

ARIZONA WATER BANKING AUTHORITY

1997 ANNUAL PLAN OF OPERATION



Rita P. PEARSON, Chairman

December 1, 1996

INTRODUCTION

A.R.S. § 45-2456 requires, by December 1 of each year, the Arizona Water Banking Authority (Authority) to adopt a plan of operation for the following calendar year. The Authority was created with the passage of HB 2494 by the 1996 Legislature. The Authority consists of the following 7 members, 5 of whom are voting and two non-voting ex officio: the Director of the Arizona Department of Water Resources serves as chairman of the Authority (Rita P. PEARSON); the President or designee of the Central Arizona Water Conservation District Board (Grady Gammage); a representative of an entity with an M&I subcontract (Bill Chase); a representative of the Colorado River communities (Tom Griffin); a person knowledgeable in water management (Richard S. Walden); an ex officio member of the Senate appointed by the President of the Senate (Stan Barnes) and an ex officio member of the House appointed by the Speaker of the House (Mark Killian).

The Authority was created with a mission to take the currently unused portion of Arizona's Colorado River allotment and recharge the water in Arizona to develop long-term storage credits for future use. Recharge by the Authority is not meant as a substitute for existing uses or storage of Colorado River water by entities in Arizona, but as a means of utilizing Colorado River water that would otherwise have gone unused by Arizona.

The Authority has approximately \$10 million in calendar year 1997 for direct and in-direct recharge, including all pump tax, 4 cent property tax and general fund revenues. Due to the demonstrated requests, recharge opportunities for 1997 will only be constrained by revenues of the Authority.

1997 ANNUAL PLAN OVERVIEW

Total estimated use on the Colorado River for 1996 and 1997 will exceed the 7.5 million acre feet (maf) allotted to the Lower Basin states of Arizona, California and Nevada (see Figure 1). The 1996 surplus declaration and the expected declaration of a surplus for 1997 have and will provide for delivery to the Lower Basin an amount greater than the 7.5 maf.

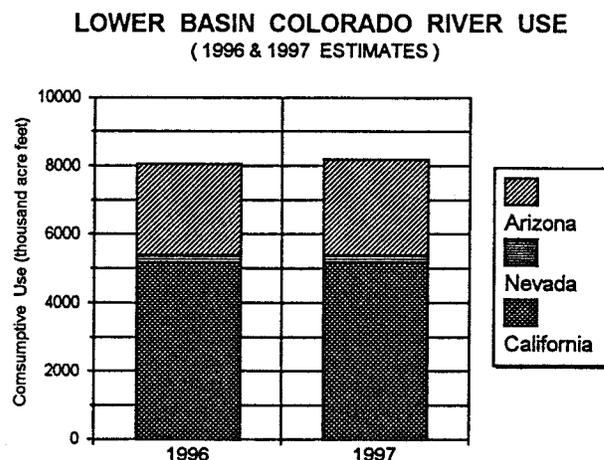


Figure 1

However, total Colorado River consumptive use by the State of Arizona for 1997 is estimated to be 2.7 maf (see Figure 2), still under the allotted 2.8 maf allowed to be diverted by Arizona under *Arizona vs. California*.

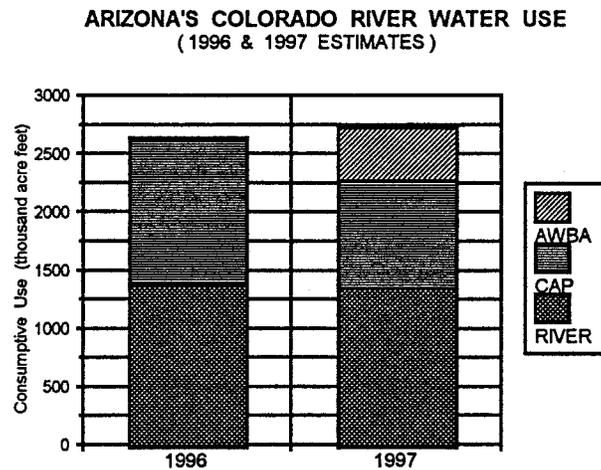


Figure 2

Figure 3 further itemizes Arizona's estimated 2.7 maf of Colorado River use by month, including projected Colorado River uses along the River in Arizona of 1.38 maf; CAP

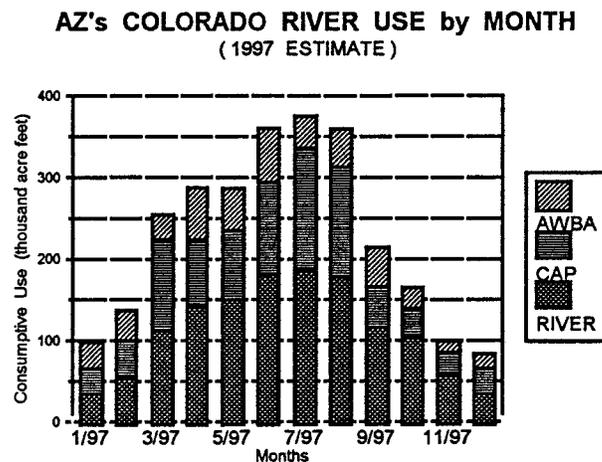


Figure 3

subcontractor deliveries of an estimated 905,000 af, including M&I, Indian, Agriculture Pool 1, 2, and 3, and incentive recharge water; and approximately 436,000 af for recharge by the Authority.

Table 1 reflects the delivery of water by the CAWCD on behalf of the Arizona Water Banking Authority for banking in Arizona. The total storage by the Authority in 1997 will be constrained by CAP aqueduct capacity remaining after the CAP has scheduled its deliveries.

TABLE 1
ARIZONA WATER BANKING AUTHORITY
CAP Water Delivery Schedule for AWBA Recharge
(Monthly Adjusted AWBA Volumes based on CAP Capacity Values)
Calendar Year 1997
(ACRE-FEET)

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
Estimated CAP Deliveries: (M&I, Indian, Ag Pools 1, 2 & 3, Incentive Recharge)	32,891	46,973	112,046	83,566	85,167	111,964	150,844	135,829	52,411	34,582	29,790	29,378	905,441
Available Excess CAP Capacity for AWBA:	29,000	32,000	28,000	59,000	50,000	63,000	37,000	44,000	45,000	23,000	10,000	16,000	436,000
AWBA - Recharge Sites:													
Phoenix AMA:													
Direct > GRUSP	9,000	9,000	4,484	7,669	6,400	1,873	0	0	0	0	2,864	5,300	46,590
AGUA FRIA (1)	0	0	0	0	0	0	0	0	958	1,616	1,432	1,178	5,184
Indirect > CHANDLER HGTS CID (4)	0	0	0	30	36	36	42	40	36	0	0	0	220
MWD	2,250	2,000	1,495	2,559	2,849	3,750	2,137	2,437	2,878	1,616	1,432	589	25,992
NEW MAGMA	2,250	2,000	3,836	0	0	0	3,762	10,359	9,786	1,454	573	883	34,903
QUEEN CREEK	0	0	0	0	0	937	1,603	3,656	959	808	358	1,178	9,499
RWCD	3,500	8,000	3,996	6,821	5,698	7,500	4,274	4,875	7,676	2,424	0	0	54,764
SRP	0	0	1,247	18,047	15,787	16,090	3,829	711	12,152	8,618	477	395	77,353
TONOPAH ID (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
PINAL AMA:													
Direct > (3)													
Indirect > CAIDD	5,500	3,000	4,982	10,232	8,547	13,125	8,015	9,141	3,838	2,424	1,432	2,944	73,180
HOHOKAM	0	0	1,495	1,706	1,424	4,687	4,274	4,875	0	0	0	0	18,461
MSIDD	6,500	8,000	6,477	11,907	9,259	15,000	9,064	7,906	6,716	4,040	1,432	3,533	89,834
TUCSON AMA:													
Direct > AVRA VALLEY (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
PIMA MINE ROAD (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect > CORTARO MARANA ID (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
BKW FARMS (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL SYSTEM (DIRECT & INDIRECT):	29,000	32,000	28,000	59,000	50,000	63,000	37,000	44,000	45,000	23,000	10,000	16,000	436,000
Remaining CAP Capacity:	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Agus Fria Siphon Outage (June 16 - September 15, 1997)
The HAV through HSV Pumping Plant Capacity will not be available for recharge downstream of the Waddell Turnout during this period.

(1) - Not Available for Direct Recharge until Fall 1997.
(2) - Capacity Committed to Other Partners.
(3) - No Direct Facilities Currently Permitted.
(4) - Chandler Heights maximum potential delivery was not pro-rated due to the low relative volumes.

BACKGROUND

Absent any existing Storage Site Criteria for selection of potential recharge sites or a facilities inventory of all existing facilities and available capacities, the Authority began putting together a proposed detailed plan for determining the cost and location for storing water in 1997.

The Authority staff made initial visits to virtually all permitted facilities in the three county CAWCD service area of Maricopa, Pinal and Pima counties that currently held would soon have Groundwater Savings Facility permits or Underground Storage Facility permits, as in the case of Salt River Project (SRP) at their Granite Reef Underground Storage Project (GRUSP) facility. In the Tucson AMA, the staff met with Cortaro-Marana. In the Pinal AMA, the Authority staff visited with Central Arizona Irrigation and Drainage District (CAIDD), Maricopa-Stanfield Irrigation and Drainage District (MSIDD), Hohokam Irrigation District, and San Carlos Irrigation District, which has yet to apply for a Groundwater Savings Facility permit. In the Phoenix AMA, the staff met with Roosevelt Water Conservation District (RWCD), Queen Creek Irrigation District (QCID), Salt River Project (SRP), New Magma Irrigation and Drainage District (NMIDD), Chandler Heights Citrus Irrigation District (CHCID), Metropolitan Water District (MWD) and Tonopah Irrigation District. Through these meetings, the Authority was able to gain a better perspective of the potential in-lieu and direct recharge opportunities for 1997 and to help address some concerns and questions raised by districts.

Attachments were developed out of the initial meetings with the districts, reflecting the potential in-lieu demand of each district and direct capacities at the GRUSP and Agua Fria sites. The Central Arizona Project (CAP) staff, in conjunction with the Arizona Water Banking Authority staff, then corresponded all potential recharge amounts provided by the individual districts with the monthly delivery capacities of the CAP and developed Table 16.

Please note that all capacities are given assuming full utilization of historical Pool 1 and Pool 2 water in calendar year 1997. The Authority quickly learned, as shown in these Tables, that more demand existed initially than water was available for purchase by the Authority due to financial limitations of the Authority, even with full use of Pool 1 and Pool 2. The CAWCD and ADWR have made the determination that all Pool 1 and Pool 2 water taken the previous year by the districts must be taken in calendar year 1997 prior to credits being awarded to the Authority for water delivered to a district in-lieu. The Arizona Department of Water Resources has not made an official determination, however, it is believed that Pool 3 will not have the same requirements for delivery prior to credits being awarded as Pool 1 and 2. It should also be noted that the Authority will assume responsibility for all losses incurred from the individual turnouts of the CAP and water delivered as Authority in-lieu water will not carry a take-or-pay provision similar to that of CAP Pool 1 and Pool 2 water.

The following steps were taken in developing the Annual Operating Plan:

- Step 1: Determined interest in participating in the Water Bank (acre feet)
 Determined CAP capacity constraints
 (Results shown on Table 2)

TABLE 2
ARIZONA WATER BANKING AUTHORITY
 Potential CAP Water Delivery Schedule for AWBA Recharge
 (Maximum Potential Deliveries for Direct and Indirect Recharge with AWBA Based on User's Requests)
 Calendar Year 1997
 (ACRE-FEET)

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
Estimated CAP Deliveries: (M&I, Indian, Ag Pools 1, 2 & 3, Incentive Recharge)	32,891	46,973	112,046	83,566	85,187	111,964	150,844	135,829	52,411	34,582	29,790	29,378	905,461
Available Excess CAP Capacity for AWBA:	29,000	32,000	28,000	59,000	50,000	63,000	37,000	44,000	45,000	23,000	10,000	16,000	436,000
AWBA - Recharge Sites:													
Phoenix AMA:													
Direct > GRUSP	9,000	9,000	9,000	9,000	9,000	2,000	0	0	0	0	4,000	9,000	60,000
Indirect > AGUA FRIA (1)	0	0	0	0	0	0	0	0	1,000	2,000	2,000	2,000	7,000
Indirect > CHANDLER HGTS CID	0	0	0	30	36	36	42	40	36	0	0	0	220
MWD	2,000	2,000	3,000	3,000	4,000	4,000	4,000	4,000	3,000	2,000	2,000	1,000	34,000
NEW MAGMA	2,000	1,800	7,700	0	0	0	7,040	17,000	10,200	1,800	800	1,500	49,840
QUEEN CREEK	0	0	0	0	0	1,000	3,000	6,000	1,000	1,000	500	2,000	14,500
RWCD	3,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	3,000	0	0	70,000
SRP	0	0	2,502	21,166	22,168	17,166	7,168	1,168	12,666	10,666	660	670	96,000
TONOPAH ID (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
PINAL AMA:													
Direct > (3)													
Indirect > CAIDD	5,000	3,000	10,000	12,000	12,000	14,000	15,000	15,000	4,000	3,000	2,000	5,000	100,000
HOHOKAM	0	0	3,000	2,000	2,000	5,000	8,000	8,000	0	0	0	0	28,000
MSIDD	6,000	8,000	13,000	14,000	13,000	16,000	17,000	13,000	7,000	5,000	2,000	6,000	120,000
TUCSON AMA:													
Direct > AVRA VALLEY (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
PIMA MINE ROAD (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect > CORTARO MARANA ID (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
BKW FARMS (2)	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL SYSTEM (DIRECT & INDIRECT):	27,000	31,800	56,202	69,196	70,202	67,202	69,248	72,206	46,902	28,466	13,966	27,170	579,560
Remaining CAP Capacity:	2,000	200	(28,202)	(10,196)	(20,202)	(4,202)	(32,248)	(28,206)	(1,902)	(5,466)	(3,966)	(11,170)	(143,560)

Note: Agua Fria Siphon Outage (June 16 - September 15, 1997)
 The HAV through HSV Pumping Plant Capacity will not be available for recharge downstream of the Waddell Turnout during this period.
 (1) - Not Available for Direct Recharge until Fall 1997. (2) - Capacity Committed to Other Partners. (3) - No Direct Facilities Currently Permitted.

- Step 2: General Fund monies divided equally between Phoenix and Pinal AMA's because of lack of facilities in Tucson AMA in 1997.
- Step 3: Calculate the amount of recharge potential in each AMA/county by funds allocated to AMA. Again, because of lack of facilities in Tucson AMA, their recharge was scheduled to occur in Pinal AMA .
- Step 4: Adjusted monthly delivery amounts based on available CAP monthly capacities (Table 1).

PRICING

The total cost to the AWBA to develop approximately 436,000 acre feet of recharge credits is \$8,250,000 including the delivery rate, cost recovery from the in-lieu user, and a direct facility use fee.

Table 3 reflects the water rates the Central Arizona Water Conservation District (CAWCD) will charge the Authority for the delivery of Colorado River water, the Authority will charge irrigation districts for in-lieu water, the rate the Salt River Project (SRP) is expected to charge the Authority for the use of the Granite Reef Underground Storage Project (GRUSP) and an estimated rate for the Agua Fria River facility currently under construction by the CAWCD.

Table 3 WATER RATES For Calendar Year 1997	
CAP delivery rate to AWBA	\$35 per acre foot
AWBA rate to In-Lieu User	\$21 per acre foot
SRP rate to AWBA for Direct Recharge	\$22 per acre foot
CAWCD rate to AWBA for Direct Recharge	\$10 per acre foot (estimate)

(Note: decision on in-lieu pricing policy is scheduled to be made by Authority members at October 16 meeting in Lake Havasu City)

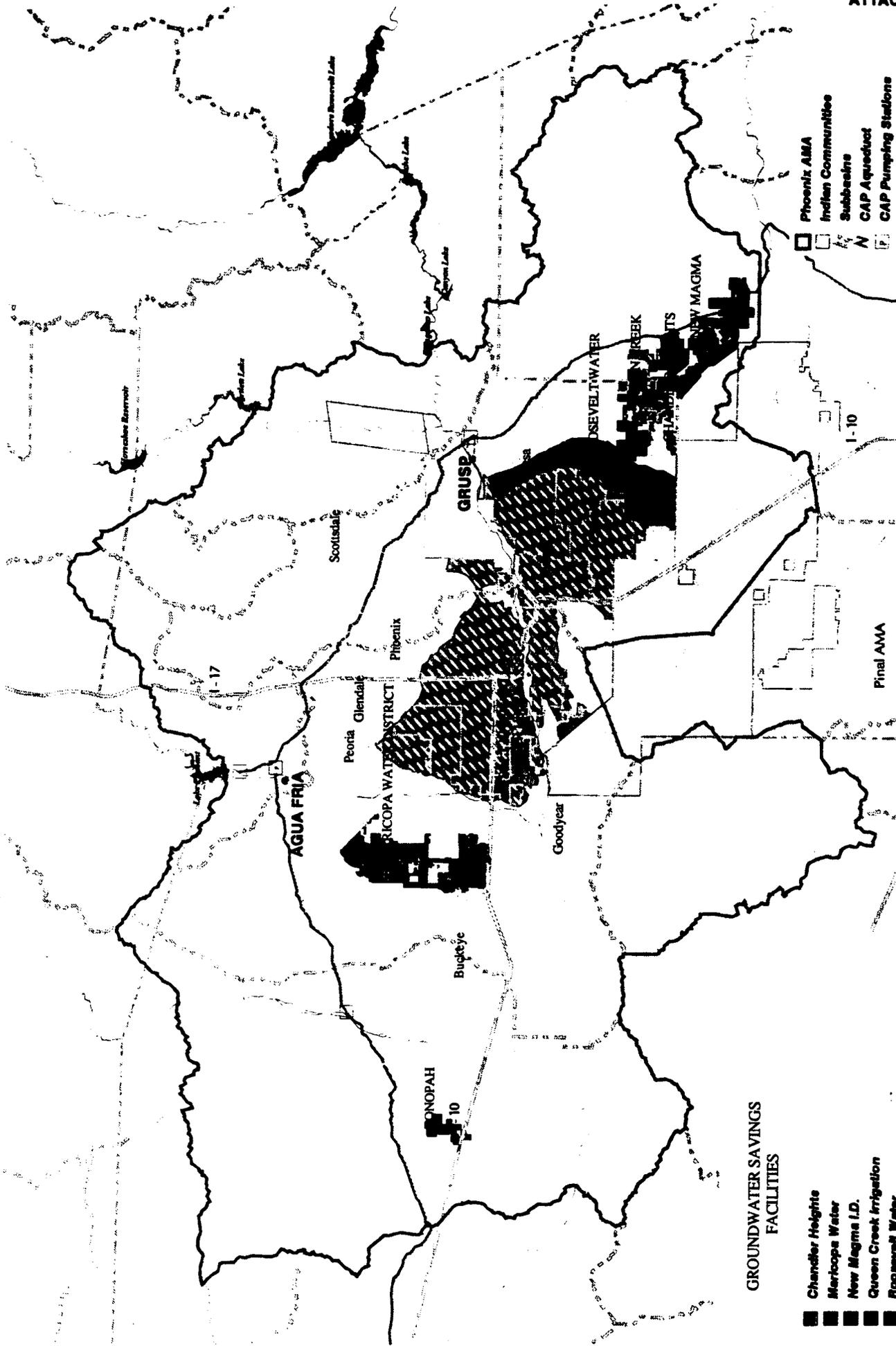
ACCOUNTING

A.R.S. § 45-2457 stipulates that the Authority shall develop an accounting system for the long-term storage credits accrued by the Authority. The accounting system shall be designed to allow the Authority to determine which funding source of the banking fund paid for each long-term storage credit accrued by the Authority.

The Arizona Department of Water Resources has set-up the accounts per A.R.S. § 45-2457 for both funding and credits. Table 4 reflects estimates of the 1997 funding and credits, which will accrue to those accounts based on this Operating Plan.

Table 4
FUNDING AND CREDIT ACCOUNTING
For Calendar Year 1997

DESCRIPTION	FUNDING		CREDITS	
	AVAILABLE	EXPENDED	AMOUNT	LOCATION
<u>Withdrawal Fee</u>				
Phoenix AMA	(not available)			
Tucson AMA	(not available)			
Pinal AMA	(not available)			
<u>Four Cent Tax</u>				
Maricopa County	\$5,700,000	\$4,729,000	210,000 acre feet	Phoenix AMA
Pima County	\$1,400,000	\$1,242,000	88,700 acre feet	Pinal AMA
Pinal County	\$ 300,000	\$ 300,000	21,300 acre feet	Pinal AMA
<u>Other</u>				
General Fund	\$2,000,000	\$2,000,000	116,000 acre feet	
		(\$1,000,000)	(44,600 acre feet)	(Phoenix AMA)
		(\$1,000,000)	(71,400 acre feet)	(Pinal AMA)
California	(not applicable)			
Nevada	(not applicable)			
TOTAL	\$9,400,000	\$8,271,000	436,000 acre feet	



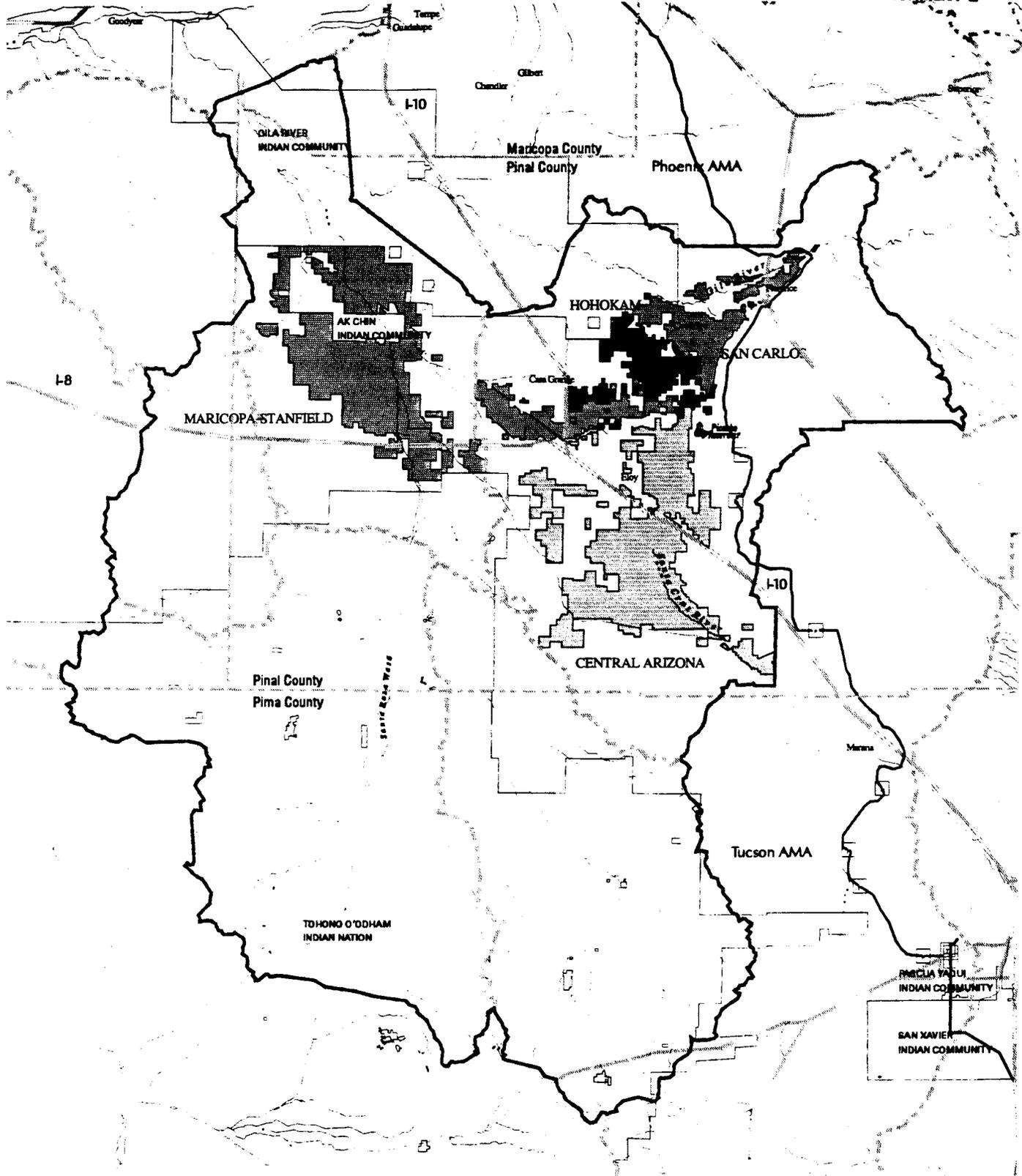
- ☐ Phoenix AMA
- ☐ Indian Communities
- ▨ Subbasins
- ▨ CAP Aqueduct
- ▨ CAP Pumping Stations
- ▨ Streams and River Beds
- ▨ Lakes and Reservoirs
- ▨ Interstates
- ▨ Counties
- Direct Recharge Facility
- Water Providers

GROUNDWATER SAVINGS FACILITIES

- ▨ Chandler Heights
- ▨ Maricopa Water
- ▨ New Magma I.D.
- ▨ Queen Creek Irrigation
- ▨ Roosevelt Water
- ▨ Salt River Valley Water Users Assoc.
- ▨ Tonopah I.D.

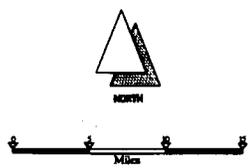


Phoenix Active Management Area



- Pinal AMA
- Indian Communities
- Subbasins
- CAP Aqueduct
- CAP Pumping Stations
- CAP Water Treatment Plant
- Streams and River Beds

- Interstates
- Counties
- Central Arizona IDD
- Hohokam IDD
- Maricopa-Stanfield IDD
- San Carlos IDD



Universal Transverse Mercator Projection

Pinal AMA Recharge Facilities