

CALIFORNIA - AMERICAN WATER COMPANY

**CORONADO DISTRICT
URBAN WATER MANAGEMENT
PLAN**

2006-2010

**CALIFORNIA-AMERICAN WATER COMPANY
880 Kuhn Drive
Chula Vista, CA 91914**

**CORONADO DISTRICT
1019 Cherry Avenue
Imperial Beach, CA 92032**

URBAN WATER MANAGEMENT PLAN

2006 - 2010

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I. INTRODUCTION

This report has been prepared in compliance with the Urban Water Management Planning Act, as amended.¹ The Act requires urban water suppliers to prepare plans that describe and evaluate reasonable and practical efficient water uses, water recycling, and conservation activities. The Plan incorporates the water conservation initiatives that have been implemented by the California-American Water Company (Cal-Am) in the Coronado District adopted under the terms of the *Memorandum of Understanding Regarding Urban Water Conservation in California*, to which the Company is a signatory.

This is the fourth *Urban Water Management Plan* to be prepared by the Cal-Am for the Coronado District under the terms of AB 797 (1983) and subsequent amending legislation. This Plan also includes a *Water Shortage Contingency Plan* as required under the provisions of AB 11X of (1991) and addresses changes required by subsequent legislation including AB 892 (1993), SB 1017 (1994), AB 2853 (1994), SB 901 (1995), SB 610 (2001), SB 221 (2001) and AB 105 (2004).

Upon adoption, the Plan will be filed with the Office of Water Use Efficiency in the Department of Water Resources, the California Public Utilities Commission, the California State Library, the Metropolitan Water District of Southern California, the City of San Diego, San Diego County and the incorporated cities within the County where Cal-Am has customers. A public hearing will be held in Coronado to provide an opportunity for public comment prior to final adoption.

¹California Water Code, District 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

II. PUBLIC PARTICIPATION AND INTERAGENCY COORDINATION

A. PUBLIC PARTICIPATION

The Coronado District provided a notice of preparation of this Urban Water Management Plan to all customers through a printed message on their water bills in the summer of 2005. In March 2006 the District will convene a public hearing at its office in Coronado to receive comments on the Plan prior to its final adoption by the Company and submittal to the California Department of Water Resources.

B. INTERAGENCY COORDINATION

As a public utility, California-American Water Company (Cal-Am) and its districts, including the Coronado District are regulated by the California Public Utilities Commission. The Coronado District is a wholesale customer of the City of San Diego.

The District is a participant in regional water planning initiatives and water conservation programs sponsored by the City and the Metropolitan Water District. Land use planning and development approvals within the District's boundaries are the responsibility of the local governments with jurisdiction over various portions of the service area. These include the City of Coronado, Imperial Beach and portions of Chula Vista and San Diego. The coordination with these, and other local agencies, is summarized in Table 1.

**TABLE 1
COORDINATION AND PUBLIC INVOLVEMENT**

Agency	Was sent a Notice of Preparation	Was contacted for Assistance	Was sent a copy of the Draft Plan	Was sent a Notice of Intention to Adopt
CPUC	✓		✓	✓
City of Coronado	✓		✓	✓
City of Imperial Beach	✓		✓	✓
City of Chula Vista	✓		✓	✓
City of San Diego	✓	✓	✓	✓
San Diego County Water Authority	✓	✓	✓	✓

III. DESCRIPTION OF THE CORONADO DISTRICT

A. THE CALIFORNIA-AMERICAN WATER COMPANY

The California-American Water Company (Cal-Am) is a private utility company, operated as a subsidiary of American Water (AW), headquartered in Voorhees, New Jersey. AW, in turn, was acquired by RWE Thames Water Holdings GmbH in 2003. Cal-Am was incorporated under California law in 1966 when American Water Works acquired the water system from California Water and Telephone. The Company operates seven separate water systems in California, which are, from south to north, Coronado, Los Angeles (comprising systems in Baldwin Hills, San Marino and Duarte), Village, Monterey, Felton, Sacramento, and Larkfield. The American Water Works Services Company provides many of the senior management, financial, operations, personnel and customer services for Cal-Am from the corporate office in Voorhees, NJ and an administrative office in Chula Vista, CA. Water quality testing and research is undertaken at the AWWC laboratory in Belleville, IL.

The operations of the California-American Water Company in California are regulated by the California Public Utilities Commission (PUC). The Company must comply with the rules, regulations and decisions of the PUC.

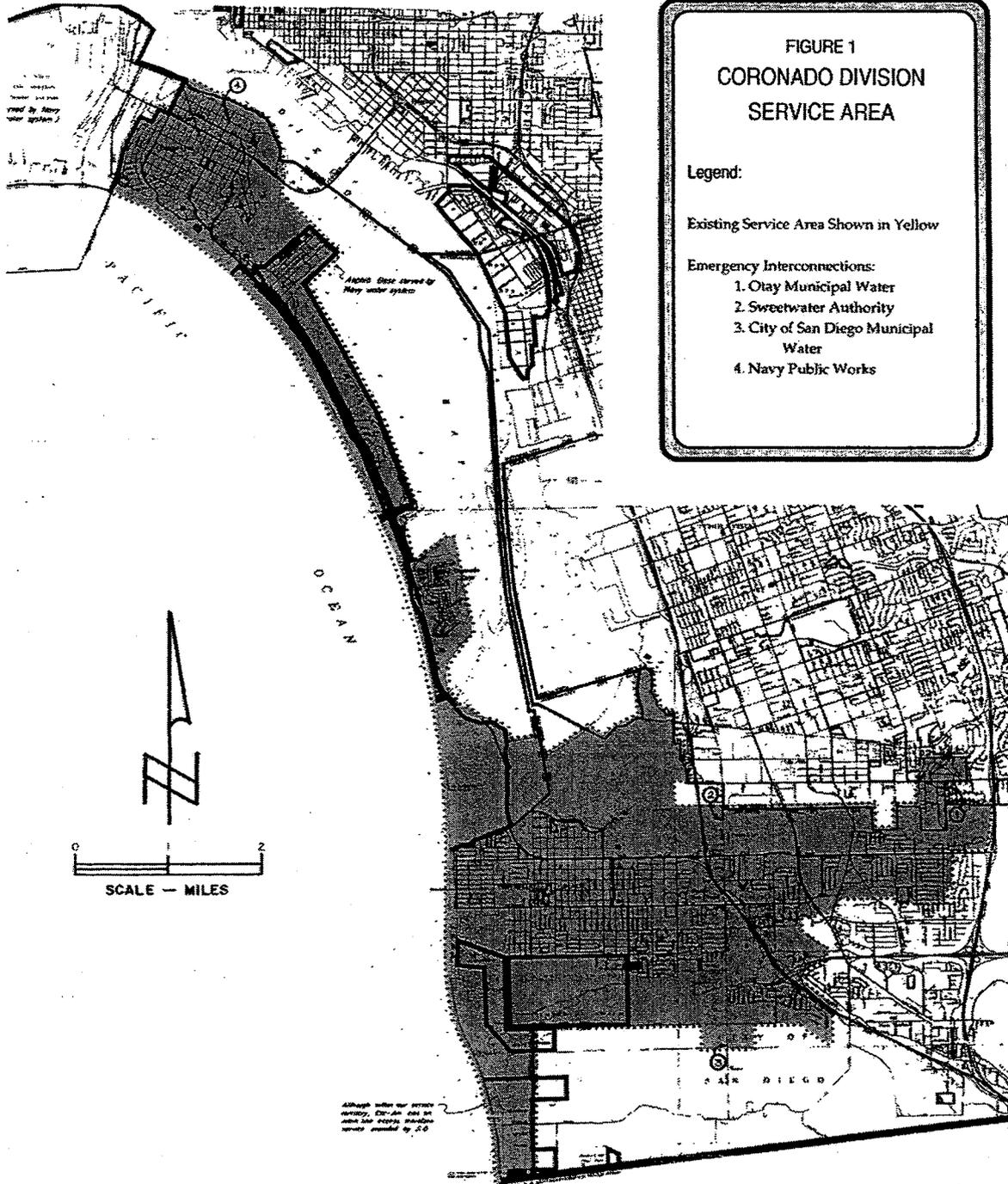
Acronyms and Abbreviations Used In This Report

- AF/yr or AFY - Acre Feet per Year
- AW - American Water
- BMP - Best Management Practice
- Cal-Am - California American Water
- ccf unit - A billing unit of 100 cubic feet or 748 gallons
- CIMIS - California Irrigation Management Information System
- DMM - Demand Management Measure
- PUC - California Public Utilities Commission
- CUWCC - Calif. Urban Water Conservation Council
- Eto - Evapo-transpiration rate
- gpcpd - gallons per capita per day
- gpd - gallons per day
- gpm - gallons per minute
- mg - million gallons
- mgd - million gallons per day
- MOU - Memorandum of Understanding
- UWMP - Urban Water Management Plan

B. DISTRICT LOCATION AND SIZE

The Coronado District serves the Cities of Coronado (except the Naval Air Station), Imperial Beach, a portion of the City of San Diego lying south of San Diego Bay and a small area of the City of Chula Vista, all in the southern part of San Diego County. The area served by the Company is easily accessed by Interstate Highways 5 and 805, which terminate at the U.S. - Mexican border, about 5 miles south of the service territory. Ingress and egress to the Coronado peninsula is accomplished by crossing the San Diego-Coronado Bay Bridge or by traveling Route 75, known locally as the Silver Strand.

The District boundaries are shown in Figure 1.



California-American Water Company

(Coronado District)
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C. CLIMATE

The Coronado District has a semi-arid Mediterranean climate typified by warm summers and mild winters. The warmest months of the year are August and September, and the coldest are December and January. As shown in Table 2, the average daily maximum temperature in August at the Chula Vista monitoring station is 75.2°, while the average minimum temperature in December is 44.6°.

**TABLE 2
CORONADO DISTRICT CLIMATE DATA**

	January	February	March	April	May	June	July
Standard Average ETo (in./mo.)	2.07	2.32	3.44	4.61	5.07	5.33	5.66
Average Rainfall (in.)	1.94	1.74	1.75	0.75	0.15	0.06	0.02
Average Max. Temperature (°F)	65.0°	65.5	65.3	66.8	67.9	69.8	73.4

	August	September	October	November	December	Annual
Standard Average ETo	5.59	4.33	3.56	2.39	2.03	46.50
Average Rainfall (in.)	0.06	0.16	0.40	1.15	1.17	9.37
Average Max. Temperature	75.2	75.4	73.1	69.5	65.5	69.4

Eto (EvapoTranspiration) rates in inches/month from California Irrigation Management System (CIMIS) data for Station 184 in San Diego.

Rainfall and temperature data for Chula Vista from Western Regional Climate Center; 1948-2005.

District Description

The average annual precipitation is 9.25 inches, virtually all of which is rainfall, with about 92 percent falling between November and April. Rainfall amounts vary widely from year to year, with a low of 3.07 inches in 1953 and a high of 19.11 inches in 1983. The evapo-transpiration rate is high during the hot, dry summer months, and the demand for irrigation water increases accordingly.

D. SERVICE AREA POPULATION

The population served by Cal-Am in the Coronado District was estimated at 65,833 in 2004 compared with 65,642 in 1999.¹ The vast majority (86%) of the system's customers are residential connections. Commercial connections, which include a number of apartment buildings and hotels, comprise 9.3% of the connections while governmental facilities and schools comprise most of the rest. There are no industrial connections.

The population of the area served by the District is expected to grow slowly in the coming years because most of the service area is built out. Most growth will come from redevelopment and construction of higher occupancy housing. Between 2005 and 2025 the number of connections is expected to grow between 3% and 5%.²

E. WATER SUPPLY AND FACILITIES

Cal-Am has, by contract with the City of San Diego, the right to purchase all of the potable water required to serve its customers. In recent years the District has accounted for approximately 2.2% of the total deliveries in San Diego County.³ The District receives all of its water from the City of San Diego through four metered connections to their system. Three are located in South San Diego (a 24", a 12" and an 8" connection) and one (a 20" connection) is at

¹California American Water Co., *Annual Reports to the California PUC.*, 1999 – 2004.

²*ibid.*; Table 2-3.

³The San Diego County Water Authority deliveries in 1999 were 619,409 acre feet. SDCWA, *2000 Urban Water Management Plan*, December 2000, p. 2-4.

the terminus of Harbor Drive on the Coronado Peninsula, at the opposite end of the distribution system.

All water purchased for the Coronado District has been treated by the Metropolitan Water District, or the San Diego County Water Authority, or the City of San Diego. Monitoring water quality remains the responsibility of the Company.

F. STORAGE

The District operates two steel storage tanks with a combined capacity of 3.7 mg. This is equivalent to about 35% of one day's demand and is adequate for peaking demands and fire fighting needs.

G. INTERTIES WITH OTHER AGENCIES

The Coronado system has three emergency interconnects with other systems — one with the Sweetwater Authority, one with Otay Municipal Water District, and one with the U. S. Navy. These connections have been used occasionally during water supply problems, and remain available for use during any similar future emergencies.

IV. PAST, CURRENT AND PROJECTED WATER SUPPLY AND DEMAND

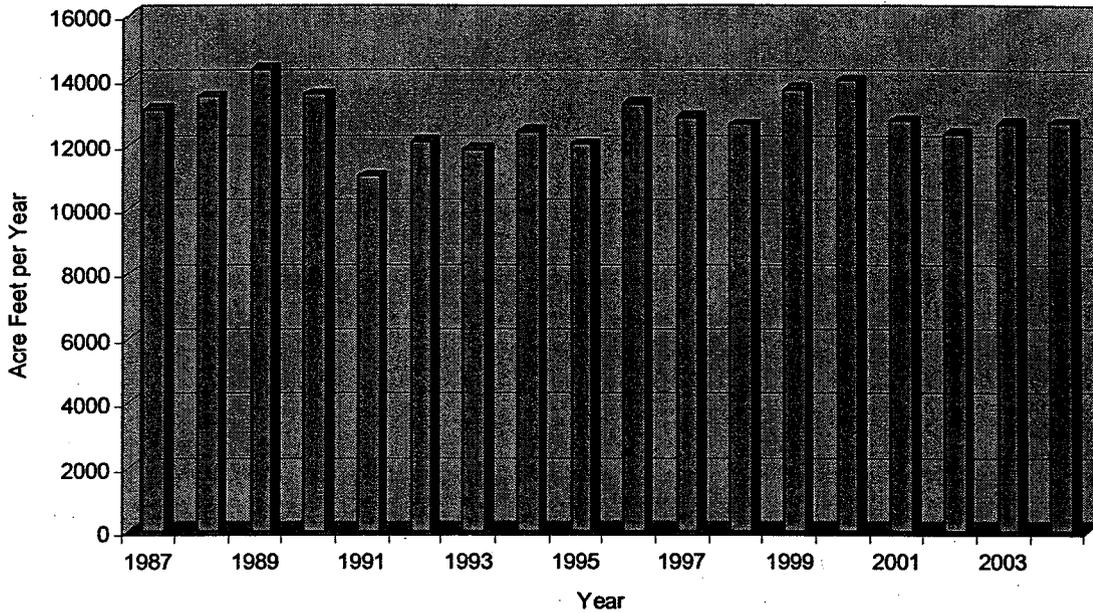
A. WATER PRODUCTION

All of the Coronado District's water is purchased from the City of San Diego. These wholesale purchases, which represent the District's water production volumes, are summarized in five-year increments since 1980 in Table 3, below.

Source	1980	1985	1990	1995	2000	2004
City of San Diego	11,470 AF	11,000 AF	13,554 AF	12,058 AF	13,984 AF	12,627 AF

In 4 of the past 20 years the District's water production requirements have been affected by reduced demand due to water rationing. Either a voluntary or mandatory rationing program was in effect for all of 1991 and 1992, as well as portions of 1990 and 1993. The year-to-year variation in water demand, since 1989, is demonstrated in Figure 2. As shown, the District's customers responded well to water conservation initiatives. The Coronado District's demand was 23% lower in 1991 than in 1989, the last year of above normal precipitation before the most recent drought. Figure 1 also demonstrates that over the past decade, the District's customers have become more efficient in their use of water and overall growth has been very modest. As a result, the District's water demand in 2004 was 11.4% lower than the peak of 14,246 AF that was recorded 15 years earlier, in 1989.

FIGURE 2
ANNUAL WATER PRODUCTION
1987 - 2004



B. WATER SALES AND UNMETERED WATER

The Coronado District’s annual water sales and unaccounted-for water, in volume and as a percent of production, are depicted in Table 4. The data is presented in 5-year increments beginning in 1980.

The unmetered water is divided into two categories. Non-revenue water includes water used for fire fighting, main flushing, shop and office use, and other authorized uses. The unaccounted-for water includes water lost in pipeline leaks, water meter inaccuracy, tank overflows, etc.

TABLE 4
WATER SALES AND UNMETERED WATER
 5-Year Increments, 1980 - 2004
 in Acre Feet per Year

Description	1980	1985	1990	1995	2000	2004
Water Sales	10,999.9	12,400.2	12,948.9	11,846.6	13,983.5	13,180.0
Non-Revenue Water Volume ^a	11.0	11.0	11.0	7.7	9.8	n.d.
Unaccounted-for Water, Volume	459.4	-89.6 ^b	593.8	203.8	577.9	-552.6 ^b
Unaccounted-for Water, % of Purchases	4.0%	NA	4.4%	1.7%	4.3%	NA

^a Includes water for fire fighting, main flushing, shop use, etc.

^b The lack of unaccounted-for water in 1985 and 2004 was traced to errors in source of supply meters.

n.d. = No Data; NA = Not Applicable

Unaccounted-for water volumes can vary widely from year to year, particularly in the event of malfunctioning supply meters or major pipeline breaks. The Coronado District's distribution system is well maintained, and the volume of unaccounted-for water, which has averaged 2.7% of production over the past 5 years, is considered low, by industry standards.

C. WATER SALES BY USER CATEGORY

Water sales by customer category for the past 5 years are summarized in Table 5. Table 5 also shows the number of active service connections during each year listed as well as water

Water Supply and Demand

production and unaccounted-for water in each of the past 5 years.¹ In this period, residential consumption has accounted for about 48.5% of the water sold by the District while commercial and Public Authority sales have accounted for about 30% and 15.8% of water delivered, respectively.

It should be noted that 89% of the connections to the Coronado system are residential, while only 9.6% are commercial and 1.6% are Public Authority. In the past five years deliveries to residential connections have averaged around 310 gallons per day, while deliveries to commercial and Public Authority accounts are much greater, averaging about 1,721 and 5,738 gallons per day, respectively. However, the commercial category includes a number of master metered apartment buildings, condominium complexes and mobile home parks, so much of the water supplied to commercial accounts is for residential use. The Coronado District has no industrial customers.

Overall, the District's water consumption per connection over the past 5 years has averaged 567 gallons a day, slightly above the average sales per connection of 560 gallons per day for the 1995-1999 period.

¹ Fire service connections have accounted for 94% of the new connections since 2000. These are standby services, that are not billed by volume of use and do not increase water sales. They are not considered "active" for purposes of sales and consumption calculations in this report.

TABLE 5
WATER SALES BY BILLING CATEGORY
 1999 – 2004
 Sales data in Acre Feet a Year (AFY)

Description		2000	2001	2002	2003	2004
Residential	Sales (AFY)	n.d.	6,200.1	6,376.4	5,997.3	6,441.0
	Connections	17,991	18,008	17,949	17,971	18,016
Commercial	Sales (AFY)	n.d.	2,008.0	4,611.9	4,304.1	4,543.8
	Connections	1,957	1,964	1,943	1,937	1,949
Public Authorities	Sales (AFY)	n.d.	2,111.6	2,177.2	1,768.2	2,118.3
	Connections	335	338	337	332	318
Fire Service/Other	Sales (AFY)	9.8	0.3	109.3	145.4	34.1
	Connections	289	293	304	300	607
Total Sales (AFY)		13,400.9	12,921.5	13,274.9	12,215.1	13,180.0
Number of Customers ^a		20,283	20,310	20,229	20,240	20,302
Water Purchases (AFY)		13,983.5	12,750.1	12,356.8	12,640.8	12,627.4
Unaccounted for Water (AFY)		577.9	-171.46 ^b	-918.18 ^b	425.7	-552.6 ^c
Unaccounted for Water (%)		4.3%	NA	NA	3.5%	NA

^aThis excludes the Fire Service/Other category which are primarily standby connections which are not billed by volume of use.

^b The lack of unaccounted-for water in 2001 and 2002 was traced to errors in source of supply meters.

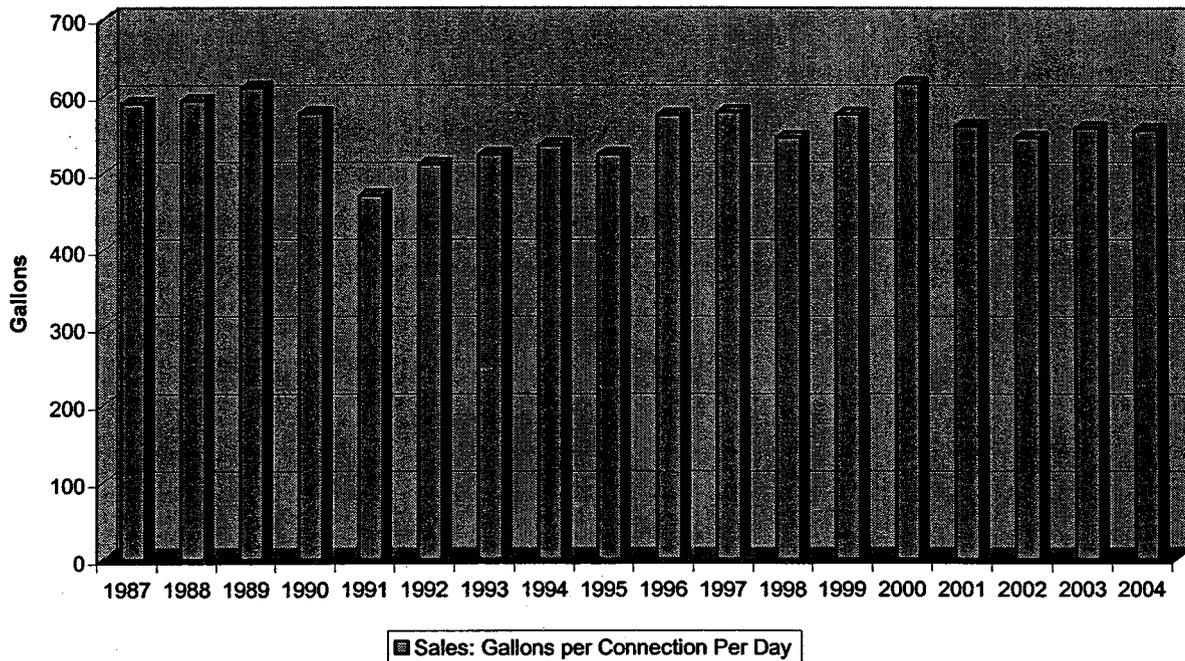
^c The 2004 differences between purchases and sales appears to be due to overlapping reporting periods at the beginning and ending of the year.

n.d. = No Data; NA = Not Applicable

D. DROUGHT RESPONSE AND CONSERVATION

Figure 2 demonstrates how well the District's customers responded to water conservation initiatives promoted during the drought of 1990 - 1992. Consumption on a per connection basis was 23% lower in 1991 than it was in 1989, the year before the drought, and the year in which customer consumption peaked at 610 gallons per day per connection. The level of consumption has not rebounded to the pre-drought levels, primarily due to the increases in water use efficiency from the installation of water conserving fixtures, improved irrigation practices and the benefits of a more widespread understanding of the need for water conservation. In 2004, the average consumption per connection was 555 gallons per connection per day, 9.0% lower than it was in 1989.

**FIGURE 3
CORONADO DISTRICT WATER SALES PER CONNECTION**



E. PROJECTED DEMAND

The Coronado system of the California-American Water Company provides potable water to approximately 20,302 customers in the Cities of Coronado and Imperial Beach (except for the Coronado Naval Air Station), to a portion of the City of San Diego and to a small portion of the City of Chula Vista. The Cities of Coronado and Imperial Beach are well-developed communities with little remaining vacant land and their populations are generally quite stable. The San Diego Association of Governments (SanDAG) projects that much of the population growth in south San Diego County in the coming 20 years will occur in the City of Chula Vista and in other areas that are outside Cal-Am's service area. In the Cal-Am service area much of the population growth will be from increasing household sizes, rather than as a result of new development. The current population served by the Coronado District is estimated to be approximately 66,000. Of these, 28,000 live in the City of Imperial Beach, 18,000 in the City of Coronado, 20,000 in south San Diego and 1,000 in Chula Vista.¹

In 2000, Cal-Am completed an analysis of demand projections for the Coronado District as part of a long-range planning process.² These projections indicated that, under the "most likely" growth scenario, the number of connections was expected to increase by 1.6% by 2010 and 2.8% by 2020, a growth rate of about 0.14% per year.³ Based on the actual experience for the first 5 years of the planning period, the projected growth rate in the numbers of connections has been slower than the "most likely" scenario and even below the projections for the "low scenario." At the beginning of 2005 the District had 64 fewer residential connections, 25 fewer commercial connections and 36 fewer public authority connections than was projected under the "low scenario".

¹ Sources: U.S. Census data, City Websites, California Department of Finance, Cal-Am and Donaldson Associates estimates.

²American Water Works Service Co., *California-American Water Company Comprehensive Planning Study, Demand Projections, Coronado System*, June 2000

³Fire service connections are excluded from these projections because they have minimal effect on water demand and consumption.

Water Supply and Demand

Cal-Am's long range planning process projected that the growth in demand for water would be proportionally higher than the increases in the number of connections due to increasing household sizes and projected increases in demand from governmental agencies. The increase in household population was projected to generally offset conservation benefits in the residential sector while the water demand in the commercial and public authority sectors was expected to remain relatively constant on a per-connection basis. The potential long-term effects of water conservation initiatives were not factored into the demand projections for the commercial and public authority sectors.

The Coronado District's 2004 demand of about 13,180 AF was 5.0% lower than was projected for the "most likely" scenario and 1.3% lower than was projected for the "low scenario" five years earlier when the demand projections were completed. This is partly the result of slower than projected growth in the number of connections, but it is also may reflect real benefits from the implementation of the DMMS (BMPs) and customer initiated toilet replacements, installation of low flow showerheads and faucets, purchases of water conserving appliances, and water conserving landscape irrigation practices. Therefore, for this UWMP, the water demand projections have been modified to reflect the "low scenario" rate of growth in the numbers of connections as well as a modest level of demand reduction from implementation of the BMPs and customer increases in water use efficiency.

The projected growth in connections, by category, is summarized in Table 6, while projected growth in water demand by category is presented in Table 7. As shown in Table 6, Cal-Am expects the Coronado system to gain only 459 new connections over the next 20 years and 548 new connections over the next 25 years. This is an average of 22 new connections per year and represents an overall increase of 2.7% in the number of connections by 2030 and an average annual growth rate of 0.108%.¹

Cal-Am expects that the benefits of water conservation initiatives and improved water use efficiencies will offset the modest increases in the number of connections and the population served by the Coronado District. As indicated in Table 7, total water demand is expected to drop somewhat over the next five years and then grow slowly over the following 20 years.

¹Based on the "most likely" projections scenario, the 2000 UWMP predicted an average annual increase of 29 connections per year through 2020, representing an average annual growth rate of 0.14%.

Water Supply and Demand

Because of water conservation, overall consumption in the residential and commercial sectors is projected to lower in 2030 than it is today, while total consumption is projected to increase by only 2.3% in the 25-year planning period.

Based on these projections, the Coronado District will be purchasing about 12,770 acre-feet of potable water a year by 2030, as compared to 13,704 acre-feet in 1999 and 14,340 acre-feet in 1989, the system's peak demand year to date.

TABLE 6
PROJECTED CUSTOMER GROWTH^a
 Number of Connections by Category
 2005 - 2030

YEAR:	2005	2010	2015	2020	2025	2030	2005 - 2030		AVERAGE ANNUAL INCREASE
							No.	Percent	Percent
Residential	18,034	18,124	18,197	18,270	18,342	18,416	382	2.1%	0.084%
Commercial	1952	1972	1987	2001	2017	2032	80	4.1%	0.164%
Public Authority/ Other	323	352	380	409 ^b	409	409	86	26.6%	1.06%
Total ^c	20,309	20,448	20,564	20,680	20,768	20,857	548	2.6%	0.108%

^aThis analysis applies growth rates derived from the "low" planning scenario to actual 2004 data.

^bAssumes no growth in the number of Public Authority/Other connections after 2020.

^c This data does not include Fire/Special connections that are on standby.

TABLE 7
PROJECTED GROWTH IN WATER DEMAND
 Acre-Feet per Year (AFY)
 2005 - 2030

YEAR:	2005 ^a	2010 ^b	2015 ^c	2020 ^d	2025 ^d	2030 ^d	INCREASE	
							2005 - 2030	
							Amount	Percent
Residential	6,232.23	5,989.4	5,862.76	5,886.28	5,909.48	5,933.31	(298.92)	(4.6%)
Commercial	3,763.18	3,611.36	3,547.82	3,572.82	3,601.39	3,628.17	(135.01)	(3.6%)
Other	2,076.05	2,145.08	2,257.68	2,429.98	2,429.98	2,429.98	353.93	17.0%
Non-Revenue ^e	11.20	11.20	11.20	11.20	11.20	11.20	0	0
Unaccounted-for water ^f	374.62	363.62	745.50	759.67	762.90	766.13	391.51	104%
Total	12,487.28	12,120.66	12,424.96	12,659.87	12,714.90	12,768.79	281.51	2.3%

^a 2005 demand was projected by applying average consumption rates by category for 2001-2004 to connection projections from Table 5.

^b Assumes a 1% per year conservation reduction for 2005 through 2010.

^c Assumes a 0.5% per year conservation reduction from 2010 to 2015.

^d Assumes no additional conservation reduction after 2020.

^e Non-revenue water is assumed to remain constant at an average of 0.01 mgd.

^f Unaccounted-for water is assumed to average 3% of production through 2010, increasing to 6% thereafter.

Source: American Water Works Service Company, *Demand Projections, Coronado System*, Donaldson Associates.

Water Supply and Demand

The data in Table 7 includes both projected sales and non-revenue/unaccounted-for water. The totals, therefore, represent projected purchases from the City of San Diego. Cal-Am's contract with the City, which dates back to 1912, allows the company to purchase all water necessary to meet its needs; there are no specified limitations on volume of water that the Coronado District can purchase from the City in a given year. Cal-Am's projected demand would account for about 4.3% of the projected water use by all City of San Diego customers in 2010 and 3.9% of San Diego's projected sales in 2020.¹

In order to meet the future needs of its retail and wholesale customers, including Cal-Am, the City of San Diego, in conjunction with the San Diego County Water Authority and the Municipal Water District of Southern California (MWD) is developing a variety of new local and imported supplies of water. Over the past five years significant progress has been made on many fronts, including:

- Negotiation of the 2003 Quantification Settlement Agreement, which assures long term supplies of Colorado River water for the San Diego region and clears the way for the transfer of up to 200,000 AFY from the Imperial Irrigation District to the Water Authority for 75 years plus an additional 77,000 AFY for 110 years by lining the Coachella and All-America Canals to prevent seepage losses. Over time, the Quantification Settlement Agreement will provide for an increase San Diego County's reliable water supply by as much as 280,000 AFY.
- A decision to construct a seawater desalination plant with a capacity of 56,000 AFY adjacent to the Encina Power Station in the City of Carlsbad.
- Development of capital improvement plans to increase local storage, pipeline and pumping facilities to provide more protection against possible emergency cutbacks in imported water deliveries.
- Development of new and expanded recycled water projects in the City of San Diego's Northern and Southern service areas
- Demand reduction through water conservation.

¹The City's retail and wholesale demand was projected to be 232,720 acre-feet a year in 2010 and 330,724 AFY in 2020. City of San Diego, *The 2000 Urban Water Management Plan*, p. 10.

Water Supply and Demand

In addition, MWD has developed new storage facilities in Southern California, conjunctive use programs to recharge groundwater aquifers in wet years so they can be discharged in dry years, standby water transfer agreements with agricultural users and water recycling projects that reduce demand and recharge groundwater aquifers.

As a result of these programs MWD and the San Diego County Water Authority are not projecting water shortages, relative to normal year demands, in the event of a single-dry year or multiple-dry year scenario that might occur in the coming 20 years. Accordingly, the potential drought scenarios for the District presented in Table 8 do not anticipate any shortages that would require the imposition of water rationing.

**TABLE 8
DROUGHT SCENARIOS
SINGLE DRY YEAR AND MULTIPLE DRY YEARS**

	Normal Year (2025)	Single Dry Year (2025)	Multiple Dry Years		
			Year 1	Year 2	Year 3
Demand	12,715 AF	12,715 AF	12,715 AF	12,715 AF	12,715 AF
Supply (Year 2025)	12,715 AF	12,715AF	12,715 AF	112,715 AF	12,715 AF
Supply Shortage	0	0	0	0	0

The Company's Water Shortage Contingency Plan, which would be activated in the event of an unanticipated water shortage or short-term emergency, is described in Chapter VII of this report.

V. URBAN WATER MANAGEMENT PLAN PROGRAMS

A. INTRODUCTION

This chapter describes and evaluates the Coronado District's Urban Water Management programs for the 2006 - 2010 period. It describes the water conservation programs that were in effect prior to preparation of the District's previous *Urban Water Management Plans*, as well as the programs that are being continued and refined in the present Plan.

The California-American Water Company is a signatory to the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) and is therefore a member of the California Urban Water Conservation Council (CUWCC). The MOU contains 14 demand management measures that signatories to the MOU agree to implement as part of their good faith efforts to optimize water savings. The CUWCC calls these demand management measures Best Management Practices (BMPs). In the *Urban Water Management Planning Act* they are termed DMMs (Demand Management Measures). The BMPs/DMMs are examples of sound water management practices that have been found to be cost effective and practicable in most instances throughout California. The BMPs are generally consistent with the water conservation practices that have been implemented by the Company under the existing *Urban Water Management Plan* (and in some cases, for much longer). Accordingly, the Coronado District's water conservation programs presented later in this chapter have been organized in a format that is consistent with the list of BMPs being implemented statewide by the CUWCC.

B. PREEXISTING WATER CONSERVATION PROGRAMS

The Coronado District of the California-American Water Company, in conjunction with other agencies in San Diego County and the Metropolitan Water District of Southern California, has actively promoted water conservation initiatives by its customers and staff. The District's water consumption peaked in 1989 at 14,338 AF and then declined by about 24% in response to water

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rationing instituted during the 1991 - 1993 drought. Consumption has gradually rebounded during the recent run of years with normal or above normal precipitation but remains about 5.8% below the 1989 level on a consumption per connection basis.

Today, the District's on-going water conservation measures, some of which had been in place for many years prior to the 1990 UWMP, include the following:

1. METERING

All Cal-Am water connections are metered. Metering is recognized as sound urban water management practice as well as a basic water conservation measure (DMM 4). The District's sources of supply are also metered, and the supply meters can be cross-checked against sales data to allow the District to identify water lost in the transmission/distribution system. The District's supply source meters are tested once per year; customer meters are regularly replaced and recycled. Approximately 83% of customer meters are 10 years old or less while only 41 meters out of over 20,500 are more than 15 years old.

2. MAINTENANCE OF WATER USE RECORDS BY USER TYPE

While the record keeping itself does not save water, the data it provides is fundamental to evaluating the effectiveness of water conservation programs.

3. SYSTEM PRESSURE CONTROL PROGRAM

The District manages water pressure throughout its system as required by CPUC regulations. The primary purpose of pressure regulation is to ensure that pressures are high enough to meet fire flow needs. However, if water pressure is too high, more water will be lost when fixtures leak or if water is inefficiently applied.

4. SUPPLY SIDE MANAGEMENT

The Company is committed to maximizing the efficient use of water within its operations. This requires accurate metering of production facilities, with scheduled meter testing and replacement programs.

Cal-Am has on-going programs to maintain the efficiency and integrity of the transmission and distribution systems operated by the Coronado District and the amount of water lost in the transmission and distribution system is very low — averaging only 2.7% of purchases over the past 5 years. These include pipeline replacements and leak detection work by maintenance personnel, as summarized below.

Pipeline Replacements. The Company has a continuing capital investment program for the replacement of old and deteriorated pipelines, which account for most leaks. In the past 5 years the District has invested an average of \$172,000 annually in the replacement of transmission and distribution mains with known leakage problems or which require frequent maintenance. In the ten-year span between 1984 and 1993 the District replaced the old, unlined cast-iron mains wherever feasible, whether or not they were leaking. This has resulted in fewer new breaks or leaks and is a major factor in the District's record of very low water losses.

Use of Leak Detection Equipment. California American Water has an official water loss control and leak detection program.¹ Since water losses in the Coronado District have been low, and it has been sufficient for the Company to repair distribution leaks as quickly as possible after they are reported.

5. PLUMBING FIXTURES RETROFIT PROGRAMS

California American Water has distributed thousands of residential plumbing retrofit devices since the last statewide drought in the early 1990's. Since 1992, approximately 8,500 "Toilet Tank Bank" displacement bags have been distributed to customers. Prior to that the District

¹California-American Water Company, *Water Loss Control and Leak Detection*, Distribution Policy No. 7, Approved by Board of Directors, May 9, 1988.

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distributed 2,000 to 3,000 retrofit kits, consisting of a toilet tank bag, a packet of leak detection dye tablets and conservation literature.

California American Water has promoted the installation of low flow showerheads in conjunction with various conservation programs conducted during the past 15 years. Approximately 7,000 have been distributed to customers, without charge, from the District Office. Currently, low flow showerhead kits are available at the office site and are offered with the toilet rebate programs. The low flow showerheads have a maximum flow rate of 2.75 gallons per minute, compared to non-conserving showerheads with flow rates of 5 to 8 gpm.

Since 1993 the Coronado District promoted the use of positive shut-off hose nozzles for outdoor use. The Company has purchased and distributed over 3,000+ nozzles. A positive shut-off nozzle has the potential to save as much as 50 gallons of water during a single home car wash.

A successful Ultra Low Flow Toilet rebate program has been operated every year since 1991. Rebates are provided to single family residential homes, including townhomes, master metered condominiums and mobile homes as well as duplexes and triplexes. The rebates are \$75 for the first toilet and \$50 for each additional toilet. The program is typically announced in the November/December bills and applications are accepted beginning January 1 and processed in the order received. In all, over 3,000 ULF toilets have been installed under this program, resulting in an estimated water savings of 25 AFY.

6. PUBLIC EDUCATION

Since the 1977-78 drought, the District has implemented regular public education and information efforts related to water conservation and a wise use ethic. Programs and activities that have been undertaken in the past 10 years have included:

- The on-going maintenance of a water conservation information and supply display in the entryway of the District office where it can be seen by all visiting customers;
- The sponsorship of a public education booth and information kiosk during the Sand Castle Weekend festivities (which regularly attracts more than 200,000 visitors);

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- Provision of free curriculum materials and other support for water education activities in schools, upon teacher request;
- Sponsorship of the *National Theater for Children* (formerly *Small Change Theater*) programs with a water conservation theme at elementary schools in the District;
- The development of demonstration gardens using low water use plants at the District office and at the Imperial Beach Senior Citizen's Center.

In addition, all of Cal-Am's customer's are shown their past year's usage for the same period on each water bill when the information is available (i.e. when the account has been open for more than one year). This important information can be very effective in alerting customers to plumbing problems or changes in habits and may often generate a conservation response.

The Coronado District has indirectly benefited from the public education programs of other water agencies, including the City of San Diego and the County Water Authority, because many of the District's customers have seen these other agency's billboards, read their newspaper ads and seen and heard their public service announcements.

The Company believes that all of these efforts not only improve the effectiveness of water conservation programs, but they will also prove beneficial during emergencies, when a more educated public is more understanding and cooperative in complying with any voluntary or mandatory actions that might be requested by the Company to restrict their water usage.

C. WATER CONSERVATION PROGRAMS — 2006 - 2010

1. DMM 1. WATER SURVEY PROGRAMS FOR SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL CUSTOMERS (BMP 1)

BMP 1: Implementation shall consist of at least the following actions:

Develop and implement a strategy targeting and marketing water use surveys to single-family and multi-family residential customers.

Directly contact not less than 20% of single-family and 20% of multi-family residential customers each reporting period.

Surveys shall include indoor and outdoor components.

Customers shall be provided with results.

Track survey offers, completions, results and costs.

In 1992 and 1993, 175 residential water audits were conducted for the owners of single-family homes who responded to offering letters. The audits were conducted by an outside contractor on a representative group of homes located in all four cities served by the District. The audits covered both indoor and outdoor water use and were well received.

Cal-Am subsequently applied for authorization from the California Public Utilities Commission for permission to be reimbursed for expenses incurred in conducting water audits on a continuing basis, pursuant to BMP 1. The request was denied. The Company, therefore, has not developed a formal water audit program and does not currently expect to have one in place during the term of this plan.

However, the Company's customer service personnel continue to conduct an informal "Alert, Check and Control" auditing program for all customers. This program has been internally developed in conjunction with the standard meter reading and billing process. The billing clerks regularly scan the meter reading data as it is filed and compare it with past usage data. Any anomalies in the data are noted (the Alert) and the appropriate customer service representatives are informed. They visit the site, verify the meter reading and look for obvious leaks or problems (the Check). In many cases a flow recording device is placed on the meter to identify usage patterns, which in turn can indicate possible internal leaks. The customer is kept informed and is offered assistance in identifying and correcting any problems (the Control). In the past, a number of malfunctioning toilets, faucets and irrigation devices have been discovered and repaired in this way.

IMPLEMENTATION: At the present time, Cal-Am has not budgeted for a formal water audit program during the term of this Plan. However, the Company will renew its requests for reimbursement of the costs of administering a formal water audit program. If a cost reimbursement program is approved a program will be designed and implemented with alacrity.

2. DMM 2. RESIDENTIAL PLUMBING RETROFIT (BMP 2)

BMP 2: Implementation shall consist of at least the following actions:

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Develop a targeting and marketing strategy to distribute or directly install low-flow showerheads, toilet displacement devices, toilet flappers and faucet aerators to single-and multi-family residences constructed prior to 1992.

Maintain distribution and/or direct installation programs so that devices are distributed to not less than 10% of single-family connections and multi-family units each reporting period or require through an enforceable ordinance the replacement of high-flow showerheads and other water using fixtures with their low-flow counterparts, until it can be demonstrated that 75% are retrofitted.

Cal-Am has implemented programs to provide free "Toilet Tank Banks," low flow showerheads and positive shutoff hose nozzles to customers requesting them since 1992. Over 8,500 toilet tank displacement bags and over 9,000 low-flow showerheads have been distributed under these programs. In addition, 2,000 to 3,000 toilet retrofit kits were distributed in the mid to late 1980's.

Cal-Am continues to keep an inventory of showerheads in the District Office and promotes them to visiting customers. They will also be distributed for free by customer service representatives in the field who respond to concerns regarding high water bills, plumbing leaks, etc.

IMPLEMENTATION: The Company will continue to make plumbing retrofit kits available upon customer request and in conjunction with trouble shooting visits by field personnel. The Company will inform customers of their availability through information messages on water bills and bill inserts. (See, also, DMMs 1, 5 and 9.)

3. DMM 3. DISTRIBUTION SYSTEM AUDITS AND LEAK DETECTION AND REPAIR (BMP 3)

BMP 3: Implementation shall consist of at least the following actions:

Annually complete a prescreening system audit to determine the need for a fullscale system audit.

When indicated, complete a distribution system audit using methodology consistent with the American Water Works Association's "Manual of Water Supply Practices, Water Audits and Leak Detection.

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Advise customers whenever it appears possible that leaks exist on the customer's side of the meter; perform system leak detection when warranted and repair leaks when found.

Cal-Am has an established *Water Loss and Leak Detection Policy*¹, which is followed by Cal-Am personnel when conducting routine fieldwork. Leaks found are prioritized and scheduled for repair as quickly as possible. Larger leaks are given higher priority, while the largest leaks are considered emergencies and are repaired as quickly as the personnel and equipment can be mobilized.

The level of unaccounted-for water in the Los Angeles Division has historically been below 10%, the industry standard for acceptable distribution system efficiency. It is also the threshold level for a system audit under this BMP.

IMPLEMENTATION: BMP 3 requires system audits when unaccounted-for water exceeds 10% of production, a level the District has not exceeded in many years, if ever. Based on this, the District considers itself to be in compliance with BMP 3 and with DMM 3.

The level of unaccounted-for water will be regularly calculated and the system wide surveys of distribution facilities will be reinstated if water losses rise appreciably.

4. DMM 4. METERING WITH COMMODITY RATES (BMP 4)

BMP 4: Implementation shall consist of at least the following actions:

Requiring meters for all new connections and billing by volume of use.

Identifying a program for retrofitting existing unmetered connections and billing by volume of use.

Identifying intra- and inter-agency disincentives or barriers to retrofitting mixed use commercial accounts with dedicated landscape meters, and conducting a feasibility study to assess the merits of a program to provide incentives to switch mixed use accounts to dedicated landscape meters.

¹ California-American Water Company, *Distribution Policy 7, Water Loss Control and Leak Detection*, adopted by the Board of Directors, May 9, 1988.

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California American Water Coronado District is fully metered and all customers are billed on the basis of a set service charge per meter plus a volume of use charge. The volume of use charge currently in effect is \$2.0938 for the initial unit of 0.61 ccf and \$2.1885 for each additional unit of 0.61 ccf unit (0.61 ccf = 456.3 gallons).

IMPLEMENTATION: This BMP is being fully implemented. It should be noted that no changes in rates or in the rate structure may be implemented unless they are authorized in advance by the California Public Utilities Commission.

5.DMM 5. LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES (BMP 5)

BMP 5: Implementation shall consist of at least the following actions:

Provide non-residential customers with support and incentives to improve their landscape water use efficiency. This support shall include the following:

Identify accounts with dedicated irrigation meters and assign Eto-based water use budgets. Provide notices each billing cycle to accounts with water use budgets showing the relationship between budget and actual consumption.

Develop and implement a strategy targeting and marketing large landscape water use surveys to CII accounts with mixed-use meters. Each reporting period, directly contact via letter or telephone not less than 20% of such accounts and offer water use services.

Provide information on climate-appropriate landscape design, efficient irrigation equipment/management to new customers and change of service customer accounts.

Recommended actions:

Install climate appropriate water efficient landscaping at water agency facilities.

Provide customer notices prior to the start of the irrigation season alerting them to check their irrigation systems and make repairs as necessary. Provide notices at the end of the irrigation season advising them to adjust their irrigation system timers and irrigation schedules.

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The largest landscape irrigator in the Coronado District is the Coronado Municipal Golf Course. Other major landscape irrigators are the Cities, which irrigate parks and the school districts, which irrigate athletic fields and school playgrounds.

The District believes that the cost of water, which is based on volume of use, provides a very strong customer incentive for the careful application of water to large landscaped areas. Prior to 1995, the San Diego County Water Authority conducted an average of 3 - 4 large turf audits annually for Cal-Am customers. Subsequently, the Authority decided to restrict the offer for large turf audits to customers located in the District's San Diego service area.

The Water Authority has recently developed a program to provide rebate incentives to encourage the installation of emerging technology weather based irrigation system controllers for both residential and large landscape areas, matching fund incentives for irrigation hardware upgrades at commercial landscape sites and even incentives for installing artificial turf at sports fields and playgrounds.

IMPLEMENTATION: During the term of this Plan, the District will request PUC approval for increased funding of water conservation programs and will consider sponsoring, or joining with the Water Authority to co-sponsor, a program of large landscape water audits in the Coronado District.

The District's Conservation Coordinator will develop and implement a program to identify the largest CII accounts with mixed-use meters to identify candidates for the installation of separate irrigation meters. Once identified, participants will be selected based on their interest and willingness to follow the auditors recommendations. Water use surveys and the installation of separate irrigation meters will be offered to these customers, with appropriate follow-up as suggested in BMP 5. To assess the magnitude of water savings, Cal-Am will evaluate water sales data for the participating customers before and after the audits. This data will be used in determining whether the program should be expanded to include more landscape customers in the future.

The District will also consider funding an expansion of the Water Authority's incentive programs for installing new weather based irrigation controllers, irrigation hardware upgrades and artificial turf projects.

6. DMM 6. HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM (BMP 6)

BMP 6: Implementation shall consist of at least the following actions:

Until January 1, 2007, the water agency shall offer financial incentive, if cost effective, for the purchase of high-efficiency clothes washing machines (HEWS) meeting a water factor of 9.5 or less.

Any financial incentive offered shall be not less than the marginal benefits of the water savings, reduced by the necessary expense of administering the incentive program. A program is not required if the agency determines that the maximum cost-effective incentive is less than \$50.

Cal-Am has a program of rebates for high efficiency washing machines available to customers of the Coronado District. Rebates of \$50.00 are provided for qualifying high efficiency washing machines. The rebates could be supplemental to rebates that may be available from other utilities such as San Diego Gas and Electric or the Municipal Water District of Southern California.

IMPLEMENTATION: Cal-Am will continue the HEWS rebate program through 2006, in accordance with BMP 5. The Company will consider joining the San Diego Water Authority's HEWS rebate program and/or matching the amount of the Authority's rebates, which are currently \$125.

7. DMM 7. Public Information (BMP 7)

BMP 7: Implementation shall consist of at least the following actions:

Implement a public information program to promote water conservation and conservation related benefits.

Program should include providing speakers to community groups and the media; using paid and public service advertising, using bill inserts; providing information on customers bills showing use in gallons per day for the last billing period compared to the same period the year before; providing public information to promote other water conservation practices; and coordinating with other governmental agencies, interest groups and public interest groups.

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Cal-Am's Coronado District has conducted a variety of public education activities over the past fifteen years and expects to continue these efforts during the term of this Plan. The public information programs have focused, generally, on customer information, in-school education, and community outreach. In addition to its own programs, the Company has benefited from mass media oriented programs undertaken by the City of San Diego and the San Diego County Water Authority, especially those involving advertising, news coverage and public service announcements on radio, television and billboards.

The purpose of the public education programs has been to motivate customers to conserve water and to promote understanding and dialogue in the community on water conservation topics. As would be expected, these programs have been most active during water shortages.

IMPLEMENTATION: The public information activities that are currently being implemented will be carried forward in this Plan. They include all of the implementation programs suggested in BMP 7, e.g. bill inserts, water conserving text messages on bills, past usage information on bills, continued distribution of water conservation information, public service announcements, and coordination with other public agencies and interest groups.

8. DMM 8. SCHOOL PROGRAMS (BMP 8)

BMP 8: Implementation shall consist of at least the following actions:

Implement a school education program to promote water conservation and conservation related benefits.

Programs shall include working with the school districts and private schools in the water supplier's service area to provide instructional assistance, educational materials and classroom presentations that identify urban, agricultural, and environmental issues and conditions in the local watershed. Education materials shall meet the state education framework requirements, and grade appropriate materials shall be distributed to grade levels K-3, 4-6, 7-8 and high school.

Cal-Am sponsored *National Theatre for Children* plays (with a water conservation theme) for the ten elementary schools in the District from 1990 - 1998. The District believes that its theater programs have been reaching most of the students at the elementary schools in the service area.

In addition, the company has distributed teaching materials from AWWA and other sources to interested teachers upon request.

IMPLEMENTATION:

Throughout the term of this UWMP, the Coronado District will continue to support, and benefit from, the regional water education programs sponsored by its wholesalers. The primary objective of Cal-Am's efforts related to BMP 8 will be to ensure that schools in the Coronado District service area are adequately represented and participating in these programs.

9. DMM 9. CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL (CII) ACCOUNTS (BMP 9)

BMP 9: Implementation shall consist of both (a) and (b) and either (c) or (d):

- (a) Identify and rank CII accounts according to water use;*
- (b) Implement a program to accelerate replacement of high-water using toilets with ULFTs in CII accounts;*
- (c) Implement a CII Water-use Survey and Customer Incentives Program such that 10% of the CII accounts are surveyed within 10 years of the date of implementation;*
- (d) Achieve a water use reduction in CII sectors equaling or exceeding 10% of the baseline (1997) use over a 10-year period.*

The Coronado District has about 1,950 commercial connections and 320 institutional (Public Authority/Other) connections. There are no industrial connections. The commercial and institutional connections account for about 47% of the District's total sales. The largest commercial customers in the District are hotels, multi-family apartment and condominium complexes. The residential customers qualify for residential retrofit devices under DMM 2, and for washing machine and toilet rebates under DMM 6 and DMM 14. Many of the Public Authority/Other accounts are either mixed use or dedicated landscape irrigation accounts and will qualify for participation in the District's programs planned under DMM 5. The District staff regularly responds, on an informal basis, to phone calls or walk-in complaints about excessive runoff from landscape irrigation systems. These are often symptoms of broken sprinkler heads or improper maintenance, and are typically corrected after a phone call or field visit from a Cal-Am representative.

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The volume of use pricing has proven to be a powerful conservation incentive for a number of the largest multi-family accounts. This is especially true where there is volume pricing for both water and sewage treatment service. (See DMM 11, below.) In some cases, homeowner's associations and mobile home parks have voluntarily elected to install sub-meters for each residential unit so that the occupants can be held responsible for the cost of their individual volume of use. One manager has reported that the reduced water costs have been considerable (23%), resulting in a payback period for the meter system installation of just over 1 year.

IMPLEMENTATION. As noted, many of the District's CII customers qualify for the water conservation programs developed under DMMs 2, 5, 6 and 14. Participation in these programs will reduce demand in the Commercial and Public Authority/Other sectors. The District will continue to extend its ULFT and HEWS rebate programs to commercial as well as residential customers and will work with its commercial accounts, in response to queries or complaints, to improve their water use efficiency.

In addition, Cal-Am will consider joining with the Water Authority to facilitate the extension of the Authority's ongoing CII programs to the Coronado service area.

10. DMM 10. WHOLESALE AGENCY ASSISTANCE PROGRAMS (BMP 10)

BMP 10: Implementation shall consist of at least the following actions:

Wholesale water suppliers shall provide financial incentives, or equivalent resources, as appropriate, beneficial and mutually agreeable to their retail water agency customers to advance water conservation efforts and effectiveness.

This demand management BMP requires wholesale water suppliers to provide financial incentives, or equivalent resources, to their retail water agency customers for the advancement of water conservation efforts.

IMPLEMENTATION. Since the Coronado District is not a wholesale water supplier, this BMP is applicable.

11. DMM 11. CONSERVATION PRICING (BMP 11)

BMP 11: Implementation shall consist of at least the following actions:

Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

EXISTING RATE STRUCTURE. The Coronado District currently has water conserving, increasing block rate, volume of use, pricing for all categories of customers. The current rate is \$2.0938 for the first 0.61 ccf; and 2.1885 for each subsequent units of 0.61 ccf. Volumes of use charges are added to a basic service charge, which is dependent on the size of the meter. The most common 5/8 X 3/4 -inch meter is \$18.16 per month. These rates are subject to periodic review and revision by the Company, subject to PUC approval.

Cal-Am does not provide sewage treatment for customers in any of its Districts. In the Coronado District, sewage treatment is provided by one of four agencies, depending on the customer's location. In Imperial Beach, treatment is provided by the City of Imperial Beach. The rate structure is based on a set flat rate for each user category plus a volume of use rate. In Coronado, sewage treatment costs are paid for from an annual property tax assessment based on user type combined with the overall water usage for the City. In San Diego, the sewage treatment costs are assessed on the basis of a customer's "winter daily average" (November 1 - February 28). In Chula Vista, sewage treatment costs are set at a flat rate based on user type.

Of these four cities, Imperial Beach and San Diego have good water conserving rate structures, while Chula Vista's rate structure provides no incentive to conserve. The Coronado rate system is, in part, a volume of use pricing structure, but its assessment is so infrequent (annually) and the volume is so far removed from individual control (e.g. city average) that its conservation benefits are limited.

IMPLEMENTATION: Cal -Am will continue to maintain volume of use pricing with an inclining block rate structure for water service. It is important to emphasize that no changes in rates or the rate structure can be implemented unless they are authorized in advance by the California Public Utilities Commission.

The Company has no jurisdiction over sewage treatment rates, but will encourage more aggressive conservation pricing when the opportunities arise.

12. DMM 12. CONSERVATION COORDINATOR (BMP 12)

BMP 12: Implementation shall consist of at least the following actions:

- a) Designation of a water conservation coordinator and support staff (if necessary), whose duties shall include the coordination and oversight of conservation programs and BMP implementation, preparation and submittal of Council BMP Implementation Reports, and communication and promotion of water conservation issues to agency senior management, coordination of agency conservation programs with operations and planning staff; preparation of annual conservation budget; participation in the California Urban Water Conservation Council; and preparation of the conservation elements of the agency's Urban Water Management Plans.*
- b) Agencies jointly operating regional conservation programs are not expected to staff duplicative and redundant conservation coordinator positions.*

Cal-Am has a Conservation Coordinator responsible for overseeing the water conservation programs being implemented in all of the Company's service areas in California. In addition, the Conservation Coordinator is assisted by local staff, and draws upon the resources of personnel from the central billing operations, and the customer call center to ensure that the public information efforts and rebate programs are effectively implemented. The District has utilized outside consultants for other water conservation related activities including the 1992 - '93 water audit program, some of the school programs, and for the preparation of this report.

IMPLEMENTATION: The Conservation Program Manager, with assistance from other staff, as needed, will continue to fulfill the Coronado District's needs for the management and coordination of its water conservation programs.

13. DMM 13. WATER WASTE PROHIBITION (BMP 13)

BMP 13: Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, sales of automatic (self regenerating) water softeners, single pass

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cooling systems in new connections, nonrecirculating systems in all new conveyer car washes and commercial laundry systems and non-recycling decorative water fountains.

This BMP calls for water agencies to enact and enforce certain prohibitions against wasteful water use on an on-going basis, i.e. during drought and non-drought periods. The ordinances should prohibit, at a minimum, gutter flooding, non-recirculating fountains, non-recirculating systems in any new car wash or commercial laundry installations, and any new single-pass cooling systems.

IMPLEMENTATION. The Coronado District does not have the ability to adopt a waste water prohibition ordinance, as it is a private company, not a public agency. However, Emergency Water Management Programs for the Cities of Imperial Beach and Coronado contain provisions stating "at no time shall water be wasted or used unreasonably."¹ The Company's authorization to prohibit wasteful water use is derived from the CPUC's Rule 11, which establishes the District's regular operating procedures. It permits the Company to discontinue service "where negligent or wasteful use of water exists" if the practices have not been remedied within 5 days of giving the customer written notice to such effect.²

In addition, the voluntary and mandatory water rationing programs that have been adopted by the District and by the affected cities during past droughts have all contained prohibitions against waste. These ordinances have been specific in their definition of wasteful practices and are easier to implement and enforce. These provisions are discussed in greater detail in the *Water Shortage Contingency Plan*, section VII, of this report.

IMPLEMENTATION: Cal-Am will continue to enforce Rule 11 and will enforce any future water waste prohibitions that are implemented pursuant to a voluntary or mandatory water-rationing plan.

¹City of Imperial Beach, Ordinance 813, §7, July 5, 1990; City of Coronado, Ordinance 1761, §6, June 19, 1990.

²California-American Water Company, Rule No. 11, § B. 3. a., effective July 6, 1993.

14. DMM 14. ULTRA LOW FLUSH TOILET REPLACEMENT (BMP 14)

BMP 14: Implementation shall consist of at least the following actions:

Implementation of programs for replacing existing high-water- using toilets with ultra-low-flush toilets (1.6 gallons or less) in single family and multi-family residences.

Programs shall be at least as effective as requiring the replacement at the time of resale .

As described in section B, 5, (above) Cal-Am has operated a ULFT rebate program for single-family residences since 1991. Rebates are \$75 for the first toilet and \$50 for up to two additional toilets. Over 3,000 fixtures have been replaced under this program, resulting in a permanent demand reduction of over 25AFY.

In addition to this program, all new construction, since 1992, has included ultra-low flow plumbing fixtures in accordance with State law.

IMPLEMENTATION: Cal-Am has sought the continuation of this program on a year-by-year basis, and will continue to do so at a funding level equal to or greater than past levels.

15. WASTEWATER RECLAMATION.

Wastewater collection within the Coronado District's service area is undertaken by the respective Cities (Coronado, Imperial Beach, San Diego and Chula Vista) while wastewater treatment and disposal is provided by City of San Diego's Metropolitan Wastewater Department. Currently, the wastewater flows to the Point Loma Wastewater Treatment Plant located along the coast near the mouth of San Diego Bay.

Some of the wastewater generated within the Coronado District's service area is diverted to San Diego's South Bay Water Reclamation Plant, which opened in 2002. The plant is located in the very southern part of the County, near the border with Mexico and has the capacity to treat 15 mgd. Today approximately 1.25 mgd is supplied to existing customers, and by 2007 an additional 6 mgd will be supplied to the Otay Water District for use in areas of eastern Chula Vista that are served by Otay. The Otay Water District will be constructing a 30-inch transmission pipeline from the South Bay Water Reclamation Plant to its service area where a network of recycled water distribution pipelines is partially in place and will be expanded as

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new subdivisions are built.¹ Additional potential customers include the Sweetwater Authority, which serves National City and portions of Chula Vista, (east of the Coronado District). Sweetwater would primarily supply the recycled water to a proposed power plant project, although other irrigation and industrial uses are contemplated. At the present time, the City of San Diego is not planning any recycled water transmission pipelines that would serve portions of the Coronado District, and there are no plans to supply recycled water to users within Cal-Am's service area.

IMPLEMENTATION: Cal-Am will support the City's efforts to expand the availability of reclaimed wastewater in the South County area.

D. IMPLEMENTATION PROGRAM AND SCHEDULE

Table 9 summarizes Cal-Am's implementation program for the *Urban Water Management Plan*. The implementation program is based on a six-year time horizon, beginning with 2006. The schedule is intended to provide general guidance to the Company for the enactment of the water conservation programs described in this report. The Company will maintain full flexibility in funding and scheduling the various programs, and the implementation schedule may be modified as a result of new developments or changes in conditions. As required by State law, the entire plan will be reviewed after five years.

¹ City of San Diego Water Department, *Water Reuse Study 2005*, Interim Report, pps.3-7 to 3.9.

TABLE 9
IMPLEMENTATION PLAN SUMMARY

BMP #	Program	2006	2007	2008	2009	2010
1	Single- and Multi-family Water Survey Programs	-	-	-	-	-
2	Residential Plumbing Retrofit	○	○	○	○	○
3	Systemwide Water Audits	NA	NA	NA	NA	NA
3	Leak Detection	○	○	○	○	○
4	Metering with Commodity Rates	○	○	○	○	○
5	Large Landscape Conservation	D	D	○	○	○
6	High Efficiency Washing Machine Rebates	○	E	-	-	-
7	Public Information Program	○	○	○	○	○
8	School Programs	○	○	○	○	○
9	Commercial and Industrial Water Conservation	○	E	○	○	○
10	Wholesale Agency Assistance	NA	NA	NA	NA	NA
11	Conservation Pricing	○	○	○	○	○
13	Water Waste Prohibition	○	○	○	○	○
14	Residential ULFT Replacement	○	○	○	○	○
-	Wastewater Reclamation	-	-	-	-	-

Key to Symbols:

D = Develop Program

○ = Ongoing Program from Previous Plan or Before

E = Expand Program

NA = Not Applicable

- = No Program

VI. WATER SHORTAGE CONTINGENCY PLAN

A. INTRODUCTION

Section 10632 of the California Water Code requires *Urban Water Management Plans* to include the preparation of a water shortage contingency analysis. The first part of the *Water Shortage Contingency Plan* presented in this chapter describes the Coronado District's plan for responding to a sudden water shortage or water quality emergency such as might occur in the event of significant system damage from a major earthquake, or during a prolonged power outage, or in the event of a water quality emergency from bacteriological or chemical contamination of the water supply.

The second part of the plan describes the District's planning to address potential long-term water shortage conditions that could occur following one or more years of low precipitation (a drought).

B. PAST, CURRENT AND PROJECTED WATER USE

The Coronado Division's total annual production requirements, in five-year increments between 2005 and 2030 are shown in Table 6, above. The production requirements for the past 10 years are summarized in Table 10, on the following page.

As described in Section III, above, the number of connections to the Coronado system is projected to increase by only 2.6% over the coming 25 years. The District's water production requirements are expected to increase only slightly (2.3%) during the same period. The increase in demand is expected to be lower than the increase in population due to the increased water use efficiency.

C. ESTIMATE OF MINIMUM WATER SUPPLY

The Metropolitan Water District of Southern California (MWD) and its member agencies¹ conducted an Integrated Resource Planning (IRP) effort in 1996 of determining an appropriate level of long-term water supply reliability and establishing cost-effective ways to achieve that goal. The IRP adopted in 1996 established a goal of 100 percent reliability for full-service demands through 2020 with a Preferred Resource Mix involving the attainment of regional targets set for conservation, local supplies, State Water Project projects, Colorado River Supplies, groundwater banking, and water transfers. The 1996 IRP was reviewed and updated in 2003 to provide 100 percent reliability under historic hydrology through 2025.

MWD's projected minimum supply capability, total demands on the MWD system, and the projected surplus in average, single dry year and multiple dry year scenarios in 5-year increments through 2025 is shown in Table 11.²

Year	Amount (AF)
1995	12,066.9
1996	13,294.5
1997	12,867.9
1998	12,631.6
1999	13,696.6
2000	13,983.5
2001	12,750.1
2002	12,356.8
2003	12,640.8
2004	12,687.4
2005	13,350 (est.)

¹The San Diego County Water Authority is a member of MWD. And the City of San Diego, which supplies all of the Coronado District's water, is, in turn, a member of Water Authority. MWD is responsible for the importation of water to supply the urban areas of San Diego County.

²The data in Table 17 is from: Metropolitan Water District of Southern California, *Draft Regional Urban Water Management Plan*, May 2005, Chapter II.

TABLE 11
MWD SUPPLY CAPABILITIES
AVERAGE YEAR, SINGLE DRY YEAR AND MULTIPLE DRY YEAR SCENARIOS
2006 – 2025
Acre-Feet per Year (AFY)

	2006	2010	2015	2020	2025
AVERAGE YEAR SCENARIO					
Maximum Supply Capability	2,542,800	2,733,900	2,986,405	2,920,100	2,918,600
Total Projected Demand	2,169,300	2,096,100	2,266,500	2,487,900	2,618,700
Surplus for Reserves & Replenishment	373,500	637,800	720,100	432,200	299,900
SINGLE DRY YEAR (Repeat of 1977 Hydrology)					
Maximum Supply Capability	2,489,700	2,957,000	3,392,800	3,420,200	3,396,600
Total Projected Demand	2,169,300	2,096,100	2,266,500	2,487,900	2,618,700
Surplus for Reserves & Replenishment	320,400	860,900	1,126,500	932,300	777,900
MULTIPLE DRY YEARS SCENARIO (Repeat of 1990-92 Hydrology)					
Maximum Supply Capability	2,507,600	3,077,500	3,459,200	3,473,300	3,459,500
Total Projected Demand	2,245,200	2,175,600	2,320,900	2,534,100	2,688,500
Surplus for Reserves & Replenishment	262,400	901,900	1,138,300	939,200	771,000

As shown in Table 17, MWD expects that the region will have reliable supplies under the conditions that have existed in past dry periods throughout the 2006 to 2025 period. As

demonstrated by the demand numbers in Table 17, MWD expects to meet total projected demands that are equal to or greater than average year demands in both Single- and Multiple-Year Drought Scenarios through 2025. Based on this, the minimum water supply available to customers of Cal-Am's Coronado District in single and multiple dry years will be equivalent to the normal year water supply.

D. STAGED RESPONSE PLAN FOR WATER SUPPLY SHORTAGES

1. INTRODUCTION

Cal-Am has the right to purchase all of the potable water needed by its customers from the City of San Diego under the terms of a contract dating back to 1912. The contract does not contain any specific restrictions on the quantity of water that can be purchased in a given year, although in the past the District has voluntarily agreed to encourage and/or require conservation by its customers during previous periods of water shortage. For example, in 1991 - 92 and part of 1993, all of which were dry years, the District enforced a voluntary water rationing program, once requesting a 20% reduction in use. The conservation efforts were successfully achieved.

Based on MWD's Integrated Resource Plan, Cal-Am does not expect that water rationing will be necessary during the coming 25 years. By managing its multiple water resources, MWD, in conjunction with its San Diego County partners including the Water Authority and the City of San Diego, expect to be able to meet the normal year demands of their customers during single- or multiple-year droughts equal to, or even worse than, the 1977 and 1991 - 1993 droughts.

However, the District has water rationing contingency plan in place that could be implemented, should it ever be necessary. The plan is described below.

2. A THREE-PHASE PLAN

Generally, for droughts or any other long-term water supply shortage, the District would implement a program of water rationing measures designed to result in use restrictions proportional to the severity of the reductions needed. In 1991, the Coronado District developed a three-phase water rationing plan pursuant to Rule 14.1 of the California Public Utilities Commission. The plan was implemented and Phase II restrictions were imposed in response to

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the water shortage declaration made at the time. The overall plan remains in place and a Phase I, II or III Rationing Program could be implemented, as appropriate, in response to a finding that a water shortage exists.

The Cities of Coronado¹ and Imperial Beach² have adopted similar three-stage approaches to water shortages with the addition of a fourth stage emergency plan to be implemented in the event of a water supply or distribution facility failure. Both Cities' plans have provisions whereby they can be implemented by the respective City Managers in consultation with Cal-Am.

The three phases of the Rule 14.1 Plan are described below.

Phase I: This is voluntary (non-punitive) conservation program with a goal of 10% reduction in consumption over previous twenty-four months (the "historical base period") Under this program certain wasteful, nonessential uses of water would be prohibited, including:

1. Use of water to wash sidewalks and other hard surfaces;
2. Car and motor vehicle washing without a positive shutoff nozzle;
3. Use of water in fountains and for aesthetic purposes unless they have a recycling system;
4. No restaurant drinking water service unless expressly requested;
5. Plumbing leaks must be repaired in 48 hours;
6. Lawn and landscape watering on odd/even days and between 5:00 pm and 10:00 am;
7. No water runoff from landscaped areas.

Phase II: Phase Two would be a mandatory 10% - 20% conservation program, measured against a base period of the 24 previous months. The exact level of conservation would be determined by Cal-Am depending on the requests of the Company's wholesale suppliers although every customer would be allowed a minimum allocation of 15 hcf

¹City of Coronado, Ordinance 1761, adopted June 19, 1990.

²City of Imperial Beach, Ordinance 813, adopted July 5, 1990.

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units. Water waste would be prohibited and the list of nonessential, wasteful practices would be broader. Changes would include:

1. The amounts of permissible lawn and landscape watering would be cut back from every second to every fourth day;
2. Commercial nurseries, golf courses and other water dependent industries would be limited to irrigation on every second day between 6:00 pm and 8:00 am;
3. Water for construction projects, including dust control, would be limited to amounts specified in a water use plan and would have to be non-potable (recycled), if available.

The Phase II program would be enforced with the imposition of excess use fees. (In 1991 they were \$2.00 per hcf unit.) Before excess use fees would be imposed, the Company would apply credits for unused units (below 15 ccf) from previous billing periods. That is to say, previous conservation savings (below 15 units) would be banked for possible use in future months.

Phase III: The Third Phase water rationing program would consist of mandatory water rationing of 20% or greater measured against a base period of the previous 24 months. Again, the exact level of conservation would be determined by Cal-Am depending on the requirements and policies of the Company's wholesale suppliers. This Phase would have a lower minimum allocation of 13 hcf units per 30-day billing period. It would involve all of the water use restrictions in Phases I and II augmented by the following additional requirements:

1. Irrigation watering would only be permitted between 6:00 pm and 6:00 am, every fourth day;
2. Commercial nurseries, golf courses and other water dependent industries would be limited to irrigation on every third day between 6:00 pm and 6:00 am;
3. The use of water from fire hydrants would be limited to fire fighting and other public health, safety and welfare uses.

A steeper excess use fee for the Phase III program would be set. (In 1991 it was \$3.00 per hcf unit). Banking of unused amounts below the minimum allocation of 13 hcf units per month

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would be permitted and would be credited in future months before an excess use charge would be levied.

The Phase II and III programs would include enforcement mechanisms of escalating severity beginning with written warnings followed by the installation of flow restricting devices (after three monthly violations), plus the payment of special fees for their removal, leading, ultimately, to the termination of service. Appeal procedures for customers seeking variances or exceptions would also be established. In addition to these enforcement mechanisms, the violations of similar provisions contained in the Coronado and Imperial Beach ordinances could constitute an offence punishable by a fine.

3. A STAGE IV, WATER EMERGENCY RESPONSE PLAN

Although not a part of the Cal-Am's Rule 14.1 Plan, the programs adopted for the Cities of Coronado and Imperial Beach contain a Stage IV, Emergency Response plan that could be implemented in response to a sudden failure of a supply or distribution facility. A Stage IV response could be implemented by the respective City Managers in conjunction with Cal-Am, and would affect most of the Coronado District's customers. A Stage IV alert would involve very stringent reductions of outdoor use:

1. Landscape irrigation would be prohibited, except to protect rare or exceptionally valuable plants or animals;
2. Water use at commercial nurseries would have to be reduced by 50%.
3. Water use by commercial car washes would have to be reduced by 50%. All other vehicle washing would be prohibited.
4. On Golf Courses, only greens could be watered.
5. Water could not be used for ornamental fountains or for swimming pools, spas, artificial lakes, etc.
6. No construction water meters or permits for unmetered service would be issued.
7. Water could not be used to wash down paved surfaces, nor could it be served in restaurants, except by request.

4. MANDATORY PROVISIONS TO REDUCE WATER USE.

Each of the three Phases of water rationing includes mandatory prohibitions against non-essential use of water. The prohibitions become increasingly broad in response to increasingly severe water shortages. The Phase I (voluntary), the Phases II and III (mandatory) water rationing programs and the Stage IV Emergency Response Plan all incorporate mandatory restrictions on the use of water for washing sidewalks and other paved surfaces, for vehicle washing, for non-recycling fountains and other aesthetic water features, a prohibition on automatic water service in restaurants, increasingly stringent restrictions on landscape watering and a prohibition on landscape irrigation runoff to streets and sidewalks.

The Phase II or Phase III water shortages and Stage IV, Emergency Response, would incorporate additional mandatory reductions such as stringent irrigation restrictions for commercial nurseries and golf courses, limitations on the use of water for certain construction purposes, and the prohibition of the use of water from fire hydrants for other than essential health, safety and welfare reasons.

5. CONSUMPTION LIMITS.

The District's response to any recognized water shortage requiring the adoption of a mandatory water rationing program would include a percentage reduction from the amount consumed in the preceding 24 month base period, although a minimum monthly lifeline allocation of 15 hcf units in Phase II and 13 hcf units in Phase III would be permitted.

6. PENALTIES OR CHARGES FOR EXCESS USE

The Water Shortage Contingency response would involve the adoption of excess-use charges for the mandatory rationing phases (II and III). In 1991 the Phase II program fees were \$2.00 per hcf unit over the allocation and the Phase III charge \$3.00 per overage unit.

7. IMPACTS ON REVENUES AND EXPENDITURES

Cal-Am must follow the rules and regulations of the CPUC when recovering lost revenue due to mandatory water conservation. Procedures to permit special drought memorandum accounts were set up in the early 1990's and are now in effect. Cal -Am will continue to work

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with the CPUC to maintain revenues that are both beneficial to the customers and to the company.

Revenue from excess use charges would also be held in a separate reserve account for eventual disposition as authorized by the CPUC.

8. DRAFT ORDINANCE

As noted, Cal-Am does not have the authority to adopt resolutions or ordinances. However, both Imperial Beach and Coronado have adopted ordinances with Phase I, II and III programs that are compatible with the Rule 14.1 program. These ordinances affect most of the District's customers and can be put in effect by order of the respective City Managers, subject to review by the City Councils.

Any water rationing program that would be implemented by Cal-Am would be designed to conform with the CPUC Rule 14.1 and with the respective ordinances of the two cities.

9. MECHANISM FOR DETERMINING ACTUAL REDUCTIONS.

Since all Cal-Am customers are metered and the sources of supply are metered, the Company is able to measure the effectiveness of any water shortage contingency plan that is implemented. Data can, as it currently is, being collected by the Company on a regular basis and can be regularly evaluated to determine the effectiveness of the overall response to a water shortage.

In a water shortage period, Cal-Am can generate comparisons of current consumption data to compare with data from a corresponding billing period 12 or 24 months previous, as appropriate. The Company can also review customer's records against past data for compliance with the adopted reduction goal in terms of percentage reduction or in terms of the minimum lifeline allocation then in effect. A list of all non-complying customers can be developed for appropriate enforcement action.

E. WATER SUPPLY EMERGENCY RESPONSE

The Coronado District has a written Emergency Response Plan, designed to provide guidance and direction for the activities of the District's staff in the event of a disaster or system contamination incident.¹ Key provisions of the plan are summarized below:

Readiness. The District's primary emergency operations center would be the District office, at 1019 Cherry Avenue in Imperial Beach. The District office is equipped with radios, telephones, telemetry equipment for operating the system, spare parts, emergency equipment, and supplementary documents and supplies. In addition, supplies necessary to support operation of the center on a round-the-clock basis for several days are stored on-site. These materials include food, cooking equipment, first aid supplies, sleeping bags, and personal hygiene supplies. The emergency operations center would be the central point of coordination for government services, communications, and emergency public information. A secondary assembly area has been designated at the Highland Tank site on Palm Avenue in San Diego.

The District also stored emergency pumping equipment, and an inventory of pipeline repair materials. Keys to operate company trucks and tractors are kept at both the primary and secondary assembly sites. Communication protocols have been established for disaster response and an organization chart defining the chain of command and emergency notification numbers are set out in the Plan.

Response. In the immediate period following a major disaster, such as an earthquake, the District's initial task would be to evaluate the water supply system and determine the integrity of all vulnerable and critical components. The District would also establish contact with the municipalities and emergency service providers in the service area and the integrity of all emergency cross-connections with other water suppliers would be evaluated.

Following the damage assessment work, the District would focus on restoring service. Pipeline breaks would be isolated as quickly as possible in order to minimize storage losses, and priorities for the repair tasks would be assigned based on a general hierarchy set forth in the

¹California-American Water Company, Coronado District, *Emergency Response Plan*, May 16, 2000.

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Emergency Response Plan. The first priorities are fire services at the scenes of fires, next are medical facilities, and third are remaining fire services. The Emergency Response Plan includes guidance for media contact and a current list of media phone numbers sufficient to organize a News Conference.

In addition to general disasters of large magnitude (such as a major earthquake) the Plan addresses certain specific types of disasters that may require special response protocols. These include transmission main breaks, contamination of the distribution system, and bomb threats/acts of terrorism.