SECTION

III

Future Conditions and Directions

Preface

Sections I and II have described water resource conditions within the Pinal AMA and the regulatory programs designed to cause efficient use of groundwater and to cause increasing amounts of renewable water supplies to be used. The Arizona Department of Water Resources' (Department) regulatory programs for the third management period described in Section II represents the midpoint in the Department's overall management strategy to implement conservation programs that ultimately lead to the achievement of the active management area's (AMA) management goal by 2025. Because the Third Management Plan for the Pinal AMA is part of a larger strategy of five consecutive management plans, Section III is included to describe how this management plan fits into the overall strategy to achieve the AMA's management goal.

The Third Management Plan describes alternative future water supply and demand conditions in Chapter 11, along with the direction that will be taken in developing water management programs during the third management period and beyond in Chapter 12. The Department's supply and demand projections, also known as "water budgets," are designed to volumetrically account for a range of supply and demand possibilities for consideration as the Department develops its management programs. Both Pinal AMA scenarios exhibit overdraft conditions.

The Department has considered these projections in the context of the overall water management goal and strategy in order to further develop and refine the concept of water management for the future. The future directions discussion in Chapter 12 elucidates the Department's vision for the future, looking toward ultimately achieving the management goal through continued requirements for the conservation of groundwater along with the augmentation of water supplies through such methods as efficient use of all water supplies and greater reliance on renewable supplies. Chapter 12 provides a brief conclusion of many of the more important management strategies and programs presented in Section II and also identifies some of the interrelationships of sector water use, impacts of water use, and the implications of implementing a planned depletion allowance on the AMA's management goal. The chapter concludes by discussing future strategies that may be implemented during the third management period and beyond to better manage the AMA's water resources.

CHAPTER

11

Water Budgets and Projections

11.1 INTRODUCTION

The Arizona Department of Water Resources (Department) uses detailed water budgets to evaluate the current balance between water demands and renewable supplies and to measure progress toward achieving the Pinal Active Management Area's (AMA) management goal. This chapter presents two scenarios depicting projected maximum and minimum availability of affordable Central Arizona Project (CAP) water supplies when non-Indian agricultural demand is held constant. Projections of water demand and supply are based, in most part, on the water use trends described in Chapter 3. These projections also take into consideration the agricultural, municipal, and industrial conservation requirements described in chapters 4, 5, and 6, respectively. In addition, the projections reflect the augmentation program goal and objectives presented in Chapter 8.

11.2 BASELINE WATER DEMAND AND SUPPLY ASSUMPTIONS

In Chapter 3, a baseline water budget was introduced in order to depict water demand and supply in the Pinal AMA for 1995. Most agricultural, industrial, and municipal water demands and supplies were based on reported water use. Incidental recharge and canal losses were estimated. Net groundwater inflow and stream channel recharge were derived based upon estimates presented in Chapter 2.

11.3 WATER DEMAND AND SUPPLY PROJECTIONS AND ASSUMPTIONS

The following sections describe the assumptions used in the development of Pinal AMA demand and supply projections. These projections are separated into six time periods (see Table 11-1).

TABLE 11-1
SUMMARY OF WATER BUDGET TIME PERIODS
PINAL ACTIVE MANAGEMENT AREA

1995	Baseline conditions
2000	Beginning of the third management period (2000) through termination of the existing CAP pool pricing program (2003)
2004	Post CAP pool pricing program (2004) through the end of the third management period (2009)
2010	Beginning of the fourth management period (2010) through the end of the statutorily authorized funding sources for the Arizona Water Banking Authority (2016)
2017	Post water banking program (2017) through the end of the fifth management period (2024)
2025	End of current statutory authority for management periods

11.3.1 Non-Indian Agricultural Water Demand and Supply

11.3.1.1 Demand

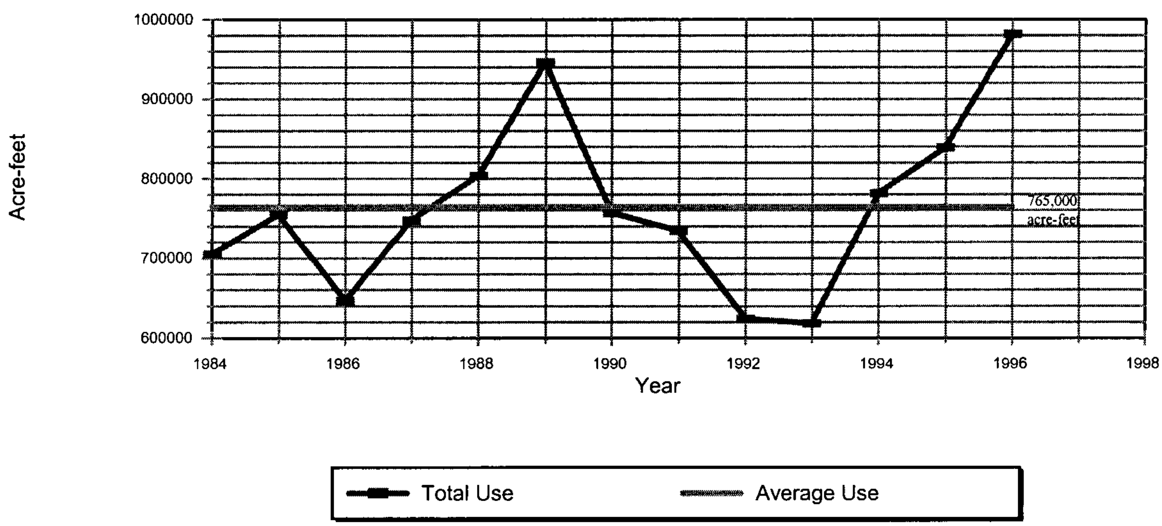
In 1995, there were approximately 279,000 acres of non-Indian farmland in the Pinal AMA. The baseline water demands are reflective of this amount of acreage, farmed at a 70 percent land utilization rate. Beginning in 1996, it is assumed that 500 acres of farmland will be retired annually through the year 2025 based on current projections of growth in the municipal and industrial sectors. Non-Indian and Indian irrigable acreage through 2025 is shown in Table 11-2.

TABLE 11-2
IRRIGABLE ACREAGE, 1995-2025
PINAL ACTIVE MANAGEMENT AREA

Irrigable Acreage	1995	2000	2004	2010	2017	2025
Non-Indian	279,000	276,500	274,500	271,500	268,000	264,000
Indian	29,922	34,794	36,444	39,341	42,201	44,581
TOTAL	279,000	311,294	310,944	310,841	310,201	308,581

Although total non-Indian farmland will be reduced due to urbanization, it is expected that water demand will remain constant because agricultural market demands will be met by bringing currently fallow farmland into production. Non-Indian agricultural water demand for the period 1984 to 1996 averaged about 765,000 acre-feet (see Figure 11-1). Future Indian agricultural water demands are expected to rise, however, due to increased water supplies resulting from utilizing existing CAP allocations and lining of distribution systems. It is assumed that 100 percent of the Indian irrigable acreage will be irrigated throughout the 25-year period.

FIGURE 11-1
NON-INDIAN AGRICULTURAL DEMAND, 1984-1996
PINAL ACTIVE MANAGEMENT AREA



11.3.1.2 Supply

The following tables summarize the volumes of water by source that will most likely be used by the CAP irrigation districts, San Carlos Irrigation and Drainage District (SCIDD), and farms not associated with an irrigation district. The CAP districts include Maricopa-Stanfield, Central Arizona, and Hohokam Irrigation and Drainage Districts. The tables project maximum and minimum volumes of CAP water to meet water demands in the CAP districts and a small, fixed volume of surface water from the Santa Cruz River. It is estimated that surface water supplies by SCIDD will be more fully utilized as a result of a long-term (2001-2016) canal lining program. The tables also include groundwater supply and effluent projections to meet demands of non-district farms. It is important to understand that the following projections assume that groundwater, because of its high cost, is the last source of supply to meet non-Indian agricultural water demands.

Water supply sources to meet expected agricultural demand from 2000 through 2003 are summarized in Table 11-3. The water supply estimates assume that CAP incentive pricing will remain in effect through 2003. During this period, it is projected that the CAP districts will maximize their CAP pool supplies under both the minimum and maximum supply scenarios. In-lieu groundwater supplies under the minimum scenario reflect the amount of CAP water that may be purchased using all water banking funds generated in the Pinal AMA and limited general fund appropriations. Under the maximum scenario, in-lieu groundwater reflects the average deliveries by the Arizona Water Banking Authority (AWBA) to date.

TABLE 11-3
NON-INDIAN AGRICULTURAL WATER SUPPLY PROJECTIONS, 2000
PINAL ACTIVE MANAGEMENT AREA

Water Supply Source	CAP Districts	SCIDD	Non-District	TOTAL
	Minimum CAP			
Groundwater	152,557	20,160	102,936	275,653
Surface Water	5,000	130,073	0	135,073
CAP (Pool)	280,000	0	0	280,000
Groundwater (In-lieu)	70,000	0	0	70,000
Effluent	0	0	4,274	4,274
TOTAL	507,557	150,233	107,210	765,000
	Maximum CAP			
Groundwater	72,557	20,160	102,936	195,653
Surface Water	5,000	130,073	0	135,073
CAP (Pool)	280,000	0	0	280,000
Groundwater (In-lieu)	150,000	0	0	150,000
Effluent	0	0	4,274	4,274
TOTAL	507,557	150,233	107,210	765,000

In the following water supply tables (Tables 11-4, 11-5, and 11-6), projections are dependent on several basic assumptions. The CAP pool supplies under both the minimum and maximum supply scenarios are expected to be reduced by increments of 50,000 acre-feet for each time period. It is assumed that in-lieu groundwater will be available to the CAP districts until 2016 through AWBA. More in-lieu groundwater is assumed to be delivered under the minimum scenario because there would be more excess Colorado River water available. In addition, other in-lieu groundwater is expected to be available through 2025 as a result of indirect recharge of local municipal CAP allocations.

Surface water supplies utilized by SCIDD are expected to increase due to the anticipated canal lining that is required by the Third Management Plan. The canal lining is expected to be 25 percent complete by 2004, 50 percent by 2010, and completed by 2017. By federal law, half of the water savings will be distributed to the San Carlos Irrigation Project (SCIP) for delivery to Indian farmland. Similarly, it is anticipated that SCIP will also line its canals on the Gila River Indian Reservation at the same rate. Half of these savings will be available to SCIDD for distribution.

TABLE 11-4
NON-INDIAN AGRICULTURAL WATER SUPPLY PROJECTIONS, 2004
PINAL ACTIVE MANAGEMENT AREA

Water Supply Source	CAP Districts	SCIDD	Non-District	TOTAL
	Minimum CAP			
Groundwater	196,691	20,913	103,211	320,815
Surface Water	5,000	134,911	0	139,911
CAP (Pool)	200,000	0	0	200,000
Groundwater (In-lieu)	100,000	0	0	100,000
Effluent	0	0	4,274	4,274
TOTAL	501,691	155,824	107,485	765,000
	Maximum CAP			
Groundwater	176,691	20,913	103,211	300,815
Surface Water	5,000	134,911	0	139,911
CAP (Pool)	250,000	0	0	250,000
Groundwater (In-lieu)	70,000	0	0	70,000
Effluent	0	0	4,274	4,274
TOTAL	501,691	155,824	107,485	765,000

TABLE 11-5
NON-INDIAN AGRICULTURAL WATER SUPPLY PROJECTIONS, 2017
PINAL ACTIVE MANAGEMENT AREA

Water Supply Source	CAP Districts	SCIDD	Non-District	TOTAL
	Minimum CAP			
Groundwater	342,873	22,917	84,913	450,703
Surface Water	5,000	149,803	0	152,803
CAP (Pool)	150,000	0	0	150,000
Groundwater (In-lieu)	7,220	0	0	7,220
Effluent	0	0	4,274	4,274
TOTAL	505,093	170,720	89,187	765,000
	Maximum CAP			
Groundwater	292,873	22,917	84,913	400,703
Surface Water	5,000	147,803	0	152,803
CAP (Pool)	200,000	0	0	200,000
Groundwater (In-lieu)	7,220	0	0	7,220
Effluent	0	0	4,274	4,274
TOTAL	505,093	170,720	89,187	765,000

TABLE 11-6
NON-INDIAN AGRICULTURAL WATER SUPPLY PROJECTIONS, 2025
PINAL ACTIVE MANAGEMENT AREA

Water Supply Source	Cap Districts	SCIDD	Non-District	TOTAL
	Minimum CAP			
Groundwater	406,211	22,917	72,285	501,413
Surface Water	5,000	147,803	0	152,803
CAP (Pool)	100,000	0	0	100,000
Groundwater (In-lieu)	6,510	0	0	6,510
Effluent	0	0	4,274	4,274
TOTAL	517,721	170,720	76,559	765,000
	Maximum CAP			
Groundwater	356,211	22,917	72,285	451,413
Surface Water	5,000	147,803	0	152,803
CAP (Pool)	150,000	0	0	150,000
Groundwater (In-lieu)	6,510	0	0	6,510
Effluent	0	0	4,274	4,274
TOTAL	517,721	170,720	76,559	765,000

11.3.2 Indian Agricultural Demand and Supply

11.3.2.1 Demand

It is projected that Indian communities within the Pinal AMA will irrigate about 39,341 acres by 2010 and 44,581 acres by 2025 (see Table 11-2). Some of this increase in acreage will be a result of rehabilitation of existing farmland by the Gila River Indian Community, utilizing additional surface and groundwater supplies. These additional supplies will be made available as a result of the projected canal lining projects by SCIDD and SCIP. It is also assumed that new acreage will be developed by the Gila River Indian Community, beginning in 2000 and continuing until after 2025, as a result of the community increasing its utilization of groundwater supplies and its existing CAP allocation.

The Ak-Chin Indian Community is expected to continue to irrigate all of its farmland of approximately 16,000 acres during the 25-year period.

It is assumed that the Tohono O'odham Nation will increase its irrigated acreage from almost 3,000 acres to 4,700 acres as a result of fully utilizing its existing CAP allocation for the Schuk Toak District.

11.3.2.2 Supply

Initially, the Gila River Indian Community's water demand will be met mostly by surface water supplies from the Gila River and supplemented with groundwater. Other sources of supply include surface water from the Salt River Project and effluent. Over the 25-year period, the community is expected to increasingly utilize CAP supplies, with full utilization of the community's existing allocation occurring by 2025.

The Ak-Chin Indian Community is expected to continue to meet their irrigation demand exclusively with CAP water until the Del Webb Corporation begins to utilize CAP water pursuant to the recent long-term lease it signed with the community. This lease entitles Del Webb to use up to 10,000 acre-feet of CAP water annually for its development near New River in the Phoenix AMA. Del Webb, however, is not expected to fully utilize the leased water supplies until after 2010. The Ak-Chin Indian Community's future water demand will be met mostly by CAP supplies and supplemented with groundwater.

It is assumed that the Tohono O'odham Nation will continue to utilize groundwater supplies for existing farmland and fully utilize its CAP supplies for newly developed farmland.

11.3.3 Municipal Demand and Supply

11.3.3.1 Demand

Population and per capita water consumption are the primary factors influencing municipal demand. Total municipal demand is composed of potable and non-potable water use by AMA water providers, domestic well owners, and Indian reservation populations. Most of the municipal demand is accounted for by the four large municipal water providers: the Arizona Water Company - Casa Grande and Coolidge systems, City of Eloy, and the Town of Florence. The municipal demand projections are based on population estimates compiled by the Arizona Department of Economic Security. These projections reflect an annual rate of growth of approximately 2 percent. Overall gallons per capita per day (GPCD) is expected to decrease slightly from 2000 to 2010, reflecting reduced use due to Third Management Plan conservation requirements. No further reductions in GPCD after 2010 are assumed. Effluent demand is projected to increase because it is tied closely to increases in population. Non-potable deliveries of water for urban irrigation are projected to be constant over the 25-year period. Direct use of CAP allocations by the four large municipal providers is expected to steadily increase through 2025, reflecting the need to meet assured water supply requirements. By 2025, municipal water demand will represent more than 3.5 percent of the AMA's total demand. Municipal projections for different demand factors are shown in Table 11-7.

TABLE 11-7
MUNICIPAL PROJECTIONS, 2000-2025
PINAL ACTIVE MANAGEMENT AREA

Demand Factor	2000	2004	2010	2017	2025
Population	100,019	108,652	120,877	133,538	146,307
GPCD	206	204	201	201	201
Effluent Use (acre-feet)	616	1,047	1,658	2,290	2,928
Urban Irrigation (acre-feet)	732	732	732	732	732
CAP Direct Use (acre-feet)	1,793	6,675	7,169	7,882	8,587

11.3.3.2 Supply

The majority of the water supply to meet municipal demands will be made up of groundwater supplies. Groundwater withdrawals by 2010 will account for approximately 66 percent of the total supply. Effluent supplies are expected to meet water demands for new turf-related facilities. It is important to note that the large water providers are expected to be fully utilizing their CAP water supplies by 2004 through indirect recharge made possible through groundwater savings arrangements with local CAP irrigation districts. Much of these CAP supplies will be utilized through annual storage and recovery. Municipal CAP allocations that are stored but not recovered in the same year are counted in both water budget scenarios as in-lieu groundwater supplies for the irrigation districts.

11.3.4 <u>Industrial Demand and Supply</u>

11.3.4.1 Demand

Industrial water demand includes all water obtained pursuant to non-irrigation grandfathered rights and groundwater withdrawal permits. Turf-related facilities, cattle feedlots, dairies, and sand and gravel operations account for most of the current industrial demand in the Pinal AMA.

Industrial demand projections, like municipal projections, are based on population. By the end of the third management period, it is estimated that industrial water use will almost double when compared to the 1995 baseline water demand. By 2025, industrial water use is estimated to be in excess of 12,800 acre-feet, which is just over 1 percent of the total AMA projected water use.

11.3.4.2 Supply

Most of the water supply to meet industrial demands will be made up of groundwater supplies. Groundwater withdrawals by 2010 will account for almost 90 percent of the total supply. The remaining supplies are almost entirely effluent, which will be used to meet the water demands for two existing golf courses.

11.3.5 <u>Underground Storage</u>

11.3.5.1 Demand

The underground storage demand of the AMA is principally driven by the need to more fully utilize excess Colorado River water supplies by the AWBA and, to a lesser degree, by the need for local municipal water providers to fully utilize their CAP allocations. Almost all of the demand for storage is expected to be through groundwater savings arrangement with CAP irrigation districts.

11.3.5.2 Supply

Most of the water supply to meet underground storage demands is expected to be excess Colorado River water made available through AWBA. It is important to understand that much of the underground storage of water, especially, that stored by AWBA, may be recovered for use outside the Pinal AMA and therefore would not have any long-term benefit to the water resources of the AMA.

11.3.6 <u>Additional Demands</u>

It is not anticipated that any basin transfers will occur prior to 2025. In 1985 the City of Mesa purchased more than 11,000 acres of land in the Eloy Subbasin that have irrigation grandfathered rights. The conversion of these rights to non-irrigation rights would allow the City of Mesa to export, or transfer, approximately 30,000 acre-feet of water annually out of the Pinal AMA.

Canal losses include both seepage and evapotranspiration. Based on annual reports filed since 1988, total losses from CAP canals are assumed to be 2 percent of all CAP water diverted from the main aqueduct.

Since 1983, lost and unaccounted for water has averaged 40 percent of the Gila River water delivered by SCIP to SCIDD and 39 percent of the water delivered by SCIP to the Gila River Indian Community. However, the actual physical losses attributable to each part of the system are assumed to be 20 percent. It is assumed that the unaccounted for water is actually delivered to farmland. Both water budget scenarios assume that physical losses will be reduced to 2 percent by 2017 as a result of the planned canal lining projects.

An annual demand of 2,000 acre-feet of water for the maintenance of the riparian area at Picacho Reservoir is assumed under both scenarios. Pinal County was awarded an Arizona Water Protection Fund grant to purchase excess Colorado River water for this purpose in 1996.

11.4 ADDITIONAL GROUNDWATER SUPPLIES

11.4.1 Net Groundwater Inflow and Stream Channel Recharge

In both water budget scenarios, net groundwater inflow and stream channel recharge are held constant. Annual groundwater inflow into the AMA is estimated to be 50,800 acre-feet, while groundwater outflow is approximately 11,800 acre-feet. Net groundwater inflow is therefore 38,300 acre-feet per year. The annual stream channel recharge benefitting the AMA is estimated to be 20,000 acre-feet. This estimate was derived by averaging the benefits of recent flood events over the length of time between them. All of these estimates are more fully described in Chapter 2.

11.4.2 Total Incidental Recharge

The method for estimating incidental recharge is identical in both scenarios. Total incidental recharge is a factor of agricultural, municipal, industrial, and underground storage demands, as well as additional demands such as canal losses. Generally, total incidental recharge ranges from about 25 percent of the total AMA water demand in the early years to about 22 percent of the total demand by year 2025. This small percentage reduction in incidental recharge is due to increased municipal and industrial water demands and reduced canal seepage as SCIDD and SCIP water distribution systems are lined.

11.4.3 Extinguishment of Storage Credits

Long-term storage credits that are accrued by AWBA using groundwater withdrawal fees collected in the Pinal AMA must, by statute, be used to help meet water management objectives in the AMA. In both water budget scenarios these credits are projected to be extinguished thereby reducing groundwater overdraft in the AMA.

11.5 WATER BUDGETS

The water budgets through 2025 are shown for the minimum and maximum scenarios in Tables 11-8 and 11-9, respectively. These water budgets reflect the amount of groundwater overdraft that will occur for each selected time period. The water budgets also show the impact of the planned depletion allowance (PDA) of 310,000 acre-feet per year on the AMA's management goal. The PDA concept is discussed in detail in the preface to Section II and in chapters 8 and 12.

11.5.1 Groundwater Overdraft and the PDA

Groundwater overdraft in the Pinal AMA is almost entirely a function of agricultural water demand because agriculture accounts for greater than 90 percent of total demand throughout the 25-year period. Under 1995 baseline conditions, non-Indian agricultural demand was approximately 844,000 acre-feet. This level of demand is atypical in that it reflects a higher than normal water use. Annual water use from 1984-96 averaged approximately 765,000 acre-feet. Therefore, through 2025, this volume is used to more closely reflect water demand for non-Indian agriculture.

TABLE 11-8
BASELINE AND PROJECTED WATER DEMAND AND SUPPLY, 1995-2025
MINIMUM CAP SUPPLY SCENARIO

	1995	2000	2004	2010	2017	2025
Non-Indian Agriculture						
Demand	844,207	765,000	765,000	765,000	765,000	765,000
Supply	844,207	765,000	765,000	765,000	765,000	765,000
CAP (Direct Use)	298,671	280,000	200,000	200,000	150,000	100,000
SCIP (Surface Water)	150,047	130,073	134,911	139,869	147,803	147,803
Santa Cruz River	1,480	5,000	5,000	5,000	5,000	5,000
Effluent	4,274	4,274	4,274	4,274	4,274	4,274
In-lieu Groundwater (In-lieu)	46,983	70,000	100,000	100,000	7,220	6,510
Groundwater	342,752	275,653	320,815	315,857	450,703	501,413
Indian Agriculture						
Demand	145,510	165,821	174,236	189,011	203,597	215,735
Supply	145,510	165,821	174,236	189,011	203,597	215,735
CAP (Surface Water)	76,345	97,680	95,026	96,988	103,883	106,964
SCIP (Surface Water)	30,818	28,838	30,589	32,420	35,350	35,350
Salt River Project (Surface Water)	4,953	4,953	4,953	4,953	4,953	4,953
Effluent	5,231	5,231	5,231	5,231	5,231	5,231
Groundwater	28,163	29,119	38,437	49,419	54,180	63,237
Municipal						
Demand	21,115	23,032	24,804	27,276	30,073	32,906
Supply	21,115	23,032	24,804	27,276	30,073	32,906
CAP (Surface Water)	835	1,793	6,675	7,169	7,882	8,587
SCIP (Surface Water)	558	558	558	558	558	558
Effluent	62	616	1,047	1,658	2,290	2,928
Groundwater	19,660	20,065	16,524	17,891	19,343	20,833
Industrial						
Demand	5,697	8,850	9,594	10,646	11,737	12,836
Supply	5,697	8,850	9,594	10,646	11,737	12,836
CAP (Surface Water)	50	50	50	50	50	50
Effluent	1,139	1,139	1,139	1,139	1,139	1,139
Groundwater	4,508	7,661	8,405	9,457	10,548	11,647
Underground Storage						
Demand	46,983	70,000	100,000	100,000	7,220	6,510
Supply	46,983	70,000	100,000	100,000	7,220	6,510
Indirect Recharge	46,983	70,000	100,000	100,000	7,220	6,510
Direct Recharge	0	0	0	0	0	0
Additional Demands						
Demand	66,211	59,636	48,175	37,129	18,834	19,162
Basin Transfers	0	0	0	0	0	0
Canal Losses	66,211	57,636	46,175	35,129	16,834	17,162
Seepage	50,790	44,287	35,573	27,192	13,285	13,547
Evapotranspiration	15,421	13,349	10,602	7,937	3,549	3,615
Riparian Enhancement	0	2,000	2,000	2,000	2,000	2,000
Supply	66,211	59,636	48,175	37,129	18,834	19,162
CAP (Surface Water)	8,458	11,030	10,075	10,124	7,421	6,482
SCIP (Surface Water)	49,524	39,426	29,569	19,713	3,943	3,943
Groundwater	8,229	9,180	8,531	7,292	7,470	8,737
Total Demand	1,129,723	1,092,339	1,121,809	1,129,062	1,036,461	1,052,149
Total Groundwater Withdrawn	450,295	411,678	492,712	499,916	549,464	612,377
Net Groundwater Inflow	38,300	38,300	38,300	38,300	38,300	38,300
Groundwater Inflow	50,100	50,100	50,100	50,100	50,100	50,100
(Less) Groundwater Outflow	11,800	11,800	11,800	11,800	11,800	11,800
Stream Channel Recharge	20,000	20,000	20,000	20,000	20,000	20,000
Total Incidental Recharge	272,087	254,387	250,064	246,021	232,342	235,470
Extinguishment of Storage Credits	0	35,625	38,190	38,190	0	0
Groundwater Overdraft	**119,908**	**63,366**	**146,158**	**157,405**	**258,821**	**318,606**
PDA	**310,000**	**310,000**	**310,000**	**310,000**	**310,000**	**310,000**
Withdrawal in Excess of AMA PDA Goal	(190,092)	(246,634)	(163,842)	(152,595)	(51,179)	8,606

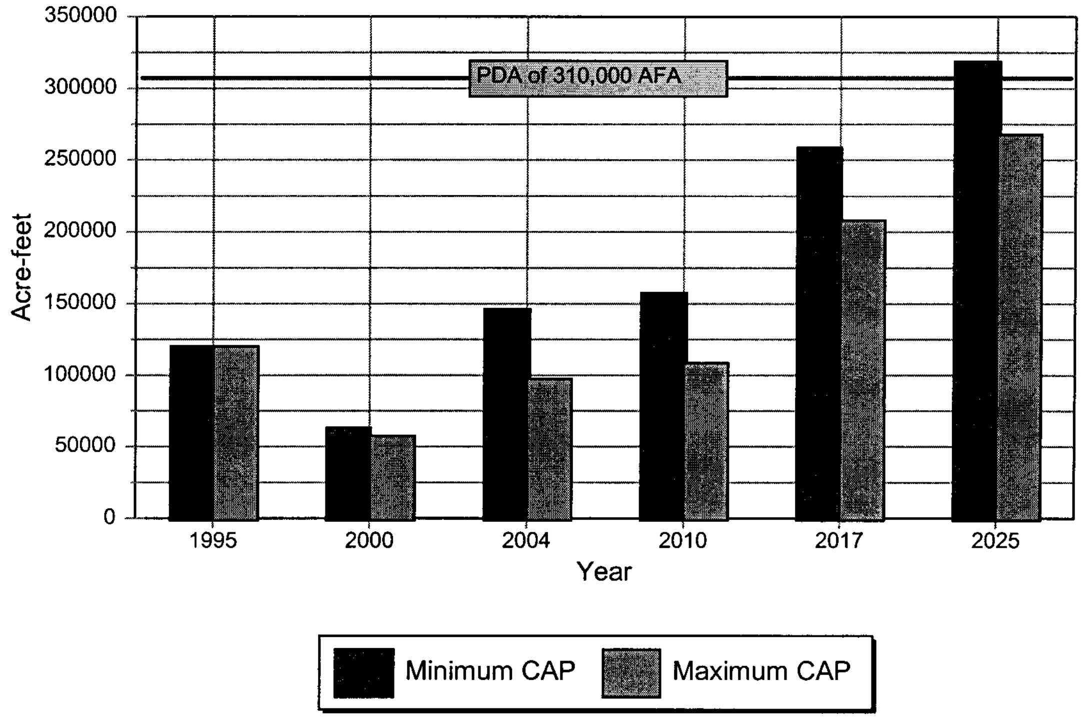
TABLE 11-9
BASELINE AND PROJECTED WATER DEMAND AND SUPPLY, 1995-2025
MAXIMUM CAP SUPPLY SCENARIO

	1995	2000	2004	2010	2017	2025
Non-Indian Agriculture						
Demand	844,207	765,000	765,000	765,000	765,000	765,000
Supply	844,207	765,000	765,000	765,000	765,000	765,000
CAP (Direct Use)	298,671	280,000	250,000	250,000	200,000	150,000
SCIP (Surface Water)	150,047	130,073	134,911	139,869	147,803	147,803
Santa Cruz River	1,480	5,000	5,000	5,000	5,000	5,000
Effluent	4,274	4,274	4,274	4,274	4,274	4,274
Groundwater (In-lieu)	46,983	150,000	70,000	70,000	7,220	6,510
Groundwater	342,752	195,653	300,815	295,857	400,703	451,413
Indian Agriculture						
Demand	145,510	165,821	174,236	189,011	203,597	215,735
Supply	145,510	165,821	174,236	189,011	203,597	215,735
CAP (Surface Water)	76,345	97,680	95,026	96,988	103,883	106,964
SCIP (Surface Water)	30,818	28,838	30,589	32,420	35,350	35,350
Salt River Project (Surface Water)	4,953	4,953	4,953	4,953	4,953	4,953
Effluent	5,231	5,231	5,231	5,231	5,231	5,231
Groundwater	28,163	29,119	38,437	49,419	54,180	63,237
Municipal						
Demand	21,115	23,032	24,804	27,276	30,073	32,906
Supply	21,115	23,032	24,804	27,276	30,073	32,906
CAP (Surface Water)	835	1,793	6,675	7,169	7,882	8,587
SCIP (Surface Water)	558	558	558	558	558	558
Effluent	62	616	1,047	1,658	2,290	2,928
Groundwater	19,660	20,065	16,524	17,891	19,343	20,833
Industrial						
Demand	5,697	8,850	9,594	10,646	11,737	12,836
Supply	5,697	8,850	9,594	10,646	11,737	12,836
CAP (Surface Water)	50	50	50	50	50	50
Effluent	1,139	1,139	1,139	1,139	1,139	1,139
Groundwater	4,508	7,661	8,405	9,457	10,548	11,647
Underground Storage						
Demand	46,983	150,000	70,000	70,000	7,220	6,510
Supply	46,983	150,000	70,000	70,000	7,220	6,510
Indirect Recharge	46,983	150,000	70,000	70,000	7,220	6,510
Direct Recharge	0	0	0	0	0	0
Additional Demands						
Demand	66,211	59,636	48,175	37,129	18,834	19,162
Basin Transfers	0	0	0	0	0	0
Canal Losses	66,211	57,636	46,175	35,129	16,834	17,162
Seepage	50,790	44,287	35,573	27,192	13,285	13,547
Evapotranspiration	15,421	13,349	10,602	7,937	3,549	3,615
Riparian Enhancement	0	2,000	2,000	2,000	2,000	2,000
Supply	66,211	59,636	48,175	37,129	18,834	19,162
CAP (Surface Water)	8,458	12,630	10,475	10,524	8,421	7,482
SCIP (Surface Water)	49,524	39,426	29,569	19,713	3,943	3,943
Groundwater	8,229	7,580	8,131	6,892	6,470	7,737
Total Demand	1,129,723	1,172,339	1,091,809	1,099,062	1,036,461	1,052,149
Total Groundwater Withdrawn	450,295	410,078	442,312	449,516	498,464	561,377
Net Groundwater Inflow	38,300	38,300	38,300	38,300	38,300	38,300
Groundwater Inflow	50,100	50,100	50,100	50,100	50,100	50,100
(Less) Groundwater Outflow	11,800	11,800	11,800	11,800	11,800	11,800
Stream Channel Recharge	20,000	20,000	20,000	20,000	20,000	20,000
Total Incidental Recharge	272,087	258,387	248,564	244,521	232,342	235,470
Extinguishment of Storage Credits	0	35,625	38,190	38,190	0	0
Groundwater Overdraft	**119,908**	**57,766**	**97,258**	**108,505**	**207,821**	**267,606**
PDA	**310,000**	**310,000**	**310,000**	**310,000**	**310,000**	**310,000**
Withdrawal in Excess of AMA PDA Goal	**(190,092)**	**(252,234)**	**(212,742)**	**(201,495)**	**(102,179)**	**(42,394)**

Under the minimum CAP supply scenario, groundwater overdraft in 2000 is projected to be about 63,000 acre-feet and then rise in subsequent years as CAP supplies are reduced (see Figure 11-2). In 2025, overdraft is projected to be approximately 319,000 acre-feet. Under the maximum scenario, a groundwater overdraft of about 58,000 acre-feet is projected for 2000. This overdraft condition is projected to continue in an upward trend through 2025 when overdraft is projected to be approximately 268,000 acre-feet.

In both scenarios, the PDA is only exceeded once during the 25-year period. Under the minimum scenario, groundwater overdraft exceeds 310,000 acre-feet by about 9,000 acre-feet in 2025. It is important to note that in years when groundwater is depleted at an annual rate less than the PDA, the Department will credit the difference toward future use (see Chapter 12).

FIGURE 11-2
GROUNDWATER OVERDRAFT, 1995-2025
PINAL ACTIVE MANAGEMENT AREA



11.6 CONCLUSIONS

This management plan has clearly shown that the use of renewable water supplies, especially CAP, has contributed greatly to the water resources of the Pinal AMA. Since importation of CAP supplies began in 1987, water levels have dramatically risen and overdraft has been significantly reduced. The preceding water budgets further demonstrate the critical importance of CAP supplies to the AMA. While these supplies remain available, it is essential that they be fully utilized by all water users in order to assist the AMA in meeting its management goal.