

ACRONYMS AND ABBREVIATIONS

AAWS	Analysis of Adequate Water Supply
ADMMR	Arizona Department of Mines and Mineral Resources
ADWR	Arizona Department of Water Resources
ADEQ	Arizona Department of Environmental Quality
AFA	Acre-feet per annum (year)
ALERT	Automated Local Evaluation in Real Time
ALRIS	Arizona Land Resource Information System
AMA	Active Management Area
AMP	Adaptive Management Program
AMWG	Glen Canyon Adaptive Management Work Group
ASLD	Arizona State Land Department
AWPF	Arizona Water Protection Fund
AZGF	Arizona Game and Fish Department
AZGS	Arizona Geological Survey
AZMET	Arizona Meteorological Network
BLM	United States Bureau of Land Management
bls	Below land surface
C-Aquifer	Coconino Aquifer
cfs	cubic feet per second
CLIMAS	Climate Assessment for the Southwest
CWR	Certificate of water right
DES	Arizona Department of Economic Security
DOD	United States Department of Defense
DWID	Domestic water improvement district
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
GCNP	Grand Canyon National Park
gpm	Gallons per minute
GWSI	Groundwater Site Inventory System
HSR	Hydrographic Survey Report
HUC	Hydrologic Unit Code
ITCA	Intertribal Council of Arizona
LCR	Little Colorado River
LDIG	Local Drought Impact Group
LUST	Leaking Underground Storage Tank
maf	Million acre-feet
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NPS	United States National Park Service
NRCS	Natural Resources Conservation Service
NWIS	National Water Information System

Appendix A

Appendix A

Arizona Water Protection Fund Projects in the Western Plateau Planning Area through 2008¹

WESTERN PLATEAU PLANNING AREA			
Groundwater Basin	AWPF Grant #	Project Title	Project Category
Coconino Plateau	96-0019	Response of Bebb Willow to Riparian Restoration	Stream Restoration
Coconino Plateau	99-071	Protection of Spring and Seep Resources of the South Rim, Grand Canyon National Park by Measuring Water Quality, Flow, and Associated Biota	Research
Coconino Plateau	99-074	Proposal to Inventory, Assess, and Recommend Recovery Priorities for Arizona Strip Springs, Seeps, and Natural Ponds	Research
Coconino Plateau	99-093	Coconino Plateau Regional Water Study	Research
Coconino Plateau	05-131	Management & Control of Tamarisk and Other Invasive Vegetation at Backcountry Seeps, Springs, and Tributaries in Grand Canyon National Park	Exotic Species Control
Coconino Plateau	06-138	Management and Control of Tamarisk and Other Invasive Vegetation at back County Seeps, Springs, and Tributaries in Grand Canyon National Park – Second Year Phase II	Habitat Restoration
Grand Wash	06-137	Pakoon springs Restoration Design and Implementation Project	Habitat Restoration
Kanab Plateau	96-0004	Hydrologic Investigation & Conservation Planning: Pipe Springs	Research
Kanab Plateau	98-061	Watershed Enhancement on the Antelope Allotment	Upland Water Developments
Kanab Plateau	99-075	Glen and Grand Canyon Riparian Restoration Project	Exotic Species Control & Revegetation
Paria	08-157	Paria River Exotic Removal Project	Habitat Restoration

¹ A map with all Arizona Water Protection Fund grant locations can be found in Volume 1

Appendix B

APPENDIX B: Community Water System Annual Reports and Submitted Plans

PCC	FACILITY	Basin	2006 Withdrawn	2006 Diverted	2006 Received	2006 Total Demand	2006 Delivered	2006 Delivered to	2007 Withdrawn	2007 Diverted	2007 Received	2007 Total Demand	2007 Delivered	2007 Delivered to
91-000088	ADOT GRAND CANYON AIRPORT	Cocoino Plateau			5	5	10	CUSTOMER			6	6		
91-000107	BELLEMONT TRUCK CENTER	Cocoino Plateau	69			69	69	CUSTOMER	80			80	78	CUSTOMER
91-000085	CAMERON TRADING POST	Cocoino Plateau		40		40	40	CUSTOMER				NR		
91-000115	GRAND CANYON NP	Cocoino Plateau		883	176	1059	432/3/177	CUSTOMER/SYSTEM/OTHER					522	CUSTOMER
91-000109	HYDRO RESOURCES-TUSAYAN	Cocoino Plateau	153			153	126/25	CUSTOMER/SYSTEM	114			114	88/26	CUSTOMER/SYSTEM
91-000114	USFS-KNF-TUSAYAN ADMIN	Cocoino Plateau			3	3	3	CUSTOMER			3	3	3	CUSTOMER
91-000105	VALLE AIRPORT GRAND CANYON	Cocoino Plateau	35			35	35	CUSTOMER	37			37	38	CUSTOMER
91-000097	WILLIAMS, CITY OF	Cocoino Plateau	389		153	542	489/153	CUSTOMER/OTHER	512	85		597	428	CUSTOMER
91-000346	CENTENNIAL PARK DWID	Kanab Plateau				NR						NR		
91-000087	FREDONIA, TOWN OF	Kanab Plateau				NR						NR		
91-000311	HILDALE/COLORADO CITY	Kanab Plateau			1480	1480	1291	CUSTOMER			1494	1494	1426	CUSTOMER
91-000116	GLEN CANYON NRA-WAHWEAP	Paria				NR			8			8	8	CUSTOMER
91-000348	BEAVER DAM EAST DWID	Virgin River	13			13	13	CUSTOMER	12			12	12	CUSTOMER
91-000310	BEAVER DAM WC #2	Virgin River	296			296	296	CUSTOMER	161			161	160	CUSTOMER
91-000352	BIASI WATER COMPANY	Virgin River	33			33	33	CUSTOMER	48			48	48	CUSTOMER
91-000345	CHIEF SLEEP EASY TP	Virgin River				NR			3			3	3	CUSTOMER
91-000340	DS WATER COMPANY	Virgin River				NR						NR		
91-000356	VIRGIN MOUNTAIN UTILITIES	Virgin River	4			4	4	CUSTOMER	2			2	2	CUSTOMER
91-000353	VIRGIN MT ESTATES MHP	Virgin River	10			10	10	CUSTOMER	10			10	10	CUSTOMER

PCC = Program Certificate Conveyance (used as the community water system ID number)

**Community Water Systems that have submitted a System Water Plan to
the Department as of 12/2008**

PCC	NAME	Basin
91-000085	CAMERON TRADING POST	Coconino Plateau
91-000088	ADOT GRAND CANYON AIRPORT	Coconino Plateau
91-000097	WILLIAMS, CITY OF	Coconino Plateau
91-000105	VALLE AIRPORT GRAND CANYON	Coconino Plateau
91-000107	BELLEMONT TRUCK CENTER	Coconino Plateau
91-000109	HYDRO RESOURCES-TUSAYAN	Coconino Plateau
91-000114	USFS-KNF-TUSAYAN ADMIN	Coconino Plateau
91-000115	GRAND CANYON NP	Coconino Plateau
91-000087	FREDONIA, TOWN OF	Kanab Plateau
91-000311	HILDALE/COLORADO CITY	Kanab Plateau
91-000346	CENTENNIAL PARK DWID	Kanab Plateau
91-000116	GLEN CANYON NRA-WAHWEAP	Paria
91-000310	BEAVER DAM WC #2	Virgin River
91-000345	CHIEF SLEEP EASY TP	Virgin River
91-000348	BEAVER DAM EAST DWID	Virgin River
91-000352	BIASI WATER COMPANY	Virgin River
91-000353	VIRGIN MT ESTATES MHP	Virgin River
91-000356	VIRGIN MOUNTAIN UTILITIES	Virgin River

PCC = Program Certificate Conveyance (used as the community water system ID number)

Appendix C

APPENDIX C

SURFACE WATER RIGHT AND ADJUDICATION FILINGS

Surface water is defined in Arizona as “waters of all sources, flowing in streams, canyons, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, floodwaters, wastewaters, or surplus water, and of lakes, ponds and springs on the surface” (A.R.S. § 45-101).

In 1864, the first territorial legislature of Arizona adopted the doctrine of prior appropriation to govern the use of surface water. The doctrine is based on the tenet of “first in time, first in right” which means that the person who first puts the water to beneficial use acquires a right that is superior to later appropriators of the water. Since the population and water use were both relatively small at that time, no method was initially specified by the legislature for filing surface water right claims or granting rights. By the late 1800s, rapid development of irrigated agriculture combined with drought years had resulted in severe water shortages along the Salt and Gila Rivers. The territorial legislature responded in 1893 with a requirement that new water appropriations be posted at the point of diversion. However, until 1919, a person could acquire a surface water right simply by applying the water to beneficial use and recording a notice of appropriation at the state and country recorder’s office. There still was not a mechanism for granting surface water rights (ADWR, 1992).

On June 12, 1919, the state legislature enacted a surface water code. Now known as the Public Water Code, the law generally requires that a person apply for and obtain a permit in order to appropriate surface water. There is an exception for water use from the mainstem of the Colorado River, which requires a contract with the Secretary of the Interior. In addition, most persons claiming surface water rights prior to the code have been required to file a statement of claim under the Water Rights Registration Act of 1974, although the act did not provide a process for determining the validity of these claims. The legislature also enacted the Stockpond Registration Act in 1977 to recognize certain “unpermitted” stockponds constructed after 1919 that had not gone through the application process.

The Public Water Code provides that beneficial use shall be the basis, measure and limit to the use of water within the state. Beneficial uses are domestic (which includes the watering of gardens and lawns not exceeding one-half acre), municipal, irrigation, stockwatering, water power, recreation, wildlife including fish, nonrecoverable water storage, and mining uses (A.R.S. § 45-151(A)). The quantity of water that is reasonable for a particular beneficial use depends on a number of factors, including the location of the use.

The Department maintains a registry of surface water right applications and claims filed in Arizona since the Public Water Code was enacted. Each filing is assigned a unique number with one of the following prefixes

- “3R” – application to construct a reservoir filed before 1972;
- “4A” – application to appropriate surface water filed before 1972;
- “33” – application for permit to appropriate public water or construct a reservoir filed after

1972. In addition to surface water diversions and reservoirs, instream flow maintenance can be applied for and is defined as a surface water right that remains in-situ or “in-stream”, is not physically diverted or consumptively used, and is for maintaining the flow of water necessary to preserve wildlife, including fish, and/or recreation;

- “36” – statement of claim of rights to use public waters of the state. To make this claim, an applicant or predecessor-in-interest must have initiated a water use based on state law before March 17, 1995;
- “38” – claim of water right for a stockpond and application for certification filed for stockponds constructed after June 12, 1919 and before August 27, 1977. To file this claim and application, the stockpond should have been used exclusively for watering of livestock and/or wildlife, have a maximum capacity of 15 acre-feet, and not be subject to water rights litigation or protests prior to August 27, 1977;
- “39” – statement of claimant filed in *The General Adjudication of the Gila River System and Source* (Gila Adjudication) and *The General Adjudication of the Little Colorado River System and Source* (LCR Adjudication). As explained further below, the department maintains a separate registry of these filings on behalf of the Superior Court of Arizona; and,
- “BB” – decreed water rights determined through judicial action in state or federal court.

These filings specify the source of water, its point of diversion (POD) and place of use (POU), the type and quantity of water use, and date of first use or priority.

If, after moving through a number of administrative steps, an application to appropriate surface water or construct a reservoir (3R, 4A, or 33) is determined to be for beneficial use and not conflict with vested rights or be a menace to public safety or against the interests and welfare of the public, it may be approved and the applicant issued a permit to appropriate. The permit allows the permit holder to construct diversion works, as needed, and put the water to beneficial use. If the terms of the permit are met, the applicant can submit proof of appropriation through an application of certification and may be issued a Certificate of Water Right (CWR). The CWR has a priority date that relates back to the date of application and is evidence of a perfected surface water right that is superior to all other surface water rights with a later priority date, but junior to all rights with an earlier (older) priority date. The CWR also specifies the extent and purpose of the right and may be subject to abandonment and forfeiture if not beneficially used. There are currently approximately 850 applications to appropriate pending with ADWR, and approximately 420 permits and over 7,000 certificates have been issued by ADWR or its predecessors.

A CWR may also be issued based on a stockpond claim (38) if it is found that the facts stated in the claim are true and entitle the claimant to a water right for the stockpond. The priority date depends on the date that the owner of the stockpond filed the claim. If filed prior to March 17, 1996, the priority date is the date of construction. Otherwise, the priority date is the date of filing the claim. Regardless of the date, the CWR for a stockpond claim is junior to (a) Colorado River and other court decreed rights; (b) other rights acquired prior to June 12, 1919 and registered as a statement of claim; and (c) any other CWR issued pursuant to an application filed before August 27, 1977. To date, nearly 20,000 stockpond claims have been filed of which over 3,000 stockpond certificates have been issued by ADWR or its predecessors.

Unlike a CWR, the act of filing a statement of claim (36) does not in itself create a water right,

nor does it constitute a judicial determination of the claim. Statements of claim are subject to challenge, but can be admitted “in evidence as a rebuttal presumption of the truth and accuracy of the information contained in the claim” (A.R.S. § 45-185). To date, nearly 30,000 statements of claim have been filed in Arizona.

In addition to the applications and claims described above, ADWR’s registry of surface water right filings includes several rights determined through judicial action in state or federal court. These ‘adjudications’, in which a water right is determined by court action, may be initiated when one or more water users seek to know how their rights compare to the rights of other water users and/or seek judicial relief from alleged interference with their rights by other water users. The court process establishes or confirms the validity of surface water rights and claims, determines whether these have been properly maintained over the years, and ranks them according to their priority. The result is a decree that may, in addition to establishing and confirming rights, specifies terms under which the decreed rights may be exercised if water shortages occur. Court decreed rights are considered the most valued or certain surface water rights because in the absence of abandonment or forfeiture, they are normally accepted as to their validity. More than 1,000 court-decreed rights are listed in ADWR’s registry and given the prefix “BB”.

Although several surface water uses have been decreed, many claims and rights established before and after statehood have still not been examined to see if they remain valid. In addition, many water rights established under federal law and claimed by Indian tribes and the United States have not been quantified or prioritized. To better manage water resources in the state, these diverse rights and claims have been jointed into large, comprehensive determinations.

Arizona currently has two general stream adjudications – the Gila Adjudication and the LCR Adjudication. The purpose of these judicial proceedings is to determine the nature, extent, and priority of water rights across the entire river systems. In addition to confirming existing state-based surface water rights, the adjudications will quantify and prioritize reserved water rights for Indian and non-Indian federal lands. The latter include military bases, national parks and monuments, and national forests. The adjudications will also determine which wells are pumping appropriable underground water (subflow) and therefore are subject to the jurisdiction of the court. The Gila and LCR Adjudications are being conducted in the Superior Court of Arizona in Maricopa and Apache Counties, respectively. ADWR provides technical, legal and administrative support to the adjudication court, as described in A.R.S. § 45-256.

Figure C-1 General Stream Adjudications in Arizona



The Gila Adjudication was initiated in 1974 when SRP filed a petition to determine the water rights in the Salt River Watershed above the Granite Reef Diversion. Since that time, the adjudication area has grown and now covers over 53,000 square miles. It is divided into 7 watersheds and includes 12 Indian reservations and over 24,000 parties. The LCR Adjudication was initiated by a petition filed by Phelps Dodge in 1978. This adjudication now covers 27,000 square miles and includes 3 watersheds, 5 Indian reservations, and over 3,000 parties. A party is a person or entity that has filed one or more statement of claimant (SOC) in the adjudication.

All parties who claim to have a water right within the river systems are required to file an SOC or risk the loss of their right. Well owners are also encouraged to file an SOC since the adjudication process may include water use from a well depending on the well's location relative to streams and other factors. However, a person does not obtain a right to use water by filing an SOC nor is an SOC a legal permit to use water. Rights to use water must be acquired in accordance with state or federal law.

Each year, ADWR sends summons to new surface water appropriators and well owners in the adjudication areas that direct them to file an SOC. In response, the number of SOCs filed in the adjudications continues to increase as new water uses are initiated. To date, nearly 81,000 SOCs have been filed in the Gila Adjudication and over 14,000 SOCs have been filed in the LCR Adjudication. ADWR maintains a separate registry of these adjudication filings on behalf of the Superior Court and assigns each a unique number with the prefix "39".

Table C-1 summarizes the number of surface water right and adjudication filings for each planning area. The table was generated by querying ADWR's surface water right and SOC registries in February 2009. Files are only counted in the table if they include sufficient locational information (Township, Range, and Section) to allow a POD and/or POU to be mapped within the planning area. If a file lists more than one POD or POU in a planning area, it is only counted once in the table for that planning area. However, no attempt was made to avoid counting multiple filings for the same POD/POU which can result if a landowner or lessee has two or more filings or if different applicants each have at least one filing. Since many SOCs list surface water right filings as their basis of claim, multiple filings are common and account, in part, for the large number of filings. Sorting through multiple filings is one of the challenges facing the Department and the adjudication courts. Results from the Department's investigation of surface water right and adjudication filings are presented in Hydrographic Survey Reports (HSRs).

Figure C-2 shows the location of surface water diversion points listed in the Department's surface water rights registry. The numerous points mapped reflect the relatively large number of stockponds and reservoirs that have been constructed across the state as well as diversions from streams and springs. Locations for registered wells, many of which are referenced as the basis of claim in SOCs, are also shown in Figure C-2. Instream flow filings are not shown as these filings do not have points of diversion.

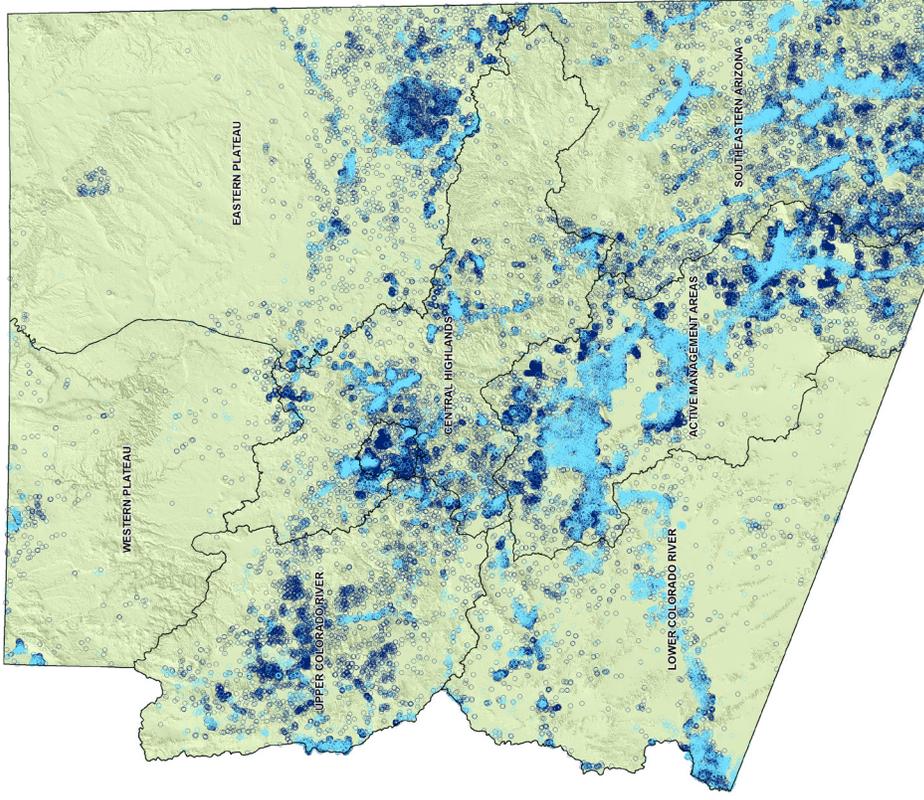
Table C-1 Count of Surface Water Right and Adjudication Filings by Planning Area¹

PLANNING AREA	TYPE OF FILING						TOTAL
	BB ²	3R ³	4A ³	33 ³	36 ⁴	38 ⁵	
Eastern Plateau	134	163	196	373	3,289	3,275	12,099
Southeastern	483	395	716	898	8,288	6,415	19,288
Upper Colorado River	0	224	329	469	2,858	2,084	0
Central Highlands	1	287	625	897	8,517	3,928	25,443
Western Plateau	0	415	207	554	1,177	1,270	324
Lower Colorado River	0	26	48	86	355	304	2,323
Active Management Areas	1	269	341	687	4,072	2,913	27,134
Total	619	1,779	2,462	3,964	28,556	20,189	86,611

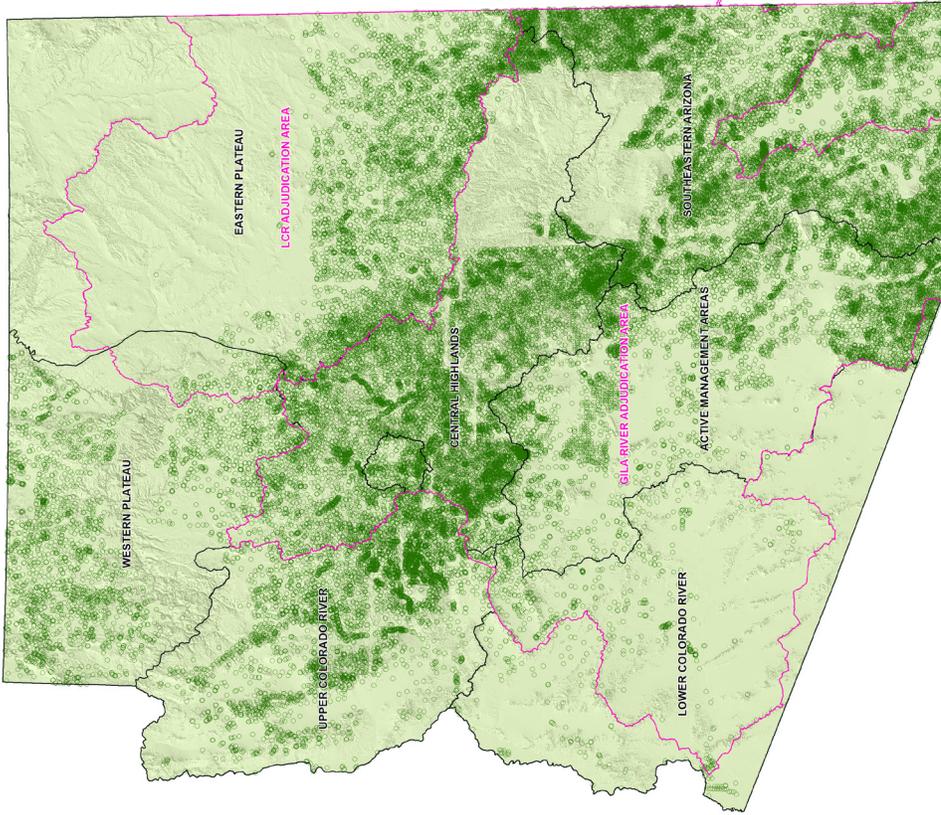
Notes:

- ¹ Based on a query of ADWR's surface water right and adjudication registries in February 2009. A file is only counted in this table if it provides sufficient information to allow a Point of Diversion (POD) and/or Place of Use (POU) to be mapped within the planning area. If a file lists more than one POD or POU in a given planning area, it is only counted once in the table for that planning area. Several surface water right and adjudication filings are not counted here due to insufficient locational information. However, multiple filings for the same POD/POU are counted.
- ² Court decreed rights; not all of these rights have been identified and/or entered into ADWR's surface water rights registry.
- ³ Application to construct a reservoir, filed before 1972 (3R); application to appropriate surface water, filed before 1972 (4A); and application for permit to appropriate public water or construct a reservoir, filed after 1972 (33).
- ⁴ Statement of claimant of rights to use public waters of the state, filed pursuant to the Water Rights Registration Act of 1974.
- ⁵ Claim of water right for a stockpond and application for certification, filed pursuant to the Stockpond Registration Act of 1977.
- ⁶ Statement of claimant, filed in the Gila or LCR General Stream Adjudications.

Wells



Surface Water Points of Diversion



- Planning Area Boundary
- Wells
 - Non-Exempt Well
 - Exempt Well
- Surface Water POD
- Adjudication Watershed Boundary

Figure C-2
Registered Wells and Surface
Water Diversion Points in Arizona

Appendix D

APPENDIX D
Rural Watershed Partnerships in the Western Plateau Planning Area (2008)

MULTI-PLANNING AREA - Eastern Plateau, Western Plateau and Central Highlands			
Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
Coconino Plateau Water Advisory Council	<p>Flagstaff Williams Page TNC Navajo Nation Havasupai Tribe ADWR State Land NAU USBOR National Parks US Fish and Wildlife Grand Canyon National Park AZ Game and Fish Doney Park Water Co.</p> <p>Coconino County Sedona Tusayan Grand Canyon Trust Hopi Tribe Hualapai Tribe ADEQ NRCD USGS USFS</p>	<ul style="list-style-type: none"> • 4 categories of potential water augmentation projects have been identified along with their associated costs. • Groundwater study and conceptual model completed • Phase I Water Demand Study for Coconino Plateau • Growth Impacts Study • Western Navajo Pipeline Study • Development of study for importing C aquifer groundwater east of Flagstaff has been completed. • Flagstaff, Hopi and Navajo are exploring cooperative opportunities for developing C aquifer groundwater. • Flagstaff purchased Red Gap Ranch for possible future development of groundwater. • Hopi HSR initiated. • Water Supply Appraisal Study Completed, which identifies current & future demands and alternatives for meeting projected demands. • Numeric Groundwater Model completed • Strategic Plan has been completed to address water conservation and management on the Plateau 	<ul style="list-style-type: none"> • Continued growth throughout entire plateau region • Limited and deep groundwater supplies. • Drought sensitive surface water supplies of Williams, Flagstaff and others • Groundwater salinity issues in northeastern part of plateau • Numerous water haulers with few hauling stations that are sometimes cutoff during drought • Unable to get adequate water supply designation under current definition • Growth in Page with no current means of additional supply • ESA issues with groundwater usage and impacts on perennial streams • Potential limitation of groundwater usage resulting from reserved groundwater rights of Indians • Uncertainty of Indian water right settlements (LCR & Colorado River) • Proposed San Juan Paiute reservation west of Flagstaff • Potential impacts on springs in Grand Canyon and also on supplies to Havasupai and Hualapai reservations • Access to water development on public lands • Limited groundwater data for entire region • Minor Arsenic issues in Woody Mtn. Well field (9-14 ppb) • Unregulated lot splits • Limited funding resources for planning, projects, infrastructure and studies

MULTI-PLANNING AREA - Eastern Plateau, Western Plateau and Central Highlands			
Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
Northern Arizona Municipal Water Users Association (NAMWUA)	<p>Prescott Flagstaff Cottonwood Sedona Chino Valley</p> <p>Prescott Valley Williams Clarkdale Payson</p>	<ul style="list-style-type: none"> • Attempting to obtain Congressional Authority to complete a Feasibility Study of the water alternatives identified • Projected water demands through 2040 have been identified • A request for 70,000 acre-feet of CAP reallocation water has been submitted to ADWR for consideration. • Completed Colorado River Supply Study 	<ul style="list-style-type: none"> • Extremely high cost of water augmentation projects • Competition from Phoenix/Tucson for CAP reallocation water and other Colorado River supplies • Congressional Support for completion of a Feasibility Study • Modifications to the current definition of an adequate water supply resulting from the passage of SB1575 • Limited supplies to meet projected demands • ESA issues impacting potential ground and surface water supplies • Limited funding resources for planning, projects, infrastructure and studies • Competition from Phoenix/Tucson for CAP reallocation water and other Colorado River supplies • Funding for Colorado River infrastructure • Water quality issues in Verde Valley and Flagstaff • Upper Basin/Lower Basin issues with Colorado River affect potential for use • Modifications to the current definition of an adequate water supply resulting from the passage of SB1575

