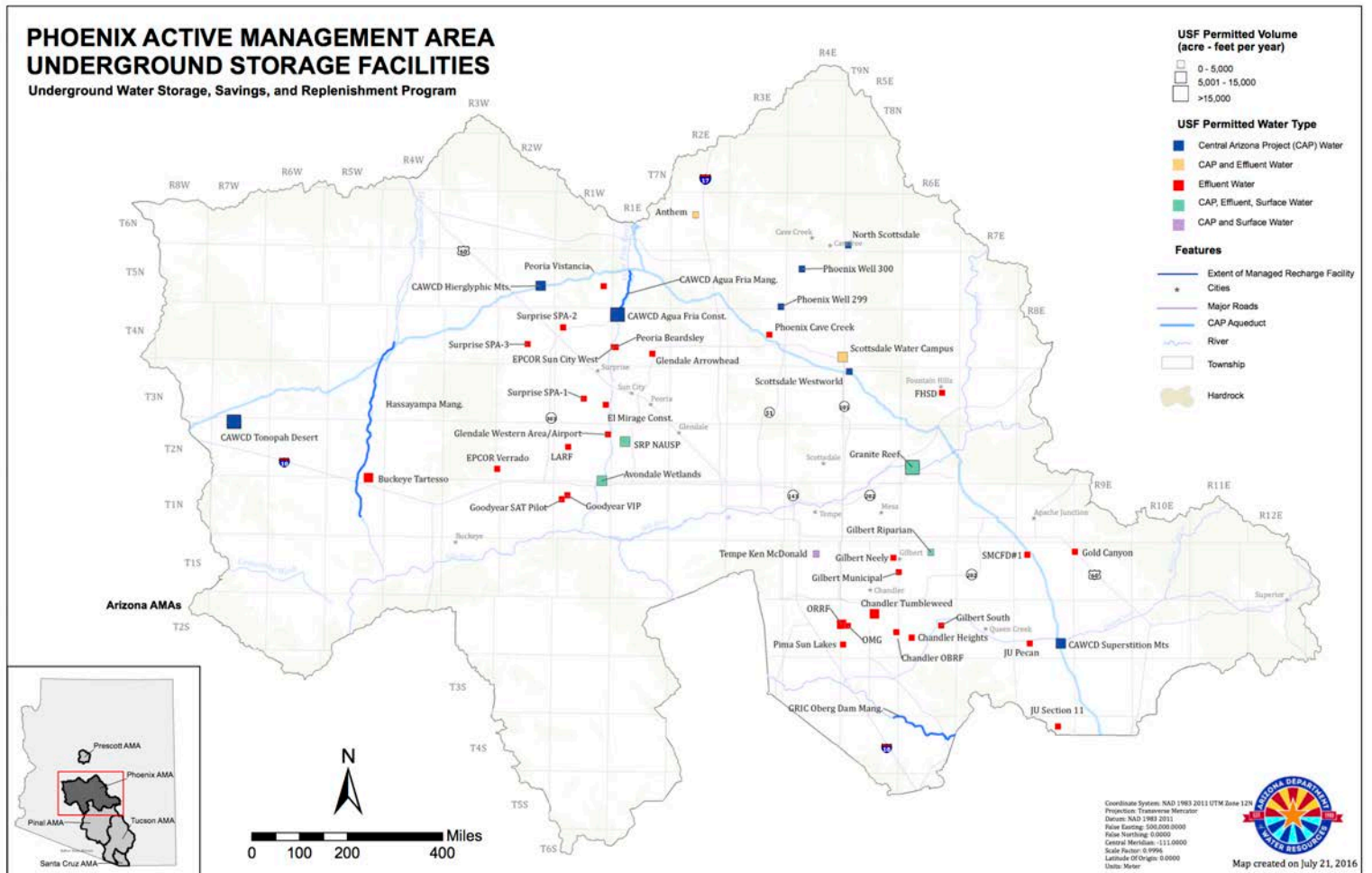
<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> ADWR, Proposed Fourth Management Plan, 2010-2020, Tucson Active Management Area, p. 12-5 (May 2016).

## Appendix A: Phoenix AMA USFs (Managed Projects are Dark Blue Lines)



## Appendix B: Tucson AMA USFs (Managed Projects are Red Lines)

