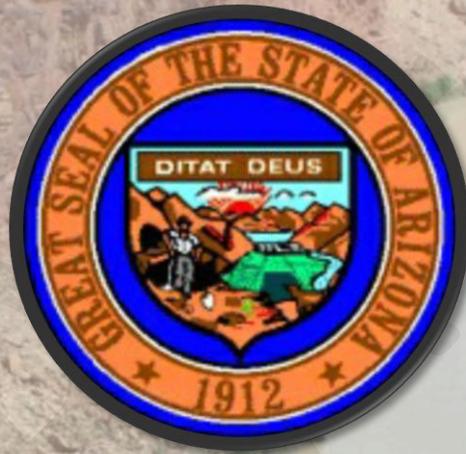


# The Arizona Water Initiative

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Annual Report  
July 1, 2016

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## Acronyms and Abbreviations

Arizona Department of Water Resources	ADWR
Acre-feet	AF
Active Management Area	AMA
Arizona State Land Department	ASLD
Arizona Water Atlas	Atlas
Best Management Practices	BMP
Central Arizona Project	CAP
Coconino Plateau Water Advisory Council	CPWAC
Coconino Plateau Watershed Partnership	CPWP
Colorado River Basin Water Supply and Demand Study	The Study
Community Water Systems	CWS
Defense Authorization Act of 2004	2004 Act
Gila River Watershed Partnership	GWP
Governors Water Augmentation Council	GWAC
Ground Water Management Act	GMA
Irrigation Non-Expansion Area	INA
Little Colorado River Watershed Coordinating Council	The Council
Million Acre Feet	MAF
Modified Non-per Capita Conservation Program	MNPCCP
Mohave County Water Authority	Authority
Palo Verde Nuclear Generating Station	Palo Verde
Salt River Valley Water Users Association	SRP
Strategic Vision for Water Supply Sustainability	Strategic Vision
Upper San Pedro Partnership	USPP
Water Resource Development Commission	WRDC

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## 4 Executive Summary

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6 The Arizona Water Initiative was implemented through Executive Order 2015-13 on December 16, 2015  
7 and established the Governor's Water Augmentation Council (GWAC) and the Planning Area Process. The  
8 goal of the AWI is to continue the Arizona legacy of proactive strategic water planning by working with  
9 key stakeholders statewide. The GWAC will investigate long-term water augmentation strategies, and  
10 other opportunities to secure water supplies for the future. The Planning Area Process will allow local  
11 stakeholders to participate in development of better demand information and a consensus driven set of  
12 solutions for future demand-supply and supply-demand imbalances.

13

14 This first Annual Report of the Arizona Water Initiative (AWI) summarizes the history of water  
15 management planning in the state and reiterates the tenets under which the AWI will operate as it builds  
16 on the past work done when creating the Strategic Vision for Water Supply Sustainability. Although  
17 activities started late in the calendar year, it also includes information regarding one meeting of the GWAC  
18 and the initial work completed in the Cochise and West Basins Planning Areas. An important early step in  
19 the AWI process was hiring and training new personnel to staff these innovative programs.

20

21 Most importantly, the Annual Report presents the recommendations of the GWAC to the Arizona  
22 Department of Water Resources and the Governor's Office. The recommendations of the GWAC are:

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1. Assess the potential for additional conservation actions as an element of the Planning Area Process. As ADWR addresses each planning area it should review existing conservation tools with the stakeholders for inclusion in the solution set that will be created for each Area.

2. The GWAC recommends that ADWR identify municipal and private water providers outside AMAs whose Lost and Unaccounted water exceeds 10 percent and explore with those providers potential actions that may reduce the Lost and Unaccounted water to below 10 percent.

3. In recognition of past, present, and proposed investments in demand reduction by the State, municipalities, industry and the agricultural community, the GWAC recommends the Department continue to lead Arizona Water conservation efforts and bring applicable conservation concepts to the GWAC for consideration.

4. The GWAC recommends that Council discussions in Fiscal Year 2016-2017 focus on the following topics:

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• The potential for augmentation through re-use, reclaimed, and poor quality water to significantly impact the future demand and supply imbalance

• The potential for augmenting groundwater supplies through natural recharge and conservation to include possible incentives and infrastructure needs

• Consideration of a communication plan for the State to accurately convey the status of its water supply resiliency and its efforts to maintain that status moving forward

• Funding for augmentation infrastructure

• Begin to identify large-scale augmentation opportunities

5. It is a recommendation of the GWAC that a role of the Council be to provide direction to the Director of the Arizona Department of Water Resources on any other issues that the Director determines may impact water management.

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## 1 Current Water Management Planning in Arizona

2  
3 For over a century, Arizonans have faced challenges in ensuring the state has sufficient and sustainable  
4 water supplies and have successfully overcome those challenges by developing secure and sustainable  
5 water supplies for agricultural, industrial and domestic uses. Arizona has aggressively taken the actions  
6 necessary to ensure that those supplies are available for its long-term economic stability. While diverse,  
7 these actions shared a common premise: they are solution-oriented, meeting not only the immediate  
8 needs of the State, but also addressing the future challenges that residents of our arid, Southwestern  
9 state may face.

10  
11 However, Arizona's past success cannot sustain our economic development forever and the state must  
12 continue to plan and invest in water resources. Recent studies have identified the potential for a long-  
13 term imbalance between available water supplies and projected water demands over the next 100  
14 years. In 2014, in recognition of the fact that Arizona was facing the next challenge in water supply  
15 security, the Arizona Department of Water Resources (ADWR) published Arizona's Next Century: A  
16 Strategic Vision for Water Supply Sustainability (Strategic Vision). This Strategic Vision identified the  
17 actions Arizona could take to meet future water supply challenges. The state began implementing the  
18 Strategic Vision in 2016 through the Arizona Water Initiative.

### 19 20 The Arizona Water Initiative

21  
22 Arizona Governor Doug Ducey announced his water planning initiative for the state in the fall of 2015.  
23 This initiative set out to continue the legacy of long term strategic water planning in Arizona by furthering  
24 the work and recommendations in the Strategic Vision. The Arizona Water Initiative was implemented  
25 with the signing of Executive Order 2015-13 on December 16, 2015 (see Appendix I). Through the Arizona  
26 Water Initiative, ADWR began working with key stakeholders statewide on two parallel tracks, the  
27 Planning Area Process and the Governor's Water Augmentation Council (GWAC).

28  
29 The Planning Area Process is a stakeholder-driven analysis of the 22 Planning Areas identified in the  
30 Strategic Vision (See Figure 1) beginning with rural areas, with a goal of completion of all areas within five  
31 years. In this process, ADWR will work with local stakeholders to identify issues that are resulting in water  
32 demand and supply imbalances and to develop a consensus-driven set of solutions.

33  
34 The GWAC was created to investigate long-term water augmentation strategies, additional water  
35 conservation opportunities and funding and infrastructure needs to help secure future water supplies for  
36 Arizona. The GWAC is comprised of 31 members appointed by the Governor (see Appendix II) who  
37 represent water resource experts, watershed groups, local government, non-governmental organizations,  
38 and industry leaders in Arizona agriculture, mining and home-building. The GWAC will meet quarterly to  
39 discuss potential solutions to Arizona's future water demand and supply imbalance. Per Executive Order,  
40 the GWAC will produce this annual report for the Governor and will describe the activities and the  
41 recommendations of the council as well as the activities of the Planning Area Process.

42  
43 This is an important time in Arizona to discuss maintaining sustainable water supplies and planning for  
44 the future. Arizona has the advantage of being ahead of the game in terms of water management with

- 1 decisions made in the context of preparation instead of desperation. This is a time for building upon  
2 Arizona's past successes of water supply planning and management.



3  
4 Figure 1. Strategic Vision Planning Areas

### 5 6 7 8 **The Strategic Vision – the Cornerstone of the Arizona Water Initiative**

9  
10 The Strategic Vision was based on work completed by previous water management planning groups with  
11 which ADWR participated, most specifically, the work of the Water Resources Development Commission  
12 (WRDC) and the U.S. Bureau of Reclamation in the Colorado River Basin Water Supply and Demand  
13 Study (Basin Study). Both of these efforts resulted in a comprehensive water supply and demand  
14 analysis and identification of a long-term imbalance between available supplies and projected water  
15 demands over the next 100 years.

16  
17 The Strategic Vision was innovative in that it was a statewide evaluation of the water-related issues that  
18 Arizonans face. Additionally, the statewide evaluation was completed in a systematic process based on  
19 “strategic” Planning Areas instead of other hydrologic or geopolitical divisions. For the first time, the

1 state was organized into solution oriented Planning Areas or areas with similar hydrology, similar water-  
 2 use patterns and similar characteristics affecting water demands and supply availability. Consequently,  
 3 the state's 22 Planning Areas have similar strategies for meeting future water demands.

#### 4 5 6 *Regional Strategies*

7 The Strategic Vision noted that no single strategy can address projected water supply imbalances across  
 8 the State and that a portfolio of strategies would need to be implemented dependent on the local area.  
 9 It also noted the importance of the unique character of each Planning Area and a need for a more  
 10 thorough regional overview and evaluation of the water supply needs of each Planning Area. The Arizona  
 11 Water Initiative's Planning Area Process is a refinement of the initial work completed for each Planning  
 12 Area within the Strategic Vision.

#### 13 14 *Statewide Strategic Priorities*

15 The Strategic Vision identified a number of statewide strategic priorities that ADWR felt would be critical  
 16 to moving water management forward within Arizona. For some priorities, the Strategic Vision proposed  
 17 action items within the 10-year action plan. Table 1 summarizes the priorities with proposed action items.  
 18

Strategic Vision Priority	Strategic Vision Action Item <sup>1</sup>
Resolution of Indian and Non-Indian Water Rights Claims	Establish Adjudication Study Committee
Continued Commitment to Conservation and Expand Reuse of Reclaimed Water	Review Legal and Institutional Barrier to Direct Potable Reuse of Reclaimed water – Develop and implement plan for resolutions
Supply Importation – Desalination	Begin Discussion on Ocean Desalination: <ul style="list-style-type: none"> <li>• Exchange options: California, Mexico</li> <li>• Direct Options: Mexico</li> </ul>
Develop Financing Mechanism to Support Water Supply Resiliency	Begin Discussion on Water Development Financing

19 **Table 1 Strategic Vision Priorities and Action Items**

20  
21 The Strategic priorities identified under the Strategic Vision included the following:

- 22 • Resolution of Indian and Non-Indian Water Rights Claims

23 Arizona has been successful in resolving, either in whole or in part, 13 of 22 Indian water rights claims,  
 24 providing substantial benefits to both Indian and non-Indian water users<sup>2</sup>. However, the general  
 25 stream adjudications, which began in the 1970s, remain incomplete. Completion of the general  
 26 stream adjudication will result in the Superior Court issuing a comprehensive final decree of water  
 27 rights. Until that process is complete, uncertainty regarding the nature, extent and priority of water  
 28 rights will make it difficult to identify all the strategies necessary for meeting projected water  
 29

<sup>1</sup> *Ten Year Action Plan Outline. "Arizona's Next Century: A Strategic Vision for Water Supply Sustainability", Pg. 17, 2014, Arizona Department of Water Resources.*

<sup>2</sup> *"Arizona's Next Century: A Strategic Vision for Water Supply Sustainability", Pg. 17, 2014, Arizona Department of Water Resources.*

1 demands. ADWR believes that options need to be developed by the State to accelerate this process.  
2 Creation of a Study Committee to develop options in a short time frame could help provide guidance  
3 to ADWR so adequate funding can be identified and obtained to complete the necessary technical  
4 work to support completion of this process. Development of options could initially focus on  
5 conceptualization of water rights administration in a post-adjudicated Arizona. This will streamline  
6 the Court and ADWR's effort to collecting and evaluating only that information what will assist in  
7 administering the final water rights decrees.

8  
9 • Continued Commitment to Conservation and Expand Reuse of Reclaimed Water

10 Conservation is the foundation of sustainable water management in our arid State. See Appendix III  
11 for a detailed discussion regarding water conservation in Arizona. The continued commitment to  
12 using all water supplies as efficiently as possible is necessary to stretch our existing water supplies  
13 and has delayed the need to acquire other, more expensive, supplies. Additionally, many non-potable  
14 uses are currently being met by reclaimed water including: landscape irrigation of parks and golf  
15 courses; agricultural irrigation; and streamflow augmentation benefitting ecosystems. In many areas  
16 of the state, reclaimed water is produced consistently and is available throughout the year, with  
17 limited seasonal fluctuation. Using reclaimed water limits use of potable water for non-potable  
18 purposes and saves potable water for drinking water supplies. However, as demands increase and  
19 potable water supplies become stressed, the need to explore and invest in direct potable reuse of  
20 reclaimed water for drinking water supplies will become necessary.

21  
22 • Statewide Water Use Metering and Reporting

23 Metering and reporting across the State would serve to support and enhance analysis of current water  
24 use trends. However, monitoring of water use outside of the Active Management Areas (AMAs) and  
25 Irrigation Non-Expansion Areas (INAs) is limited. Hydrologic data collection is also a crucial element  
26 in the development of groundwater models, which have proven to be invaluable management tools  
27 throughout the State, and provide a method for evaluating future conditions and potential impacts of  
28 new uses and/or alternative water management strategies.

29  
30 • Identifying the Role of In-State Water Transfers

31 A source of significant controversy across the State, in-State water transfers have been the focus of  
32 much debate throughout Arizona's history. A comprehensive analysis of water transfer policy is  
33 needed in Arizona. Evaluation of long-term versus short-term transfers may actually provide insight  
34 into how water transfers can be developed to protect or even benefit local communities. Lessons  
35 from other western states that have adopted more market-based water rights transfer models may  
36 be worthy of review as part of this analysis.

37  
38 • Supply Importation – Desalination

39 Importation of water from outside of Arizona will likely be required to allow the State to continue its  
40 economic development without water supply limitations. –Supplies derived from ocean water  
41 desalination can be imported directly into Arizona to meet the water needs of municipal and industrial  
42 water users, while at the same time providing aesthetic, recreational and ecological benefits.  
43 Alternatively, desalination can be done in partnership with other Colorado River water users in  
44 exchange for water from Lake Mead. Potential partners for ocean water desalination include higher

1 priority Colorado River entitlement holders in Arizona and California, the State of California, or  
2 Mexico. Projects of this magnitude are expensive and energy intensive, although unit capital and  
3 operating costs have significantly reduced as technology has improved. More importantly, because of  
4 the need to identify partners and develop agreements, such projects will require a significant  
5 investment of time – up to 20 years to bring to fruition. Because of the time it takes to develop these  
6 projects, and the more pressing need for water supplies in certain parts of the State, exploration of  
7 this strategy should begin immediately.

8  
9 • **Develop Financing Mechanism to Support Water Supply Resiliency**

10 The strategies identified above, both statewide and regional, will require capital investment. Some  
11 areas of the State need immediate assistance in developing water projects, specifically in portions of  
12 rural Arizona. Unfortunately, these are areas where limited populations cannot finance the required  
13 water infrastructure. The Water Resources Development Revolving Fund was created by the Arizona  
14 State Legislature to provide financial backing for these communities, but has not been funded to date.  
15 Seed money and a source of sustained funding for this revolving fund will be very important to meet  
16 the immediate needs of rural communities and provide long-term water supply security for many  
17 Arizonans.

18  
19 Financing of large-scale projects is another issue. For many years, the water community has been  
20 attempting to develop options for funding water supply acquisition and infrastructure development.  
21 These conversations and analyses have largely been conducted in the absence of substantial financial  
22 expertise and have failed to develop a plan that will generate capital. It is time to elevate this  
23 conversation and address Arizona's future water supply needs and only Arizona's community,  
24 political, and business leaders are capable of garnering financial resources and mechanisms necessary  
25 to meet these needs. While the water supply needs may not be immediate, addressing the financing  
26 of future large-scale water projects needs to begin as soon as possible to ensure Arizona's industries  
27 and citizens have secure water supplies into the future.

28  
29 *Future Water Supplies & Demands*

30 The Strategic Vision noted that, although Arizona has an existing solid foundation in water management,  
31 water demands driven by future economic development are expected to outstrip existing supplies.  
32 Additionally, drought conditions have continued to reduce the availability of surface water locally and  
33 throughout the Colorado River Basin. What's more, questions regarding future climate conditions added  
34 still more uncertainty to the ability to maintain an appropriate balance between demands and supply.

35  
36 Arizona has been actively evaluating future water supply and demand conditions for decades. This long-  
37 term evaluation includes an ADWR assessment of water supply and demand conditions in each of the  
38 State's five AMAs every 10 years, primarily to evaluate the ability to achieve the management goals  
39 identified by the Legislature for each AMA under the Groundwater Management Act (GMA). In 2009 and  
40 2010, in anticipation of the next Management Plan, ADWR developed a demand and supply assessment  
41 for each of the AMAs to: (1) evaluate its current status and ability to achieve the statutory water  
42 management goals for these five areas and (2) to frame the discussions of alternative management  
43 strategies needed to meet and maintain those goals. ADWR also produced the [Arizona Water Atlas](#) (Atlas)  
44 in 2010 providing water-related information on a local, regional and statewide level to frame and support  
45 water planning and development efforts. The development of the Atlas also spurred the creation of a

1 statewide water resources data repository housed at ADWR, which is continuously updated as water use  
2 information is reported and collected. Arizona has also developed, or partnered in, comprehensive and  
3 prospective statewide and multi-state planning efforts that will be discussed later in this document.  
4

#### 5 *Opportunities and Challenges*

6 The Strategic Vision recognized that Arizona is characterized by widely diverse geographic zones, ranging  
7 from forested mountains to arid deserts. The resultant dissimilar climates and precipitation regimes have  
8 led to great variability in, and accessibility to, surface water supplies. Arizona is also geologically complex,  
9 which controls the availability, quality and accessibility of groundwater supplies. Arizona is also unique in  
10 its land ownership patterns. Less than 18 percent of the land within the State is under private ownership.  
11 State Trust Land, administered by the Arizona State Land Department (ASLD) comprises almost 13 percent  
12 of the land, with the remaining 69 percent in either Federal or Tribal ownership. Land ownership is also  
13 often fragmented, with Federal, State, and private land holdings assembled in a “checkerboard” fashion  
14 that further complicates the development and execution of comprehensive and cohesive land and water  
15 management strategies.  
16

17 Another factor in the complexity of developing water supplies is the Arizona water law system, a complex  
18 mixture of State and federal laws, with groundwater and surface water largely regulated under separate  
19 statutes and rules. While the groundwater management system primarily applies inside designated AMAs  
20 and INAs, the surface water system (except for Colorado River supplies) is administered statewide.  
21 Colorado River supplies are managed in cooperation with the State, but contracts for Colorado River water  
22 are initiated through the U.S. Secretary of the Interior and administered by the Bureau of Reclamation.  
23 Reclaimed water is managed under a completely different set of regulations and policies, and its  
24 management framework has been significantly influenced by case law<sup>3</sup>. This legal complexity adds to the  
25 challenge of ensuring that adequate supplies exist to meet the demands across the state.  
26

27 Over the next 25 to 100 years, Arizona will need to identify and develop ~~an~~ additional water supplies to  
28 meet the projected water demands<sup>4</sup>. In some cases, there may be viable local water supplies that have  
29 not yet been developed, but in others, water supply acquisition and/or importation will be required to  
30 meet water demands. The Strategic Vision identified the following examples of potential water supplies:  
31

- 32 1) Non-Indian Agricultural Priority CAP water;
- 33 2) Reclaimed water or water reuse for which there is not yet delivery or storage infrastructure  
34 constructed to put it to direct or indirect use;
- 35 3) Groundwater in storage (both potable & brackish supplies);
- 36 4) Water supplies developed from revised watershed management practices;
- 37 5) Water supplies developed through weather modification;
- 38 6) Water supplies developed from large-scale or macro rainwater harvesting/storm water capture; and
- 39 7) Importation or exchange of new water supplies developed outside of Arizona (e.g., ocean  
40 desalination).

#### 41 *Summary*

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<sup>3</sup> *Arizona Public Service Co. v. Long*

<sup>4</sup> “Arizona’s Next Century: A Strategic Vision For Water Supply Sustainability”, Pg. 16, 2014, Arizona Department of Water Resources

1 The Strategic Vision identified and created a framework for analysis of potential strategies and provided  
2 the context for addressing the needs of multiple water users across the State. It has provided information  
3 regarding water supplies that will be the topic of discussion of the GWAC through the Arizona Water  
4 Initiative processes. The Strategic Vision has provided a framework that will be utilized by both Arizona  
5 Water Initiative processes in the course of water management planning for the future.  
6  
7

## 8 A History of Water Management Success

9

10 Arizona has a storied history of adapting and thriving in one of the most challenging climatic regions in  
11 North America. Yet even in these conditions, new ways to utilize and manage water resources throughout  
12 the region have been developed. The Hohokam people constructed a vast network of canals throughout  
13 much of the Salt and Gila River valleys in order to manage water and sustain both crops and life. Settlers  
14 would later find the remnants of these ancient canals and improve them to provide a dependable water  
15 supply. The current canals within the Valley of the Sun were born from the insight and concepts applied  
16 throughout the centuries.

17 A tradition of water management and planning is what sets Arizona apart from other regions of the  
18 country. Arizona has set a standard in our ability to adapt to an arid climate while still answering the  
19 needs of a rapidly growing population. Arizona may be perceived as a harsh environment, but those with  
20 great vision and leadership have harnessed the natural resources needed to support a thriving Arizona  
21 economy. This vision started well before statehood. First, beginning with the passage of the 1902  
22 National Reclamation Act and the efforts of the Salt River Valley Water User's Association (SRP), over  
23 200,000 acres of private ranching and farm lands in the Phoenix area were pledged as collateral for the  
24 construction of Roosevelt Dam in 1903, with a reservoir storage capacity of nearly 1.4 MAF<sup>5</sup>. This was  
25 followed by the Yuma Project, authorized in 1904, to provide irrigation water for over 65,000 acres of  
26 lands in the Colorado River floodplain. Today, instate surface water accounts for 19 percent of Arizona's  
27 supply while the Colorado River accounts for an additional 40 percent<sup>6</sup>.

28 Groundwater is also a significant source of supply in Arizona currently accounting for over 40 percent of  
29 water supplies in the state<sup>7</sup>. For decades Arizona's groundwater supplies were managed through the  
30 courts. In 1980, however, the Arizona Legislature adopted a comprehensive groundwater management  
31 strategy, known to this day as the 1980 Groundwater Management Act (GMA). The framework of the  
32 GMA was intended to protect existing water users and serve new uses with non-groundwater supplies,  
33 preserving the groundwater supply. The GMA established a timeline for reduction and elimination of  
34 groundwater pumping in certain areas of the State; designating AMAs to facilitate this process. While the  
35 1980 Groundwater Management Act is viewed as the cornerstone of Arizona water management and

---

<sup>5</sup> From 1989 to 1996, the dam was modified by the U.S. Bureau of Reclamation. In addition to raising the dam's height 77 feet in elevation, the modification included construction of two new spillways, installation of new outlet works, and power plant modifications, increasing its water conservation storage capacity by 20 percent.

<sup>6</sup> <http://www.azwater.gov/AzDWR/PublicInformationOfficer/ABCofWater.htm>

<sup>7</sup> <http://www.azwater.gov/AzDWR/PublicInformationOfficer/ABCofWater.htm>

1 policy, there have been many other important events throughout our state’s history that have contributed  
2 to our water management success. The timeline in Appendix IV provides a summary of water management  
3 efforts statewide.

4 The achievements outlined above and in Appendix IV serve as a guide for future planning as they are the  
5 result of strong commitments and significant investments in time and money to realize the benefits of the  
6 projects. Establishing and pursuing a vision for water security for future generations of Arizonans must  
7 begin well in advance of the need in order to ensure orderly development, avoid economic disruption,  
8 and protect the unique and precious environment that we all enjoy. Many of the elements of Arizona’s  
9 water development history were shaped by creative public/private partnerships. Such arrangements are  
10 likely to become more common and necessary, as the federal government’s role in water development  
11 projects continues to evolve.

12

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## 1 Governor's Water Augmentation Council – Annual Activities

### 3 **February 19, 2016 Meeting**

5 The first meeting of the GWAC was held on February 19, 2016 at the Arizona Department of Water  
6 Resources. Twenty-seven of the twenty-nine appointed Council Members and forty-eight stakeholders and  
7 members of the public were in attendance. The goal of the first meeting was to evaluate the potential for  
8 additional water conservation activities within water use sectors to meet the projected future statewide  
9 supply and demand imbalance. ADWR staff presented information regarding water conservation potential  
10 for discussion. A copy of the presentation is available on [the GWAC webpage](#)<sup>8</sup>. See Appendix III for additional  
11 discussion on water conservation activities within Arizona.

13 Council Members discussed the volumes of water that could be conserved by implementation of additional  
14 conservation activities above and beyond the existing regulatory and non-regulatory implementation of  
15 conservation measures. A key tenet of the discussion was the importance of planning for the future of water  
16 sustainability while recognizing Arizona's past accomplishments in water management. There was  
17 consensus that understanding the past accomplishments is an important launching point when planning for  
18 future water savings. The history of managing Arizona's water serves as a foundation upon which the future  
19 of water conservation, reuse and augmentation can be constructed.

20 Other topics of discussion included:

- 21 • The cost, actual water savings, challenges and barriers, and impact of lining irrigation ditches and  
22 canals
- 23 • The purpose or use of conserved water
- 24 • The interstate and international impacts of conservation
- 25 • How the GWAC can define problems and solutions to determine how conservation can be a  
26 solution

### 27 **May 13, 2016 Meeting**

28 During the May 13, 2016 Governor's Water Augmentation Council Meeting, ADWR staff provided answers  
29 to the questions asked at the February 19<sup>th</sup> meeting.

### 30 **Conclusion**

31 Following discussion at the February meeting, the GWAC determined that the potential for additional  
32 conservation to create a volume of water large enough to significantly impact the future demand and  
33 supply imbalance was limited. It was noted that the major water use sectors in the state have been, and  
34 will continue to, implement water conservation activities and that implementation of such activities has,  
35 and will continue to, improve water security within the state.

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<sup>8</sup> [http://www.azwater.gov/AzDWR/Arizona\\_Water\\_Initiative/documents/GWAC\\_Presentation.pdf](http://www.azwater.gov/AzDWR/Arizona_Water_Initiative/documents/GWAC_Presentation.pdf)

## 1 Planning Area Process – Annual Activities

2  
3 The Planning Areas Process of the Arizona Water Initiative is a stakeholder driven analysis of each of the 22  
4 Planning Areas identified in the Strategic Vision. Through this process, ADWR will work closely with local  
5 stakeholders to update data, identify issues that are resulting in water supply and demand imbalances, and  
6 to develop strategies for addressing those imbalances. The West Basins, Cochise, and Northwest Basins  
7 Planning Areas have been identified as the focus of the Planning Areas Process for the 2016 calendar year.

### 8 9 **Cochise Planning Area**

10 The Cochise Planning Area is located in the southeast corner of Arizona. It is comprised of the Sulphur  
11 Springs, San Simon, and San Bernardino Valleys, covers portions of Cochise and Graham Counties, and  
12 consists of the Willcox, Douglas, and San Bernardino Valley Groundwater Basins and the San Simon Valley  
13 Sub-basin.

#### 14 *Summary of Stakeholder Meetings*

15 An initial meeting was held March 5, 2016 at the Willcox Community Center. This meeting was introductory  
16 in nature, and included presentations regarding the Planning Areas Process, Planning Area hydrology, and  
17 existing groundwater management tools and options.

18 This meeting also included significant time dedicated to public comment. There were approximately 150  
19 attendees, 18 attendees made verbal comments, and two attendees submitted written comments.

20 A subsequent set of meetings was held April 19, 2016 at the Willcox Community Center. One meeting  
21 focused on existing municipal, agricultural, and industrial water demand data and stakeholder discussions  
22 regarding how that data might be updated. The other meeting focused on published background information  
23 and existing mitigation strategies for the Cochise Planning Area, and stakeholder discussions on how to  
24 expand upon, correct, and refine information and previously discussed strategies. The first meeting had  
25 approximately 50 attendees, the second had approximately 40 attendees, and both meetings had a high  
26 level of stakeholder engagement, discussion, and participation.

27 Additional meetings are in the process of being scheduled, throughout which stakeholders will further  
28 develop and analyze ideas gathered from the first several meetings and various other sources, with the goal  
29 of creating a final report including a compilation of the data and feedback from the Planning Area  
30 stakeholders.

#### 31 *Stakeholder Identified Issues*

32 The economy in the Cochise Planning Area is heavily reliant on agriculture, with an emerging wine industry.  
33 With minimal surface water availability, agriculture is heavily reliant on pumping groundwater for irrigation.  
34 Areas in the planning area have experienced significant declines in groundwater levels and are in a state of  
35 overdraft. In some cases, this overdraft has resulted in land subsidence and earth fissures and local reports  
36 of wells going dry.

1 The Douglas Basin is largely categorized as an INA, but the rest of the Planning Area is not under any such  
2 groundwater regulation. In early 2015, ADWR received a petition for the initiation of procedures to  
3 designate an INA for the San Simon Valley Sub-basin. After holding a public hearing, the Director of ADWR  
4 issued findings and a decision that the San Simon Valley Sub-basin of the Safford Basin shall not be  
5 designated as an INA.

6  
7 There have been discussions by local stakeholders of creating an INA or an AMA in the Willcox Basin by  
8 local initiation. There are those in the area who opposed such a move due to concerns that it might  
9 damage property values and harm the local emerging wine industry. There were also concerns that  
10 looming regulation is causing a rush to irrigate new land in order to avoid losing the right to do so.

11 There has been an effort by local stakeholders to develop an alternative statutory framework for  
12 groundwater management to protect aquifers while limiting adverse economic impacts in the Willcox Basin.  
13 At this time any draft legislation developed has not been presented to the Legislature.

14 ADWR will continue to meet with stakeholders throughout 2016 to develop and refine strategies for water  
15 sustainability in the Cochise Planning Area. A Hydrologic Monitoring Report is due to be released in May  
16 2016, and a Groundwater Model for the Willcox Basin is in development by ADWR. The Department will also  
17 work with stakeholders to update planning area supply and demand projections and intends to publish a  
18 final report with all data and recommendations for the Cochise Planning Area in early 2017.

### 19 20 **West Basins Planning Area**

21 The West Basins Planning Area is located in the central western portion of the State and is comprised of  
22 the Butler Valley, McMullen Valley, Ranegras Plain, Tiger Wash, and Harquahala Valley groundwater basins.  
23 The Planning Area is within portions of La Paz, Yuma, Yavapai, and Maricopa Counties. Communities within  
24 the Planning Area include Aguila in the northeast, Brenda in the southwest, and Vicksburg, Hope,  
25 Harcurvar, and Salome in the central portion of the Planning Area.

### 26 27 *Summary of Stakeholder Meetings*

28 The West Basins Planning Area held its first meeting in Wenden on January 30, 2016. During this meeting  
29 ADWR Deputy Assistant Director Gerry Walker gave a presentation on the Planning Area process as well as  
30 a brief presentation of management tools available. ADWR Chief Hydrologist Frank Corkhill presented  
31 hydrology data on the West Basins groundwater basins. After ADWR presented this information, the floor  
32 was opened to public comment. Sixteen stakeholders submitted speaker cards and commented. All  
33 questions asked were documented, and ADWR responded to all of them in writing on ADWR's website.

34 Two additional meetings were held on March 28, 2016 in Wenden. The first meeting involved data gathering.  
35 ADWR staff presented information from the Strategic Vision for Water Supply Sustainability and the Water  
36 Resource Development Commission's Final Report, including background information on the West Basins,  
37 current water supplies available to the West Basins, and water demand data for the municipal, agricultural,  
38 and demand sectors. In the second half of the meeting, the stakeholders broke out into small working groups  
39 to discuss the information that had been presented and offered suggestions for how it could be improved.

1 The second meeting focused on narrowing down the water challenges stakeholders are facing. Stakeholders  
2 broke into small groups to discuss the water issues they were facing and then reported back with a summary.

### 3 *Stakeholder Identified Issues*

4 Several stakeholders have expressed their concern that they will not be able to drill new wells fast enough  
5 or afford to drill new wells in order to keep up with the significant pumping occurring on irrigated land. Many  
6 residential wells have reportedly gone dry including a church well that has caused residents to have to haul  
7 water. A concern for seasonal residents is that even though they own land in the West Basins, due to existing  
8 statutory requirements they are not eligible to vote on any possible new regulation in the area since they  
9 are not registered to vote in Arizona.

10 ADWR is in the process of identifying the large industrial water users in the area so that the industrial water  
11 demand data may be updated to reflect the current use. Background information, water supply availability,  
12 and water demand for the municipal and agricultural sectors is also being updated. Once this information is  
13 updated, ADWR can begin working with stakeholders to develop a set of solutions to solve the water  
14 problems they are facing. The next meeting is currently being planned and will most likely take place in late  
15 May or early June.

16

17

## 1 Recommendations

2  
3 The GWAC recommends that ADWR assess the potential for additional conservation actions as an element  
4 of the Planning Area Process. As ADWR addresses each planning area it should review existing conservation  
5 tools with the stakeholders for inclusion in the solution set that will be created for each Area.

6 The GWAC recommends that ADWR identify municipal water providers outside AMAs whose Lost and  
7 Unaccounted water exceeds 10 percent and explore with those providers potential actions that may reduce  
8 the Lost and Unaccounted water to below 10 percent.

9 There will be no further discussion at the GWAC regarding implementation of large-scale programmatic or  
10 systematic statewide conservation measures. The GWAC does advocate for continued implementation of  
11 water conservation measures in all water use sectors throughout the state.

12 The GWAC makes the following recommendations:

- 13 1. Assess the potential for additional conservation actions as an element of the Planning Area Process.  
14 As ADWR addresses each planning area it should review existing conservation tools with the  
15 stakeholders for inclusion in the solution set that will be created for each Area.  
16
- 17 2. The GWAC recommends that ADWR identify municipal and private water providers outside AMAs  
18 whose Lost and Unaccounted water exceeds 10 percent and explore with those providers potential  
19 actions that may reduce the Lost and Unaccounted water to below 10 percent.  
20
- 21 3. In recognition of past, present, and proposed investments in demand reduction by the State,  
22 municipalities, industry and the agricultural community, the GWAC recommends the Department  
23 continue to lead Arizona Water conservation efforts and bring applicable conservation concepts to  
24 the GWAC for consideration.  
25
- 26 4. The GWAC recommends that Council discussions in Fiscal Year 2016-2017 focus on the following  
27 topics:
  - 28 • The potential for augmentation through re-use, reclaimed, and poor quality water to significantly  
29 impact the future demand and supply imbalance
  - 30 • The potential for augmenting groundwater supplies through natural recharge and conservation  
31 to include possible incentives and infrastructure needs
  - 32 • Consideration of a communication plan for the State to accurately convey the status of its  
33 water supply resiliency and its efforts to maintain that status moving forward
  - 34 • Funding for augmentation infrastructure

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- Begin to identify large-scale augmentation opportunities

It is a recommendation of the GWAC that a role of the Council be to provide direction to the Director of the Arizona Department of Water Resources on any other issues that the Director determines may impact water management.

DRAFT

## Appendix I: Executive Order 2015-13

### **Relating to the Implementation of the Arizona Water Initiative (Supersedes and Rescinds Executive Order 2014-10)**

**Whereas**, in January of 2014, the Arizona Department of Water Resources released "Arizona's Next Century: A Strategic Vision for Water Supply Sustainability" (Strategic Vision) that identified key priorities, timelines and action items to maintain sustainable water supplies for Arizona into its next century;

**Whereas**, the Strategic Vision divided the state into twenty-two planning areas and analyzed the water demands and supplies for each and identified strategies for meeting water demands into the future;

**Whereas**, sustainable water supplies are essential to the economic vitality and quality of life for Arizona and its citizens;

**Whereas**, the proactive measures taken by the State of Arizona have resulted in a current state of resiliency with respect to its water supplies;

**Whereas**, Arizona Governor Janice K. Brewer established the Governor's Council on Water Supply Sustainability on November 4, 2014 that published an Initial Report on December 31, 2014;

**Whereas**, the Initial Report recommended that working groups be formed to develop, evaluate and prioritize recommendations and potential partnerships regarding water supply augmentation and water supply infrastructure needs;

**Whereas**, the Initial Report proposed workgroups to address desalination, funding, rural issues, and stakeholder engagement;

**Whereas**, implementation of the Strategic Vision and the recommendations of the Initial Report is imperative for the future of Arizona;

**Whereas**, on October 5, 2015, I announced a Water Initiative that will implement the Strategic Vision and address the recommendations of the Initial Report through two tracks to insure the certainty of Arizona's water supply into the future;

**Whereas**, the first track will focus on a stakeholder driven analysis of the twenty-two Strategic

- 1 Vision planning areas and the second track will be a council that will investigate long-term water
- 2 augmentation strategies for the state;

DRAFT

1 Executive Order 2015-13  
2 Page 2

3 NOW, THEREFORE, I, Douglas A. Ducey, Governor of the State of Arizona, by virtue of the  
4 authority vested in me by the Constitution and laws of the State of Arizona, hereby order as  
5 follows:

- 6 1) The Arizona Department of Water Resources shall provide staffing and technical  
7 support to complete the first track of the Water Initiative.
- 8 2) The Governor's Water Augmentation Council (Council) shall be created to  
9 implement the second track of the Water Initiative.
- 10 3) The Council shall meet quarterly.
- 11 4) The Council shall consist of members appointed by the Governor who shall serve at  
12 the pleasure of the Governor.
- 13 5) The Arizona Department of Water Resources shall provide staffing and technical  
14 support to the Council.
- 15 6) The Council shall consider the need to create additional working groups and, if  
16 formed, Council members shall serve on working groups that may also include non-  
17 Council members.
- 18 7) The Council shall consider a communication plan for the State to accurately convey  
19 the status of its water supply resiliency and its efforts to maintain that status moving  
20 forward
- 21 8) The Council shall prepare an annual report and submit it to the Governor by July 1,  
22 2016 and by July 1 every year thereafter.
- 23 9) The annual report shall describe the activities and the recommendations of the  
24 Council and activities undertaken pursuant to the first track of the Water Initiative.
- 25 10) Executive Order 2014-10 is hereby superseded by this Order and Executive Order  
26 2014-10 is rescinded.

27  
28 IN WITNESS WHEREOF, I have hereunto set  
29 my hand and caused to be affixed the Great Seal  
30 of the State of Arizona.

*Douglas A. Ducey*

**GOVERNOR**



31  
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34 DONE at the Capitol in Phoenix on this  
35 Sixteenth day of December in the year Two  
36 Thousand and Fifteen and of the Independence  
37 of the United States of America the Two  
38 Hundred and Fortieth.

39  
40 ATTEST:

*Michelle Reagan*

**Secretary of State**

## 1 Appendix II: Members of the Governor's Water Augmentation Council

Member	Representing
Aja, Basilio F	Arizona Cattle Feeders' Association
Atkins, Lisa A.	Arizona Land Department
Brown, David	Brown & Brown Law Offices, P.C.
Buschatzke, Thomas (Chair)	Arizona Department of Water Resources
Cabrera, Misael	Arizona Department of Environmental Quality
Camacho, Chris	Greater Phoenix Economic Council
Cooke, Ted	Central Arizona Project
Doba, Ronald V.	Northern Arizona Municipal Water Users Association
Fabritz-Whitney, Sandra	Freeport-McMoRan
Gammage, Grady	Gammage and Burnham
George, Maureen R.	Mohave County Water Authority
Graham, Patrick James	The Nature Conservancy in Arizona
Hamer, Glenn	Arizona Chamber of Commerce & Industry
Kamps, Spencer A.	Home Builders Association of Central Arizona
Keeling, Rod	Arizona Wine Growers Association
Kniec, John	Southern Arizona Water Users Association
Lavis, Rick C.	Arizona Cotton Growers Association
Lombard, Cheryl	Valley Partnership
Lotts, Robert A.	Arizona Public Service Company
Moore, Hunter (Vice Chair)	Natural Resources Policy Advisor, Office of the Governor
Noble, Wade	Noble Law Office
O'Connell, Virginia	Arizona Water Banking Authority
Porter, Sarah	Kyl Center for Policy at Morrison Institute
Roberts, Dave	Salt River Project
Smith, Mark	Yuma Irrigation District
Sullivan, Craig	County Supervisors Association of Arizona
Tenney, Warren	Arizona Municipal Water Users Association
Townsend, Phillip Dale	Sunland Chemical Co.
Udall, Christopher L.	Agribusiness & Water Council

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Arizona Department of Water Resource Staff

Gerry Walker	Deputy Assistant Director of Water Planning
Martin Stiles	Facilitator, Governor’s Water Augmentation Council
John Riggins	Coordinator, Governor’s Water Augmentation Council



1 **Appendix III: Water Conservation in Arizona**

2 Water conservation and the reuse of water supplies is the cornerstone of Arizona’s water use history.  
 3 Arizona leads the nation in water conservation and the reuse of reclaimed water. Water conservation  
 4 continues to be the foundation of Arizona’s water management strategy. The state and its citizens have  
 5 achieved unparalleled water supply improvements through implementation of conservation measures  
 6 and practices that serve as a model for water managers throughout the world. Table A1 and A2  
 7 summarize the water conservation activities that have been implemented statewide.<sup>9</sup>

	Public Awareness/ Public Relations	Conservation Education and Training	Outreach Services	Physical System Evaluation and Improvement	Ordinances/ Conditions of Service/ Tariffs	Rebates/ Incentives	Research/ Innovation Program
AMAs	X	X	X	X	X	X	X
Benson	X	X	X		X		X
Cottonwood	X	X	X	X	X	X	
<u>Bullhead City</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
Flagstaff	X	X	X	X	X	X	X
Globe	X	X		X	X		X
Holbrook				X			
Kingman	X	X	X	X	X		
Lake Havasu	X	X	X	X	X	X	X
Payson	X	X	X	X	X	X	X
Safford	X	X	X	X	X		
Sierra Vista	X	X	X	X	X		
St. Johns			X		X		
Williams	X	X	X	X	X	X	
Winslow	X	X	X	X	X	X	
Yuma	X	X	X	X	X		

8 **Table A1 Summary of Municipal Water Conservation Practices Implemented within Arizona**

<sup>9</sup> Data collected from ADWR Community Water Systems Annual Reports

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	Concrete lined	Laser Grade	Level Basin	Sprinkler irrigation	Drip/trickle irrigation	Tail water Re-use	Crop Rotation	Soil and Water Analys	Flow Rate Measurement	Furrow Shaping	Scheduled Irrigation
AMAs <sup>10</sup>	X	X	X	X	X	X	X	X	X	X	X
Cienega <sup>11</sup> Creek Basin					X			X			
<u>Mohave Valley Irrigation and Drainage district</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>			<u>X</u>		<u>X</u>		<u>X</u>
San Simone Valley				X	X						
Willcox Basin					X			X			
Verde Valley Sub Basin					X			X			
Verde River Basin					X			X	X		
Yuma <sup>12</sup>	X	X	X	X			X	X	X	X	X

4 **Table A2 Summary of Agricultural Water Conservation Practices Implemented in Arizona**

5 Note: Excluding the AMAs, Table A2 reflects BMPs observed at specific agricultural locations across the state and does not  
6 necessarily reflect the total number of BMPs being utilized in given regions. The limited amount of BMP data outside of the  
7 AMAs limits the availability of statewide BMP data

8 It should be noted that there are activities other than conservation that have resulted in water security for  
9 Arizona. Regional planning efforts both statewide and within each AMA have expanded. There has been  
10 an increase in the conversion from the use of groundwater (a non-renewable supply) to renewable water  
11 supplies, primarily Colorado River water through the Central Arizona Project. Monitoring of groundwater  
12 conditions and land subsidence is ongoing and new subdivisions, both inside and outside of AMAs, where  
13 new developments must demonstrate 100 years of sustainable water supplies.

<sup>10</sup> Arizona Department of Water Resources Agriculture Best Management Practices

<sup>11</sup> USDA National Agricultural Statistics Service CropScape Data Layer

<sup>12</sup> "A Case Study in Efficiency-Agriculture and Water Use in Yuma, Arizona Area" Executive Summary-III, 2015, Yuma County Agriculture Water Coalition

## 1 Water Conservation within the Active Management Areas

2 Within the AMAs, there are mandatory conservation requirements established within the management  
3 plans for the municipal, industrial, and agricultural water use sectors. Best management practices (BMPs)  
4 are, by definition, methods or techniques that have been found to be the most effective, efficient and  
5 practical manner to achieve an objective. BMPs are often developed and determined through industry  
6 standards. Certain regulatory programs within the AMAs are BMP-based and lists of BMPs exist for those  
7 programs (see Municipal BMP Example List)<sup>13</sup>. It should be noted, however, that the ADWR lists only  
8 represent a subset of BMPs and more options may exist within a specific use sector. Regulatory BMP  
9 programs exist for the three major use sectors within the AMAs. In the AMAs, the development and  
10 implementation of mandatory conservation requirements for all users of groundwater has resulted in  
11 increased water savings and efficiency.

### 12 *Agricultural Water Use Sector*

13 A cornerstone of the 1980 Groundwater Code water was a prohibition on new irrigated acreage within the  
14 AMAs and the management plans have moved from that basis into other water conservation programs.  
15 The First Management Plan established a Base Program that assigned irrigation water allotments based on  
16 water consumption between 1975 and 1980. The Base Program established the baseline for groundwater  
17 consumption for all groundwater rights and all subsequent conservation programs utilized that baseline.  
18 The Third Management Plan assigned a maximum annual groundwater allotment based on assumed  
19 irrigation efficiencies of 65 to 80% and capped irrigation district system losses at 10%.

20 The Third Management Plan also created an innovative BMP program as a voluntary alternative to the Base  
21 Program. The agricultural BMP program includes four categories of agricultural water conservation: water  
22 conveyance systems; farm irrigation systems; irrigation water management; and agronomic management.  
23 In this program, an agriculture operator can voluntarily choose BMPs from an approved list. A goal of the  
24 BMP program is to have water savings in the agriculture sector, at a minimum, be equivalent to those  
25 during the Base Program.

### 26 *Municipal Water Use Sector*

27 Currently, conservation in the municipal water use sector is consistent with the requirements of the Third  
28 Management Plan, as amended. Large municipal water providers (city, town, private water company or  
29 irrigation district that serves more than 250 AF of water per year) are regulated under one of six municipal  
30 regulatory programs, including the Modified Non-per Capita Conservation Program (MNPCCP) which is the  
31 program selected by the majority of large providers. The Gallons per Capita per Day Program, which strives  
32 to reduce water consumption on a per-person basis, is the second most commonly adopted regulatory  
33 program. The MNPCCP is mandatory for all large municipal water providers in AMAs that do not have a  
34 Designation of Assured Water Supply; it is optional for providers with a Designation of Assured Water  
35 Supply.

36 The MNPCCP requires participating providers to implement BMPs that result in water use efficiency in their  
37 service areas. A water provider regulated under the program must implement a required basic public  
38 education program and choose one or more additional BMPs based on its size as defined by its combined

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<sup>13</sup> <http://www.azwater.gov/AzDWR/WaterManagement/AMAs/documents/ListofBMPs.pdf>

1 total of residential and non-residential water service connections. Providers may have to implement one,  
2 five or ten additional BMPs.

3  
4 Small municipal water providers (city, town, private water company or irrigation district that serves 250 AF  
5 of water per year or less) are required to minimize water waste, maximize outdoor watering efficiency,  
6 encourage water reuse, and comply with any reasonable conservation requirements established for small  
7 providers by ADWR.

### 8 9 *Industrial Water Use Sector*

10 Within the AMAs, conservation within the industrial use sector is either allotment or BMP based. Water  
11 allotment requirements are typically used for large turf facilities, dairies and feedlots. BMP based  
12 requirements are required for mines, cooling towers, sand and gravel operations, large scale power plants  
13 and new large landscape users. A Best Management Practices in Arizona report stated that BMPs provide  
14 a science based formation in which collaborations between researchers, regulators, and water users,  
15 assure stewardship of our most precious natural resource.<sup>14</sup>

16 The Palo Verde Nuclear Generating Station (Palo Verde) is an example of industrial water conservation and  
17 reuse as Palo Verde reuses approximately 760,000 AF of reclaimed water annually. The Third Management  
18 Plan recognized that maximization of the cooling water cycles increased the water efficiency of a  
19 generation station and established a standard of 15 cycles to recycle cooling water for power plants  
20 operating after 1985.<sup>15</sup> Palo Verde, which began commercial operation in 1986, averages 22 to 25 cooling  
21 cycles which exceeds the minimum standard and provides more opportunity for water savings<sup>16</sup>. Palo  
22 Verde is unique in that it is ~~one of the few~~ the only nuclear generating stations that is not located on or  
23 near a significant body of water, therefore, management of water resources has been an operational  
24 priority from the beginning.

### 25 26 **Water Conservation outside the Active Management Areas**

27 Although water conservation measures are ~~not~~ generally not required outside of the AMAs, the  
28 application of conservation measures is prevalent in Arizona. Water users throughout the state have long  
29 recognized the need to utilize water as efficiently as possible. In fact, many non-AMA water users opt to  
30 utilize many of the BMPs included within ADWR's regulatory lists to conserve water. Additionally, as of  
31 2010, some water providers in the state are required by the Arizona Corporation Commission to  
32 implement select BMPs from ADWR's list<sup>17</sup> when initiating service or undergoing rate cases.

### 33 *Municipal Water Use Sector*

34  
35 In 2005, legislation associated with drought planning in the state established the Community Water System  
36 (CWS) Planning and Reporting requirements. While there are CWSs located inside the AMAs, the majority  
37 are located outside. Many CWSs located within AMAs are exempted from the CWS requirements because  
38 they fall under other AMA regulatory requirements.

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<sup>14</sup> Wienecke, David. "Irrigation Best Management Practices in Arizona." Michigan State Press. 2005.

<sup>15</sup> As described in the Third Management Plan (2000-2010) under conservation requirements for the Industrial Sector.

<sup>16</sup> Lotts, B., 2014 Arizona Public Service Company, [http://www.azenergy.gov/doclib/6-20-14\\_AMC-PVNGS\\_B.Lotts.pdf](http://www.azenergy.gov/doclib/6-20-14_AMC-PVNGS_B.Lotts.pdf)

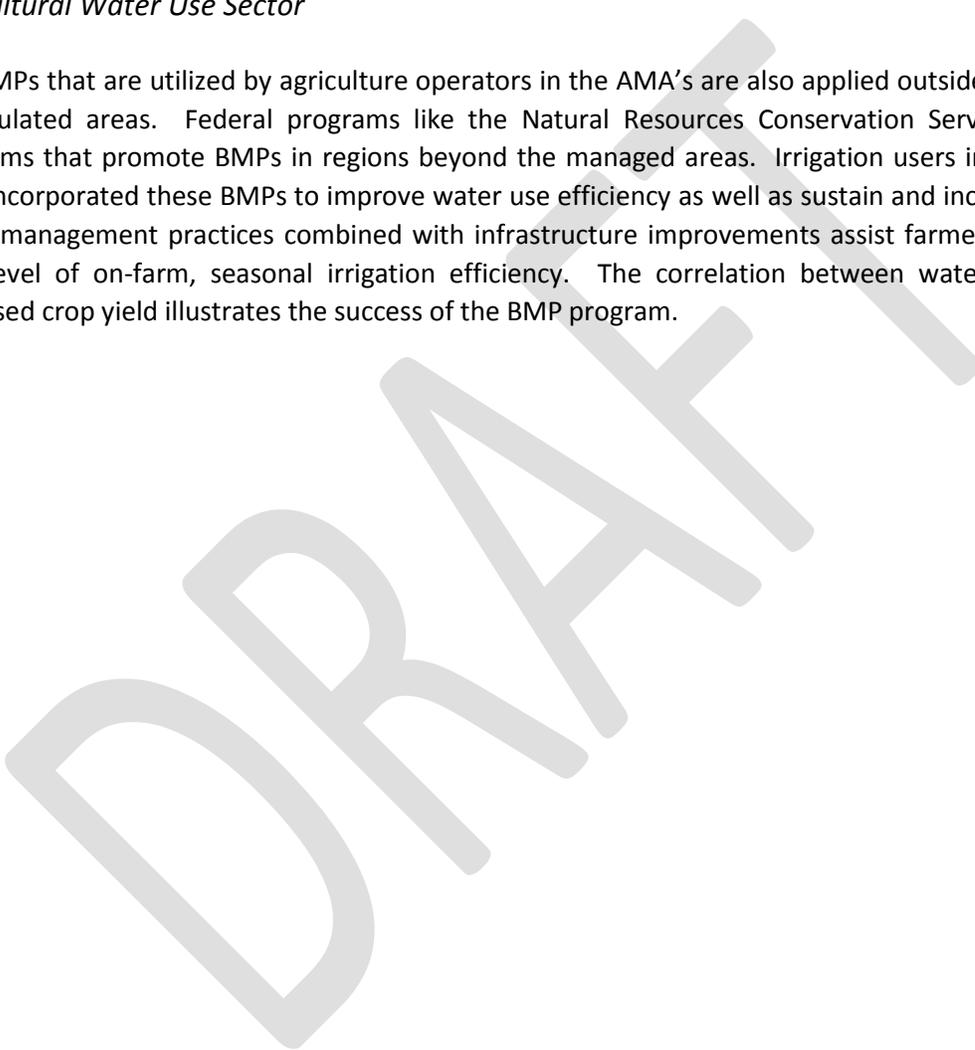
<sup>17</sup> AZ Corporation Commission Water Rules. 2010. <http://www.azcc.gov/divisions/utilities/water.asp>

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2 A CWS is a municipal water provider in Arizona that serves at least 15 connections used by year-round  
3 residents of the area served, or that regularly serves at least 25 year-round residents. A CWS must file  
4 annual reports and five-year System Water Plans that include a water supply plan, a drought preparedness  
5 plan and a water conservation plan. The water conservation plan requests the CWS to list conservation  
6 measures currently being implemented or planned for the future. The conservation measures are derived  
7 from ADWR’s municipal BMP list.

8  
9 *Agricultural Water Use Sector*

10  
11 The BMPs that are utilized by agriculture operators in the AMA’s are also applied outside the boundaries  
12 of regulated areas. Federal programs like the Natural Resources Conservation Service fund similar  
13 programs that promote BMPs in regions beyond the managed areas. Irrigation users in the Yuma area  
14 have incorporated these BMPs to improve water use efficiency as well as sustain and increase crop yield.  
15 These management practices combined with infrastructure improvements assist farmers in achieving a  
16 high level of on-farm, seasonal irrigation efficiency. The correlation between water efficiency and  
17 increased crop yield illustrates the success of the BMP program.

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## Appendix IV: Timeline of Water Management in Arizona

### ~~1897 — Pinetop Woodland Irrigation Company Surface Water Diversions Begin from Billy Creek<sup>18</sup>~~

~~The Pinetop Woodland Irrigation Company operates a pipeline and earthen canal system that diverts water from Billy Creek for irrigation use in the community of Pinetop. Irrigated land consists of native pasture and lawns, gardens and orchards associated with residential areas.~~

### 1903 Yuma Project

The Yuma Project provides irrigation water for lands near the towns of Yuma, Somerton, Gadsden, and San Luis in Arizona, and Bard and Winterhaven in California. The project was divided into the Reservation Division, which consists of 14,676 acres in California, and the Valley Division, which consists of 53,415 acres in Arizona.

### 1903 Yuma County Water Users Association

The association was organized as a private non-profit corporation for the purpose of coordinating with the United States Bureau of Reclamation in the development and operation of the Valley Division of the Yuma Project, which was also founded in 1903 to facilitate irrigation. The landowners in the Association hold Priority 1 Colorado River entitlements which are irrevocably administered by the Association.

### ~~1905 — Lakeside Irrigation Company Surface Water Diversions Begin from Adair Spring~~

~~The Lakeside Irrigation Company operates a pipeline system that diverts water from Adair Spring for irrigation use in and around the community of Lakeside which was settled in the 1880's. Irrigated lands consist of native pasture, orchards and irrigation associated with residential areas.~~

### 1917 Unit B Irrigation and Drainage District

The District provides irrigation water to a portion of the Yuma Mesa including 3,305 acres of crops. Unit B holds a Priority 1 Colorado River entitlement.

### 1918 North Gila Valley Irrigation and Drainage District

The North Gila Valley Irrigation and Drainage District provides irrigation water to no more than 6,587 acres in the North Gila Valley. The District holds a combination of Priority 1 and Priority 3 Colorado River entitlements. The Priority 3 Colorado River entitlement is shared with Yuma Irrigation District and Yuma Mesa Irrigation and Drainage District of the Yuma Mesa Division of the Gila Project.

### 1919 Yuma Irrigation District

Yuma Irrigation District holds a Priority 3 Colorado River entitlement for the irrigation of 10,600 acres. The Priority 3 Colorado River entitlement is shared with North Gila Valley Irrigation and Drainage District and Yuma Mesa Irrigation and Drainage District of the Yuma Mesa Division of the Gila Project.

<sup>18</sup> All timeline information sourced from ADWR's 2014 Strategic Vision.

**1920s Mohawk Municipal Water-Conservation District and Gila Valley Power District**

The District consists of 62,975 acres irrigated using its Priority 3 Colorado River entitlement.

**1923 Norviel Decree**

The Norviel Decree determined the relative rights of landowners to the use of the waters of the Little Colorado River and its tributaries in Apache County.

**1927 The Concho Decree**

The Concho Decree determined the relative rights to use surface water from Concho Springs and Concho Creek in Apache County.

**1928 The Gila Project**

The project was built to control the diversions of the Colorado River in the Yuma area Southwestern Arizona and allow specified entitlements allotments of irrigation water to be delivered to on-river users in the Yuma Mesa Division and the Wellton-Mohawk Division. The Yuma Mesa Division consists of the Yuma Mesa Irrigation and Drainage District, the Yuma Irrigation District, and the North Gila Valley Irrigation and Drainage District. The Wellton-Mohawk Division is the Wellton-Mohawk Irrigation and Drainage District. Proper water management and structural ingenuity have allowed the project to expand the economic success of the Yuma area's agricultural market. Reclamation reports that combined with the crops in the Yuma Valley, the Gila Project is responsible for more than half of Arizona's total agricultural production.

**1935 The Globe Equity No. 59 Consent Decree**

The court action that led to the decree was initiated by the United States in 1925 to protect the water supply of the Gila River Indian Community and the San Carlos Apache Tribe. The named defendants were the water users above and below the proposed San Carlos Dam and Reservoir. The lands described in the decree are approximately 40,000 acres in the Safford and Duncan-Virden Valleys; approximately 1,000 acres on the San Carlos Apache Reservation; approximately 2,000 acres near Winkelman; approximately 50,000 acres within the current San Carlos Irrigation and Drainage District and approximately 50,000 acres within the Gila River Indian Reservation.

**1941 City of Flagstaff Constructs Upper Lake Mary Dam on Walnut Creek**

Due to the intermittent nature of flows in Walnut Creek and the high infiltration rates in the bottom of Lower Lake Mary, a second dam was constructed up-gradient of Lower Lake Mary Dam in order to store water for use by the citizens of Flagstaff. The dam was raised 10 feet in 1951 to its current height to enable storage of 16,300 acre-feet of water.

**1946 Formation of the Central Arizona Project**

The Central Arizona Project Association was formed to educate Arizonans about the need for CAP and to lobby Congress to authorize its construction. It took the next 22 years to do so, and in 1968, President Lyndon B. Johnson signed a bill approving construction of CAP. The bill provided for the Bureau of Reclamation of the Department of the Interior to fund and construct CAP and for another entity to repay the federal government for certain costs of construction when the system was complete.

**1954 Yuma Mesa Irrigation and Drainage District**

The Yuma Mesa Irrigation and Drainage District provides irrigation water for up to 20,000 acres

1 [on the Yuma Mesa using a Priority 3 Colorado River entitlement. The Priority 3 Colorado River](#)  
2 [entitlement is shared with Yuma Irrigation District and North Gila Valley Irrigation and Drainage](#)  
3 [District of the Yuma Mesa Division of the Gila Project.](#)

4 **1970 *Jarvis v. State Land Department II***

5 Relying on a surface water statute that gives preference to domestic and municipal uses over  
6 agricultural uses, the Arizona Supreme Court stated that it would modify the injunction issued in  
7 *Jarvis v. State Land Department I* to allow the City of Tucson to acquire cultivated lands within  
8 the Critical Groundwater Area outside the City, retire the lands from irrigation and transport to  
9 the City for municipal use an amount of groundwater equal to the “annual historical maximum  
10 use” on the lands. The court later held that “annual historical maximum use” means the *average*  
11 of the annual maximum amount of groundwater *consumptively* used on the land for irrigation  
12 purposes.

13  
14 **1974 Salinity Control Act**

15 Provided the means to comply with the obligations made by the U.S. to Mexico in Minute No.  
16 242. The act authorized construction of the Yuma Desalinization Plant in Arizona and authorized  
17 construction of the Protective and Regulatory Pumping Unit – the 242 Well Field in Arizona.

18  
19 ***Town of Chino Valley v. City of Prescott***

20 The court stated that “there is no right of ownership of groundwater in Arizona prior to its  
21 capture and withdrawal from the common supply and ... the right of the owner of the overlying  
22 land is simply to the usufruct of the water.” The court further holds that the legislature may  
23 enact laws regulating groundwater use under its police powers.

24  
25 **1980 Groundwater Management Act**

26 Passed by the Arizona legislature on June 11, 1980 and signed into law by Governor Babbitt the  
27 next day, this Act implements the final recommendations of the Groundwater Study Commission.  
28 The Act establishes the Arizona Department of Water Resources to administer the provisions of  
29 the Act.

30  
31 **1981 Harquahala Irrigation Non-Expansion Area Established**

32 Designated by ADWR as the state’s third Irrigation Non-Expansion Area.

33  
34 **1984 *Ak-Chin Indian Community Water Rights Settlement Act***

35 [Under the Act 50,000 acre feet of the Priority 3 Colorado River entitlement shared by the three](#)  
36 [districts of the Yuma Mesa Division was transferred to the Ak-Chin Indian Community. The](#)  
37 [Priority 3 entitlement is shared by Yuma Mesa Irrigation and Drainage District, Yuma Irrigation](#)  
38 [District and North Gila Valley Irrigation and Drainage District.](#)

39  
40 **1986 *Underground Storage and Recovery Program***

41 [The program allows persons with surplus supplies of water to store that water underground and](#)  
42 [recover it at a later time for the storer’s use.](#)

43  
44 **1988 *Salt River Pima-Maricopa Indian Community Water Rights Settlement Act***

45 [Under the Act 22,000 acre feet of Priority 3 Colorado River entitlement was transferred from](#)

1 [Wellton-Mohawk Irrigation and Drainage District to the Salt River Pima-Maricopa Indian](#)  
2 [Community.](#)

3 **1990's Formation of Watershed Partnership Groups**

4 A number of watershed partnership groups formed throughout the State to represent specific  
5 geographic areas. These groups are a collective effort between local governments and private  
6 citizens that meet regularly with stakeholders to address local water management challenges.  
7 See Appendix V for a list of currently active water partnership groups in Arizona.  
8

9 **1991 Groundwater Transportation Act**

10 The legislature amended the groundwater transportation laws to prohibit the transportation of  
11 groundwater from areas outside of AMAs to AMAs, with several exceptions. The exceptions  
12 allow certain entities to transport groundwater from the McMullen Valley groundwater basin to  
13 the Phoenix AMA, from the Big Chino sub-basin of the Verde River groundwater basin to the  
14 Prescott AMA, and from the Butler Valley groundwater basin and the Harquahala INA to any  
15 initial AMA.  
16

17 **1994 Assured and Adequate Water Supply Rules**

18 ADWR adopted rules establishing criteria for demonstrating an assured or adequate water supply  
19 become effective. The rules require that an applicant for a certificate or designation of assured  
20 water supply in an AMA demonstrate that the use will be served primarily with renewable water  
21 supplies.  
22

23 **Yavapai-Prescott Indian Tribe Water Rights Settlement Agreement**

24 Settled claims of the Yavapai-Prescott Indian Tribe to groundwater and surface water from  
25 Granite Creek and allowed for the transfer of the Tribe's and the City of Prescott's CAP water to  
26 the City of Scottsdale.  
27

28 **Santa Cruz Active Management Area is established**

29 The Santa Cruz AMA was established from a portion of the Tucson Active Management Area to  
30 address unique water management goals.  
31

32 **1996 [Arizona Water Banking Authority \(AWBA\)](#)**

33 [-The establishment of AWBA secured Arizona's unused Colorado River water for future use, while](#)  
34 [also providing water management benefits.](#)  
35  
36

37 **1999 San Carlos Apache Tribe Water Rights Settlement Agreement**

38 Settled the claims of the San Carlos Apache Tribe to the Salt River side of their reservation and  
39 includes groundwater, water from the Salt, Black, Gila and Sand Pedro Rivers, CAP water (that  
40 can be leased) and reclaimed water. The water right claims of the Tribe to the Gila River side of  
41 the reservation will be the subject of separate negotiations or litigation.  
42

43 **2001 [Stipulation Between the City of Flagstaff and the United States on Behalf of the National Park](#)**  
44 **[Service and the Forest Service in the General Adjudication of all Rights to Use Water in the](#)**  
45 **[Little Colorado River System and Source](#)**

1 Recognized surface water and groundwater claims between the City of Flagstaff, Coconino  
2 National Forest and National Park Service. Establishes operation parameters and permissible  
3 maintenance for Upper and Lower Lake Mary.

4  
5 **2003 Zuni Indian Tribe Water Rights Settlement Agreement**

6 Settled claims of the Zuni Tribe to surface water from the Little Colorado River and provided to  
7 the tribe additional groundwater and reclaimed water.

8  
9 **2004 Arizona Water Settlement Act**

10 Through this Act, Congress approved an agreement between the United States and the State of  
11 Arizona for CAP repayment obligations. The Act also settled the water rights claims of the Gila  
12 River Indian Community and the claims of the Tohono O'odham Nation for its San Xavier  
13 reservation near Tucson, and reallocated 67,300 acre-feet (AF) of Non-Indian Agricultural priority  
14 CAP water to the Secretary of the Interior for use in future Indian water rights settlements in  
15 Arizona.

16  
17 **2005 Community Water System planning and reporting requirements**

18 The Arizona legislature enacted legislation requiring community water systems to prepare a  
19 water supply plan, a drought preparedness plan and a water conservation plan every five years  
20 and to submit annual water use reports

21 **2007 Mandatory Water Adequacy**

22 The Arizona legislature enacted legislation authorizing counties and cities to adopt an ordinance  
23 requiring new subdivisions outside of AMAs to demonstrate a 100-year adequate water supply  
24 before obtaining plat approval or receiving a public report from the Arizona Department of Real  
25 Estate.

26 **2010 White Mountain Apache Tribe Settlement**

27 More than \$126 million was authorized for development of a rural water system, including a dam  
28 and reservoir, to deliver the water. The measure, which passed on a unanimous vote Friday,  
29 November 19, 2010, sets aside 52,000 acre-feet of water to settle claims with the tribe. The tribe  
30 agreed to lease Central Arizona Project water it had been allocated as a part of the settlement to  
31 cities in the metropolitan Phoenix area.

## Appendix V: Water Partnership Groups from Around the State

This list is included for illustrative purposes and is not intended to be all-inclusive. There are several municipal water user groups that represent collective communities in various parts of the State. These groups include the Arizona Municipal Water Users Association, the Northern Arizona Municipal Water Users Association, and the Southern Arizona Water Users Association. There are also many Arizona water partnership groups that work cooperatively with multiple government and non-governmental entities to address local water issues. This list provides basic background information on currently active organizations.

### *Gila Watershed Partnership*

The Gila Watershed Partnership (GWP) was established in 1992 to improve the health and quality of the Upper Gila River in Arizona. Participants in the GWP include the City of Safford, Gila Valley Irrigation District, Graham and Greenlee Counties, and the Towns of Clifton, Duncan, Pima and Thatcher. The objective of the GWP is to ensure the Upper Gila River's water sustainability for future generations<sup>19</sup>. Goals of the group include conserving natural resources to improve the environment, preserving the local economy and mitigating against flood dangers as well as other natural disasters occurring along the river. The GWP has worked to improve water quality and quantity for those living in the Gila River watershed. The GWP works to engage and educate their community on various watershed issues such as invasive tree species. Beginning in 2015, the Gila River Restoration Project has worked to remove acres of invasive salt cedar from the Gila River watershed<sup>20</sup>. The GWP has worked with state and federal agencies to remove the salt cedar and replace them with native plant and tree species<sup>21</sup>.

### *The Coconino Plateau Water Advisory Council and Watershed Partnership*

The Coconino Plateau Water Advisory Council (CPWAC) was founded in 2000 under the State Rural Watershed Initiative. By 2011, the CPWAC included 33 stakeholder entities, including the City of Flagstaff and Coconino County. The goal of CPWAC was to provide sound water resource management and conservation strategies on the Coconino Plateau. They have worked to provide a better understanding of local water issues such as supply and demand in northern Arizona. In 2013, the Coconino Plateau

<sup>19</sup> Upper Gila River Watershed & Watershed Partnership. (n.d.). Retrieved from [http://www.azwater.gov/AzDWR/StatewidePlanning/SWAG/documents/Upper\\_Gila\\_Safford\\_SWAG\\_060206.pdf](http://www.azwater.gov/AzDWR/StatewidePlanning/SWAG/documents/Upper_Gila_Safford_SWAG_060206.pdf)

<sup>20</sup> Gila Watershed Partnership of Arizona. (2015). Gila River Restoration Project. Retrieved from Gila Watershed Partnership of Arizona: <http://www.gwpaz.org/projects/gila-river-restoratio>

<sup>21</sup> Gila Watershed Partnership of Arizona. (n.d.). Current Projects. Retrieved from Gila Watershed Partnership of Arizona: <http://www.gwpaz.org/projects/current-projects>

1 Watershed Partnership (CPWP) was established as an affiliate organization of the CPWAC which remains  
2 as a lobbying and funding organization<sup>22</sup>. The CPWP works to continue the goals of the original CPWAC.

### 3 *Upper San Pedro Partnership*

4 The Upper San Pedro Partnership (USPP) was established in 1998 as a collaborative effort to identify,  
5 prioritize and implement comprehensive policies and projects that assist in meeting the water needs of  
6 the Sierra Vista Sub watershed<sup>23</sup>. The Defense Authorization Act of 2004 (2004 Act), Public Law 108-136,  
7 Section 321, stipulates the way in which Section 7 of the Endangered Species Act applies to the Fort  
8 Huachuca, Arizona, and military reservation. Following implementation of the 2004 Act and through 2011,  
9 the Upper San Pedro Partnership submitted an annual report or “Section 321 Report” to Congress in  
10 consultation with the Secretaries of Agriculture and Defense on steps to be taken to reduce the overdraft  
11 and restore the sustainable yield of groundwater in the Sierra Vista Sub watershed.

12 The most recent Section 321 Report submitted by the USPP outlines the groundwater depletion in the  
13 Sierra Vista Sub Watershed but notes that the annual overdraft of the aquifer is greatly reduced from the  
14 2010 reported amount. Conservation yields for USPP members were outlined annually in the reports by  
15 planned yield and actual yield amounts. Fort Huachuca, Sierra Vista and Cochise County reported a 2010  
16 conservation yield of 2,638 acre-ft. and 2,860 acre-ft. of effluent recharge<sup>24</sup>.

17 The USPP reported that in 2011, 12,902 acres of land were conserved which translates to nearly 1,073 acre-  
18 ft. per year of water saved by retiring wells used for agriculture in the Sierra Vista Sub Watershed. Fort  
19 Huachuca has replaced some grass training areas with artificial turf and through Water Wise audits has  
20 reduced its water usage by 3.6 million gallons per year<sup>25</sup>.

### 21 *Mohave County Water Authority*

22 The Mohave County Water Authority (Authority) was formed in 1995 pursuant to A.R.S. 45-2202 and  
23 comprised of representatives from Lake Havasu City, Bullhead City, City of Kingman, Mohave Valley  
24 Irrigation & Drainage District, Golden Shores Water Conservation District, Mohave County and Mohave  
25 Water Conservation District. The Authority was created in response to the Department of Interior’s notice  
26 to the City of Kingman that their 4<sup>th</sup> priority main stream water contract was going to expire because of a  
27 lack of beneficial use<sup>26</sup>. The Authority became the one contracting entity for the Kingman contract which  
28 kept the Colorado River water in Mohave County and today has the entire 18,500 Acre-ft. of 4<sup>th</sup> priority

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<sup>22</sup> Coconino Plateau Water Advisory

Council <http://www.azwater.gov/azdwr/statewideplanning/RuralPrograms/CoconinoPlateaubasin.htm>

<sup>23</sup> Upper San Pedro Partnership. (n.d.). History. Retrieved from Upper San Pedro Partnership:

[http://www.usppartnership.com/about\\_history.htm](http://www.usppartnership.com/about_history.htm)

<sup>24</sup> Upper San Pedro Partnership. (2011). Water Management of the Regional Aquifer in the Sierra Vista Sub watershed, Arizona 2011 Report to Congress. Washington D.C.: U.S. Department of Interior.

<sup>25</sup> Upper San Pedro Partnership. (2011). USPP Brochure. Retrieved from Upper San Pedro Partnership:

<http://www.usppartnership.com/docs/2011USPPBrochureFinal.pdf>

<sup>26</sup> Mohave County Water Authority. (n.d.). Mohave County Water Authority. Retrieved from Mohave County Water Authority.com: <http://mohavecountywaterauthority.com/>

1 water that was at one time the Kingman contract<sup>27</sup>. Since its formation, the Authority has explored ways  
2 to address permanent and shortage supply issues.

3 *Little Colorado River Watershed Coordinating Council*

4 The council was established in 2004 to properly manage water resources within the Little Colorado River  
5 watershed and work together to implement watershed management and conservation strategies. The  
6 council works as a collective effort to educate the local citizens of watershed issues<sup>28</sup>.

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<sup>27</sup> Arizona Department of Water Resources. (2015). Mohave County Water Authority Demand and Supply Assessment. Phoenix: Arizona Department of Water Resources.

<sup>28</sup> Little Colorado River Watershed Coordinating Council. (n.d.). Retrieved from usbr.gov: [https://www.usbr.gov/uc/rm/amp/amwg/mtgs/05aug30/Attach\\_05b.pdf](https://www.usbr.gov/uc/rm/amp/amwg/mtgs/05aug30/Attach_05b.pdf)