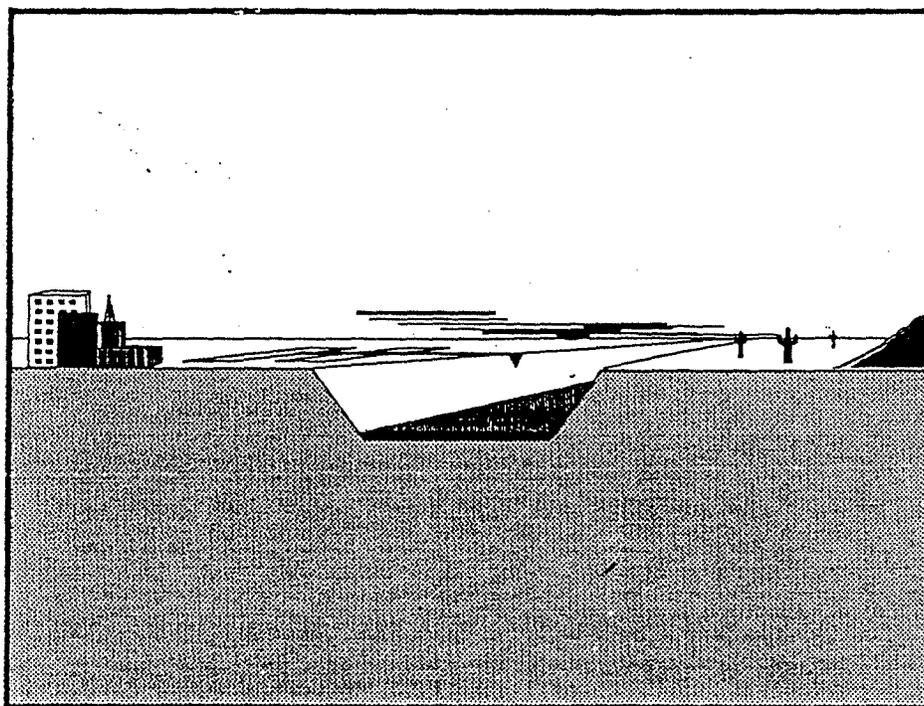


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GOVERNOR'S CENTRAL ARIZONA PROJECT ADVISORY COMMITTEE

LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION



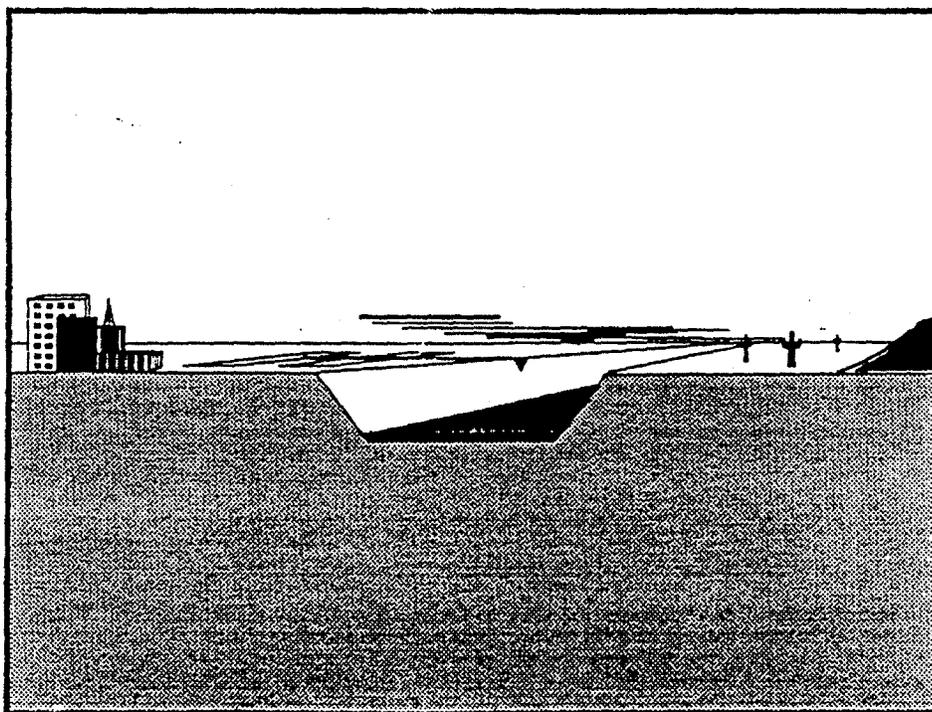
March 10, 1993

CAWCD035046

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LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION



Prepared by Arizona Department of Water Resources
with the assistance of the Central Arizona Water Conservation
District and the U.S. Bureau of Reclamation

March 10, 1993

CAWCD035047

LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION

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INTRODUCTION

The Governor's Central Arizona Advisory Committee has adopted a planning procedure that consists of six sequential steps. The first step, **Describe the CAP as of 1993**, is completed. A draft report on this topic was prepared and was discussed and distributed at the Committee's February 18, 1993 meeting. The second step, **Describe the likely future conditions without alternative action**, is critical to the entire process. The process describes the probable sequence of events if the current laws, agreements, contracts, and subcontracts remain in place without modification. It is the implications of the "future without action" discussion that results in issues and concerns about the CAP and the need for potential alternative action. This planning scenario, which is often called the "no action plan," will be used as the basis of comparison for the effects of any proposed action plan.

This draft report documents the "future without action" description that was developed by the Inter-agency Study Team. The description is based on analysis of the effect of various provisions of current laws and contracts concerning the Central Arizona Project in light of conditions, especially economic conditions, which currently exist. In preparing this "future without action" description consideration was given to a wide range of comments, opinions, and observations received at the February 23, 1993 meeting of the Indian Involvement Group and the February 24, 1993 meeting of the Public Involvement Advisory Group. The concepts described in this report were the focus of the March 2, 1993 meeting of the Governor's Central Arizona Project Advisory Committee.

DEFINITION OF LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION

The Description of the Central Arizona Project report explained that the framework of the CAP is more than just physical features; it also includes the laws, agreements, institutions, allocations, contracts and subcontracts, financial arrangements, and water supplies. Much of this framework evolved over many years based on Central Arizona Project planning studies and upon the interest expressed by water users in receiving CAP water. According to recent study efforts, such as the Governor's Task Force on CAP issues and the U.S. Bureau of Reclamation (USBR) and Central Arizona Water Conservation District (CAWCD) "White Paper," it is now apparent that some of the fundamental assumptions that were made in the development of the CAP framework may not be accurate. The root inaccurate assumption is that non-Indian agriculture could use all the CAP water supply that would not be used by Municipal and Industrial (M&I) and Indian contractors.

Because this fundamental assumption appears to be incorrect, it is likely that the CAP cannot be operated as originally envisioned. In describing the "future conditions without alternative action" an attempt is made to lay out the scenario of what is likely to happen to the Project if no changes are made to the project framework, even though conditions affecting CAP water users may have changed. Since many of the contract and legal provisions are subject to interpretation, it is impossible to describe the no action scenario without making a number of assumptions. However, the differentiation between a "no action scenario" and an "action scenario" occurs when an assumption will result in a fundamental change in the CAP plan. This change may be the result of new legislation, contract modifications, or perhaps a decision by the Secretary of the Interior.

The "future without action" description may be influenced by decisions or changes in conditions that may happen independently of any direct action taken to change the project framework. Examples of outside influences could be a new Indian water rights settlement or the adoption of assured water supply rules by the Arizona Department of Water Resources (ADWR).

This report focuses on the likely conditions in the near term that result from the USBR issuing the Notice of Substantial Completion for the CAP water supply system. It also discusses the potential use of CAP water through the year 2040 based on assumptions of increased municipal and industrial growth.

Within this report the terms "likely future conditions without alternative action" and "no action" are synonymous and are used interchangeably.

SUMMARY OF THE LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION SCENARIO

The following list summarizes the possible sequence of events that constitute the "likely future without alternative action" scenario. Figure 1 is a flow chart that shows the interrelationship and the sequence of the events. The remaining sections of this report provide additional background and detail on the assumptions leading to this projection of future events.

- The agricultural economy and financial situation in CAP irrigation districts is likely to remain depressed. Conditions are unlikely to improve without a major change in the world cotton market.
- Implementation of the assured water supply provisions of the Groundwater Code will occur based on rules adopted by ADWR. It is likely that some form of replenishment district or augmentation agency will be formed to facilitate implementation of these provisions. The districts probably will rely on excess CAP water as their primary supply source.
- The USBR will issue the Notice of Substantial Completion for the CAP water supply system on or about October 1, 1993 after completing a series of pre-requisite actions.
- The CAWCD will determine each subcontractor's share of project OM&R based on the assumed delivery of a full supply of water.
- CAWCD will adjust the water service capital charge to M&I subcontractors. This adjustment will reflect increased project costs, changed proportions between M&I and agricultural uses, and delays in implementation of repayment.

- Many, if not all, CAP agricultural districts will conclude that, at current levels of water demand, the cost of CAP water exceeds their ability to pay. They will therefore be unable make required payments.
- Some municipal subcontractors, especially those who are not currently delivering CAP water, may find it difficult to meet the increased cost of the capital repayment obligation. Rather than make payments, they may choose to relinquish their contracts and use a replenishment district option to meet assured water supply requirements.
- Because irrigation districts are in arrears, CAWCD will stop delivering water. Water service will be discontinued until payments are current. CAP irrigation districts will increase their groundwater pumping to compensate for the reduction in CAP water.
- The irrigation districts will take legal action to seek a judgment on the interpretation of the "take or pay" provisions of the subcontracts. They are also likely to seek a reformation of their bond agreements and deferment arrangements on their 9(d) contracts.
- If CAP related debts cannot be reformulated, it is probable that most of the irrigation districts will utilize Chapter 9 bankruptcy to reorganize their debts.
- In the short term CAWCD may choose to make up the shortfall in fixed OM&R payments through use of cash reserves. Because reserves are limited it is probable that CAWCD will reformulate payment of fixed OM&R charges to place the OM&R cost on the remaining project participants.
- The revised share of OM&R costs per acre-foot (AF) will be significantly higher than previously envisioned, thereby further jeopardizing participation in the CAP by private water companies, and some Indian communities, municipalities and industrial users.
- USBR will periodically recompute the capital cost allocations to reflect the reduction in agricultural use. Since non-Indian agriculture will likely be greatly reduced, nearly

all of CAWCD's capital repayment obligations will be interest bearing. Over the life of the 58 year repayment period, this interest component will amount to a considerable increase in CAWCD's repayment obligation. The increase will be reflected in an increased capital cost component to M&I water users.

- Indian water rights settlements based on CAP water will be stalled unless a funding source is found to offset OM&R costs. This will result in increased reliance on the adjudication process to resolve Indian water rights.
- CAWCD will develop contracting procedures and policies relating to "spot market" sales and short-term contracts. Contracts of this nature will make excess CAP water available to willing purchasers on a year by year basis. Irrigation districts who emerge from bankruptcy and replenishment districts are likely to use these types of contracts.
- CAP water use will remain low in the near term but will increase gradually reflecting increased demand for municipal supplies resulting from growth.

LIKELY FUTURE CONDITIONS WITHOUT ALTERNATIVE ACTION

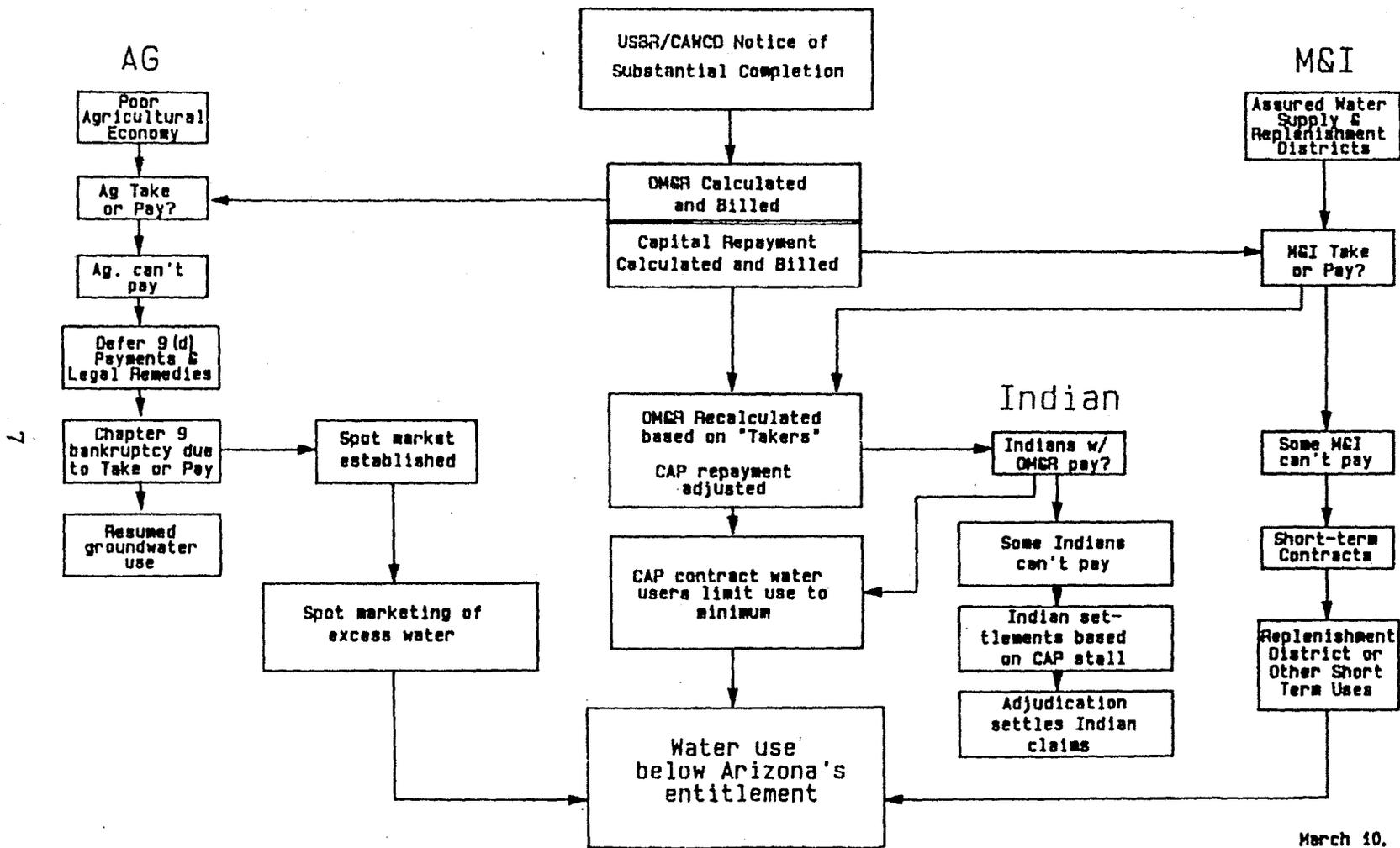


Figure 1. Likely future conditions without alternative action schematic diagram.

PREVIOUS ESTIMATES OF PROJECTED CAP WATER USE

The USBR has periodically prepared estimates of projected CAP water use based on information provided by Project contractors and subcontractors. USBR surveyed municipal and industrial (M&I) water users to determine their estimates of future Project water use. M&I demand estimates assumed that requests for deliveries would grow in increments based on the staged construction of water treatment plants related to the need for supplemental supplies as the population of subcontractors grew. Some subcontractors have decided to use most of their CAP allocations as early as possible. Others have not determined their rate of use of CAP, so USBR assumed that they would increase deliveries gradually over the fifty year repayment period. M&I deliveries were capped at the 638,823 acre-feet allocation amount. Table 1 shows a previous USBR estimate of build up in Municipal demand and Table 2 show similar information for Industrial users. Figure 2 is a graphical representation of the information in the tables.

Forecasts of water use by Indian communities were dependent upon the scheduled construction of distribution systems needed to convey water from the main aqueduct to Indian water users. Anticipated use of water available through Indian water rights settlements considered the potential for those supplies to be leased to non-Indian users. Currently, only the Ak Chin Community has a completed distribution system and is using CAP water. The Gila River Reservation has received CAP water in previous years through the San Carlos Project distribution system. While several additional water rights settlements are possible, currently only the Salt River, Fort McDowell, San Carlos Apache, and the Ak Chin Communities have agreed to settlements that call for additional CAP water beyond their 1983 allocation amounts. Table 3 displays a previous forecast estimate of the potential build up in demand for CAP water by Indian Communities. Figure 3 is a graphical summary of the information in the table.

Water use forecasts by non-Indian agricultural irrigation districts were based on the assumption that this sector would use all the available water that would not be used by higher priority M&I and Indian users. As the use by those other sectors increased over time, the remaining amount of Project water available for agriculture would decrease. Allocations

were not based on a fixed amount of water but rather on a percentage of the remaining available supply. Table 4 shows the amount of water available to the non-Indian agricultural entities based on an assumed deliverable water supply of 1,420,000 acre-feet (1,490,000 available less 70,000 for losses). It also assumes the annual percentages based on 1992 reallocation and that M&I and Indian buildup would be as described in Tables 1-3. Figure 4 illustrates how previous estimates envisioned the CAP water would be distributed by primary sectors through the year 2035.

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TABLE 1
CENTRAL ARIZONA PROJECT
PREVIOUSLY ESTIMATED MUNICIPAL AND INDUSTRIAL DEMANDS
USBR 1992 WATER SUPPLY STUDY

(MGD x 1000 Gallons)

ENTITIES	1995	2000	2005	2010	2015	2020	2025	2030	2035
ALGA FRIA	80	400	1,002	1,077	1,183	1,228	1,303	1,379	1,439
APACHE JUNCTION	2,400	3,500	3,888	4,235	4,803	4,971	5,338	5,706	6,000
AZ SIERRA UTILITY	300	407	407	407	407	407	407	407	407
ASLD NORTH	2,000	8,715	9,120	10,910	12,700	14,491	16,281	18,071	19,503
ASLD SOUTH	0	8,715	9,120	10,910	12,700	14,491	16,281	18,071	19,503
AVONDALE	500	2,346	3,086	3,244	3,422	3,800	3,778	3,957	4,099
BERNELL W. Co.	100	305	342	358	373	389	404	420	432
BUCKEYE	200	434	434	383	293	222	152	81	25
CAMP VERDE W. Co.	0	1,443	1,443	1,443	1,443	1,443	1,443	1,443	1,443
CANADA HILLS W. Co.	350	567	784	1,001	1,218	1,435	1,652	1,862	1,852
CAREFREE RANCH W. Co.	201	271	341	447	552	658	764	869	954
CAREFREE W. Co.	400	400	400	400	400	400	400	400	400
CASA GRANDE	2,000	5,000	5,311	5,927	6,543	7,159	7,775	8,391	8,884
CAVE CREEK W. Co.	800	700	750	800	818	1,024	1,229	1,435	1,800
CHANDLER	3,318	3,318	3,318	3,318	3,318	3,318	3,318	3,318	3,318
CHANDLER #2	360	360	360	360	360	360	360	360	360
CHANDLER HEIGHTS I.D.	0	100	315	315	315	315	315	315	315
CHAPARRAL CITY W. Co.	2,000	3,500	5,370	6,340	6,978	6,978	6,978	6,978	6,978
CONSOLIDATED-MAR	1,000	1,800	2,722	2,931	3,139	3,346	3,556	3,765	3,932
CONSOLIDATED-PINAL	800	1,700	2,476	2,553	2,829	2,705	2,782	2,858	2,919
COOLIDGE	0	1,000	1,500	1,586	1,872	1,754	1,845	1,931	2,000
CORTARO-MARANA I.D.	0	47	47	47	47	47	47	47	47
COTTONWOOD W. Co.	0	1,789	1,789	1,789	1,789	1,789	1,789	1,789	1,789
DEL LAGO W. Co.	0	200	372	476	570	663	756	849	932
DESERT RANCH W. Co.	32	41	51	66	81	97	112	127	139
ELOY	800	1,200	1,840	1,897	1,954	2,011	2,068	2,125	2,171
FLORENCE	0	800	965	1,074	1,192	1,310	1,428	1,547	1,641
FLOWING WELLS I.D.	920	1,482	2,065	2,637	3,209	3,782	4,354	4,926	4,354
GILBERT	3,000	7,235	7,235	7,235	7,235	7,235	7,235	7,235	7,235
GLENDALE #1	12,475	12,475	12,475	12,475	12,475	12,475	12,475	12,475	12,475
GLENDALE #2	0	1,608	1,608	1,608	1,608	1,608	1,608	1,608	1,608
GLOBE	0	1,740	3,480	3,480	3,480	3,480	3,480	3,480	3,480
GOODYEAR	500	1,700	2,374	2,374	2,374	2,374	2,374	2,374	2,374
GREEN VALLEY	200	900	1,317	1,418	1,518	1,619	1,719	1,820	1,900
GREEN VALLEY COMM W. Co.	200	800	1,100	1,100	1,100	1,100	1,100	1,100	1,100
LITCHFIELD PARK	1,000	5,000	5,085	5,171	5,256	5,341	5,426	5,512	5,580
MAYER-HUMBOLT W. Co.	0	177	192	216	240	264	289	313	332
MOCHLEN I.D.	500	2,500	4,281	5,183	6,085	6,987	7,889	8,791	9,513
MESA	20,000	30,000	33,459	33,459	33,459	33,459	33,459	33,459	33,459
MIDVALE FARMS W. Co.	1,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
NEW PUEBLO W. Co.	0	237	237	237	237	237	237	237	237
NEW RIVER UTILITY	500	1,500	2,359	2,359	2,359	2,359	2,359	2,359	2,359
NOGALES	340	537	735	1,299	1,843	2,387	2,932	3,506	3,949
PARADISE VALLEY W. Co.	3,000	3,231	3,231	3,231	3,231	3,231	3,231	3,231	3,231
PAYSON	0	932	932	932	1,974	1,974	1,974	1,974	1,974
PEORIA	1,185	7,016	11,500	12,505	13,989	14,784	15,878	16,973	17,849
PHOENIX #1	101,882	101,882	101,882	101,882	101,882	101,882	101,882	101,882	101,882
PHOENIX #2	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
PINE/STRAWBERRY	0	50	80	77	95	112	130	147	161
PRESOTT	0	7,127	7,127	7,127	7,127	7,127	7,127	7,127	7,127
QUEEN CREEK I.D.	500	944	944	944	944	944	944	944	944
REALLOCATION - NORTH	0	3,000	5,000	7,000	9,000	11,000	13,000	15,000	18,170
REALLOCATION - SOUTH	0	5,000	5,500	6,000	6,500	7,000	7,500	8,000	8,143
RIO RICO UTILITY	0	800	1,204	1,459	1,714	1,969	2,224	2,479	2,683
RIO VERDE UTILITY	200	445	463	548	603	658	713	768	812
SAN TAN I.D.	100	236	236	236	236	236	236	236	236
SCOTTSDALE	20,488	20,488	20,488	20,488	20,488	20,488	20,488	20,488	20,488
SPANISH TRAIL W. Co.	2,000	3,037	3,037	3,037	3,037	3,037	3,037	3,037	3,037
SUN CITY	2,000	7,000	9,815	10,863	11,891	12,929	13,967	15,005	15,835
SUNRISE W. Co.	0	352	438	525	612	700	787	874	944
TEMPE	4,315	4,315	4,315	4,315	4,315	4,315	4,315	4,315	4,315
TRAILS END W. SERV	0	110	146	180	174	187	201	215	226
TUCSON	148,420	148,420	148,420	148,420	148,420	148,420	148,420	148,420	148,420
WATER UTIL. OF BUCKEYE	10	40	43	43	43	43	43	43	43
WATER UTIL. OF TONOPAH	10	45	64	64	64	64	64	64	64
WEST END W. Co.	0	84	92	103	114	125	137	148	157
WHITE TANK	200	803	880	713	786	819	872	926	968
WILLIAMS AFB	833	833	833	833	833	833	833	833	833
YOLINGTOWN	100	380	380	380	380	380	380	380	380
SUBTOTAL MUNICIPAL	355,099	447,018	475,836	489,950	504,778	518,103	531,420	543,850	555,103

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TABLE 2
CENTRAL ARIZONA PROJECT
PREVIOUSLY ESTIMATED MUNICIPAL AND INDUSTRIAL DEMANDS
USBR 1992 WATER SUPPLY STUDY

ENTITIES	1995	2000	2005	2010	2015	2020	2025	2030	2035
ANAMAX-TWIN BUTTES	5,951	6,028	6,105	6,119	6,332	6,246	4,969	4,873	4,444
APS-SRP	0	2,000	5,000	7,451	14,903	22,354	28,806	37,257	43,218
AZ GAME & FISH NORTH	100	315	252	246	240	233	227	221	216
AZ GAME & FISH SOUTH	80	180	128	123	120	117	114	110	108
ASARCO-HAYDEN	417	625	833	790	748	703	660	617	582
ASARCO-MISSION	2,000	3,848	3,743	3,098	2,452	1,807	1,182	516	0
CYPRIUS-PIMA	0	6,986	6,493	6,294	6,095	5,896	5,697	5,498	5,239
DUVAL	5,000	10,728	10,398	10,078	9,798	9,441	9,122	8,804	8,549
KENNECOTT COPPER	0	5,850	5,850	5,850	5,850	5,850	5,850	5,850	5,850
MARICOPA CO. PARKS #1	644	832	820	807	494	481	468	455	445
MARICOPA CO. PARKS #2	270	284	267	251	244	238	231	225	220
PHILIPS DOGGE	0	20,868	19,954	19,042	18,130	17,218	16,306	15,395	14,865
PHOENIX MEN. PARK	58	65	71	75	78	79	80	82	84
SUBTOTAL INDUSTRIAL	14,390	67,967	65,800	65,822	64,840	64,062	74,962	79,703	83,720
TOTAL MUNICIPAL & IND.	309,470	504,986	636,436	649,572	669,418	687,785	806,102	823,553	838,823

CENTRAL ARIZONA PROJECT
PREVIOUSLY ESTIMATED M & I SCHEDULE

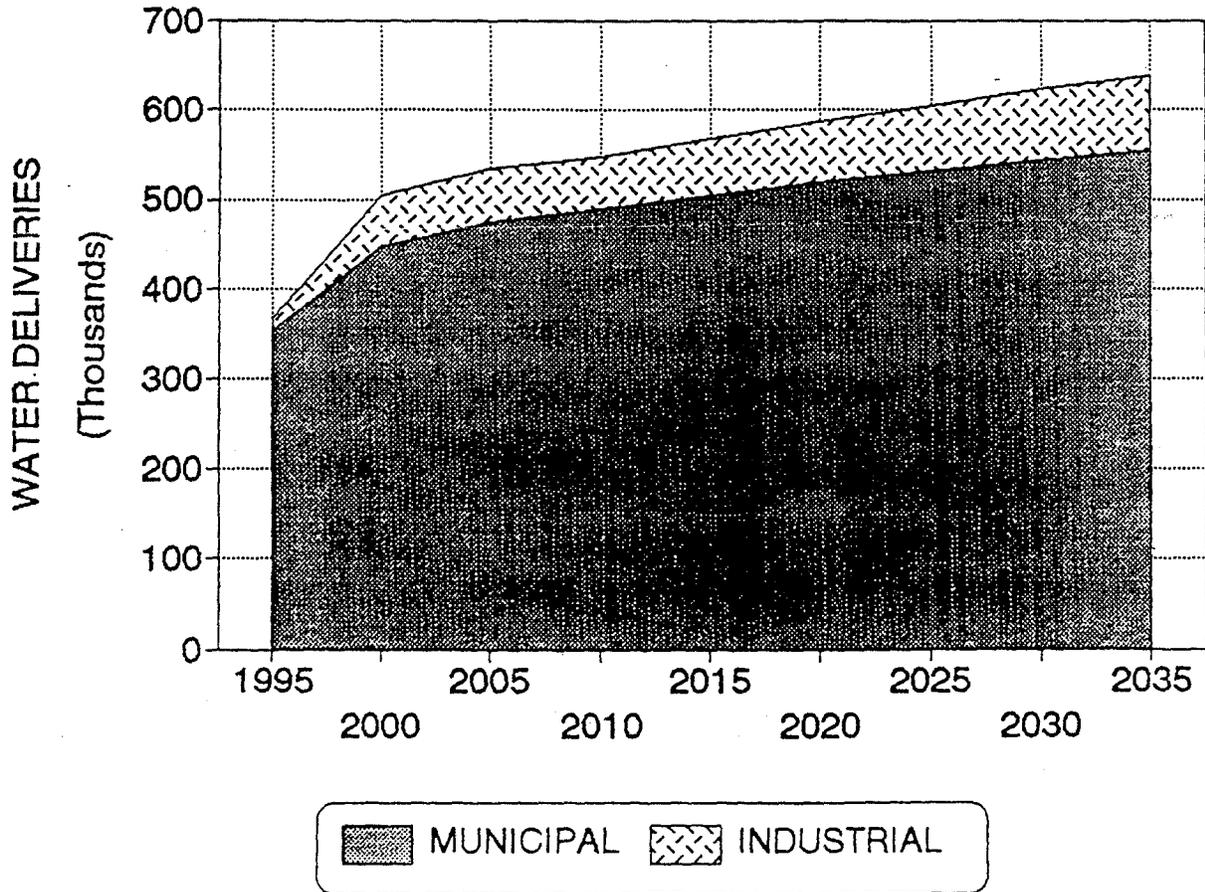


Figure 2. Previously estimated municipal and industrial demand schedule.

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TABLE 3
CENTRAL ARIZONA PROJECT
ESTIMATED INDIAN CAP AND INDIAN SETTLEMENT DEMAND

Units in acre feet

INDIAN SETTLEMENT	1995	2000	2005	2010	2015	2020	2025	2030	2035
SALT RIVER ALLOC.	13,300	13,300	13,300	13,300	13,300	13,300	13,300	13,300	13,300
SETTLEMENT	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
CAMP VERDE ALLOC.	0	0	0	250	250	250	1,200	1,200	1,200
FT. MCDOWELL ALLOC.	0	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300
SETTLEMENT	0	0	0	4,000	6,000	8,000	13,935	13,935	13,935
TONTO-APACHE ALLOC.	0	80	91	91	91	91	128	128	128
YAVAPAI-PRESCOTT ALLO	0	0	0	200	200	200	500	500	500
SAN CARLOS ALLOC.	0	12,700	12,700	12,700	12,700	12,700	12,700	12,700	12,700
SETTLEMENT	0	16,550	33,300	38,300	38,300	38,300	51,445	51,445	51,445
GILA RIVER ALLOC.	0	107,000	173,100	173,100	173,100	173,100	173,100	173,100	173,100
AK CHIN ALLOC.	58,300	58,300	58,300	58,300	58,300	58,300	58,300	58,300	58,300
SETTLEMENT	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700
CHUI CHU ALLOC.	0	4,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
SCHUK TOAK ALLOC.	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800
PASCUA YAQUI ALLOC.	0	500	500	500	500	500	500	500	500
SAN XAVIER ALLOC.	0	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000
SUBTOTAL ALLOCATION	82,400	237,980	308,091	308,541	308,541	308,841	309,828	309,828	309,828
SUBTOTAL SETTLEMENT	38,700	55,250	72,000	81,000	83,000	83,000	104,080	104,080	104,080
TOTAL CAP	121,100	293,230	380,091	389,541	391,541	393,841	413,908	413,908	413,908

POTENTIAL INDIAN BUILDUP
NO NEW SETTLEMENTS

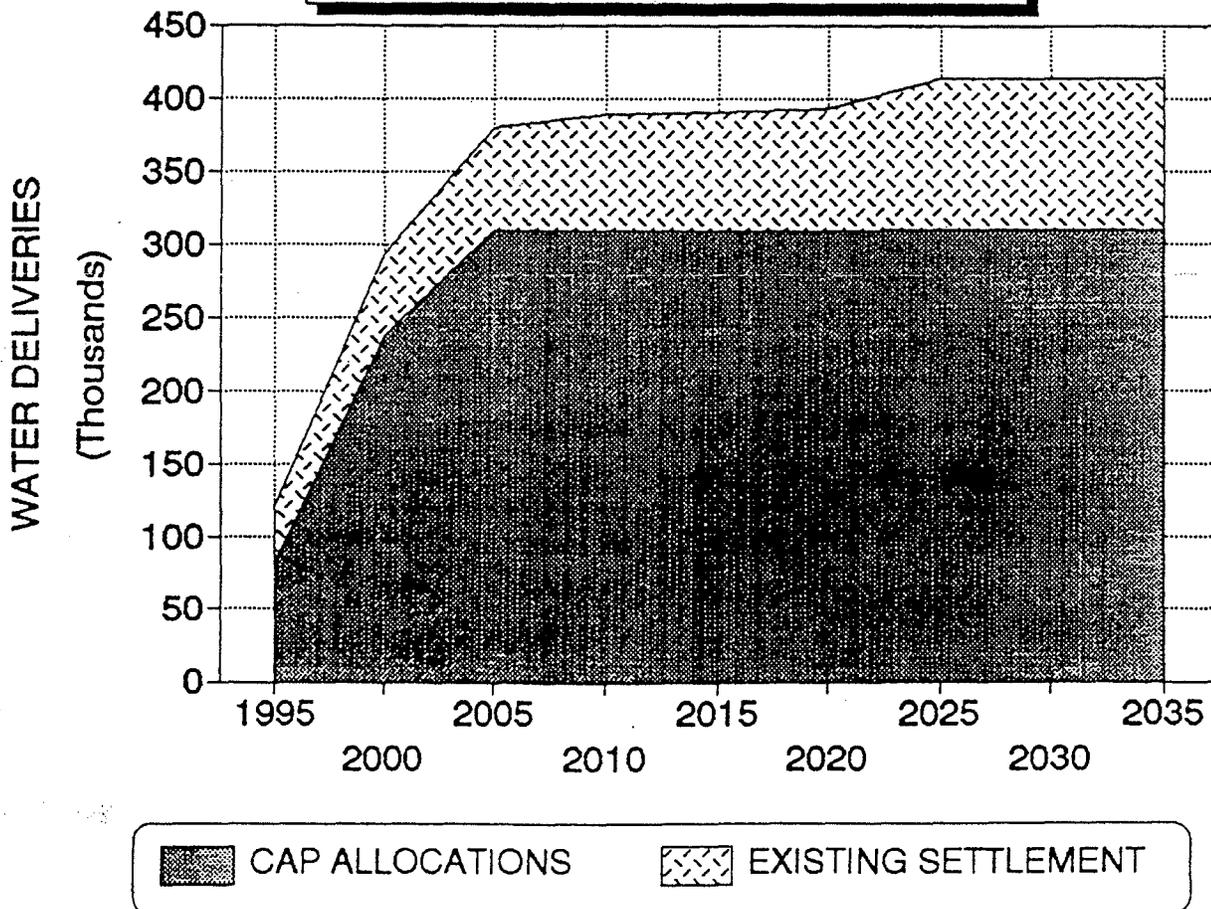


Figure 3. Estimated potential Indian demand schedule.

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TABLE 4
CENTRAL ARIZONA PROJECT
PREVIOUS ASSUMPTION OF NON-INDIAN AGRICULTURE DEMAND
Units in acre feet

USER	% ALLOC	1995	2000	2005	2010	2015	2020	2025	2030	2035
CENTRAL ARIZONA IDD	22.74	211,350	141,394	114,717	109,354	104,386	99,691	90,958	86,989	83,517
CHANDLER HEIGHTS IDD	0.30	2,798	1,865	1,513	1,443	1,377	1,315	1,200	1,148	1,102
PICO	1.64	15,343	10,197	8,273	7,987	7,528	7,190	6,560	6,274	6,023
HARQUAHALA VALLEY I	8.73	81,138	54,282	44,040	41,981	40,074	38,272	34,919	33,396	32,063
HOKOKAM IDD	6.97	64,781	43,338	35,162	33,518	31,995	30,556	27,879	26,663	25,599
MAJICOPA-STANFIELD ID	22.75	211,443	141,456	114,768	109,402	104,432	99,735	90,998	87,038	83,554
McMULLEN VALLEY CDD	3.17	29,463	19,711	15,992	15,344	14,552	13,897	12,680	12,126	11,643
NEW MAGMA IDD	7.23	67,197	44,955	36,473	34,768	33,189	31,606	28,919	27,658	26,554
QUBEN CREEK ID	4.83	44,891	30,032	24,366	23,227	22,172	21,174	19,320	18,477	17,739
ROOSEVELT ID	5.07	47,122	31,524	25,577	24,381	23,273	22,227	20,279	19,395	18,621
ROOSEVELT WCD	6.33	58,832	39,359	31,933	30,440	29,057	27,750	25,319	24,215	23,248
SAN CARLOS IDD	6.84	63,572	42,530	34,506	32,893	31,398	29,986	27,359	26,166	25,121
SAN TAN IDD	0.77	7,157	4,788	3,884	3,703	3,535	3,376	3,080	2,946	2,828
TONOPAH ID	1.98	18,403	12,311	9,989	9,522	9,089	8,680	7,920	7,574	7,272
STATE LAND DEPT	0.65	6,041	4,042	3,279	3,126	2,984	2,850	2,600	2,487	2,347
TOTAL	100.00	929,421	621,785	504,473	480,887	459,041	438,394	399,990	382,539	367,269

**ALLOCATION BASED ESTIMATED WATER DEMAND
 ALL CONTRACTORS DELIVERY SCHEDULE**

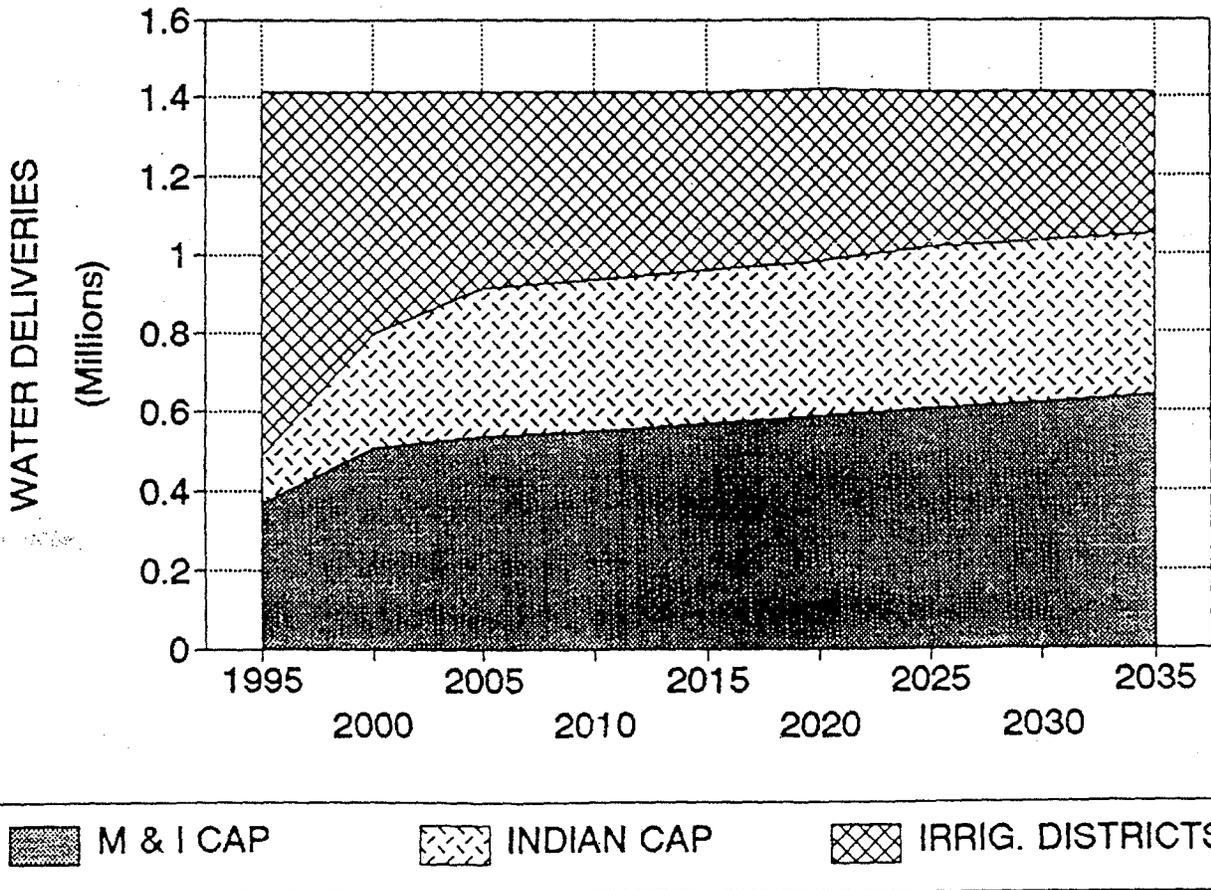


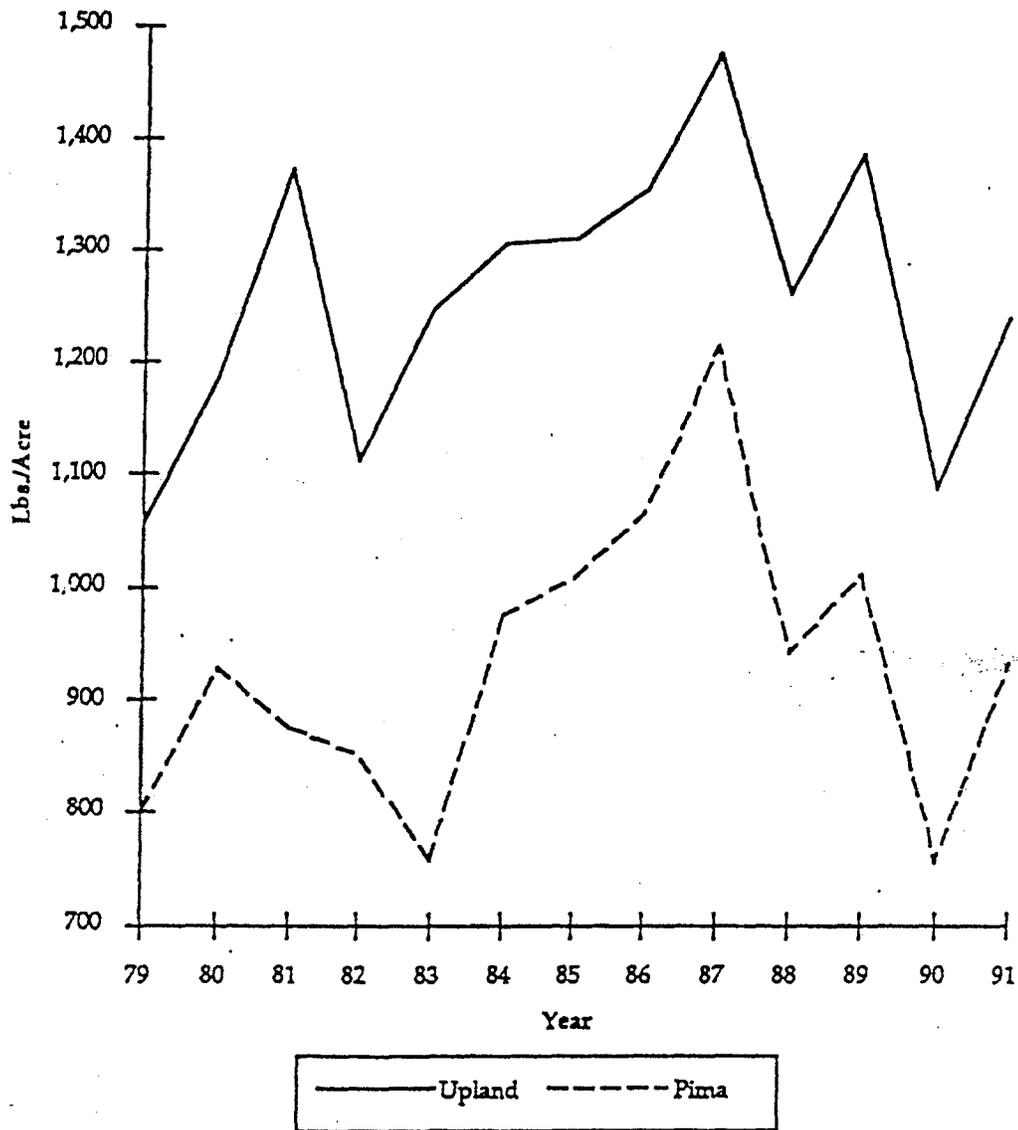
Figure 4. Previously estimated delivery schedule for all contractors.

EXTERNAL INFLUENCES THAT ARE LIKELY TO AFFECT THE CAP

DEPRESSED AGRICULTURAL ECONOMY WITHIN CAP IRRIGATION DISTRICTS

Depressed economic conditions currently exist in many of the Central Arizona Project irrigation districts. An Economic Assessment of Central Arizona Project Agriculture, November 1992 by Dr. Paul Wilson of the University of Arizona describes these conditions and their underlying causes. Dr. Wilson's study explains that the economic conditions which were expected when these districts contracted for CAP water and applied for distribution system loans have not materialized. Direct causes stem from recent decreases in cotton yields due to adverse weather conditions and insect infestations, combined with a world price structure that has decreased when viewed from a real price standpoint. Figures 5 and 6, which are extracted from Dr. Wilson's report, show the trends related to cotton yields and prices. Anticipated diversification of cropping patterns to include more acres of high value vegetables has not materialized. Agriculture is heavily dependent on production loans which have become more difficult to obtain as a result of a general re-evaluation of loan policies following the savings and loan crisis.

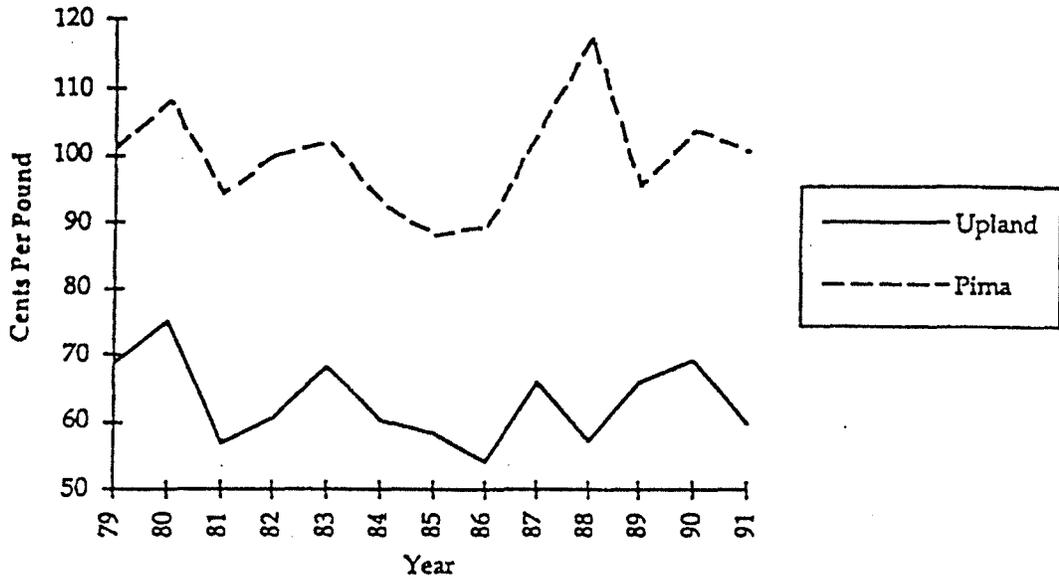
Faced with this economic and financial reality, irrigation districts have chosen to utilize their lowest cost water resources first. In most cases this lowest cost water has been groundwater pumped with energy obtained from Electrical Districts. Orders for more expensive CAP water have been correspondingly reduced. Dr. Wilson predicts that for CAP water to be a viable option within these districts, its price must be close to the price of groundwater. He estimates that the farmers ability to pay for water is limited to about \$38 per acre-foot. Considering that CAP water costs for the energy OM&R is currently estimated at \$36 per acre-foot, agriculture is unlikely to be able to afford any significant quantities of CAP water. While weather and yield reductions may be short-term phenomenon, the general state of the world cotton market leads Dr. Wilson to conclude that the economic conditions for CAP agriculture will probably not improve soon.



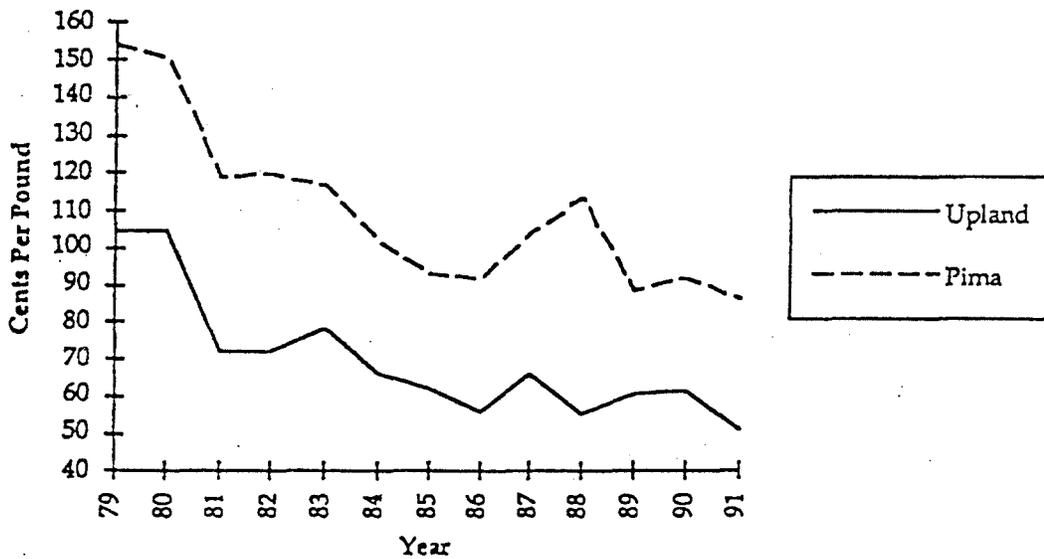
Source: Arizona Agricultural Statistics Service. *Arizona Agricultural Statistics*. Phoenix, Arizona (various years).

Figure 5. Yield per acre for upland and Pima cotton, 1979-1991, Pinal County.

A. Nominal Price



B. Real Prices (1987 = 100)



Source: Arizona Agricultural Statistics Service. *Arizona Agricultural Statistics*. Phoenix, Arizona (Various Years).

Figure 6. Upland and Pima cotton prices, 1979-1991, Arizona.

ASSURED WATER SUPPLY RULES AND FORMATION OF REPLENISHMENT DISTRICTS

The Arizona Department of Water Resources is currently in the process of developing rules to implement the assured water supply provisions of the Groundwater Code. These rules are currently in draft form, but could reasonably be expected to be adopted by January, 1995. The assured water supply program deals with guaranteeing that land within Active Management Areas which is offered for sale through subdivision laws has a 100 year water supply. In order to qualify for an assured water supply, the Groundwater Code requires that the proposed supply must be consistent with the achievement of the management goal of the AMA. In the Phoenix, Prescott, and Tucson AMAs the goal is safe yield no later than 2025. In the Pinal AMA the goal is not safe yield, but the interpretation of the goal still places limits on the amount of groundwater which may be used for new subdivisions. Figure 7 is a map showing the boundaries of the Active Management Areas where the assured water supply requirements will be applicable. In their present form, the assured water supply (AWS) rules limit the amount of overdrafted groundwater which may be used for subdivisions. This limit, in turn, naturally moves growth toward renewable resources such as CAP water. Unless ADWR radically alters the concept of the draft rules, it seems probable that the demand for CAP water for municipal growth in the CAP service area will increase.

In order to facilitate the use of CAP water or other renewable resources to meet assured water supply requirements, concepts have developed which rely on groundwater replenishment districts or water augmentation authorities. These organizations will act as agents for developers or water providers allowing for a pooling of financial resources to obtain access to CAP or other renewable supplies. Because it is likely that the AWS rules will be adopted, it also appears likely that replenishment districts or water authorities will be formed to assist water users in complying with those rules, at least in the Phoenix, Pinal, and Tucson AMAs.

ACTIVE MANAGEMENT AREAS

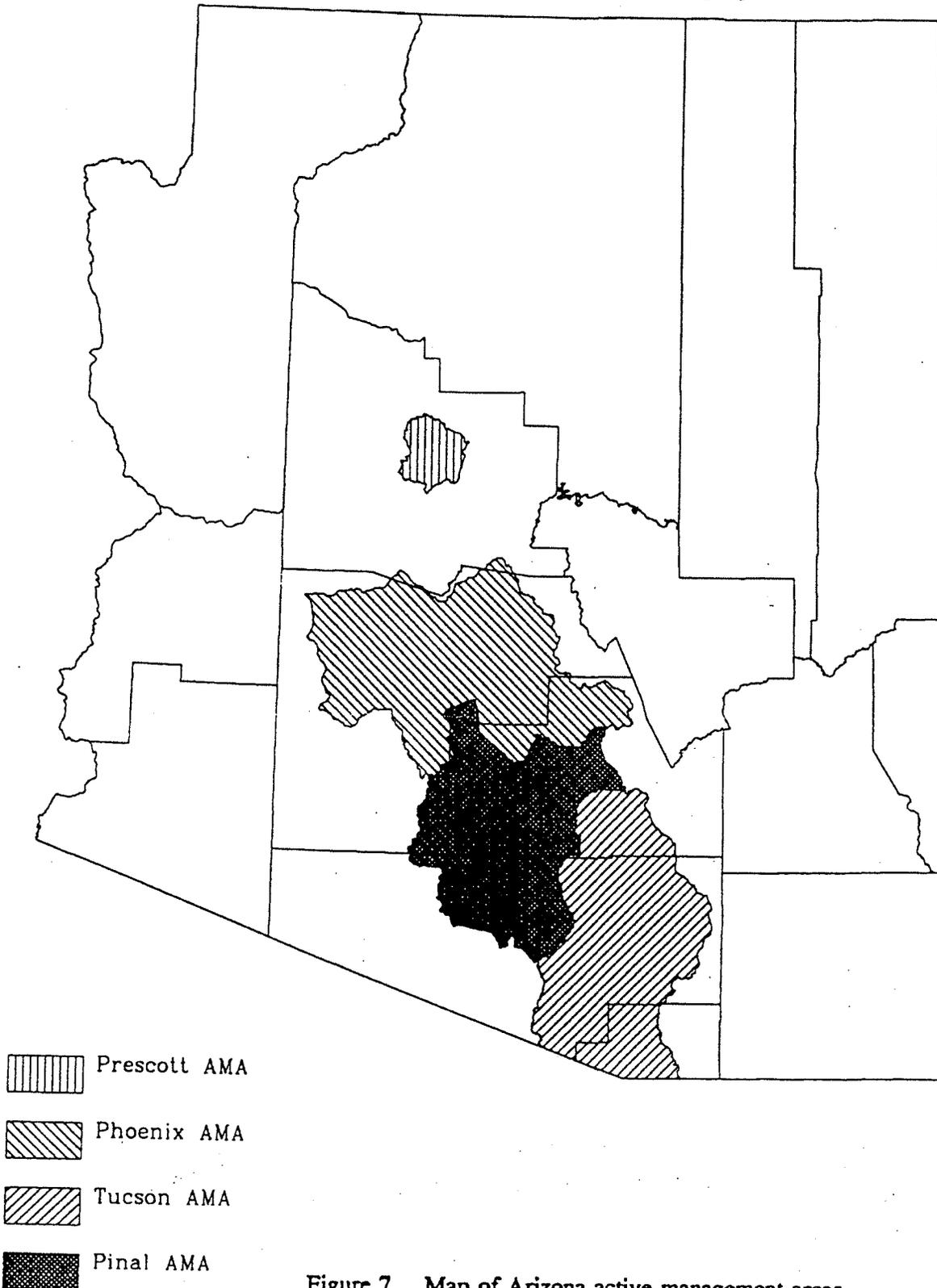


Figure 7. Map of Arizona active management areas.

INDIAN WATER RIGHTS SETTLEMENTS

Several Indian water rights settlements have been successfully completed in recent years. In all cases, the settlements have included a component of CAP water. Some have also included a component of relief from payment of CAP OM&R or have allowed off-reservation use of the water through long-term leases. There are currently active negotiations on Indian water rights settlements involving the Gila River Indian Community, the Yavapai-Prescott Tribe, the Navajo Nation, and the Hopi Tribe. There is also a need for revisions to the Tohono O'odham settlement. Of these the most likely to involve large volumes of CAP water is the Gila River settlement.

ENVIRONMENTAL ISSUES ASSOCIATED WITH EXCHANGES

When CAP water allocations were made it was envisioned that several entities who were located away from the main CAP aqueduct system would obtain access to the CAP via exchange agreements. For example, it was proposed that the City of Prescott would divert water from the Verde River and then have its CAP water delivered to the Salt River Project (SRP) in exchange. To date, only one exchange agreement has been worked out. Recent studies have identified potential environmental impacts, especially to endangered fish species, if new upstream diversions would occur. Unless solutions can be found to overcome these environmental difficulties, it is unlikely that many of the exchange subcontractors will ever be able to use CAP water.

INTERSTATE LEASING OF COLORADO RIVER WATER

Over the past year a series of meetings between representatives of the Lower Colorado River Basin states have been held to discuss options related to providing Nevada and California users additional water supplies. In this context, leasing of Colorado River water has been proposed as an alternative. There have also been discussions among representatives of Lower Basin and Upper Basin states. Furthermore, there have been active proposals made to lease water from ten Indian Tribes who hold rights to the Colorado River water. It has been Arizona's position that interstate leasing of water is contrary to the "Law of the River."

If the "Law of the River" would be interpreted differently than Arizona's perspective, it could have an effect on CAP water supplies, especially in times of shortage. Unless leasing or other arrangements to meet California and Nevada needs are agreed to in a manner which is satisfactory to Arizona, it is possible that lengthy litigation would result. Therefore, it is assumed that a position of no change in the interpretation of interstate leasing should be adopted as part of the "no action" scenario.

SCHEDULE FOR IMPLEMENTATION OF REPAYMENT

On December 3, 1992 the USBR and the CAWCD reached an agreement which recognized that the USBR intended to issue the formal Notice of Substantial Completion for the CAP water supply system no sooner than October 1, 1993 but no later than December 15, 1993. The issuance of the notice signifies the initiation of repayment for the CAP pursuant to the Master Repayment Contract and the initiation of individual subcontracts with water users. In order to meet the October 1, 1993 goal the USBR will complete a number of major activities. These major activities are briefly described in this section. Table 5 summarizes the proposed schedule as of March 2, 1993.

COST ALLOCATION REPORT

USBR will complete a cost allocation and repayment analysis for the water supply system. Following review and comment by CAWCD, the USBR will complete this process by September, 1993. The USBR will then issue the notice of substantial completion to CAWCD on or about October 1, 1993. The notice will initiate terms for repayment and cost recovery outlined in the master repayment contract, water service contracts and subcontracts, and the OM&R contract. By January 15, 1995 CAWCD will make its initial payment to the United States, including interest on the portion of the unpaid repayment obligation allocable to interest bearing purposes for the period October 1, 1993 through January 14, 1994.

OPERATING AGREEMENT

In anticipation of the Notice of Substantial Completion, USBR and CAWCD will prepare plans to permanently transfer operation and maintenance of the water supply system to CAWCD. The plans will determine the remaining staffing requirements for USBR and Western Area Power Administration (WAPA) related to oversight, power marketing, transmission system maintenance, and administration. Following the completion of the plan,

USBR and CAWCD will execute the CAP operating agreement for the water supply system portion of the CAP. It is anticipated that this will occur by September, 1993.

M&I WATER REALLOCATION AND SUBCONTRACTING

M&I subcontracts which have been offered to remaining entities had a signing deadline of March 1, 1993. However, the deadline for the potential power subcontractors has been extended forty-five days. Once the size of the reallocation pool is known, the Department of Interior will evaluate the quantity of uncontracted water to determine if any should be held in reserve for future Indian water rights settlements. Following that decision, the USBR will request recommendations for reallocations from ADWR. ADWR will initiate a public process in which interested parties are notified of the opportunity to request either a new or increased allocation. Considering the preliminary indications of interest, it is likely that the amount of requests will exceed the supply available for reallocation. ADWR will be asked to notify the USBR of its recommendations by July or August, 1993. USBR will prepare the necessary Environment Assessment on the reallocation for NEPA compliance by mid-September, 1993. The Secretary will then publish his final reallocation decision in the Federal Register. Upon completion of the reallocation process, the USBR and CAWCD will offer new or amendatory subcontracts to M&I allottees.

NON-INDIAN AGRICULTURAL WATER SUBCONTRACTING

On February 5, 1992, the Secretary of the Interior issued his decision on non-Indian agricultural water reallocation. In accordance with that decision, the USBR and CAWCD will offer water service subcontracts or amendatory subcontracts to those entities who received reallocated CAP water. Assuming that two "new" entities, Roosevelt Irrigation District and McMullen Valley Water Conservation and Drainage District qualify for subcontracts, those subcontracts will be offered. USBR and CAWCD will seek to have all reallocation subcontracts executed by December, 1993.

DECISIONS REGARDING NON-INDIAN AGRICULTURAL DISTRICTS

The USBR is currently responding to offers which resulted from the "White Paper" effort. In addition, by April 1993 they will issue responses to requests for deferment contracts for existing 9(d) contracts and will decide on a request from the San Carlos Irrigation and Drainage District for a new 9(d) contract.

TABLE 5

USBR SCHEDULE FOR INITIATION OF REPAYMENT
OF CAP WATER SUPPLY SYSTEM
MARCH 2, 1993

	<u>SCHEDULED COMPLETION DATE</u>
I. <u>Cost Allocation Report</u>	
Modifications to CAP water supply assumptions	March 1, 1993
Transmittal of first draft report to CAWCD	April 23, 1993
CAWCD Review of first draft report complete	May 14, 1993
Transmittal of second draft report to CAWCD	June 28, 1993
CAWCD Review of second draft report complete	July 28, 1993
Final Report completed	September 26, 1993
II. <u>Operating Agreement</u>	
Transmittal of first draft Operating Agreement to CAWCD	March 2, 1993
Identification of Major Issues by CAWCD	March 29, 1993
Negotiations	April - May 14, 1993
Environmental compliance	June 15, 1993
Submit to CAWCD	July 30, 1993
Approval of CAWCD Board of Directors	September 2, 1993
Execution by United States	September 30, 1993
III. <u>Municipal and Industrial (M&I) Water Reallocation and Subcontracting</u>	
Contracting Deadline for initial M&I allocations	March 1, 1993
Interior evaluation of quantity of uncontracted M&I water to be reserved for Indian settlements	March 26, 1993
Reclamation requests reallocation recommendation	April 1, 1993
ADWR completes reallocation process	July 15, 1993
Environmental compliance	September 19, 1993
Reallocation decision	October 15, 1993
Contract offers for M&I reallocation	November 17, 1993
Contract deadline for M&I reallocation	January 16, 1994
IV. <u>Non-Indian Agricultural Water Subcontracting</u>	
Contract offers to existing subcontractors	April 1, 1993
Contract deadline to existing subcontractors	June 1, 1993
Completion of financial feasibility for new allottees	June 1, 1993
Contract deadline for new allottees	December 1, 1993
V. <u>Decisions Regarding Non-Indian Agricultural Districts</u>	
Responses to White Paper offers	March 15, 1993
Responses to outstanding requests for deferments	April 1, 1993
Decisions regarding new 9(d) distribution systems	April 1, 1993

OM&R SHARE AND CAPITAL REPAYMENT DETERMINATION

OM&R SHARE

Article 5.1 of the M&I and Agricultural subcontracts require CAWCD to provide each subcontractor an estimate of their share of the fixed OM&R cost for coming year. Article 6(c) of the contracts between the Secretary of the Interior and the Indians requires the Secretary to fix the OM&R cost to be paid by each Indian contractor. OM&R payments are to be made monthly prior to deliveries. Neither the subcontracts nor the Indian contracts provide a specific formula for how the OM&R shares are to be calculated. CAWCD and the Secretary are responsible for making that determination.

In determining the relative shares of fixed OM&R, the subcontracts have generally been interpreted to require a "take or pay" calculation that would apply only to non-Indian agriculture. "Take or pay" means that the charge is based on the water supply which was available for delivery and not on the amount of water actually requested or used by a subcontractor. Even though a subcontractor may choose not to "take" the amount available, they must still "pay" for the full amount. M&I and Indian OM&R shares are not based on "take or pay." The M&I and Indian fixed OM&R shares are determined based on a proportion between the amount of water requested by the subcontractor and the total amount of water available for delivery to all CAP users. After determining the OM&R shares for M&I and Indians, the non-Indian agricultural subcontractors would be required to pay all remaining costs. This subcontract provision was based on the assumption that non-Indian agriculture would seek to purchase all of the CAP water that was available after deliveries were made to M&I and Indian water users. As was stated earlier in this report, it now appears that this assumption is incorrect.

The following examples illustrate how the various fixed OM&R shares would be calculated given a certain set of assumptions.

Assume:

1. CAWCD's total fixed OM&R is \$29,000,000 per year
2. A total of 1,420,000 acre-feet is available for delivery by CAWCD
3. Municipal users request 220,000 acre-feet; the Ak Chin Indian Community requests 71,000 acre-feet; and non-Indian agriculture requests 130,000 acre-feet.

EXAMPLE

<u>M&I SHARE</u>	
FIXED SHARE PER ACRE-FOOT	$\$29,000,000/1,420,000 \text{ AF} =$
	\$20.50 PER ACRE-FOOT
TOTAL M&I SHARE	$\$20.50 \times 220,000 \text{ AF} =$
	\$4,510,000
<u>INDIAN SHARE</u>	
FIXED SHARE PER ACRE-FOOT	$\$29,000,000/1,420,000 \text{ AF} =$
	\$20.50 PER ACRE-FOOT
TOTAL INDIAN SHARE	$\$20.50 \times 71,000 \text{ AF} =$
	\$1,460,000
<u>NON-INDIAN AGRICULTURAL SHARE</u>	
TOTAL FIXED OM&R MINUS MUNICIPAL AND INDIAN SHARE	$\$29 \text{ M} - (\$4.51 \text{ M} + \$1.46 \text{ M}) =$
	\$23,030,000
IRRIGATION SHARE PER ACRE-FOOT DELIVERED	$\$23,030,000/130,000 \text{ AF} =$
	\$177 PER ACRE-FOOT

This calculation provides a reasonable estimate of the subcontractors' share of the fixed OM&R cost once the CAP water supply portion has been declared substantially complete. The example illustrates that because the non-Indian agricultural subcontractors' share is so large, but they are projected to use only a small portion of the amount available to them the cost per acre-foot is very high.

Figure 8 illustrates the relative relationships between water using sectors based on the examples. The first pie chart shows the relative deliveries of water while the second shows the relative distribution of the fixed OM&R charges based on the non-Indian agriculture "take or pay" provision.

To calculate a total OM&R cost for each sector, a variable cost for the energy required to pump the water must be added to the fixed cost. All users pay the same rate which is charged only for water delivered. The current estimate of this cost is approximately \$36 per acre-foot. Adding the energy cost to the fixed cost results in a total cost per acre-foot to the municipal and Indian users of \$56.50 per acre-foot and to the agricultural user of \$213 per acre-foot.

It is anticipated that due to the large OM&R obligation, the agricultural subcontractors will not be able to pay their share and will seek some form of relief from their subcontract obligations. This means that less water will be delivered than had previously been estimated.

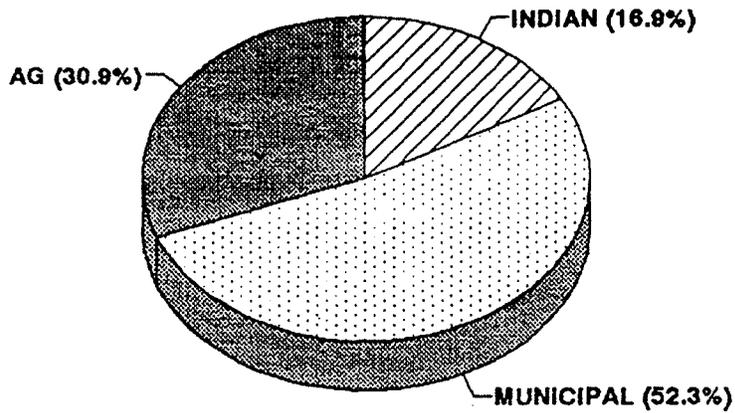
CAPITAL REPAYMENT ADJUSTMENT

Article 5.2 of the subcontracts requires the subcontractors to pay a water service capital charge. This charge is used by the CAWCD to partially repay the reimbursable portion of the CAP construction cost. Similar costs properly allocated to the Indian contractors are deferred under the Leavitt Act.

The subcontractors are required to make semiannual payments based on the formula set forth in the subcontracts. The agricultural subcontracts require the subcontractors to pay \$2 for each acre-foot of water delivered for their use. The \$2 was established based on their limited ability to repay their portion of the construction costs. The M&I subcontracts provide a repayment schedule based on a cost per acre-foot charge and require the

COMPARISON OF CAP DELIVERIES TO OM&R SHARES

CENTRAL ARIZONA PROJECT PROJECTED 1994 DELIVERIES



FIXED OM&R SHARE BY USER

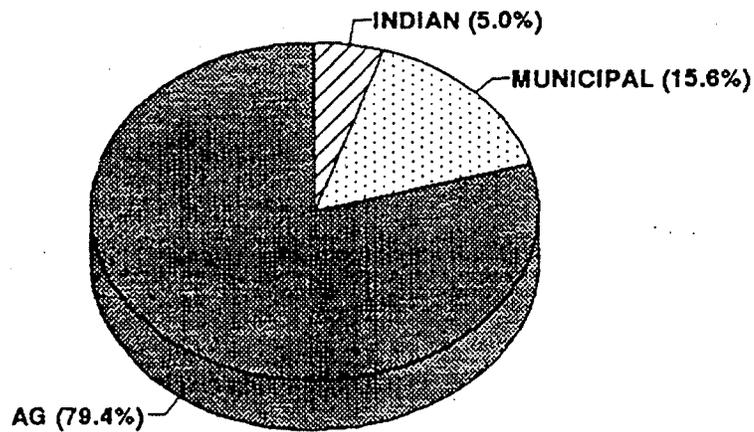


Figure 8. Comparison of CAP deliveries to share of OM&R under "take or pay" provisions.

subcontractors to pay on their entire entitlement regardless of the amount delivered. In other words, the M&I subcontractors' water service capital charge is calculated on a "take or pay" basis.

The subcontracts allow CAWCD to adjust the M&I schedule to insure that they have adequate revenues to meet their repayment obligation. It is highly likely that an upward adjustment will be required after the Notice of Substantial Completion is issued. The reasons for this adjustment are three fold: 1) since the subcontracts were signed CAWCD's repayment obligation has increased from \$1.2 billion to \$2.0 billion, 2) the capital charge was scheduled to begin in 1988, which means five years have passed without collecting revenues, and 3) with less agricultural deliveries projected more of the capital costs will be interest bearing thus further increasing CAWCD's repayment obligation. A new rate is currently not available and will not be available until the initial cost allocations are completed. A reasonable estimate of the effects of a new cost allocation on the current rate is a 4% increase to the rate in the existing subcontracts.

Tables 6 and 7 show the effect this new rate will have on the water service capital charge for each municipal provider with a CAP subcontract.

Although the capital charge is based on an per acre-foot charge, this is not the real cost per acre-foot realized by the subcontractor. The subcontractor pays the capital charge based on its total entitlement, while the real cost per acre-foot would be based on the water actually delivered to subcontractor. If a subcontractor has no immediate plans to take water, no cost per acre-foot can be established because the subcontractor's total charge cannot be divided by zero. This means the water service capital charge becomes an expensive holding charge. For subcontractors, who are either taking water or have plans to take water in the near future, the cost per acre-foot will vary depending on the percentage of its total entitlement the subcontractor is taking. An example of how cost the per acre-foot calculation is performed and the impact various levels of delivery will have on that cost follows.

TABLE 6

MUNICIPAL CAPITAL COSTS FOR SUBCONTRACTORS PROJECTED TO TAKE WATER (based on entitlement)					
	ALLOCATION ACRE-FEET	PROJECTED 1993 USE	1994 @ \$20/AF	1995 @ \$23/AF	2000 @ \$45/AF
APACHE JUNCTION	6,000	1,500	\$120,000	\$138,000	\$270,000
CAREFREE WATER	400	198	\$8,000	\$9,200	\$18,000
CAVE CREEK	1,600	382	\$32,000	\$36,800	\$72,000
CHANDLER	3,668	2,327	\$73,360	\$84,364	\$165,060
CHAPARRAL	6,978	1,535	\$139,560	\$160,494	\$314,010
ELOY	2,171	760	\$43,420	\$49,933	\$97,695
GLENDALE	14,083	11,200	\$281,660	\$323,909	\$633,735
MESA	33,459	14,450	\$669,180	\$769,557	\$1,505,655
PHOENIX	113,882	52,100	\$2,277,640	\$2,619,286	\$5,124,690
QUEEN CREEK	944	100	\$18,880	\$21,712	\$42,480
RIO VERDE	812	191	\$16,240	\$18,676	\$36,540
SCOTTSDALE	20,488	18,750	\$409,760	\$471,224	\$921,960
TEMPE	4,315	12,796	\$86,300	\$99,245	\$194,175
TUCSON	148,420	55,000	\$2,968,400	\$3,413,660	\$6,678,900
TOTAL	357,220	171,289	7,144,400	8,216,060	16,074,900

Water Service Capital Charge per acre-foot rate revised March 14, 1993 by CAWCD.

TABLE 7

MUNICIPAL CAPITAL COSTS FOR SUBCONTRACTORS NOT CURRENTLY TAKING WATER (based on entitlement)				
	ALLOCATION ACRE-FEET	1994 @ \$20/AF	1995 @ \$23/AF	2000 @ \$45/AF
AGUA FRIA	1,439	\$28,780	\$33,097	\$64,755
AVONDALE	4,099	\$81,980	\$94,277	\$184,455
BERNIEL WATER CO.	432	\$8,640	\$9,936	\$19,440
BUCKEYE	25	\$500	\$575	\$1,125
CAMP VERDE WATER CO.	1,443	\$28,860	\$33,189	\$64,935
CANADA HILLS WATER	1,652	\$33,040	\$37,996	\$74,340
CAREFREE RANCH	954	\$19,080	\$21,942	\$42,930
CASA GRANDE (A.W.C)	8,884	\$177,680	\$204,332	\$399,780
CHANDLER HEIGHTS	315	\$6,300	\$7,245	\$14,175
CONSOLIDATED (MC)	3,932	\$78,640	\$90,436	\$176,940
CONSOLIDATED (PC)	2,919	\$58,380	\$67,137	\$131,355
COOLIDGE	2,000	\$40,000	\$46,000	\$90,000
CORTARO-MARANA	47	\$940	\$1,081	\$2,115
COTTONWOOD WATER CO.	1,789	\$35,780	\$41,147	\$80,505
DEL LAGO WATER	786	\$15,720	\$18,078	\$35,370
DESERT RANCH WATER	139	\$2,780	\$3,197	\$6,255
FLORENCE	1,641	\$32,820	\$37,743	\$73,845
FLOWING WELLS	4,354	\$87,080	\$100,142	\$195,930
GILBERT	7,235	\$144,700	\$166,405	\$325,575
GOODYEAR	2,374	\$47,480	\$54,602	\$106,830
GREEN VALLEY	1,900	\$38,000	\$43,700	\$85,500
GREEN VALLEY COM	1,100	\$22,000	\$25,300	\$49,500
LITCHFIELD PARK	5,580	\$111,600	\$128,340	\$251,100
MAYER-HUMBOLDT	332	\$6,640	\$7,636	\$14,940
MCMICKEN	9,513	\$190,260	\$218,799	\$428,085
MIDVALE FARMS	1,500	\$30,000	\$34,500	\$67,500
NEW PUEBLO	237	\$4,740	\$5,451	\$10,665
NEW RIVER UTILITY	2,359	\$47,180	\$54,257	\$106,155
NOGALES	3,949	\$78,980	\$90,827	\$177,705
PARADISE VALLEY	3,231	\$64,620	\$74,313	\$145,395
PAYSON	1,974	\$39,480	\$45,402	\$88,830
PEORIA	17,849	\$356,980	\$410,527	\$803,205
PINE/STRAWBERRY	161	\$3,220	\$3,703	\$7,245
PRESCOTT	7,127	\$142,540	\$163,921	\$320,715
RIO RICO UTILITY	2,683	\$53,660	\$61,709	\$120,735
SAN TAN	236	\$4,720	\$5,428	\$10,620
SPANISH TRAIL	3,037	\$60,740	\$69,851	\$136,665
SUN CITY	15,835	\$316,700	\$364,205	\$712,575
SUNRISE WATER	944	\$18,880	\$21,712	\$42,480
TRAILS END	226	\$4,520	\$5,198	\$10,170
WATER UTL. BUCKEYE	43	\$860	\$989	\$1,935
WATER UTL. TONOPAH	157	\$3,140	\$3,611	\$7,065
WEST END	157	\$3,140	\$3,611	\$7,065
WHITE TANK (A.W.C.)	968	\$19,360	\$22,264	\$43,560
YOUNGTOWN	380	\$7,600	\$8,740	\$17,100
TOTAL	127,557	\$2,558,740	\$2,942,551	\$5,757,165

Water Service Capital Charge per acre-foot rate revised March 14, 1993 by CAWCD.

EXAMPLE

MUNICIPAL CAPITAL CHARGE	
UNITS: DOLLARS PER ACRE-FOOT	
CAPITAL SERVICE CHARGE (City of Phoenix)	
Allocation = 113,882 AF	
Capital charge @ \$20/AF = $\$20 \times 113,882 \text{ AF} =$ \$2,277,640	
PER ACRE-FOOT CHARGE	
1994 Delivery = 52,100 AF	
	$\$2,277,640 / 52,100 \text{ AF} =$ \$44/AF
THE PER ACRE-FOOT CHARGE	
Based on Water Delivered	
FULL DELIVERY	\$20/AF
50% DELIVERY	\$40/AF
33% DELIVERY	\$60/AF
25% DELIVERY	\$80/AF
0 DELIVERY	*

The increase in the municipal water service charge will affect municipal subcontractors differently. Those subcontractors with no immediate plans to use their CAP entitlement and no way to pass the additional cost on to their customers may seek to relinquish their subcontracts. They would then use another means of developing assured water supplies such as a replenishment district or temporary contracts. Subcontractors who are taking water or who can pass the increased costs on to their customers will have to balance increasing their water orders against increased OM&R charges. The overall effect of an increase in the municipal water service capital charge probably will be that less CAP water will be delivered in the early years than was previously anticipated. In the later years, when municipal deliveries more closely match municipal entitlement, the effect will be less significant.

RECALCULATION OF CHARGES

Once CAWCD has notified the subcontractors of their OM&R shares and their water service charges, the "no action" scenario anticipates that all of the agricultural subcontractors and several of the municipal subcontractors will decline to pay and seek some form of relief. Because of the subcontractors refusal to pay, CAWCD will not collect sufficient revenues to pay its operating and capital repayment costs. CAWCD will have to choose whether to recalculate charges to subcontractors who are still taking water or to cover the shortfall with other available financial resources such as its cash reserves.

Regardless of CAWCD's initial choice, at some point it will have to recalculate the subcontractors water service capital charges. The actual recalculation of charges will depend on several factors such as any increase in power sales revenues resulting from decreased water pumping requirements, or the new cost allocation between interest and non-interest bearing costs. It is very difficult to determine what that increase might be absent a cost allocation.

The recalculation of the fixed OM&R share may be simplified by an assumption that CAWCD's fixed cost will be equally spread over those subcontractors who continue to take water.

The following example illustrates how the recalculation of the fixed OM&R share could be accomplished.

EXAMPLE

RECALCULATION OF OM&R SHARE	
NO AGRICULTURAL SUBCONTRACT USE	
Assume:	
Municipal demand =	220,000 AF
Indian demand =	71,000 AF
Total demand =	291,000 AF
CAWCD's Fixed OM&R = \$29,000,000	
Energy Cost remains \$36/AF	
MUNICIPAL and INDIAN	
Fixed Cost per acre-foot	
\$29,000,000/291,000 AF	\$100/AF
Total Cost per acre-foot	
\$100/AF + \$36/AF	\$136/AF
MUNICIPAL SHARE OF FIXED OM&R	
\$100/AF X 220,000 AF	\$22,000,000
INDIAN SHARE OF FIXED OM&R	
\$100/AF X 71,000 AF	\$7,100,000

As shown in the example, recalculating only the OM&R charges can more than double the cost of water to the subcontractors who continue to order water. In light of these high costs, it is reasonable to assume that municipal providers who continue to order water will reduce their deliveries of CAP water to no more than the amount needed to meet their direct delivery demands. They are likely to forego additional water for such purposes as underground or indirect storage and recovery projects.

Indian agricultural users face the same economic problems as non-Indian agricultural users. Unless they receive some relief from paying the OM&R cost similar to the relief the Ak-Chin and Tohono O'Odham have received as a result of settlements, they will not be able to afford to use CAP water for irrigation of crops. Some Communities will continue to take limited deliveries to support M&I growth on their reservations or for leasing off reservation.

The increased cost probably will have a secondary impact on Arizona water users. CAP water has played a major role in Indian water rights settlements. Absent relief from the unaffordable OM&R cost, Indian Tribes probably will not be willing to accept additional

CAP water as a part of the settlement for their claims. Without CAP water in the water budget equation, it is unlikely that negotiated settlements can be reached. If there are no additional negotiated Indian water rights settlements, the Tribes and the Federal government will rely on the ongoing Gila River and Little Colorado River Adjudications process to quantify reserved water rights. The Adjudication cases are moving slowly through the courts. Without negotiated settlements, the uncertainty of how the reserved rights will affect other water right holders will be prolonged for years.

CAP NON-INDIAN AGRICULTURE'S POTENTIAL RESPONSE TO ECONOMIC DIFFICULTIES

BACKGROUND

Several of the central Arizona irrigation districts who signed subcontracts for CAP water service are now facing financial difficulty. The obligations undertaken by the districts in connection with CAP are significant causes of that difficulty. Several of the districts face three substantial financial obligations:

1. The non-Indian agricultural subcontracts for CAP water service, which are likely to be administered in a way which requires the districts to make OM&R payments for all water available to them, resulting in an annual obligation to be shared by all the districts in excess of \$20 million dollars;
2. Federal 9(d) agreements under which the federal government agreed to construct water distribution systems within the boundaries of the districts in exchange for the repayment of most of the costs associated with that construction; and
3. General obligation bonds which some of the districts issued to pay their share of the cost of construction of the district distribution systems.

As financial difficulties increase for the central Arizona irrigation districts, the legal avenues available to the districts and the parties to whom the districts are financially obligated become increasingly significant. The districts are interested in how, through negotiation or litigation, they may either restructure or be relieved of these obligations. The federal government, CAWCD and the bond holders, as the entities to which these obligations are owed, are interested in what remedies may be available to them should the districts fail to pay the money required by these financial obligations.

How these issues are resolved will determine how and to what extent the irrigation districts will participate in CAP. If the districts are financially incapable of participating in

CAP, the project is impacted financially in two ways. First, any OM&R costs not paid by the districts obviously must be paid from some other source of revenue, possibly from increased OM&R costs to other participants. Second, because that part of the project dedicated to irrigation use is non-interest bearing, CAWCD's repayment obligation increases if less of the project is being used for irrigation purposes.

OVERVIEW OF LEGAL OPTIONS

There are a number of options available to the creditors should the districts default. Any of the creditors could take action in state or federal court seeking a money judgment against the districts for money owed. Once a judgment is obtained, the creditors could seek a writ of mandamus in an attempt to force the district to levy and collect sufficient taxes to pay the moneys owed.

The bondholders might also avail themselves of a state procedure that allows the parties to attempt to restructure the debt owed to the bondholders. A.R.S. § 48-3241 et seq.

If the districts default on the subcontracts or 9(d) agreements, CAWCD and the federal government may cease water deliveries to the districts under the terms of those agreements. The 9(d) agreements may also allow the federal government to prevent the defaulting district from using the internal distribution systems for any purpose.

To avoid these consequences, the districts are likely to attempt to restructure or rid themselves of their debt. One option for the districts is to negotiate with their creditors seeking to restructure the respective obligations. This option has already been taken by some of the irrigation districts which have requested deferments of the payments due under the 9(d) agreements. Another option is litigation. The districts have indicated that they might sue CAWCD seeking to reform the way their subcontracts are to be administered on the grounds that there were facts unknown or misrepresented to them at the time the districts signed their subcontracts.

Although the districts might be tempted to simply dissolve and reform under new legal identities, state law prevents any district from dissolving unless all financial obligations have been paid. A.R.S. § 48-2954.

At some point, the districts may feel compelled to file for bankruptcy in federal court. Because the districts are political subdivisions of the state, the only chapter of the Bankruptcy Code under which they may file is Chapter 9. Chapter 9 is a chapter allowing municipal corporations and political subdivisions of the states to reorganize their financial obligations. Dissolution is not available to a debtor under Chapter 9 and is thus not an option for the districts under federal law.

Once a political subdivision qualifies as a debtor under Chapter 9, it is entitled to a stay that puts a hold on all attempts by the creditors to resolve their financial disputes in forums other than the bankruptcy court. Thus, all the actions discussed above as being available to the districts' creditors would be stayed by the bankruptcy action.

Because of constitutional restraints on the power of the federal government over instrumentalities of the state, Chapter 9 differs from other forms of bankruptcy in that the bankruptcy court has very minimal control over the debtor's estate and day-to-day operations. For the same reason, only the debtor may propose a plan of reorganization under Chapter 9.

As a part of the reorganization, the debtor in bankruptcy may choose whether to assume or reject its executory contracts. Executory contracts are those under which substantial performance is still required by both parties. In this case, the subcontracts, which are water service agreements with continuing obligations for all parties, are likely to be found to be executory. Thus, if the districts are unable to reform the way the subcontracts are administered, they would be free in bankruptcy court simply to reject the subcontracts in toto.

On the other hand, the 9(d) agreements would not likely be found to be executory contracts because the federal government has already completed its obligations under those agreements. If the agreements are not executory, the federal government would be an unsecured creditor of the districts in bankruptcy court.

Once a plan of reorganization is proposed, the creditors have the power to reject the plan. Under certain circumstances, however, the creditors may be subjected to a "cram down." A cram down would force the creditors to accept the plan so long as they receive a certain amount of repayment.

PROBABLE OUTCOME OF IRRIGATION DISTRICTS' FINANCIAL PROBLEMS

Based on the foregoing analysis, the following would seem to be likely sequences of events regarding the CAP irrigation districts and their financial obligations.

It is reasonable to assume that at some point, some or all of the irrigation districts may choose or feel compelled to seek the protection of federal bankruptcy court. The sequence of events leading to bankruptcy court at this point is speculative and is not particularly significant. What the irrigation districts may expect to achieve in bankruptcy court is the significant issue.

As has been stated in regard to the 9(d) agreements in bankruptcy, the contracts are likely not executory, and the federal government would likely be an unsecured creditor of the districts. This debt would be restructured in such a way as to allow the district to make payments on the obligations but in a way that makes it economically feasible to continue their operations.

With the debt restructured by the bankruptcy court and assuming that the restructured payments are timely made, it is likely that the federal government would not be able to invoke the provision of the 9(d) agreements giving them the right to refuse water service through the distribution systems. In addition, common sense would dictate that the federal government allow the districts and their land owners to continue to use the distribution systems in the manner necessary to continue their operations. Without the districts continuing their operations, the federal government would have no hope of ever seeing repayment of the obligations and would simply be the owner of an extensive series of canals within the districts of Pinal County.

The bond holders would also be creditors in the bankruptcy court but with slightly stronger rights than the federal government. They would be entitled to a certain amount of repayment, but again in a manner that would allow the irrigation districts to continue their operations.

As has also been discussed, the non-Indian agricultural subcontracts would likely be found to be executory, and thus, the districts could either assume or reject them. Undoubtedly, the initial question in determining whether the subcontracts would be assumed is whether they will in some way be reformed by negotiation or by action of state superior

court or federal district court to diminish the districts' share of OM&R. If they are not reformed, the subcontracts will likely be rejected. If the subcontracts are rejected by the districts, the water subject to those contracts would return to the control of the Secretary.

It is impossible at this time to say whether the subcontracts will be reformed and assumed by the districts or rejected by the districts. But some consequences can be foreseen under either scenario. Regardless of whether the subcontracts are assumed in some form that greatly diminishes the districts' obligations or are simply rejected, CAWCD will be forced to find a new source of revenue to pay the OM&R cost that was expected to come from the districts. Also, under either scenario, the provision in the subcontracts denying the districts water service through project facilities if the districts are in default will not be invoked. The districts will either assume the subcontracts and make their reduced payments or reject the subcontracts and not be subject to default provisions at all. Thus, these provisions will not prevent the districts from receiving some subcontract water, spot market water or water from other sources through their distribution systems. It is possible, then, that the irrigation districts might continue to receive some project water and thereby pay some money toward the OM&R obligation. This result would also leave at least a part of the CAWCD repayment obligation as non-interest bearing.

CONCLUSION

In summary, if the irrigation districts choose to reorganize under federal bankruptcy laws, it is likely that at the conclusion of the reorganization, the districts will still be in operation and making payments on their debt to the federal government and their bond holders at a rate that makes it economically feasible for the districts to continue operations. They will either not have CAP subcontracts, or they will have subcontracts which allow them to take CAP water while paying a much smaller share of the OM&R cost of the system. They will likely be using their distribution systems to deliver CAP subcontract water, CAP spot market water or other sources of water to their customers. Because of their diminished OM&R obligations, CAWCD will need to find an alternative source of revenue to pay the OM&R costs that were to have been paid by the irrigation districts.

SPOT MARKET AND SHORT-TERM SUBCONTRACTS

The "no action" scenario anticipates agricultural production in central Arizona will continue at some level regardless of the final resolution of the CAP issues. Agriculture will primarily rely on groundwater as its water supply. The irrigation districts will no longer have CAP subcontracts although the distribution systems will still be in place. Since the systems to deliver the water will be available and if the price was competitive with groundwater resources, central Arizona farmers would probably be interested in receiving supplemental Colorado River water. Some municipal providers may also be interested in participating in the spot market. If the water and aqueduct capacity were available, CAWCD will likely offer water service on a spot market.

In order to participate in the spot market an entity may have to provide its own energy for pumping the water from the Colorado River. Spot market water would be delivered on an "as available" basis after subcontractor water orders were met and if water was still available within Arizona's apportionment. There currently is no established rate for spot market water but to be a viable market it would have to be priced competitively with the other water resources available to the buyer. It would not necessarily have to reflect the charges paid by the subcontractors, but it would also not be as reliable. If agricultural water is sold on the spot market, it would increase the non-interest bearing portion of the cost allocation and thus decrease the interest bearing portion.

It is expected there will be some interest in purchasing water on the spot market, but it is not expected that these purchases will significantly increase the long-term use of CAP water.

CAWCD currently has the authority to enter into temporary contracts for the delivery of CAP water. These contracts differ from the spot market in that CAWCD could schedule project power to make deliveries. For that reason the cost of water under a temporary contract would be more than the cost under the spot market, but the water would also be more reliable. It is anticipated that water providers who could not afford to maintain their subcontracts because of the high water service capital charges and replenishment districts

would take advantage of temporary contracts, especially if the term of these contracts can be made longer than one year.

"NO ACTION" ESTIMATE OF CAP WATER DEMAND

Considering the implications of the probable increased cost of CAP water compared with previous estimates, it is likely that CAP water deliveries will be limited to those entities who have the financial capability to pay. This means the M&I water use sector will be the primary CAP water users although there will be some additional demand from Indian Communities and the potential of a spot market for agriculture. The following discussion provides an estimate of what may be the future demand for CAP water under the "no action" scenario.

POTABLE WATER DEMAND STUDY

The demand for municipal water supplies is a function of population and the kinds of uses within a service area. Some communities are primarily residential while others have significant additional components of commercial and industrial water use. In order to estimate future demand, ADWR prepared a study which analyzed the need for potable water supplies. While there may be some additional demand for CAP M&I water for non-potable uses such as golf course watering or urban irrigation, it is likely that much of this demand would be met with existing sources such as Salt River Project supplies, groundwater pumped pursuant to grandfathered rights, or effluent.

Study Areas

Due to time constraints, ADWR prepared the study utilizing data which had been prepared for the economic impact analysis of the draft assured water supply rules. Because the data was organized originally for a different purpose, the grouping of cities and water companies used in this study may not be the same as would have been used if the study been performed strictly for CAP demand analysis purposes. Table 8 depicts the grouping of the various municipalities and water company service areas. While there were a total of 18 different study areas, two of the areas, Area 3 in the Phoenix AMA and Area 1 in the Tucson AMA are the dominant groupings. These areas which include the major metropolitan

cities, were grouped together because they exhibit similar circumstances related to their access and use of CAP supplies. Providers in these areas have signed subcontracts for CAP M&I water and generally have constructed treatment plants and distribution systems to deliver at least a portion of that water. Other areas exhibit characteristics of having a CAP subcontract but limited or no means of directly using it, or having no subcontract supplies at all so that water users would be likely customers of a replenishment district or augmentation authority if one were to be formed.

Population Estimates

The first step in projecting potable demand was to analyze the most recent Department of Economic Security population estimates. Table 9 shows the population projection separated by study area. In addition to separating the population, ADWR also estimated the portion of the population who would be residing on lands with access to other renewable water supplies, especially Salt and Verde River water delivered by the Salt River Project. Data was organized by Active Management Area rather than county, since those are the areas where the proposed assured water supplies would apply. No attempt was made to incorporate the demand associated with the Prescott AMA since the possibility of utilizing CAP water through exchange does not appear to be likely due to environmental concerns. The population estimates project a 134% growth over a 45 year period, starting with about 3.25 million people in 1995 and arriving at a population of almost 7.6 million people by 2045. Figure 9 is a graphical representation of the estimated population growth by AMA.

Demand Estimates

Table 10 and Figure 10 show the estimated total demand for potable water in the three AMAs. Demands were estimated utilizing weighted average gallons per person per day (gpcd) rates for each study area. Trial estimates were made which either held the gpcd rates constant at current levels or assumed reduced levels which reflect the expected result of water conservation programs. Based on discussion from municipal representatives of the Public Involvement Advisory Group, it was determined that a "most likely" demand number should be somewhere in between the trial run assumptions. The figures shown in Table 10 reflect this most likely gpcd assumption. The results of the study indicate that the demand

**TABLE 8
CENTRAL ARIZONA PROJECT
POTABLE WATER DEMAND STUDY
WATER DEMAND STUDY AREAS**

	MUNICIPALITIES	WATER COMPANIES
PHOENIX AMA		
Area 1	Avondale, Buckeye, El Mirage, Goodyear, Peoria, Tolleson, Youngtown	Agua Fria, AZ State Lands, Consolidated W.C., McMicken I.D., Sunrise W.C., Water Utility of Buckeye, Water Utility of Tonopah, West End W.C., White Tank
Area 2	Carefree, Cave, Creek	AZ State Lands, Carefree W.C., Cave Creek W.C.
Area 3	Chandler, Gilbert, Glendale, Mesa, Phoenix, Scottsdale, Tempe	AZ State Lands, Carefree Ranch, Chandler Heights I.D., Desert Ranch W.C., New River W.C., San Tan I.D.
Area 4		Rio Verde W.C., Sun City W.C., Sun City West, Pima Utilities (Sun Lakes)
Area 5	Fountain Hills, Litchfield Park, Paradise Valley	Berneil W.C., Chaparral W.C., Litchfield Park, Paradise Valley W.C.
Area 6	Surprise	
Area 7	Areas of Phoenix AMA in Pinal County	Arizona W.C., Consolidated W.C., AZ State Lands
PINAL AMA		
Area 1	Casa Grande, Coolidge, Florence, Eloy	Arizona W.C., AZ Sierra Util.
Area 2	Portion of Pinal AMA in Maricopa County	
TUCSON AMA		
Area 1	Tucson	Midvale Farms W.C., AZ State Lands
Area 2		Canada Hills W.C., Metropolitan Domestic Water Improvement District, Rancho Vistoso
Area-3	Green Valley	Community W.C., Green Valley W.C., New Pueblo W.C., Flowing Wells I.D.
Area 4		Las Quintas Serenas, Lakewood, Hub W.C., Avra Water Coop, Farmers W.C.
Area 5		Del Lago W.C., Spanish Trails W.C.
Area 6		Lago Del Oro W.C.
Area 7	Marana	Cortaro Water User's Association
Area 8	Nogales, portion of Tucson AMA in Santa Cruz County	Rio Rico, Valle Verde, Tubac Valley
Area 9	Portion of Tucson AMA in Pinal County	Saddlebrook

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TABLE 9
CENTRAL ARIZONA PROJECT
POTABLE WATER DEMAND STUDY
POPULATION ESTIMATES

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
PHOENIX AMA										
AREA 1	143,509	184,697	242,732	325,364	391,400	505,741	665,795	753,297	983,958	1,143,040
AREA 2	4,602	4,966	5,409	5,693	7,089	15,130	24,228	27,246	29,066	29,444
AREA 3	2,139,883	2,419,564	2,683,265	2,945,992	3,225,037	3,457,061	3,650,457	3,883,315	3,915,939	4,048,710
AREA 4	66,563	72,262	81,469	91,020	96,027	105,395	117,415	119,692	121,969	124,246
AREA 5	33,475	36,512	42,290	42,845	43,128	43,318	43,408	43,695	43,997	44,262
AREA 6	21,731	27,477	31,534	44,413	84,375	133,197	174,604	263,125	388,745	486,836
AREA 7	39,001	42,257	45,282	48,307	51,347	54,387	57,105	59,634	61,991	64,348
AMA TOTAL	2,448,764	2,787,735	3,131,691	3,503,234	3,900,473	4,314,229	4,733,072	5,150,004	5,345,685	5,940,986
TUCSON AMA										
AREA 1	55,428	60,079	64,589	68,678	73,017	77,324	81,189	84,621	88,033	91,484
AREA 2	7,792	8,631	10,821	11,832	13,024	13,650	13,580	14,073	14,286	14,372
AMA TOTAL	63,220	68,710	75,410	80,510	86,041	90,974	94,869	98,694	102,319	105,856
PINAL AMA										
AREA 1	592,790	635,505	680,111	721,125	770,550	822,445	874,073	932,773	991,473	1,050,174
AREA 2	55,484	64,198	75,876	87,845	99,792	111,288	122,081	136,809	136,350	146,688
AREA 3	30,743	33,869	37,076	40,536	44,195	47,835	51,339	54,786	58,233	61,682
AREA 4	4,825	12,669	16,494	20,502	24,667	28,861	32,993	35,229	37,465	39,640
AREA 5	11,095	12,767	14,481	16,310	18,208	20,118	21,976	23,452	24,928	26,403
AREA 6	4,847	14,891	29,367	46,242	62,492	76,717	88,842	99,492	109,092	118,067
AREA 7	2,431	2,789	3,155	3,545	3,954	4,363	4,761	5,081	5,401	5,720
AREA 8	32,508	37,815	43,823	49,831	56,525	63,220	70,268	77,695	85,988	94,280
AREA 9	1,475	2,008	2,140	2,295	2,440	2,584	2,712	2,833	2,945	3,057
AMA TOTAL	736,198	816,511	902,523	988,231	1,082,822	1,177,431	1,269,045	1,358,150	1,451,875	1,543,711
TOTAL ALL AREAS	3,348,182	3,672,976	4,109,694	4,571,975	5,009,287	5,582,434	6,096,986	6,606,848	7,099,899	7,592,553

CAP POTABLE DEMAND STUDY
POPULATION BY AMA

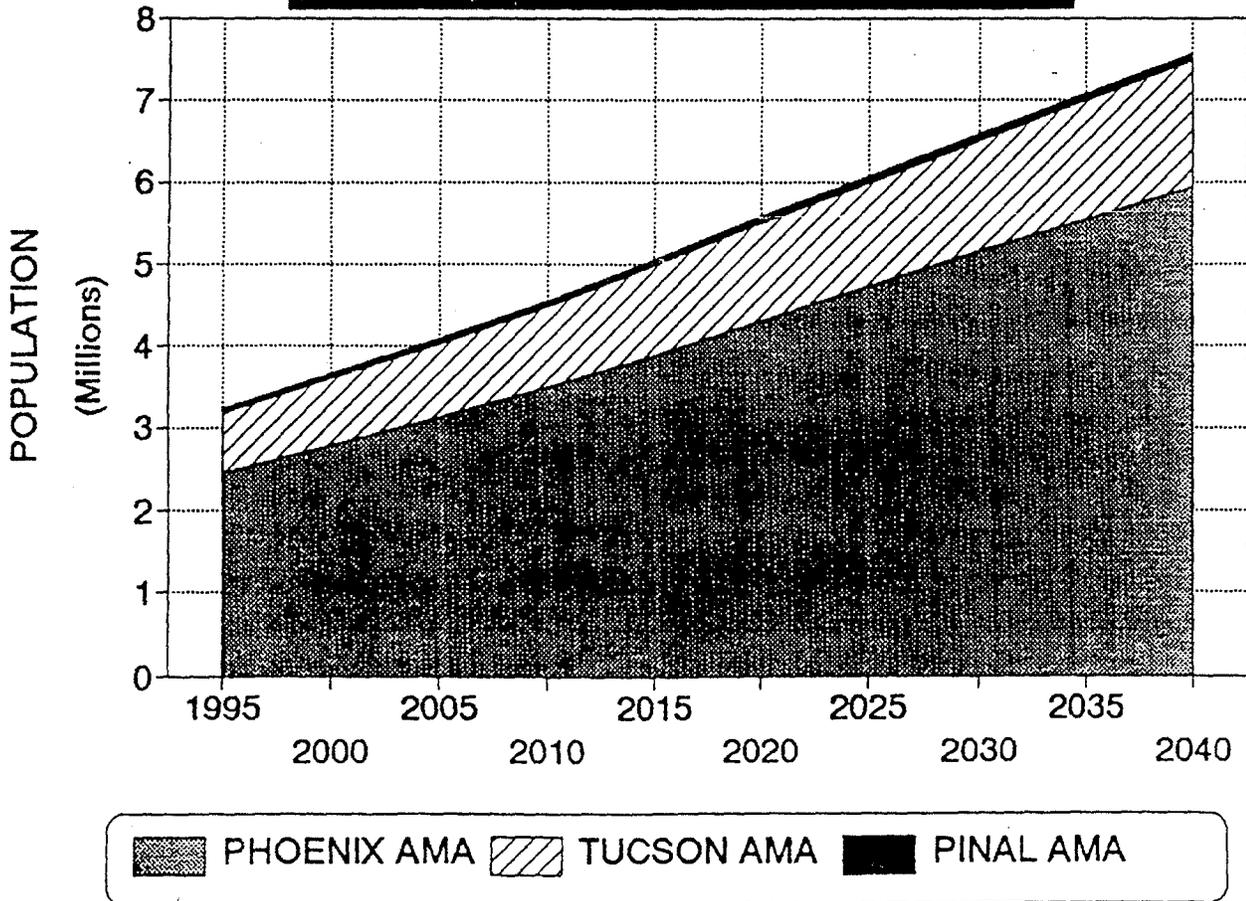


Figure 9. Potable demand study - population by AMA.

for potable water will grow from 775,000 acre-feet per year to about 1,675,000 acre-feet per year by the year 2040.

Supply Sources

The supplies which will be used for potable purposes are a function of a variety of factors such as cost, water rights, regulatory limitations, and reliability. For the purpose of this study a number of assumptions were made about the likely use of supply sources.

- A limited amount of groundwater will be pumped within the safe yield concept. For the purpose of this study a 5% incidental recharge factor was assumed. While the current draft of the assured water supply rules also provide for an allowable amount of overdrafted groundwater, no overdraft was considered in this study. If the final rules do allow an additional allowance of overdrafted groundwater as a supply, the effect would be to lower the demand for CAP water.
- It was assumed that locally available surface water supplies would be preferred over CAP water supplies. These supplies include Salt and Verde River water delivered by Salt River Project, Horseshoe Dam gatewater rights held by the City of Phoenix, new conservation water which results from the enlargement of Roosevelt Dam, surface water delivered by Roosevelt Water Conservation District which would convert from agricultural use to municipal use as a result of urbanization, and surface water from the Agua Fria River delivered by the Maricopa Municipal Water District which also would convert from agriculture to municipal use. While the volume of supplies vary year to year depending upon runoff and storage conditions, for the purpose of this study every year was assumed to be an "average year."
- Water supplies from the Salt River Project were limited to be no greater than the demands for water on SRP project lands.
- Effluent and water imported from "water farms" would not be used for potable supplies until after CAP supplies had been fully utilized.

- For the purpose of this study, the demand for potable water was not constrained by current Municipal subcontracts or allocations. Furthermore, no attempt is made to differentiate between Municipal demand which would be supplied by subcontracts, Indian settlement leases, or through a replenishment district.

Table 11 and Figure 11 show the results of the study regarding the sources of supply. CAP water supplies are calculated as the difference between the demand for potable water and the supplies available from other sources. Table 12 and Figure 12 display the results of the study which isolates the CAP demand by AMA. The studies indicate the demand for potable CAP water will increase from about 317,000 acre-feet in 1995 to about 906,000 acre-feet in 2040.

INDUSTRIAL WATER USE

No estimate was made of the likely remaining industrial demand under "no action" conditions. However, it does appear that there will be no use of water for power generation purposes since SRP and APS are considering signing their subcontracts only for the purpose of using the water for Indian water rights settlements. Mining entities may wish to use CAP water even if the price is high if they have no other alternative water sources. Lacking any additional information, no use of industrial water has been assumed at this time.

INDIAN WATER USE

The high cost of CAP water which is likely in the "future without alternative action" scenario will largely discourage the use of Project water for agricultural purposes by Indian Communities. The exceptions to this condition will be the Ak Chin Reservation who by settlement agreement have the OM&R costs paid by the Federal government and a portion of the Tohono O'odham Reservation who also have OM&R costs paid by a trust fund which was established by settlement. ADWR estimates Indian irrigation water will amount to about 75,000 acre-feet initially and about 113,000 acre-feet after the year 2005. In addition, it is likely that the Gila River Reservation may utilize up to 50,000 acre-feet for commercial and

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TABLE 10
CENTRAL ARIZONA PROJECT
POTABLE WATER DEMAND STUDY
DEMAND ESTIMATES

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
PHOENIX AMA										
AREA 1	31,025	39,315	51,660	68,517	83,424	105,936	139,462	157,791	206,107	239,429
AREA 2	2,571	2,720	2,896	3,016	3,565	6,830	10,340	11,628	12,405	12,566
AREA 3	544,158	601,677	658,236	712,689	773,081	830,950	862,787	917,823	925,539	956,914
AREA 4	21,842	23,355	26,282	29,057	31,075	33,174	36,563	37,272	37,981	38,690
AREA 5	18,165	19,304	21,459	21,645	21,739	21,825	21,911	22,025	22,177	22,361
AREA 6	5,904	7,141	7,877	10,845	20,415	31,630	40,485	61,011	90,138	112,883
AREA 7	8,300	8,993	9,637	10,281	10,928	11,575	12,154	12,692	13,193	13,695
AMA TOTAL	631,965	702,955	778,047	856,050	943,227	1,031,830	1,123,702	1,220,242	1,307,540	1,396,538
TUCSON AMA										
AREA 1	12,852	13,527	14,348	15,153	15,949	16,803	17,461	18,199	18,937	19,675
AREA 2	2,051	2,297	2,812	3,048	3,326	3,405	3,448	3,547	3,601	3,622
AMA TOTAL	14,903	15,824	17,160	18,201	19,275	20,208	20,909	21,746	22,538	23,297
PINAL AMA										
AREA 1	100,266	106,779	114,273	120,337	128,606	137,267	144,905	154,636	164,368	174,099
AREA 2	11,436	12,441	14,449	16,433	18,556	20,444	22,290	23,153	24,895	26,783
AREA 3	6,095	6,677	7,268	7,901	8,317	8,895	9,489	10,126	10,763	11,400
AREA 4	859	2,058	2,660	3,284	3,951	4,591	5,248	5,604	5,959	6,305
AREA 5	1,777	2,002	2,222	2,466	2,713	2,975	3,249	3,468	3,686	3,904
AREA 6	668	2,025	4,013	6,319	8,470	10,398	12,041	13,485	14,786	16,002
AREA 7	667	650	721	794	868	943	1,013	1,081	1,149	1,217
AREA 8	5,972	6,777	7,756	8,708	9,877	10,976	12,121	13,403	14,833	16,264
AREA 9	405	311	539	573	604	634	662	692	719	746
AMA TOTAL	128,145	139,930	152,901	166,835	181,962	197,123	211,018	225,648	241,158	256,720
TOTAL ALL AREAS	775,013	858,659	949,108	1,041,088	1,144,464	1,249,261	1,355,629	1,467,636	1,571,236	1,676,555

CAP POTABLE DEMAND STUDY
YEARLY WATER DEMAND BY AMA

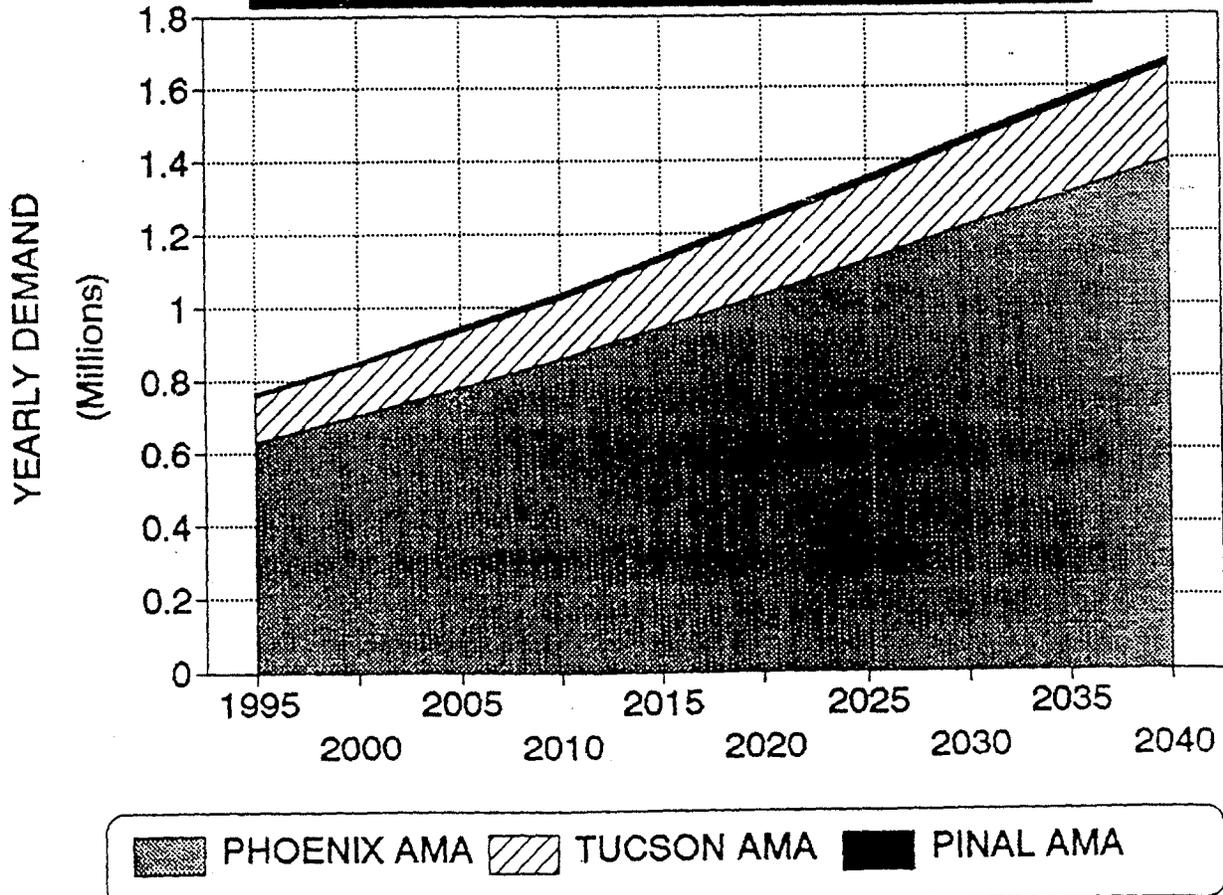


Figure 10. Potable demand study - yearly water demand by AMA.

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TABLE 11
CENTRAL ARIZONA PROJECT
POTABLE DEMAND STUDY
WATER SUPPLY SOURCES

SOURCE	Year - 1995									
	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
SAFE YIELD GW	38,730	42,935	47,456	52,054	57,223	62,466	67,780	73,382	78,561	83,827
SRP	357,710	389,125	412,093	435,029	458,393	479,987	498,617	532,399	548,139	572,900
PLAN 6	3,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
PHX GATEWATER	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
RWCD	7,984	11,976	15,960	19,962	23,955	28,943	35,932	37,263	38,594	39,925
MCMWD	2,226	2,226	3,339	4,452	6,678	8,905	11,131	14,841	18,551	22,262
CAP	317,342	361,397	418,660	478,381	547,015	617,960	681,169	758,751	836,391	906,641
TOTAL	748,012	838,659	949,108	1,041,088	1,144,464	1,249,261	1,355,629	1,467,636	1,571,236	1,676,555

CAP POTABLE DEMAND STUDY
ESTIMATED WATER SUPPLY SOURCES

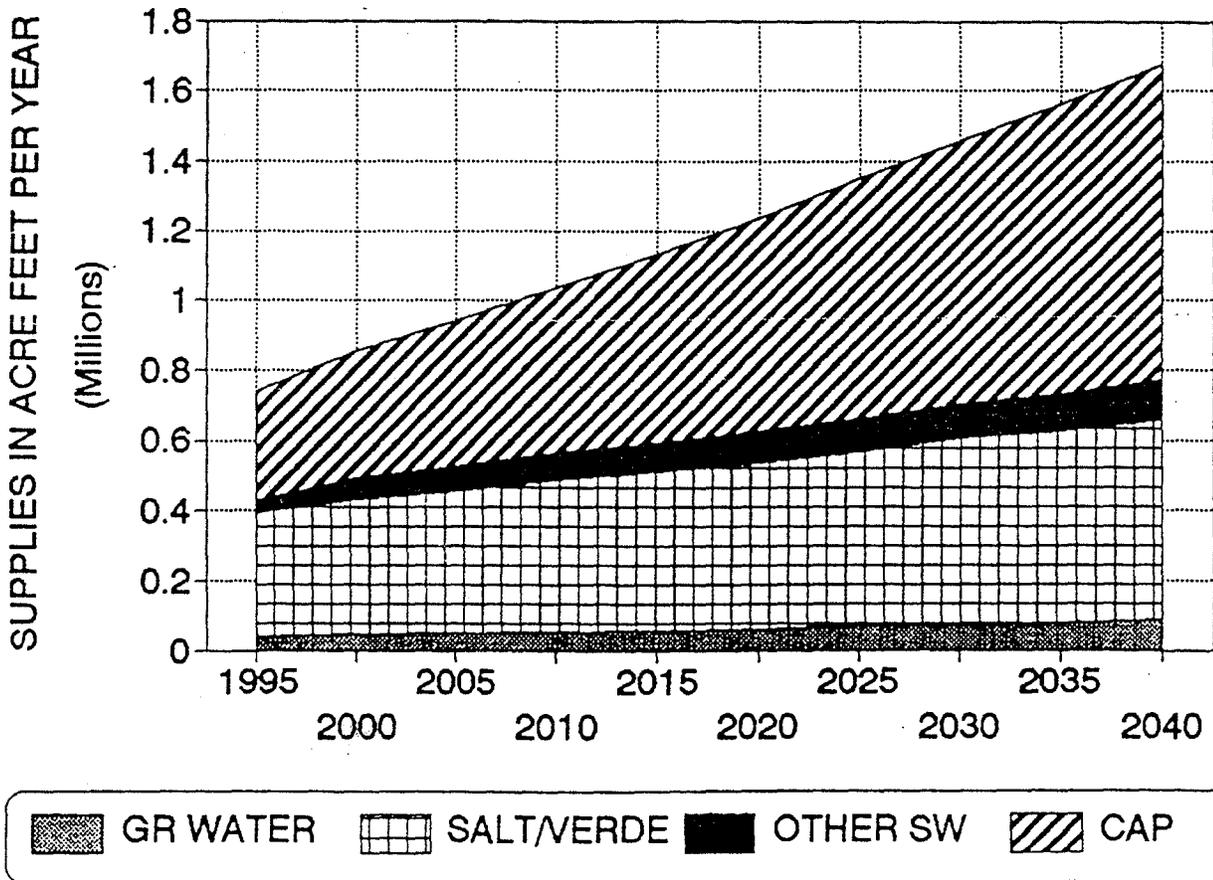


Figure 11. Potable demand study - estimated water supply sources.

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TABLE 12
CENTRAL ARIZONA PROJECT
POTABLE DEMAND STUDY
CAP DEMAND BY AMA
(AFD = 900 feet)

AMA	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
PHOENIX AMA	181,447	213,432	256,152	302,793	333,840	411,496	470,837	523,726	585,879	640,624
TUCSON AMA	121,738	132,932	146,206	158,493	172,863	187,266	200,468	214,366	229,101	243,883
PINAL AMA	14,157	15,033	16,302	17,293	18,312	19,198	19,864	20,659	21,411	22,132
TOTAL	317,342	361,397	418,660	478,581	547,013	617,960	691,169	758,751	836,391	906,641

CAP POTABLE DEMAND STUDY
ESTIMATED CAP DEMAND BY AMA

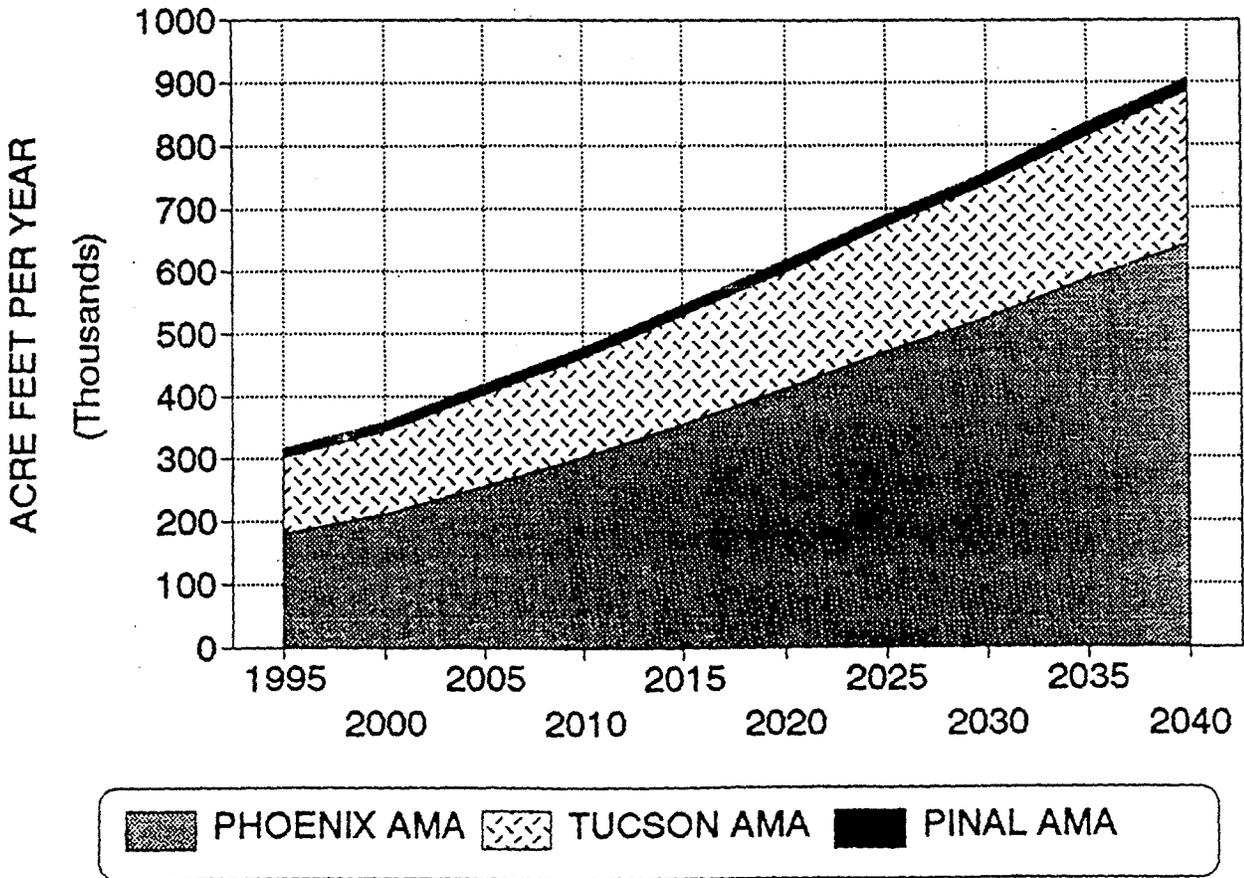


Figure 12. Potable demand study - estimated CAP demand by AMA.

industrial purposes within the reservation. It is assumed that commercial and industrial use will start at about 10,000 acre-feet in the year 2000, and increase gradually as industrial parks and other developments occur until the 50,000 acre-feet is needed by 2040.

SPOT MARKET DEMAND

It is difficult to estimate the demand for water on a spot market basis. However, it was the opinion of many members of the Public Involvement Advisory Group that a spot market was a probable future condition and should be assumed in the "future conditions without alternative action" description. Based on this input it was assumed that an average of 100,000 acre-feet per year of spot market water may be sold after the year 2005.

SUMMARY TABLE

Table 13 and Figure 13 summarize the results of the studies to estimate the demand for water under the assumptions of the "future without action" description. The overall result of the "no action" description is that CAP demand will be about 392,000 acre-feet in 1995 but will increase to 1,169,000 acre-feet by 2040. Under these conditions the CAP will not be likely to utilize its full entitlement of Colorado River water by the year 2040.

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TABLE 13
CENTRAL ARIZONA PROJECT
NO ACTION SUMMARY

Units = acre feet

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
MUNICIPAL	317,342	361,397	418,660	478,581	547,015	617,960	691,169	758,751	836,391	906,641
INDIANS	75,000	85,000	127,800	132,800	137,800	142,800	147,800	152,800	157,800	162,800
SPOT MARKET	0	0	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
UNUSED SUPPLY	1,027,658	973,603	773,540	708,619	635,185	559,240	481,031	408,449	325,809	250,559

CENTRAL ARIZONA PROJECT
"NO ACTION" SUMMARY

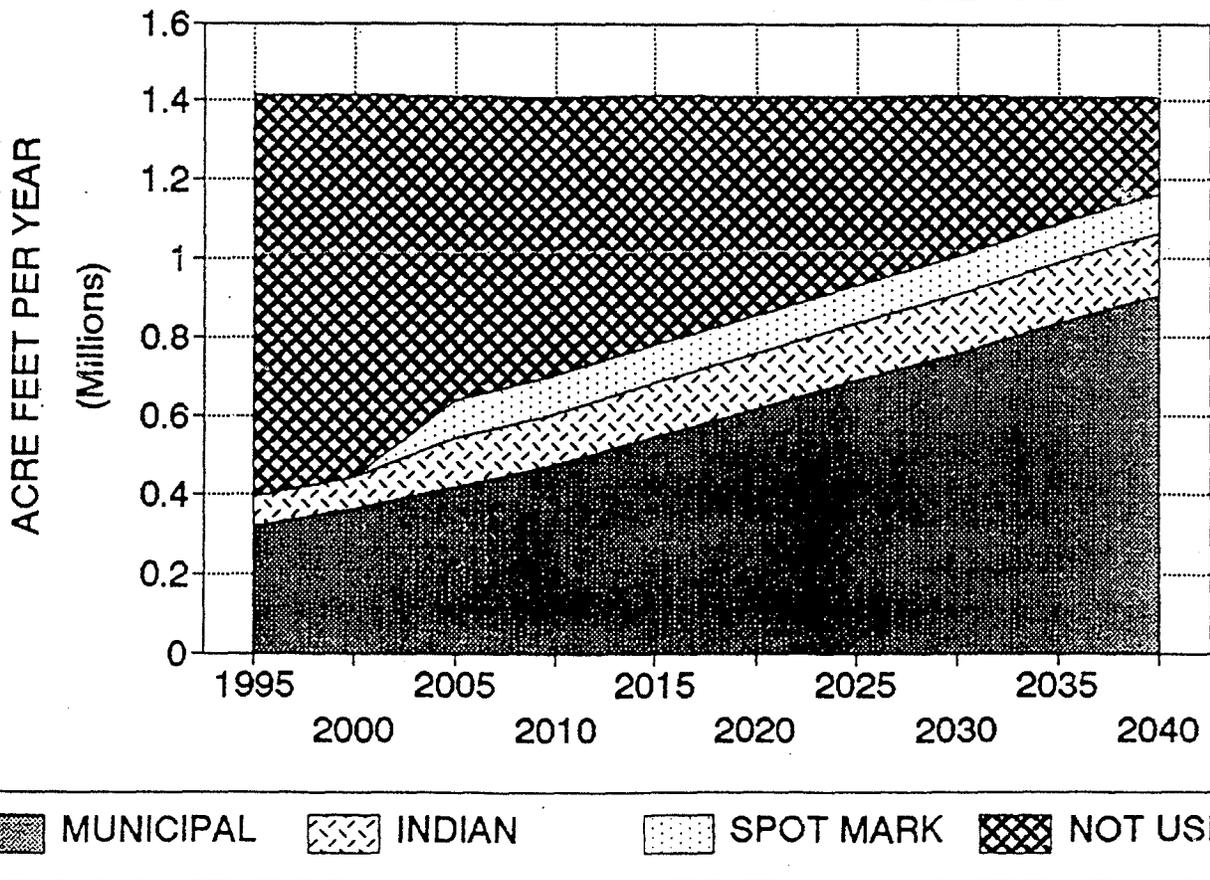


Figure 13. "No Action" scenario demand summary.